Centimeter

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 mm

Inches

1.0 1.1 1.25 1.4 1.6

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ATTENTION: Guide Holders

March 31, 1994 Update to the GUIDE

Reflecting Secretary O'Leary's focus on occupational safety and health, the Office of Occupational Safety is pleased to provide you with the latest update to the DOE Interpretations Guide to OSH Standards. The Guide was developed in cooperation with the Occupational Safety and Health Administration, which continued its support during this last revision by facilitating access to the interpretations found on the OSHA Computerized Information System (OCIS).

This update contains 123 formal interpretation letters written by OSHA. As a result of the unique requests received by the 1-800 Response Line, this update also contains 38 interpretations developed by DOE. This new occupational safety and health information adds still more important guidance to the four volume reference set that you presently have in your possession.

As with the last update, you are requested to follow the attached instructions on incorporating this update into your current set of binders. The feedback from those Guide holders who took a few minutes to fill out the questionnaire accompanying the last update was appreciated and suggested improvements incorporated where possible. It was reassuring to learn that many of you use the Guide regularly. The preference for maintaining a hard copy version along with an electronic version was stronger than we anticipated, too.

As mentioned in the last update, the entire Guide will soon be available on Technical Information Service (TIS), a new computer service containing occupational safety and health databases. This will permit users to rapidly search for information contained in the Guide. Any questions about the Guide should be directed to Raymond Rogers of the Technical Support Division, EH-312 at (301) 903-7331.
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ABSTRACT
OSHA does not require that fires actually be started and extinguished to simulate emergency fire conditions during "hands-on" employee training. However, when "live fire" demonstrations are used in training, they should be conducted under qualified supervision at a facility appropriate for the purpose. The EPA should be consulted about regulations governing open burning.

INTERPRETATION
29 CFR 1910.155(a)(41)

JUL 2 1991

Dear Mr. H:

This is in response to your letter of May 6, in which you requested advice from the Occupational Safety and Health Administration (OSHA) on whether a fire actually must be started and extinguished by designated employees as part of their "hands-on practice" training under "simulated emergency conditions," found in our 29 CFR 1910.155(a)(41) and Appendix A, of Subpart L, respectively, of the regulations.

OSHA does not require that fires actually must be started and extinguished to simulate emergency fire conditions during employee training. "Hands-on" training does not necessarily mean "live fire" demonstration. However, when conducted, live-fire demonstrations should be conducted under qualified supervision at a facility appropriate for the purpose. Additionally, the Environmental Protection Agency (EPA), or the local authority having jurisdiction should be consulted with regard to regulations governing open burning.

As a minimum, hands-on training should include the actual discharging of fire extinguishers appropriate for the type of fires expected, unracking of standpipe hoses, and test-sounding of fire alarm boxes.
OSHA Instruction STD 1-9.3

December 12, 1981

Subject: 29CFR 1910.156(e)(3)(ii) Fire-Resistive Coat Requirements For Fire Brigades

A. Purpose. This instruction recognizes a variation to the washing cycle requirements referenced in 29 CFR 1910.156 (e)(3)(ii).

B. Scope. This instruction applies OSHA-wide.

C. Action. OSHA Regional Administrators and Area Directors shall ensure that 29 CFR 1910.156(e)(3)(ii) is enforced as clarified in paragraph E. of this instruction.

D. Federal Program Change. This instruction describes a Federal program change which affects State Programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.
2. Explain the technical content of the change to the State designee as requested.
3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State’s plan to implement the change or of the reasons why the change should not apply to that State.
4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanying inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

E. Guidelines. Variations from the NFPA 1971 criteria pertaining to color fastness, shrinkage, and water absorption shall be noted as a de minimis violation only when fire-resistive coats are washed according to manufacturers' instructions. This technical violation does not reduce the wearer's safety.

F. Background. A provision of the OSHA fire brigade standard (1910.156(e)(3)(ii)) requires that the performance, construction, and testing of fire-resistant coats be at least equivalent to the requirements of the National Fire Protection Association (NFPA) standard NFPA 1971-1975, "Protective Clothing for Structural Fire Fighting" with certain permissible variations from those requirements.

1. Table 3-4.1.1 of NFPA 1971 specifies criteria for tearing-strength, color fastness, shrinkage, water absorption, and flame resistance. Paragraph 3-4.1.1 of NFPA 1971 specifies that these criteria are also applicable after five cycles of laundering and drying in accordance with American Association of Textile Chemists and Colorists (AATCC) Method 96-Test-IV-E.
2. The commercial laundering and drying cycle specified in AATCC Method 96-Test-IV-E involves mechanical agitation of the materials in a water environment exposure of 203 deg. F - 212 deg. F. This is a severe test method which does not reflect actual washing of fire-resistant coats by fire fighters following manufacturers' instructions. The washing of fire-resistant coats by fire fighters is a severe test method which does not reflect actual washing of fire-resistant coats by fire fighters following manufacturers' instructions. The washing of fire-resistant coats by fire fighters following manufacturers' instructions consists of spreading the garment out on the engine room floor (or other flat surface) and scrubbing the garment using warm water, mild detergent, and soft brush. This method of washing fire-resistant coats is preferred since it could enhance the longevity of the coats as compared to commercial laundering and drying.
3. When fire retardant (FR) cotton coats are washed according to AATCC Method 96-IV-E and the attributes of color fastness, shrinkage, and water absorption are evaluated, either no change would be expected, or the values vary by a small degree from those specified in NFPA 1971.
These minor variations from the criteria specified in NFPA 1971 would not jeopardize the wearer's safety. However, if FR cotton coats are washed using manufacturers' instructions (which is the actual method of washing used by fire fighters), the protective integrity of the garments is maintained in accordance with the criteria specified in NFPA 1971.
INTERPRETATION 29 CFR 1910.156(a)(1); (c)(1)

Jan 7, 1985

This is in response to your correspondence of December 12 concerning requirements of the Occupational Safety and Health Administration (OSHA) for fire brigade instructors.

The many fire brigades covered by the OSHA fire brigade standard (1910.156) vary widely in type, function, and size. The OSHA requirements for fire brigades, therefore, are performance-oriented to provide enough flexibility for the employer to organize a fire brigade which best reflects the needs of the workplace. Consequently, OSHA’s training requirements for instructors are minimum, what is stated in (c) (1) is that fire brigade leaders and training instructors shall be provided with training and education which is more comprehensive than that provided to the general members of the brigade. Section (c) (3) discusses fire training schools and Appendix (A) (5) further amplifies training requirements.

The following information is in response to your specific questions.

1. The minimum acceptable standards for instructors should be at least equivalent to Instructor I (NFPA-1041).
2. The instructor candidate need not be, or have been, a full time member of a fire department for five years. However, fire department experience (either volunteer or paid) would be helpful, and is certainly recommended.
3. Although OSHA's requirements are not specific with respect to teaching methods, we would recommend that tests be routinized.
4. While we do not see any advantage for a pass/fail determination being made at an administrative level, there are no OSHA requirements against it.
5. It is acceptable to OSHA to have fire brigade candidates pass a standardized set of physical, emotional and mental evaluations.
6. It is acceptable to OSHA to have these evaluations performed at an administrative level.
7. It is acceptable to OSHA to have an instructor III act in an administrative or supervisory capacity and have the actual skill instruction performed by Instructors I and II.
SOURCE LETTER

Dec 12, 1984

This union represents employees who have historically had the responsibility for training other employees in fighting incipient fires. We have recently been advised by the employer that they plan to train employees to fight interior structural fires as fire brigades. During the course of our discussions in this regard, a number of questions were raised concerning O.S.H.A. requirements and acceptable practices for compliance with 29 CFR 1910, Subpart L, Section 1910.156 and 1910.157. In this regard, I would request an official response to the following:

1. 1910.156(2),(c) states, in part, “Fire brigade leaders and training instructors shall be provided with training and education which is more comprehensive than that provided to the general membership of the fire brigade.” As we are attempting to determine what additional training or education would be required to qualify our current incipient fire fighting trainers in order to allow them to train fire brigade members in fighting interior structural fires, I would like to know the minimum acceptable standards for such instructors.

2. In order to qualify as an Instructor I or Instructor II, must the candidate be, or have been, a full-time member of a fire department for a minimum of five years?

3. If Instructors I and II are used to teach brigade candidates specific skills and then administer and grade oral, written and manipulative performance tests, should these tests be routinized so as to prevent such instructors from manipulating the results?

4. Is it acceptable for a course pass/fail determination to be made at an administrative level based upon the sum of the various specific skill testing mentioned in item #3 above?

5. Is it acceptable to have prospective fire brigade candidates pass a standardized set of physical, emotional and mental evaluations to determine their suitability and capacity to perform the Interior Structure Brigade duties?

6. Is it acceptable to have such candidate evaluation performed at an administrative level?

7. Is it acceptable to have an Instructor III act in an administrative or supervisory capacity and have the actual skill instruction performed by instructors I and II?
MEMORANDUM

APR 9, 1990

INTERPRETATION 29 CFR 1910.156(a); (a)(2); (b)(2); (c)(1); (f)(1)(ii); 1910.155(c)(26)

MEMORANDUM

Subject: Interpretation of OSHA's Fire Brigade Standard

This is in response to your memorandum of December 26, 1989, in which you requested interpretations of several sections of OSHA's Fire Brigade Standard (29 CFR 1910.156) concerning the use of self-contained breathing apparatus (SCBA) as they relate to the National Fire Protection Association (NFPA) 1500 standard (Fire Department Occupational Safety and Health Program). Your questions specifically concern the activities of an incipient stage fire brigade. Incipient stage fire brigade, as defined in 1910.155(c)(26), members are not to enter environments such as smoke-filled and toxic-filled environments where protective clothing or breathing apparatus are required. Members of an incipient fire brigade shall not lead emergency trained personnel into smoke or toxic filled areas. Protective clothing and respiratory protection may be used in cleanup and overhaul after the fire is out. Incipient stage fire brigades may not conduct search and rescue work.

On the basis of this definition incipient stage fire brigade members are not to enter environments such as smoke-filled and toxic-filled environments where protective clothing or breathing apparatus are required. The search and rescue operations involving the fire department and other safety personnel are to be performed by personnel trained in emergency operations, such as members of an interior structural fire brigade, or an equivalent unit. Section 3-3.1 of National Fire Protection Association (NFPA) 1500 requires that brigade members be provided with training and education appropriate for the duties and responsibilities before being permitted to be engaged in emergency operations. Questions the propriety of protective clothing for brigade members in his second question concerning infringement on structural brigade guidelines Incipient stage members would be infringing on the guidelines for an interior structural fire brigade by engaging in search and rescue activities similar to those addressed above, even if they were to wear protective clothing.

Third question concerning the wearing of SCBA by incipient stage fire brigade members has been partially answered in paragraph 2 above. It would not be appropriate for members of an incipient fire brigade to lead fire department personnel trained in emergency operations into smoke or toxic filled areas.

Fourth question concerns the provision of protective equipment for post-fire operations. Though not an OSHA requirement, the employer may furnish to his incipient fire brigade members, SCBA's and other protective equipment for their use during cleanup and overhaul operations after the fire is out. However, the employer shall comply with the Protective Clothing and the Respiratory Protection Devices sections of 29 CFR 1910.156(e) and (f), respectively.
In response to question #5, it has been established that incipient stage fire brigades may not conduct search and rescue work. Where structural fire brigades are engaged in search and rescue work, and where a need arises for the use of life lines, the employer should comply with NFPA 1500, Section 5-5 (Life Safety Ropes, Harnesses, and Hardware).

Questions #6 and #7 concern training of fire brigade members, and participation in confined space rescue. SCBA-trained members can be trained for structural fire brigade work and the rest of the team trained as incipient stage members. Additionally, an incipient stage brigade member, fully trained on the proper use of a SCBA and other confined space entry and rescue procedures, may participate in confined space rescues. The need for protective clothing must be based on specific factors associated with the rescue itself.

Final question whether procedures in the earlier questions should be included in the written procedures plan. OSHA requires under 1910.156(b) that the employer prepare and maintain a written policy that addresses many of the issues listed above. This organizational statement or policy must address the existence of the brigade, its structure, its training requirements, and its work functions.

Requests an OSHA opinion on the toxicity of small fires. Where small fires have the capacity to emit toxic fumes, the employer may go beyond OSHA requirements and provide his incipient fire brigade members training and protective equipment equal to or greater than that which is required by the members of a structural fire brigade.

Finally, requests a copy of our new confined space entry requirements. The Agency has not finalized the adoption of its proposed confined space standard. We anticipate the adoption of this standard sometime around February of 1991.

SOURCE LETTER

December 8, 1989

Please clarify the following in writing for us as we are receiving numerous calls pertaining to the OSHA Standard on SCBA and with the recent NFPA 1500 standard.

Can an incipient stage Fire Brigade use Self Contained Breathing Apparatus for the following:

1. Search & Rescue only, smoke filled conditions without protective clothing; boots, helmets, coats, etc.
2. Can an incipient stage Fire Brigade wear protective clothing to do the above without infringing on the structural brigade guidelines.
3. Can SCBA be worn by incipient stage Fire Brigade for the purpose of leading the fire department into smoke filled or toxic filled areas.
4. Can SCBA be worn by incipient stage Fire Brigade Members for clean up and overhaul after the fire is out.
   a. Would protective boots, steel shank, coats and helmets be allowed for this without being a structural brigade.
5. During Search & Rescue activities can the incipient stage Fire Brigade Member use a charged 1-1/2" hose line for a life line or use a rope and extinguisher for protection while conducting search & rescue work.
6. Can SCBA Members be trained for structural fire brigade work and the rest of the team trained as incipient stage.
7. Can the incipient stage Fire Brigade Member who is fully trained on the proper use of SCBA participate in confined space rescue without protective clothing.
8. Should all of the above be specifically covered in the written procedures plan.

Some of the members feel that even small fires have toxic fumes and want to wear SCBA equipment while extinguishing them. Please give us your opinion in simple terms on this and all other questions addressed in this letter.
Thank you for your correspondence concerning the Occupational Safety and Health Administration's (OSHA) protective clothing standards for fire fighters. Quite possibly, your dissatisfaction with the standard results from some error in your understanding of the standard.

Development of the OSHA fire brigade standard (1910.156) began in 1976. The rulemaking process was very comprehensive, and the fire brigade standard was promulgated in 1980 based on extensive public comment and hearings. We note your organization elected not to participate in our rulemaking.

The OSHA provisions for protective clothing (1910.156(e)) are not specific to one manmade fiber as you maintain. Protective clothing may be made of any material (manmade or natural fiber) as long as it meets the criteria specified in the OSHA standard. Cotton Incorporated was active in the OSHA rulemaking, and their input and other support in the public record caused OSHA to allow more flexibility in its standard than that permitted by the National Fire Protection Association's (NFPA) Standard.

OSHA is represented on the NFPA Committee, Protective Equipment for Fire Fighters. I believe that The Wool Bureau, Inc. is also represented on this committee. The NFPA Committee is actively working on new criteria and test methods for protective clothing for fire fighters. I am sure that the NFPA Committee would be interested in the information that you have submitted to OSHA. You may wish to submit it to them directly.

Your correspondence to OSHA also states that the trend appears to be an increase in injuries since the promulgation of the fire brigade standard. We would like copies of reports that indicate this trend as we do not have such information. We see training programs improving and better equipment being used. However, since the protective clothing provisions of the OSHA fire brigade standard are not even effective until July 1, 1985, it is unlikely that they have had any impact on recent injuries.

OSHA is continuously evaluating its standards to assure that employees are adequately protected. If revision of the fire brigade standard is necessary, all applicable information will be considered, including that which you have submitted to OSHA.
ABSTRACT
An interpretation letter responding to an inquiry about whether employee protective clothing designed for structural fire fighting can also be worn by employees engaged in airport crash and rescue operations. Protective clothing meeting the requirements of OSHA’s 1910.156(e) may be used by employees for both structural and airport crash and rescue fire fighting. OSHA will not issue citations to employers whose employees perform both structural fire fighting and crash fire rescue operations while wearing structural fire fighting protective equipment, so long as the protective garments are used and maintained in accordance with NFPA 1971 and 29 CFR 1910.156(e).

INTERPRETATION
29 CFR 1910.156(e)(1)

DEC 21, 1990

MEMORANDUM

SUBJECT: Protective Equipment for Fire Fighters Engaged in Aircraft Crash and Rescue Operations

This is in response to your inquiry of October 24, asking whether employee protective clothing designed for structural fire fighting can also be worn or used by employees engaged in airport crash and rescue operations. We have determined that protective clothing meeting the requirements of OSHA’s 1910.156(e) may be used by employees for both structural and airport crash and rescue fire fighting. This issue arose when citations were issued to the U.S. Army Transportation center and the Oceanic Naval Air Station for not providing Crash Fire Rescue (CFR) protective clothing to their employees engaged in airport crash and rescue operations.

OSHA recognizes that changes in design and materials of structural fire fighting protective clothing have resulted in state of the art gear that provides equal or greater protection as that afforded by Crash Fire Rescue (CFR) suits. Under our 1910.120(q)(3)(iii), Hazardous Waste Operations and Emergency Response standard, OSHA allows employees performing fire fighting operations beyond the incipient stage to wear protective clothing of the same type as that worn by employees performing interior structural fire fighting “for any incident or site”.

Similarly, the 1991 draft edition of NFPA 1971, “Standard on Protective Clothing for Structural Fire Fighting” also recognizes the changes in the state of the art of structural fire fighting protective equipment. The 1991 draft softened the language contained in the warning label affixed to each garment by removing the “do not use...” language of the current 1986 edition and replacing it with the “may not...” language of the current draft.

In summary, OSHA will not issue citations to employers whose employees perform both structural fire fighting and crash fire rescue operations while wearing structural fire fighting protective equipment, so long as the protective garments are used and maintained in accordance with NFPA 1971 and 29 CFR 1910.156.
OSHA Instruction STD 1-9.2
August 5, 1981


A. Purpose. This instruction provides specified exceptions for fire extinguisher repairs and/or subsequent hydrostatic tests which do not meet the requirements of 29 CFR 1910.157(f)(2),(f)(2)(i) and (f)(4) and are performed under conditions imposed by the manufacturer.

B. Scope. This instruction applies OSHA-wide.

C. Action. Regional Administrators/Area Directors shall take action to ensure that 29 CFR 1910.157(f)(2),(f)(2)(i) and (f)(4) are enforced in accordance with E. of this instruction.

D. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

E. Guidelines. Repairs will be permitted on dry chemical, cartridge type extinguisher shells constructed of mild steel when such repairs are by silver brazing and are performed in conformance with the pertinent requirements of the extinguishers' manufacturer.

1. Repairs shall only be performed by trained persons deemed competent and approved by the employer.

2. The employer shall have available and provide the Compliance Officer the employer's written designation of the approved competent person and the current manufacturer's instructions which provide for repairs, tests and/or maintenance of any fire extinguishers covered by this instruction.

3. After completion of allowable repairs, the unit shall be hydrostatically tested in accordance with the manufacturers written test instructions.

4. Allowable Repairs and Hydrostatic Test Requirements. The following allowable repairs and test requirements are considered within the scope of 29 CFR 1910.157 (f)(2),(f)(2)(i) and (f)(4):

Vol. 2-10
OSHA Instruction STD 1-9.2 (cont.)

a. Hand Portable Mild Steel, Dry Chemical Cartridge Operated Extinguishers.

1. Repairs shall be by means of silver brazing only.

2. Silver brazing is restricted to extinguisher components such as the carrying handle lug, nozzle holster nuts, hanger attachment, visual seal attachment, etc., which are specifically within the manufacturer's limitations.

3. Silver brazing shall not be allowed where the mild steel shell is damaged as by tearing, etc., of the parent metal from the shell.

b. Wheeled Extinguishers.

1. Welding is restricted to such elements of the wheeled conveyance as the handle, axle shroud, nitrogen cylinder stand, etc., which are specifically within the manufacturer's limitations and do not affect the safety factor.

2. Welding shall not be allowed where the mild steel shell is damaged, as by the tearing, etc., of the parent metal from the shell.

3. Hydrostatic testing as required in 29 CFR 1910.157 (f)(1), (f)(2) and (f)(4) shall be conducted after allowable repairs are made directly to the pressure vessel.

NOTE: The manufacturer's instructions for allowable repairs and hydrostatic testing are not exempted from other applicable OSHA standards unless by a particular directive, variance or other official notification.

F. Background. Presently, Subpart L, 29 CFR 1910.157(f)(2)(i), does not provide for exceptions when fire extinguishers have been repaired by soldering, welding, brazing or use of patching compounds.

1. The source for the development of the Subpart L standards included NFPA 10-1970 and coordination with the NFPA during the recent changes to NFPA 10. The provisions of NFPA 10-1978, 5-1.3 (examination of cylinder condition) includes a note which states "For welding or brazing on mild steel shells, consult the manufacturer of the extinguisher". These recent changes reflect the intent of Appendix B to Subpart L which contains a cross reference listing of current national consensus standards. These standards contain information and guidelines which are considered acceptable in complying with requirements in the specific sections of Subpart L.

2. As indicated by the manufacturer's instructions, specified repairs can be made and subsequent hazards reduced by following the procedures, limitations, standards and quality assurance which ensure safety.
An interim response, which informed you that we were reviewing your request and attempting to identify all documents disclosable under the FOIA, was mailed to you on May 16. Since you said in your letter that we should not hesitate to contact you, we attempted to complete a follow-up telephone call to you several times to discuss the issues you raised. We regret that we were unable to contact you.

OSHA recognizes and appreciates your concerns regarding certain statements made in the aforementioned memorandum; however, we feel that there is a misunderstanding of intent as related to the type of protective clothing worn by fire fighters. OSHA looks first at the hazardous conditions, second how best to protect the employees, and third whether the protection being provided is equal to the requirements in the OSHA regulations or provides greater protection. Therefore, OSHA recognizes that changes in design and materials of structural fire fighting protective clothing (found in National Fire Protection Association (NFPA) standard 1971), which is provided at military locations, has resulted in gear that provides equal or greater protection than that presently afforded by Crash Fire Rescue (CFR) suits.

In responding to the OSHA Regional Office memorandum (copy enclosed) dated October 24, 1990, which related to issues that arose when citations were issued to the U.S. Army Transportation Center and
Also, we have enclosed a page from the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard, 29 CFR 1910.120, (54 FR 9328), March 6, 1989, which covers the criteria contained in 29 CFR 1910.156(e) regarding protective equipment worn while performing fire fighting operations beyond the incipient stage.

In regard to "... proper proximity protective clothing to protect fire fighters from the conductive, convective, and radiant heat fluxes encountered during such rescues," OSHA has realized that there is a certain danger to the fire fighter. This is especially true for those performing advance interior structural fire fighting. Although proximity protective clothing requires the aluminization of the outer shell, we are seeing the continued use of a cotton thermal liner, which negates any advantages that aluminized shell has to offer. This is particularly true for fire fighters engaged in aircraft fire operations.

While we can understand your opinions regarding statements made by the U.S. Army Transportation Center, it is not OSHA's policy to provide comment as to the standard operating procedure for either military or civilian crash rescue operations. It is our concern as to the type of equipment that will most effectively provide protection for the fire fighters against the hazardous conditions that are likely to be encountered during fire operations that fire department's area of response.

OSHA appreciates and supports the NFPA's Technical Committee in developing a standard which will specify criteria for clothing designed to protect fire fighters against adverse effects encountered during proximity fire fighting involved in crash fire rescue operations. The availability of NFPA standards which address these issues would assist OSHA in focusing on the need and the feasibility of initiating rulemaking on this subject.

Our draft copy of the 1991 Edition of NFPA 1971 does not reflect any recognition of the changes in design and materials of structural fire fighting protective clothing which have resulted in state of the art gear because this was not the main concern at that time. OSHA determined that there was a misunderstanding of intent contained in the warning label affixed to each garment. Therefore. NFPA is removing the "do not use" language in the 1986 Edition (copy enclosed) and replacing it with the "may not" language in the draft 1991 Edition (copy enclosed). This change in language was not meant as a reference to NFPA changing the "minimum design or performance standard."

Fire departments that do not normally incur the crash fire rescue but are involved in bulk flammable liquids, flammable gas fire fighting hazards such as LPG in their response area, and may not have the proximity protection of a CFR or Hazardous Materials (HAZMAT) team must have structural gear as called for in HAZWOPER. Therefore, when we can be assured that the structural fire fighting protective clothing worn during crash fire rescue operations such as rural areas and other non-airport locations reflect the hazards which are expected to be encountered, so long as the protective clothing is used and maintained in accordance with NFPA 1971 and 29 CFR 1910.156, we would not issue citations to employers. What we are saying is that OSHA will not cite if the employer can prove equal or better protection than provided by the use of conventional proximity gear. Please see the enclosed pages 448-449 from 29 CFR 1910.156 which was updated July 1, 1990.

Other than the documents we have enclosed, OSHA does not have meeting notes, telephone logs, or inter-department correspondence that were used to make the statements in question. These types of documents would not be used by OSHA to make such determinations that result in protecting the lives of fire fighters involved in proximity fire fighting operations.

We appreciate your interest in this matter and thank you for the useful information you have provided. If you desire further information regarding the issues we have discussed herein, please feel free to contact me again.
December 21, 1990

This is in response to your inquiry of October 24, asking whether employee protective clothing designed for structural fire fighting can also be worn or used by employees engaged in airport crash and rescue operations. We have determined that protective clothing meeting the requirements of OSHA's 1910.156(e) may be used by employees for both structural and airport crash and rescue fire fighting. This issue arose when citations were issued to the U.S. Army Transportation center and the Oceanic Naval Air Station for not providing Crash Fire Rescue (CFR) protective clothing to their employees engaged in airport crash and rescue operations.

OSHA recognizes that changes in design and materials of structural fire fighting protective clothing have resulted in state of the art gear that provides equal or greater protection as that afforded by Crash Fire Rescue (CFR) suits. Under our 1910.120(q)(3)(iii), Hazardous Waste Operations and Emergency Response standard, OSHA allows employees performing fire fighting operations beyond the incipient stage to wear protective clothing of the same type as that worn by employees performing interior structural fire fighting "for any incident or site".

Similarly, the 1991 draft edition of NFPA 1971, "Standard on Protective Clothing for Structural Fire Fighting" also recognizes the changes in the state of the art of structural fire fighting protective equipment. The 1991 draft softened the language contained in the warning label affixed to each garment by removing the "do not use..." language of the current 1986 edition and replacing it with the "...may not..." language of the current draft.

In summary, OSHA will not issue citations to employers whose employees perform both structural firefighting and crash fire rescue operations while wearing structural fire fighting protective equipment, so long as the protective garments are used and maintained in accordance with NFPA 1971 and 29 CFR 1910.156.
Dear Sir:

This is in response to your letter of August 12, 1986, requesting an interpretation from the Occupational Safety and Health Administration (OSHA) regarding fire equipment training requirements as described in 29 CFR 1910, Subpart E and L. In addition, you would like to know if the program described in your letter for general employees and emergency action teams satisfies the training requirements for the use of portable fire equipment as described in Subparts E and L.

OSHA's fire protection standards are performance oriented standards designed to provide the employer greater flexibility in compliance. The intent of the standard is to minimize employee exposure to hazardous situations involving fire in the workplace and to provide for fire protection equipment and services for safe evacuation or rescue of employees endangered by fire in the workplace. OSHA believes that employers who choose to evacuate the workplace rather than to provide fire extinguishers for employee use in fighting fires will most effectively minimize the potential for fire-related injuries to employees.

29 CFR 1910.157(a) and (b) contemplate three possible choices which an employer may make to comply with the intent of the standard:

OPTION 1: Require total evacuation of employees from the workplace upon the sounding of a fire alarm.

This choice also implicitly requires the employer to establish an emergency action and fire prevention plan meeting the requirements of 1910.38(a) and (b).

When an employer has in fact established and implemented a written fire safety policy and has not provided any fire extinguishers in the workplace, he is exempted from all the requirements in 1910.157.

However, if fire extinguishers are provided but not intended for employee use, he must comply with the requirements in 1910.157(d) and (f) concerning inspection, maintenance and testing. If he has 10 or fewer employees, the emergency action and the fire prevention plans need not be in writing but may be communicated orally to employees.

OPTION 2: Provide portable fire extinguishers and designate certain employees as authorized to use them to fight fires.
All other employees in the fire area must be required to evacuate the affected area immediately upon the sounding of a fire alarm. This choice implicitly requires the employer to establish an emergency action plan meeting the requirements of 1910.38(a) and comply with the requirements in 1910.157(c), (e), (f), (g)(3) and (g)(4) regarding general requirements for fire extinguishers as well as inspection, maintenance and testing, hydrostatic testing, training and education.

When the employer has in fact established and implemented such a policy in writing, he is exempted from the distribution requirements in 1910.157(d). If he has 10 or fewer employees, the emergency action plan need not be in writing but may be communicated orally to the employees.

OPTION 3: Provide portable fire extinguishers and permit all employees to use them to fight fires.

This choice requires the employer to comply with all the requirements in 29 CFR 1910.157 for the placement, use, maintenance, testing, training and education in the use of the portable fire extinguishers.

29 CFR 1910.157(g)(1) through (4) requires that, where an employer has provided portable fire extinguishers for employee use in the workplace, he shall also provide an educational training program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting and training in the use of appropriate equipment. The education and training shall be provided upon initial employment and at least annually thereafter.

In meeting the requirements of these standards, the employer may provide educational materials, without classroom instruction, through the use of employee notice campaigns using instruction sheets or flyers or similar types of informal programs; or he may provide on site training which exposes employees to the actual "feeling" of fire fighting by simulated fires for training employees in the proper use of extinguishers.

With respect to the program described in your letter I believe the information provided above should be adequate to convey our comments on the program itself. I do want to comment specifically, however, on your third program element. It is OSHA's position that the decision to use fire extinguishers may not be left up to the employees but must be spelled out in an emergency action plan. That plan may address incipient fires and the circumstances under which fire extinguishers may be used. Appropriate training must also be provided with respect to this item.

While the above options are alternate methods of compliance with the standard, employers must understand that, when they permit employees to fight workplace fires, they must make sure that the employees know whatever is necessary to ensure the employees' safety.

SOURCE LETTER

August 12, 1986

Dear Sir:

As suggested, this letter requests an interpretation regarding fire equipment training requirements as described in 29 CFR 1910, Subparts E and L. I have discussed the items outlined below and request a response from your office.

Will the program described below for general employees and emergency action teams satisfy the training requirements for the use of portable fire equipment as described in Subparts E and L?

- An emergency action plan is in effect at each facility which designates specific employees as members of an emergency action team.

- The emergency action team is responsible for assisting in the implementation of an orderly evacuation in the event of a fire. It is also responsible for response to other emergencies such as weather or medical.
- The emergency action team and general employees are not specifically directed to perform fire fighting activities. However, they may use portable fire fighting equipment in their own discretion if the fire is incipient in nature and the person feels confident in the use of the portable fire fighting equipment and the ability to extinguish the fire.

- Educational material regarding the use of portable fire fighting equipment is provided to all employees at least annually through a media such as a company newspaper.

It is my understanding through my discussions that this type of program is satisfactory. Any additional hands-on training which is provided to emergency action teams or other employees may be done at the employer's discretion and is considered over and above that which is required by the standard.
Halon 1211 fire extinguishers with U.L. class A ratings are permitted for use on class A hazards.

(Note: The interpretation letter was released in 1980, and the standard has since been amended (1986). The important and still valid point found in the interpretation letter is the use of an extinguisher with an appropriate U.L. rating.)

Interpretation 29 CFR 1910.157(d)(1)

December 15, 1980

This is in response to your inquiry concerning the revised fire protection standards of the Occupational Safety and Health Administration (OSHA) with respect to the use of Halon 1211 fire extinguishers for class A hazards.

At the time OSHA was preparing the final rule for its fire protection standards, Halon 1211 fire extinguishers had not yet received a class A rating from U.L. Since that time however, and as you correctly noted, some Halon 1211 fire extinguishers have recently received a class A rating from U.L. The OSHA fire protection standards permit the use of any fire extinguisher for use on class A hazards if the extinguisher has received a class A rating from U.L. Therefore, those Halon 1211 fire extinguishers with a U.L. class A rating are permitted to be used on class A hazards.
RECORD ID 1423

STANDARD NUMBER 1910.158(a)
INFORMATION DATE 751023

ABSTRACT The Standpipe and Hose Systems (water supplies) standard does not address a combined sprinkler and standpipe system. However, NFPA 14-1974 recognizes such systems.

(NOTE: This standard was last amended in 1980.)

INTERPRETATION 29 CFR 1910.158(a)

October 23, 1975

This is in reference to your application for a variance from Section 1910.158(c)(3) Standpipe and Hose Systems - Water Supplies, of the Occupational Safety and Health Standards.

A careful review of the standards indicates that a combined sprinkler and standpipe system is not addressed in either the NFPA - 1970 source standards or the appropriate sections of 29 CFR 1910. Section 1910.158(c)(3) contains requirements for water supply for standpipes when used in a single system. The water supply requirements were not intended to apply to a combined system such as yours.

NFPA 14 - 1974 does recognize the combined system and sets the maximum water supply at 1500 gal/min. A modification of Section 1910.158 is pending which will allow combined systems in accordance with the 1974 NFPA requirements for combined systems. Your system will be in compliance with the new requirements. Until the standard is modified, your deviation from section 1910.158 will be considered de minimis provided that the building is in compliance with NFPA 13 and 14 - 1974. A de minimis notice carries no penalty and no abatement is required.

No further action will be taken on your request for a variance. The interim order granted on July 24, 1974, is moot.
SUBJECT: Drains on Air Receivers; 29 CFR 1910.169(a) (2)(i) and (b)(2)

1. Purpose:
To provide guidelines for issuance of citations for violation of drain requirements for air receivers.

2. Documentation-Affected:
None.

3. Background:
   a. An inquiry has been received regarding Occupational Safety and Health Administration (OSHA) enforcement of 29 CFR 1910.169(b)(2) which requires a bottom drain at the lowest point of every air receiver. It states, relevantly, that:

   A drain pipe and valve shall be installed at the lowest point of every air receiver to provide for the removal of accumulated oil and water.

   b. This inquiry notes the problem of an apparent inconsistency with 29 CFR 1910.169(a)(2)(i) which requires either a bottom drain or, alternatively, a side drain; that is, a pipe extending inward from any location to within 1/4 inch of the lowest point, in accordance with the 1968 edition of the American Society of Mechanical Engineers (A.S.M.E.) Boiler and Pressure Vessel Code, Section VIII. Specifically, it requires that:

   All new air receivers installed after the effective date of these regulations shall be constructed in accordance with the 1968 edition of the A.S.M.E. Boiler and Pressure Vessel Code, Section VIII.

   c. This problem arises only with regard to air receivers covered by Paragraph U-1 Scope, A.S.M.E. Boiler and Pressure Vessel Code, Section VIII, 1968, which excludes vessels having an internal or external operating pressure not exceeding 15 psi. and vessels having an inside diameter not exceeding 6 inches, and 29 CFR 1910.169(a)(1), which specifies the applicability of the standard.

   d. This problem also arises only with regard to air receivers subject to corrosion since, apparently, 29 CFR 1910.169(b)(2) originally was intended to apply only to an air receiver subject to corrosion. See Rule 7.3 of the source standard for 29 CFR 1910.169(b)(2), ANSI B-19, 1938, Safety Code for Compressed Air Machinery. Note that the 1968 edition of the A.S.M.E. Boiler and Pressure Vessel Code, Section VIII, paragraph UG-25(e) limits the drain construction requirements to pressure vessels subject to corrosion.

4. Action
   a. It is apparent that, despite the limited requirement of 29 CFR 1910.169(b)(2) regarding a "lowest point" drain, 29 CFR 1910.169(a)(2)(i) provides for an alternative to this; namely, a side drain. Thus, where side drains are present on air receivers, citations for violation of the (b)(2) requirement are not appropriate, even if the air receiver was constructed prior to April 28, 1971, since this is allowed for in 29 CFR 1910.169(a)(2)(i). (Note, however, that (b)(2) may be appropriately cited where there are violations of the other requirement that:
OSHA Instruction STD 1-10.2 (cont.)

The drain valve on the air receiver shall be opened and the receiver completely drained frequently and at such intervals as to prevent the accumulation of excessive amounts of liquid in the receiver.

b. A citation for violation of 29 CFR 1910.169(a)(2) (i) is appropriate where the air receiver has no bottom or side drain and is subject to corrosion and is covered by Paragraphs U-1 Scope and 29 CFR 1910.169(a)(1) Application.

5. Effective Date:

This directive is effective immediately and shall be retained until further notice.
ABSTRACT  Use of visual warning systems (blue flag rule) in lieu of derails and/or bumper blocks may be only a de minimis violation of the Handling Materials Standard.

(NOTE: This standard was last amended in 1978. The referenced OSHA Program Directive No. 200-67 has been changed.)

INTERPRETATION  29 CFR 1910.176(f)

April 18, 1978

This is in reference to your application for variance from Section 1910.176(f) Rolling Railroad Cars, of the Occupational Safety and Health Standards.

A Program Directive has recently been issued to the Occupational Safety and Health Administration's field offices to provide guidance concerning the use of de minimis violations. A de minimis violation may be used in situations where an employer is meeting the requirements of a proposed standard and the proposed amendment provides equal or greater safety. A de minimis violation carries no penalty and requires no abatement.

Since you are using the visual warning system (the blue flag rule) as described in the Federal Register proposal to modify section 1910.176(f) in lieu of derails and/or bumper blocks, it appears that you are meeting the conditions for a de minimis violation.

Accordingly, no further action will be taken on your application for variance. Copies of the proposed revision and Program Directive #200-67 are enclosed for your information.
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DOE Interpretations Guide to OSH Standards
July 1, 1992
OSHA Instruction STP 2-1.114

April 9, 1984
Office of State Programs

Subject: Servicing of Single Piece and Multi-Piece Rim Wheels; Amendment to Standard

A. Purpose. This instruction describes a Federal program change to the Regions and State designees.

B. Scope. This instruction applies OSHA-wide.

C. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this instruction is forwarded to each State designee.

2. Provide a copy of the amendment to the standard to the State designee upon request.


4. Ensure that each State designee acknowledges receipt of this change in writing, within 30 days of notification to the Regional Administrator. The acknowledgment should include:

   (a) the State's plan to adopt and implement the change,
   (b) the State's plan to develop an alternative change which is as effective, or
   (c) the reasons why no change is necessary to maintain a program which is as effective.

5. Inform each State designee that the State must amend the State's standard to ensure that it remains at least as effective as the amended 29 CFR 1910.177, and submit a plan supplement within 6 months of the date of Federal publication.

D. Background.

1. On February 3, 1984, OSHA promulgated an amendment to its standard for the servicing of single piece and multi-piece rim wheels. This action amends the original standard, Servicing Multi-Piece Rim Wheels (45 FR 6706, January 29, 1980), 29 CFR 1910.177, to include requirements for the safe servicing of single piece rim wheels used on trucks, trailers, buses and other large vehicles.

2. Under 29 CFR 1953.23(a) and (b), States are provided up to 6 months from publication in the Federal Register for adoption of parallel State standards and amendments.
RECORD ID  1802

STANDARD NUMBER  1910.177(a)(1)
INFORMATION DATE  860205

ABSTRACT  Trucks equipped with tires designated as "LT" are outside the scope of 1910.177(a)(1). It is recommended that the servicing of all tires conform to the recommendations of the wheel and tire manufacturers as described by their various bulletins to customers.

INTERPRETATION  29 CFR 1910.177(a)(1)

FEB 5, 1986

This is in response to your December 16, 1985, letter to Mr. S which was forwarded to our office for response.

The scope of 29 CFR 1910.177 defines coverage of the standard explicitly to the servicing of multi-piece and single piece rim wheels used on large vehicles such as trucks, tractors, trailers, buses, and off-road machines. It does not apply to the servicing of rim wheels used on automobiles, or on pickup trucks and vans utilizing automobile tires or truck tires designated "LT". Trucks equipped with tires designated as "LT" are outside the scope of the standard at 29 CFR 1910.177.

In the interest of safety, as a minimum, it is recommended that the servicing of all tires conform to the recommendations of the wheel and tire manufacturers as described by their various bulletins to customers. According to the (association), 9.50 R 16.5 LT Light Truck Wide Base Tires load range E, may be inflated to a cold inflation pressure not exceeding 80 psig when mounted on 15 degree drop center rims designated for the use of such tires. Rims or wheels should bear identification by the manufacturer indicating the conditions of use in normal highway service and should include:

Max Load      ____ LBS (D) or (R) ____ Max. PSI Cold

(D) means: Diagonal (Bias) Ply or Bias Ply only. (except bias wire carcass)

(R) means: Radial Ply and Diagonal (Bias) Ply or Bias Belted (except bias wire carcass)

Rims or wheels not identified, or for special conditions of use, require consultation with the rim or wheel manufacturer to determine the load, inflation and tire construction limits.

SOURCE LETTER

December 16, 1985

In regards to OSHA laws 1910.177. (A) Scope. (1) servicing of multi-piece and single piece rim wheels. The Standard does not explain in detail which is a truck tire.

This past week in (city, state) a man was killed servicing a 9.50 X 16.5 tire, which is used on three-quarters and one ton trucks. There are tires which are stamped LT and some aren't and have air pressure of 75 to 80 pounds.

Would you please reply as to which is covered by the standard on one-half, three-quarters and one ton trucks?
This interpretation letter addresses whether bolt-together, divided wheels are included in the definition in 1910.177. This standard defines a multi-piece wheel as one consisting of two or more parts, one of which is a side or locking ring designed to hold the tire on the wheel by interlocking components when the tire is inflated (1910.177(b) definitions). Bolt-together, divided wheels are not covered under this standard.

(NOTE: This standard was last amended in 1988.)

INTERPRETATION 29 CFR 1910.177(b); (a)

APR 2, 1991

This is in response to your letter of March 6, in which you requested an interpretation as to whether bolt-together, divided wheels are included in the definition of the Servicing Multi-Piece and Single Piece Rim Wheels Standard (29 CFR 1910.177).

29 CFR 1910.177 defines a multi-piece wheel as one consisting of two or more parts, one of which is a side or locking ring designed to hold the tire on the wheel by interlocking components when the tire is inflated. A review of the schematic revealed that the type of wheel depicted was of an aircraft type wheel that did not have a side or locking ring. This standard only covers multi-piece rim wheels containing a locking ring, or side ring and base. Therefore, bolt-together, divided wheels are not covered by this standard. This is explained in the enclosed page 6708 of Vol. 45, No. 20 of the Federal Register.

Although this particular type of wheel is not covered by 29 CFR 1910.177, employers are still obligated to provide protections for their employees. Failure to do so could result in a proposed citation and penalty under the general duty clause (Section 5 (a)(1)) of the Occupational Safety and Health Act.
ABSTRACT This standard does not apply to low pressure special purpose agriculture equipment rim wheels, or other tires not specifically addressed in the standard.

INTERPRETATION 29 CFR 1910.177(a)(2)

May 7, 1984

MEMORANDUM

SUBJECT: Interpretation of 29 CFR 1910.177(a)(2) - Scope

Your guidance is requested in the applicability of the subject standard to mounting of new tires on new single rim wheels during a new equipment assembly operation in a manufacturing plant.

Specifically, our question pertains to low pressure (12-20 PSI), size 16.5 x 16 to 14.1 x 24, special purpose agriculture equipment rim wheels such as those used on irrigation pipe carriers that support and move pipe through a field being irrigated.

The subject standard is based on findings and statistics involving on-road accidents and tires such as those used on large trucks and off-road machinery. We do not feel that new tire mounting operations and servicing of tires other than those mentioned in the standard present the same hazards and, therefore, 29 CFR 1910.177 does not apply in those situations.
ABSTRACT 29 CFR 1910.177(a)(2) does not apply to employers regulated under the Construction Safety Standards, Agricultural Standards, Maritime Standards, or Longshoring Standards. OSHA could still cite these industries for violations of 1910.177, but under the OSH Act 5(a)(1).

INTERPRETATION 29 CFR 1910.177(a)(2); 1915; 1918; 1926; 1928

May 3, 1985

The scope of 29 CFR 1910.177(a)(2) stipulates that the section does not apply to employers regulated under the Construction Safety Standards, Agriculture Standards or the Maritime Standards.

This is the way the regulation is written, although there is just as much a hazard if the tire is changed for a manufacturing company or if it is an off highway vehicle for a construction company.

The only way OSHA could cite when employers are covered under 1926, 1928 or 1915, is under 5(a)(1) of the act, e.g., the employer provide a safe and healthful workplace; and the violation would be serious. Changing large vehicle tires have proven to be serious.
ABSTRACT

Chain alone cannot be used as a restraining device for multi-piece rim wheels. Chain may be used as part of a specifically designed device, but it must comply with the restraining device criteria described in (d)(3)(i).

INTERPRETATION 29 CFR 1910.177(d)

February 25, 1983

MEMORANDUM

SUBJECT: 29 CFR 1910.177(d)(1) and (2)

29 CFR 1910.177(b) defines a restraining device as a mechanical apparatus such as a safety cage, rack, or safety bar arrangement or other machinery or equipment specifically designed for this purpose, that will restrain all multi-piece rim wheel components following their release during an explosive separation of the wheel components. The above requirement is written as a performance standard so as not to restrict the use of any specific type of device provided that the device is designed to restrain multi-piece rim wheels. The device used must be capable of restraining the components of a multi-piece rim wheel during explosive separation at 150 percent of maximum tire specification pressure as required in 29 CFR 1910.177(d)(1)(i).

The use of chain as one component of a specifically designed device to restrain multi-piece rim wheels would be acceptable. The size as well as the type of chain used must meet the requirements of the design engineer or manufacturer. However, chain is not specifically designed for constraining multi-piece rim wheel components during an explosive separation and, by itself, does not meet the intent of the standard and should not be used to protect employees. The rating of different sizes of chains for use on different size tires at different tire pressures would not ensure employer compliance with 29 CFR 1910.177; the capacity and use of the chain system as recommended by the design engineer or manufacturer is necessary. The standard currently requires the employer to provide a restraining device specifically designed to restrain all multi-piece rim wheel components.

A proposed amendment to remove the requirement for restraining devices to be specifically designed for that purpose was proposed in the Federal Register, 47FR 51159, 12 November 1982. The Commissioner's letter will be entered into the Record Docket, no S-101, and considered when the final rule is formulated.
OSHA Instruction STD 1-11.1
October 30, 1978

February 14, 1972

OSHA PROGRAM DIRECTIVE #100-3

SUBJECT: Approval for Powered Industrial Trucks

Ref: (a) OSHA Standards 1910.178(a)(3);
     (b) OSHA Standards 1910.178(a)(7)

1. Purpose. This instruction clarifies and explains the intent of references (a) and (b).

2. Background. The question as to what industrial trucks require approval has caused some confusion in various areas.

3. Action. As indicated in 1910.178(c)(2), an industrial truck is required to be approved for use within a hazardous location or atmosphere. Reference (b) defines approved to mean listed as approved by at least one of the following nationally recognized testing laboratories:

   Underwriters Laboratories, Inc.,
   Factory Mutual Engineering Corp., for either one or all eleven designations indicated in 1910.178(b).

   a. Industrial trucks specified under Table N-1, are the minimum type required but industrial trucks having greater safeguards may be used if desired.

   b. Industrial trucks when used in other than hazardous locations are not required to be approved nor bear a label of approval under section 1910.178(a)(3).

4. Example:

   a. When an industrial truck is engaged in moving bales of shredded paper, a highly combustible material, minimum safeguards against fire hazard would be necessary.

   b. When an industrial truck is engaged in moving steel or other metal products in an open or indoor storage area, the fire hazard would be non-existent, the minimal safeguards against fire hazard may be desirable but not mandatory.

5. Effective Date. This instruction is effective on February 15, 1972.
OSHA Instruction STD 1-11.3

OCTOBER 30, 1978

OSHA PROGRAM DIRECTIVE #100-63

Subject: 29 CFR 1910.178(m)(6) Powered Industrial Trucks; Truck Operations

1. Purpose. The purpose of this directive is to give guidelines on citing 29 CFR 1910.178(m)(6) Powered Industrial Trucks; Truck Operations, when trucks use a door opening device for opening or closing railroad freight car doors.

2. Directives Affected. None.

3. Background:
   a. A proposed amendment to 29 CFR 1910.178(m)(6) allowing powered industrial trucks to open and close freight car doors by certain practices was published in the Federal Register, April 23, 1974. Current national consensus standards allow certain powered industrial trucks equipped with a specifically designed device to open and close railroad freight car doors.
   b. The proposal and national consensus standards are in limited conflict with the subject standard, which states in part, that trucks shall not be used for opening or closing freight doors.

4. Action. When the movement of a powered industrial truck is used to open or close railroad freight car doors, and the truck is using an attached device specifically designed to open and close car doors, the violation of that part of 29 CFR 1910.178(m)(6) shall be considered "de minimis," when the following requirements have been met:
   a. The design of the door opening device shall require the force applied by the device to the door to be in a direction parallel with the door travel.
   b. The operator is trained in the use of the door opening device and keeps the operation in full view.
   c. Employees, other than the operator, stand clear while the door is being moved.

5. Effective Date. This directive is effective upon receipt and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-11.4
October 30, 1978

OSHA PROGRAM DIRECTIVE #100-72

Subject: 29 CFR 1910.178(g)(2): Battery Charging Stations for Fork Lifts and Other Industrial Trucks

1. Purpose. The purpose of this directive is to clarify the subject standard as it applies to "battery charging" areas where power industrial truck batteries are charged only.

2. Documentation Affected. This directive supersedes Field Information Memorandum #74-63 dated August 6, 1974.

3. Background:
   a. A representative from industry wrote and personally visited the National Office to obtain clarification of 29 CFR 1910.178(g)(2) as it applies to industrial truck "battery charging" stations not related to charging and charging as described in the standard.
   b. The visit was initiated because a Compliance Safety and health Officer (CSHO), while conducting an inspection of a large warehouse under construction, advised the employer that when he (the CSHO) returns to inspect the facility at a future date, all industrial truck charging stations throughout the facility would have to be equipped in the manner described in 29 CFR 1910.178(g)(2).

4. Action. "Battery charging" areas where power industrial truck batteries are charged only--no maintenance is performed, batteries are not removed from the trucks and no electrolyte is present in the area--are not subject to the requirement of 29 CFR 1910.178(g)(2). The charging areas shall be in compliance with 29 CFR 1910.178(g)(1), (8), (9), (10), (11) and (12). Personal protective equipment shall be used when and where required.

5. Effective Date. This directive is effective immediately and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-11.5

OCTOBER 30, 1978

OSHA PROGRAM DIRECTIVE #100-85

Subject: Powered Industrial Trucks, Chocks, and Blocks


1. Purpose:

The purpose of this directive is to insure judicious enforcement of 29 CFR 1910.178(k)(1) and 1910.178(m)(7).

2. Documentation Affected:

This directive supersedes Field Information Memorandum #75-25 dated March 17, 1975.

3. Background:

a. The Occupational Safety and Health Review Commission rendered a decision that the Department of Labor is preempted in the enforcement of 29 CFR 1910.178(k)(1) by the Department of Transportation (DOT) regulation 49 CFR 392.20, because the latter covers essentially the same working conditions. The Commission held that the Occupational Safety and Health Administration (OSHA) was preempted because 49 CFR 392.20 represented a sufficient "exercise" of DOT regulatory powers under Section 4(b)(1) of the Occupational Safety and Health Administration.

b. This decision also affects the enforcement of 29 CFR 1910.178 (m)(7). The first part of that standard, "Brake shall be set and wheel blocks shall be in place to prevent movement of trucks, trailers or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor." is similar in scope to 29 CFR 1910.178(k)(1).

Accordingly, enforcement of that portion of the standard as it applies to trucks and trailers is preempted by 49 CFR 392.20. Moreover the latter part of the standard requiring employers to check the flooring of trucks and trailers for breaks and weaknesses applies to the same working conditions as those covered by 49 CFR 393.94. Therefore, that part of the standard should not be enforced as it applies to trucks and trailers.

c. DOT safety authority under the Motor Carrier Act extends only to regulations of motor carriers engaged in interstate commerce. Under DOT regulation 49 CFR 392.20 and 49 CFR 393.84, DOT jurisdiction does not extend to vehicles "used wholly within a municipality or the commercial zone thereof," as defined by the Interstate Commerce Commission (ICC), unless they are transporting a single hazardous item weighing over 2,500 pounds or bulk hazardous items weighing over 5,000 pounds. (See 49 CFR 309.16, and 392.1(C).)

d. See also 39 CFR 1048 for ICC definition of commercial zones. In short, DOT jurisdiction extends to all vehicles which are not used exclusively in intracity operations or which are used in intracity operations to carry a single hazardous item weighing over 2,500 pounds or bulk hazardous items weighing over 5,000 pounds.
4. Action:

Accordingly, in light of DOT exercise of authority, we will cite or enforce only under 1910.178 (m)(7) and 1910.178 (k)(1) in consonance with the preceding guidelines.

5. Effective Date:

This directive is effective immediately and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-11.6A

February 19, 1979

SUBJECT: Disparity Between 29 CFR 1910.178(c)(2)(vii) and Table N-1, 29 CFR 1910.178(c)(2)

A. Purpose. This instruction resolves a disparity between the context of 29 CFR 1910.178 (c)(2)(vii) and Table N-1, Summary Table On Use Of Industrial Trucks in Various Locations, 29 CFR 1910.178(c)(2).

B. Scope. This instruction applies OSHA-wide.

C. Cancellation. OSHA Instruction STD 1-11.6, July 18, 1978, (previously OSHA Program Directive #100-104) is canceled.

D. Action. For compliance purposes, OSHA permits the use of truck types referenced in 29 CFR 1910.178(c)(1), with certain limitations, as specified in the following paragraphs:

1. Truck types indicated in 29 CFR 1910.178(c)(2)(vii) as DY, EE and EX are allowed in all Class II, Division 2, locations.

2. Truck types designated as DS, ES, GS or LPS may be used in the following Class II, Division 2 locations, rooms and areas containing only closed spouting and conveyors, closed bins or hoppers, or machines and equipment from which appreciable quantities of dust would escape only under abnormal operating conditions; rooms or areas into which explosive or ignitable concentrations of suspended dust might be communicated only under abnormal operating conditions; rooms or areas where the formation of explosive or ignitable concentrations of suspended dust is prevented by the operation of effective dust control equipment; warehouses and shipping rooms where dust producing materials are stored or handled only in bags or containers and other similar locations.

E. Federal Program Changes. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of the plan change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections, spot-check visits, and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

F. Background. In NFPA No. 505-1969, the source standard for 29 CFR 1910.178(b), (c) and (d), paragraphs 206b and 209a state that approved power-operated trucks designated as DS, ES, GS or LPS may be used in Class II, Division 2, hazardous locations, if permitted by the authority having jurisdiction. These acronyms are earmarked by asterisks in NFPA Table 1 to indicate "Permitted with approval of the authority having jurisdiction." Although OSHA, by 29 CFR 1910.178(c)(2)(vii), chose not to permit these designated industrial trucks for use in all Class II, Division 2, locations, their acronyms, nevertheless, were inadvertently left in the Table when the NFPA Table 1 became OSHA Table N-1. Moreover, the first sentence of 29 CFR 1910.178(c)(2)(vii) states: "For specific areas of use see Table N-1 which tabulates the information contained in this section." This statement is obviously inconsistent with the provisions of 29 CFR 1910.178(c)(2)(vii).
OSHA Instruction STD 1-11.7

August 5, 1981

Subject: 29 CFR 1910.178(k)(1) and (m)(7): Mechanical Means to Secure Trucks or Trailers to a Loading Dock

A. Purpose. This instruction allows the use of a mechanical means which secures trucks or trailers to a loading dock in situations in which they provide the equivalent protection of wheel chocks.

B. Scope. This instruction applies OSHA-wide.


D. Action. OSHA Regional Administrators/Area Directors shall take action to ensure that 29 CFR 1910.178(k)(1) and (m)(7) are enforced in accordance with the guidelines in F. of this instruction.

E. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

F. Guidelines. Under the following conditions, failure to use wheel chocks in accordance with 29 CFR 1910.178(k)(1) and (m)(7) will be deemed to be de minimis violations and will not be cited:

1. A positive mechanical means to secure trucks or trailers to a loading dock is allowed provided the system is installed and used in a manner that effectively prevents movement of trucks and trailers during loading, unloading and boarding by hand trucks and powered industrial trucks.

2. All of the mechanical equipment shall be installed, maintained and used as recommended by the manufacturer.

3. Any damaged mechanical equipment will be removed from service immediately.

G. Background.

1. The current OSHA standards in 29 CFR 1910.178(k)(1) and (m)(7) only allow the use of wheel chocks under the rear wheels to prevent the trucks from moving while loading and unloading.
2. The U.S. Department of Transportation has a mandatory regulation (49 CFR 393.86) that all truck trailers be equipped with a rear end protection device mounted at the rear to prevent cars from being wedged underneath the back of a trailer during a collision. A mechanical fastening device may be bolted to the loading dock to secure the truck or trailer rear end protection device and prevent any separation from the dock.

3. OSHA Instruction CPL 2.11A implements guidelines on de minimis violations which have no direct or immediate relationship to safety and health. CSHO’s shall recognize minor technical deviations which have no direct or immediate relationship to safety and health as de minimis violations.

4. OSHA authority to regulate motor carriers in this regard is delineated in OSHA Instruction STD 1-11.5, Powered Industrial Trucks, Chocks, and Blocks.
This interpretation letter addresses the term "safe distance" as it applies to fire protection for battery charging areas. The safe distance would be outside the special designated area that has fire protection and adequate ventilation and has been established for battery charging. These requirements must be based on the number of batteries to be charged and/or stored. An additional clarification is provided for the term "readily available" as it is applied to first aid kits (1910.151(b)).

29 CFR 1910.178(a) addresses some of the concerns expressed in your letter. 29 CFR 1910.178(a)(1) specifies that:

"This section contain safety requirements relating to fire protection, design, maintenance - - -" 

and

29 CFR 1910.178(a)(2) specifies:

"All new powered industrial trucks acquired and used by an employer after the effective date specified in paragraph (b) of 1910.182 shall meet the design and construction requirements for powered industrial trucks established in the American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1-1969, except for vehicles intended primarily for earth moving or over-the-road hauling."


29 CFR 1910.178(g)(2) and ANSI B56.1-1969 (portions attached) specify that battery charging installations be located and designated for that purpose. Facilities shall be provided to include fire protection and adequate ventilation based on the amount of batteries to be charged and/or stored. The safe distance thus would be outside of this special designated area.

Precautions to prevent open flames, sparks or electrical area in the battery charging area are based on the concern for the amounts of hydrogen and oxygen which are given off form the batteries while being charged. Dispersal and dilution of these gases is a critical consideration as is also the potential accumulation of hydrogen in unventilated floor to ceiling areas of the designated facility.

OSHA standard 29 CFR 1910.151(b) does not specify whether first aid supplies can be locked up or not. The standard does require the supplies to be "readily available". Positive control measures may be taken, providing the supplies are at hand; ready for use and can be obtained easily and quickly. Normally the employer will establish procedures for the use of the first aid supplies after consultation with the consulting physician.
Personnel and burden carriers, including golf cars and utility vehicles, that are not designated with a fire safety purpose classification may only be used in locations which do not possess flammable atmospheres as listed in Table N-1. In non-flammable atmosphere usage, this type of vehicle would be required to comply with ANSI/ASME B56.8 to be in compliance with the OSH Act. The designation requirement for powered industrial trucks in 29 CFR 1910.178 is for fire safety purposes.

This is in response to your letter of September 17, in which you inquired if your vehicle meets the design and/or construction requirements of the Occupational Safety and Health Administration (OSHA) for non-designated vehicles. We apologize for the delay in response.

Personnel and burden carriers, including golf cars and utility vehicles, that are not designated with a fire safety purpose classification may only be used in locations which do not possess flammable atmospheres. In non-flammable atmosphere usage, this type of vehicle would be required to comply with ANSI/ASME B56.8 to be in compliance with the OSH Act. In these situations the OSHA Standard 1910.178 does not apply to the vehicles about which you asked.

As per your telephone conversation, the designation requirement for powered industrial trucks in 29 CFR 1910.178 is for fire safety purposes. With the approved designation on the powered industrial truck and table N-1 (copy enclosed) the location for approved usage can be identified.
This interpretation letter evaluates a plan to retrofit fork lift equipment with an operator safety restraint system to prevent serious injuries or fatalities in the case of a lateral turnover. The installation of any substandard component would be a violation of the 1910.178(a)(4) without manufacturer prior written approval. However, replacement of the seat with a seat of equal or superior characteristics is acceptable on powered industrial trucks without need to obtain prior approval from the truck manufacturer.

As you are aware, the Occupational Safety and Health Administration (OSHA) standard at 29 CFR 1910.178(a)(4) relates to modifications of powered industrial trucks which adversely affect their safe operation and/or capacity. The installation of any substandard component would be considered a violation of the standard.

However, replacement of the seat with a seat of equal or superior characteristics is acceptable on powered industrial trucks without need to obtain prior approval from the truck manufacturer. Such replacement would not be in violation of the OSHA standard, since it is unlikely that it would create a potential safety hazard. We do note, however, that when restraint systems are utilized, consideration should be given to the structural integrity of the truck frame and the overhead guard to preclude or minimize the possibility of injury or fatality should there be a turnover, tipover (rollover) or a loading dock accident.
Changing the lifting capacity of mechanical material handling equipment without the manufacturer's prior written approval is a violation of 29 CFR 1910.178(a)(4).

MAR 5, 1985

Thank you for your letter of February 5 on behalf of your constituent.

His assertion regarding the danger of changing the lifting capacity of mechanical material handling equipment is correct for the reasons that he has indicated. The Occupational Safety and Health Administration (OSHA) has a standard on powered industrial trucks; 29 CFR 1910.178. Paragraph (a)(4) of this section states:

"Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without manufacturers prior written approval. Capacity, operation and maintenance instruction plates, tags, or decals shall be changed accordingly."

Any employer who allows his employees to utilize any modified equipment which is not approved by the equipment manufacturer is subject to citation and, more importantly, abatement of the hazard. Since the manufacturer has not approved the modification of its vehicles, an unsuspecting employer could be required to remove all of the additional counterweights and other modifications to the truck to be able to comply with the OSHA standard and abate the violation.

Essentially the same requirement as the OSHA standard cited above is contained in the American National Standards Institute (ANSI) B36.1 - 1983, Safety Standard for Low Lift and High Lift Trucks. If a truck is modified without the prior consent of the manufacturer, and the labels, tags or decals are not changed or removed, the truck is not in conformance with the consensus standard. A new fork lift truck usually has a label which attests to the fact that the truck complies with the ANSI standard. Failure to remove this label may constitute false advertising, and your constituent may wish to report the matter to the Federal Trade Commission.

We are only able to address considerations relating to OSHA's jurisdiction. It may be appropriate for your constituent to seek legal advice on the matter.

SOURCE LETTERS

FEB 5, 1985

As you will note from the enclosed correspondence, my first inquiry on this matter was inadvertently directed to the Occupational Safety and Health Review Commission.

I will appreciate it very much if you will look over the constituent's letter and provide me any information that might be helpful in responding to him. Please address your response to me at my District Office.
FEB 1, 1985

I am writing in response to a letter from you and your constituent. The Review Commission has no jurisdiction in the matter he discusses. Our sole mandate is to issue decisions in cases arising from contested inspections made by the Occupational Safety and Health Administration (OSHA), which is separate and distinct from the Review Commission.

Your constituent's correspondence gives no indication that a contested OSHA inspection has occurred, thus we could not be involved in the situation. He does mention OSHA, the U.S. Dept. of Labor agency that inspects workplaces and promulgates job safety and health regulations.

JAN 11, 1985

Attached is an advertisement from (company). (The Company's owner) makes a continued practice of purchasing (company) and other manufacturers' equipment, such as (companies), bringing it into his place of business and increasing the rated capacities by simply adding additional counterweight to the steer axle end of the vehicle. This does allow the lift truck to lift more load before the steer axle becomes unstable from lack of weight. However, it loads other components beyond their safe limits. These limits have been established by the suppliers of components, such as tires, hydraulic cylinders, rims, axles, forks and hoist chains. This will also overload the frame, mast rails and rollers. He then rates the equipment over the capacity limits of the components, advertises, and sells it.

He does this still using the (companies) name, as you can see in this advertisement. By so doing, he takes advantage of a consumer who thinks the rating that is on the machine is a (company) rating and thus uses (company's) reputation, reliability and service for selling this equipment.

To illustrate, where (company) advertised a log stacker to 158,000 pounds, although it is not said the ad indicates that the machine has a working capacity of 150,000 pounds. The capacity of this Model of (company) log stacker is 70,000 pounds. The only thing about the lift truck which might closely correlate to the advertised 150,000 pounds is the vehicle empty weight from (company), which is approximately 124,000 pounds. It would certainly not surprise us if (company) had added 26,000 pounds of counterweight and restamped the capacity plate to whatever he desired, yet leaving the (company) name on the truck. In many cases, he is loading the components to the extent that it is dangerous to the people that operate this equipment.

(Company) Machinery is out of the state of (state), and (company) actually has no direct contact with (Co. owner). The Anti-Trust Act makes us sell him parts and this means he has access to any item that he needs from (company)'s Parts & Service Department.

It seems to me that the Department of Occupational Safety & Health Administration was established to protect people and consumers from characters such as this. If there is a department in the federal government that directs its attention to matters such as this, please advise whom I should contact.
This interpretation letter addresses industrial trucks handling Liquid Oxygen (LOX) as listed in section 1910.178(c)(2)(iii) or (iv). The letter states that safe movement of LOX must be performed using a type EX designated industrial truck.

I am responding to the information requested on forklift trucks per your letter of March 13, 1985.

The required industrial truck for handling Liquid Oxygen (LOX) is listed in section 1910.178(c)(2)(iii) or (iv). To be safe, a type EX industrial truck shall be used.

The NFPA standard does not address roadways exactly although I would use paragraph 2-2.1.12, 10 feet (attached).

There is no problem transferring the LOX during a thunderstorm, but you would have the same problem as any other being struck by lightning if near the truck.
A gasoline powered industrial truck can be converted to LP gas if additional safeguards which are approved by a nationally recognized testing laboratory are installed and NFPA Standard #58 and U.L. #558 are met.

(NOTE: The revised standard does not mention the use of additional safeguards in the conversion process. Section (d) specifies that the conversion must be accomplished in accordance with the requirements of section (q). Section (q) specifies that the service must be performed by authorized personnel (q)(1) using approved conversion equipment.)

1. All applicable OSHA standards shall be observed.
2. Units and fitting used for the conversion shall be installed in strict conformity with requirements specified in the National Fire Prevention Association Standard No. 58, Storage and Handling of Liquefied Petroleum Gases, and Underwriters Laboratories No. 558, Standard for Safety - Internal Combustion Engine - Powered Industrial Trucks.
3. The manufacturer should also be consulted. When an industrial truck is converted to a LPS gas operation, the manufacturer may be able to supply listed conversion units and assign a qualified representative to supervise the installation.

Copies of the above standards may be obtained from:

National Fire Protection Association
207 East Ohio Street
Chicago, Illinois 60611

Underwriters Laboratories, Inc.
470 Atlantic Avenue
Boston, Massachusetts 02210

Affected employees and their authorized representative shall be notified of our decision concerning this matter in the same manner.
The Powered Industrial Trucks (safety guard) standard (Part II, ANSI B56.1-1969) exempts trucks operating in low overhead locations from having overhead guards.

(NOTE: Sub-section (e)(1) has not been revised since issuance.)

August 29, 1975

This is in reference to our letter dated April 25, 1974, concerning your request for variance from Section 1910.178(e)(1) Powered Industrial Trucks - Safety Guards, of the Occupational Safety and Health Standards.

At the present time Section 1910.178(e)(1) requires that overhead guards be installed on High Rider Trucks unless operating conditions do not permit. Powered Industrial Trucks would be exempted from the requirements for overhead guards, while being used in low overhead locations. Trucks used in other areas are required to have overhead guards. This could be accomplished by assigning certain trucks for use in each area, or by the use of overhead guards which flip back or tilt to the side.

Based upon the above clarification of this standard, it appears that your need for a variance is unnecessary.

No further action will be taken on your request for a variance.
This Interpretation letter addresses a request for a variance from Section 1910.178(e)(1), Powered Industrial Trucks - Safety Guards.

(NOTE: Sub-section (e)(1) has not been revised since issuance of the standard.)

This is in reference to a request for a variance from Section 1910.178(e)(1) Powered Industrial Trucks - Safety Guards, of the Occupational Safety and Health Standards, that has been received by the Division of Variance Determination.

We are forwarding this application and a copy of our response for your information. This employer has indicated that he has not been inspected by either Federal or State Compliance Officers.

Section 1910.178(e)(1) requires that overhead guards be installed on High Lift Rider Trucks unless operating conditions do not permit. This employer contends that operating conditions do not permit him to utilize overhead guards. If this is true, his trucks would be exempted from the requirements for overhead guards, while being used in low overhead locations. Trucks used in other areas would be required to have overhead guards. This could be accomplished by assigning certain trucks for use in each area, or by the use of overhead guards which flip back or lift to the side. There is a proposal being developed by our Office of Standards Development to authorize the use of powered industrial trucks without overhead guards when the lift is restricted to a specific height. This height restriction will eliminate the overhead hazard for the operator. However, an overhead guard will be required when the product in transport creates a hazard for the operator. At these times, the flip back or tilt to the side guard could be utilized.
ABSTRACT

This interpretation letter provides a clarification of the term "fixed jacks," found in 1910.178(k)(3). The term "fixed jacks" can be defined as jacks, or what is known in the trade as "nose cones". The purpose of a fixed jack is to hold one end of a trailer being worked to avoid the possibility of the trailer being "up-ended" in the course of vehicles coming in and out of the trailer. The word "fixed" indicates that the jacks are an integral part of the trailer frame and are folded up and under the trailer after loading or unloading activity has been completed and the trailer is attached once again to its tractor.

INTERPRETATION

29 CFR 1910.178(k)(3)

MAR 19, 1991

Thank you for your January 25 response pursuant to our January 7 request for additional information to assist us in preparing a response to your October 25, 1990 request for an interpretation of 29 CFR 1910.178(k)(3). You specifically asked us to address the meaning of "fixed jacks" and the placement of such equipment during your loading or unloading activity.

After reading your description of how your operation proceeds and studying the diagram you submitted, we have concluded that your operation, as described, does not appear to be in violation of 29 CFR 1910.178(k)(3).

In addition, it should be mentioned that the precise language of this regulation is advisory in nature and not mandatory to the employer.

The term "fixed jacks" can be defined as jacks or what is known in the trade as "nose cones", the purpose of which is to hold one end of a trailer being worked so as to avoid the possibility of such trailer being "up-ended" in the course of vehicles coming in and out of the trailer. The word "fixed" indicates that such jacks are not temporary in nature but are an integral part of the trailer frame, and are folded up and under the trailer after loading or unloading activity has been completed and the trailer is attached once again to its tractor.

SOURCE LETTER

JAN 7, 1991

This is in response to your letter of October 5, 1990 to my office, requesting a determination of the term, "fixed jacks," as stated in 29 CFR 1910.178(k)(3). We apologize for the delay in response.

In order for us to fully answer your question, we need additional information, for example, the length and width of the trailers being loaded and unloaded, the positioning and number of jacks you presently use, and whether or not the operation is uniform at your various locations. Sketches, diagrams or photographs would be helpful.
ANSI B56.1-1975 recommends use of personnel safety platforms on trucks with or without elevatable controls. Because the ANSI standard was developed by industry consensus, it represents a broad cross section of industries. Following the standard could still result in an OSHA Act 5(a)(1) citation.

29 CFR 1910.178(m)(12) is an inappropriate and incorrect standard to apply because it refers exclusively to trucks equipped with elevatable controls. The standard does not require or mandate that such controls must be installed on trucks not so equipped. The current version of the ANSI B56.1-1975 (portion enclosed) helps to clear up the confusion, because it recommends the use of personnel safety platforms on trucks without elevatable controls as well as those with such controls. It is recommended, therefore, that you refer to the current industry consensus standard ANSI B56.1-1975 for abatement guidance, a description of the current industry state-of-the-art, and hazard recognition criteria relative to the issue of lifting personnel with industrial trucks.

The ANSI B56.1-1975 standard was developed by an industry consensus group which represents an extremely broad cross section of industries. Therefore, it can be shown that employees lifted by industrial fork lift trucks without benefit of a proper safety platform are subject to injury from a recognized hazard. Your agency should consider issuance of a 5(a)(1) citation since no applicable OSHA standard applies.
Hazardous operational aspects observed by OSHA field staff pertaining to monorails, monorail cranes, top running single girder cranes and overhead hoists, should be regulated under Section 5(a)(1) of the OSH Act. Such equipment is not covered under 1910.179. There are ANSI standards that do cover these issues.

29 CFR 1910.179(b)(1); (b)(2)

MEMORANDUM

SUBJECT: Interpretation of 1910.179, Overhead and Gantry Cranes

The position of OSHA regarding the application of 29 CFR 1910.179 to monorails, monorail cranes, top running single girder cranes and overhead hoists has not changed since our 1972 interpretation. Such equipment is not covered under 1910.179. Prior correspondence reiterating this position are attached for your reference.

Hazardous operational aspects observed by OSHA field staff pertaining to monorails, monorail cranes, top running single girder cranes and overhead hoists, should be regulated under Section 5(a)(1) of the Act. Such enforcement sections should reference applicable portions of the pertinent ANSI standard and conform with guidelines in the FOM. ANSI standards for lifting devices and for which there are no applicable OSHA standard include:

- ANSI B30.11 Monorail Systems and Underhung Cranes
- ANSI B30.16 Overhead Hoists
- ANSI B30.17 Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)
RECORD ID 2179

STANDARD NUMBER 1910.179(b)(4); 1910.66(i)(2)(v); 1926.550; 1917.45(g)(3)(i)
INFORMATION DATE 850220

ABSTRACT Requirements for wind indicators (anemometers) are addressed in separate OSHA standards. Wind indicators are required for outdoor storage of bridge cranes in 29 CFR 1910.179(b)(4). The use of anemometers has been proposed in an amendment of the powered platform standard, 29 CFR 1910.66(i)(2)(v), which was published on January 22, 1985. Wind indicators are also required for outdoor storage of bridge cranes in 1926.550(d)(4).

(NOTE: 1910.66(i)(2)(v) for determining wind speed is now in the standard (not proposed). Except for the word "proposed," the interpretation letter is correct. 1910.179 was last amended in 1986. 1910.66 was last amended in 1989.)

INTERPRETATION 29 CFR 1910.179(b)(4); 1910.66(i)(2)(v); 1926.550; 1917.45(g)(3)(i)
FEB 20, 1985

This is in response to your letter of February 4 regarding OSHA requirements for wind indicators (anemometers).

These requirements are addressed in three separate areas of OSHA's safety standards: General Industry Standards, Construction Industry Standards, and Maritime Employment Standards.

In the General Industry Standards, wind indicators are required for outdoor storage bridge cranes in standard paragraph 1910.179(b)(4). In addition, a requirement for the use of anemometers has been proposed in an amendment of the powered platform standard, 1910.66(i)(2)(v), which was published on January 22, 1985. OSHA is requesting comment on the powered platform proposal, and a copy of this request and the proposed amendment is enclosed for your review and appropriate comment.

In the Construction Industry Standards, wind indicators are also required for outdoor storage bridge cranes in standard paragraph 1926.550(d)(4). This OSHA standard references the American National Standards Institute Standard, ANSI B30.2.0-1967, Safety Code for Overhead and Gantry Cranes. In this ANSI standard, the requirement for wind indicators is located on page 7 under section 2-1.3.1(c).

In the Maritime Employment Standards, wind indicators are required for rail-mounted cranes used in marine terminals. This requirement is in standard paragraph 1917.45(g)(3) of the marine terminal standards published on July 5, 1983.

Copies of the aforementioned standards are identified and enclosed for your use.

SOURCE LETTER
(no date)

We design and manufacture anemometers. Anemometers measure wind velocity. Knowing the speed of the wind at construction sites, at crane or hoisting equipment installations, on bridges, and at numerous other locations where dangerous wind conditions should be known, is important to life and property. OSHA recognized this some time ago. They have, we believe, issued instructions, or directives, or possibly regulations relative to the use of anemometers where wind is or can be hazardous.
We have made several attempts to locate the OSHA source for the OSHA stand on this subject. Our congresswoman supplied your name in the last effort we made. And now we have some cryptic details on what it is we may require. We will appreciate having someone do whatever research is necessary to put all of this together, locate the instruction, regulation, directive, or whatever it may be that we are after. We would also like to have a copy of the publication. Herewith the information we have:

GENERAL INDUSTRY
29 CFR1910
OSHA 2206
Revised June '81

The particular paragraph we want is a several times sub paragraph some place in this publication.
ABSTRACT
This interpretation letter answers several questions dealing with 1910.179. This standard does not apply to underhung cranes, overhead hoists, or monorails. Existing equipment constructed and installed prior to August 31, 1971 is not required to meet this specification; however, it must meet the (b)(3) modifications requirements. Fire extinguishers are not specifically required in cabs, and carbon tetrachloride extinguishers are prohibited. Where footwalks are located there shall be no less than 48 inches of headroom as specified by (d)(1)(ii) and (d)(2)(i-iv). The pendant pushbuttons are not to exceed 150 volts for a.c. and 300 volts for d.c. If the voltage can be safely reduced so as never to exceed the maximum allowable voltage, then it would be considered acceptable. Rated load tests are required for new and altered cranes.

INTERPRETATION
29 CFR 1910.179(k)(2); (g)(1)(iii); (d)(1)(ii); (c)(3); (a)(42); (b)(2); (a)

MAR 4, 1991

This is in response to your letter of January 14, in which you requested clarification of Occupational Safety and Health Administration (OSHA) standard on Overhead and Gantry Cranes, 29 CFR 1910.179.

Your specific questions and our responses are listed below for each of the related sections of the standard, 1910.179:

(b)(1)
Does this standard apply to underhung cranes, hoists, and monorails? This standard does not apply to underhung cranes, overhead hoists, or monorails. Underhung cranes and monorails are covered in ANSI B30.11-1980, a National Consensus Standard. Under 1910.179 a hoist is defined as an apparatus which may be a part of an applicable crane, exerting a force for lifting or lowering. Requirements for hoisting equipment can be found in 1910.179(h)(1).

(b)(2)
Does existing equipment constructed and installed prior to August 31, 1971 apply to the specification? In addition, do cranes constructed prior to this date and later modernized need to comply? Existing equipment constructed and installed prior to August 31, 1971 is not required to meet this specification. Cranes constructed prior to this date and later modernized are also exempted from this specification; however, such cranes must meet the requirements of 1910.179 (b)(3), Modifications.

(c)(3)
Are fire extinguisher required in cabs? Fire extinguisher are not specifically required in cabs, and carbon tetrachloride extinguishers are prohibited. If a fire extinguisher is provided, the employer shall ensure that operators are familiar with the operation and care of the extinguisher.

(d)(2)(iv)
Are any clearances required on the footwalks to machinery, electrical controls, etc.? 1910.179 (d)(1)(ii) states: "Where footwalks are located in no case shall less than 48 inches of headroom be provided. Additional requirements for the construction of footwalks can be found in 1910.179 (d)(2)(i), (ii) and (iv).

(g)(1)(iii)
Does 240 volts a.c. satisfy the 150 volts a.c. maximum requirement in pendant pushbuttons if the 240 volts a.c., when in a single phase condition at the pendant, is less than this requirement? This section calls for the voltage at the pendant pushbuttons not to exceed 150 volts for a.c. and 300 volts for d.c. If the
voltage can be safely reduced so as never to exceed the maximum allowable voltage, then it would be considered acceptable.

(k)(2)
Are rated load tests required for new and altered cranes? Yes, rated load tests are required for new and altered cranes.

SOURCE LETTER
January 14, 1991

We request clarifications on certain sections of the current OSHA criteria dealing with Overhead and Gantry Cranes (1910.179). Please review the following and advise on the respective clarifications:

- Section b.1 Does this standard apply to underhung cranes, hoists, and monorails.
- Section b.2 Does existing equipment constructed and installed prior to August 31, 1971 apply to the specification. In addition, do cranes constructed prior to this date and later modernized need to comply.
- Section C.3 Are fire extinguisher required in cabs.
- Section d.2.iv. Are any clearances required on the footwalks to machinery, electrical controls, etc.
- Section g.1.iii. Does 240 volts A.C. satisfy the 150 volts A.C. maximum requirement in pendant pushbuttons if the 240 volts A.C., when in a single phase condition at the pendant, is less than this requirement.
- Section K.2. Are rated load tests required for new and altered cranes.

Your clarifications of these sections will further enable us in our interpretations of the OSHA requirements.
The physical qualifications for crane operators listed in ANSI B30.17-1980 are not enforceable, under the OSHA standard 1910.179. A citation can be issued, however, when a serious hazard arises as a result of a crane operators performance. The general duty clause of the OSHA Act would be used ((5)(a)(1)).

INTERPRETATION 29 CFR 1910.179(b)(2)

March 7, 1983

This is in response to your letter of January 6, 1983, concerning an employer's use of a crane operator who is blind in one eye.

29 CFR 1910.179 does not include any physical qualifications for overhead and gantry crane operators. However, an employer has the responsibility to determine whether crane operators can safely perform their work. An employer's decision could be influenced by working conditions such as, operators operating a derrick strictly by headset communications, crane operators having no visual problems in following the signals provided by a signalman. The physical qualifications required in the ANSI B30.17-1980 standard are advisory requirements, which have not been adopted by OSHA and cannot be enforced on operators of equipment covered by 29 CFR 1910.179.

The use of the general duty clause 5(a)(1) of the OSHA act, is warranted only when there is a substantial probability that a recognized hazard may cause death or serious physical harm to employees. Whether use of a crane operator, who is blind in one eye, presents such a recognized hazard would depend on the particular work situation in which he operates. However, I can not say in your client's particular situation whether use of an operator who is blind in one eye would constitute a recognized hazard.
Enforcement of the design specifications on pre-1971 cranes have been largely to no avail, and the topic of this Standard has been widely mentioned by your Area Directors both formally and informally. Design specifications in the crane standard shall not be enforced for pre-1971 cranes, noted sub-sections precluded.

INTERPRETATION

29 CFR 1910.179(b)(2)

April 27, 1979

MEMORANDUM

SUBJECT: Standard at 29 CFR 1910.179

As you know, both the Review Commission and Third Circuit have specifically held that the Secretary of Labor cannot enforce the ANSI "design specifications" which are included in the above standard against owners of cranes which were constructed and installed prior to August 31, 1971. Much time and effort have been expended in trying to enforce the design specifications of this Standard on pre-1971 cranes, largely to no avail, and the topic has been widely mentioned by your Area Directors both formally and informally.

We have finally received clearance from our National Office to issue advice to you that we may now conform our inspection and citation practices to the mandates, at least, of the Third Circuit decision, although the Review Commission precedent continues to be challenged elsewhere. Specifically, Area Offices in Pennsylvania and Delaware, need no longer cite, and should no longer cite, those portions of Section 1910.179 which adopt the design specifications of ANSI B30.2.0 - 1967 with respect to cranes constructed and installed before August 31, 1971. The specifications are contained in the following Sections of the Standard - all subparts of: 1910.179(c)(1)(2)(4); (d)(1)(2)(3)(4); (e)(1)(2)(3)(4)(5)(6); (f)(1)(2)(3)(4)(5)(6); (g)(1)(2)(3)(4)(5)(6)(7); (h)(1)(2)(3)(4); (i); and (j)(1).

Please note that, contrary to the opinion of some Judges, we are not totally precluded from enforcing the crane standard on pre-1971 cranes in the Third Circuit. Only the above listed sub-sections and sub-parts thereof are excluded from being enforced.
ABSTRACT
An overhead crane may be used beyond its rated load if properly tested in accordance with manufacturer's specifications and limitations. The testing parameters in section (k) must be followed prior to using the crane above specified limits.

INTERPRETATION
29 CFR 1910.179(k)(2); (b)(2)
August 27, 1975

This is in response to your letter dated August 14, 1975, concerning your request for variance for the Company. The standard from which a variance is sought is Section 1910.179(b)(2) Overhead and Gantry Cranes - General Requirements, of the Occupational Safety and Health Standards.

The requirements of the above standard are in part that Overhead and Gantry Cranes shall meet the design specifications of the American National Standard Safety Code for Overhead and Gantry Cranes, ANSI B30.2.0 1967. Section 2-3.2.1 Size of Load states "The crane shall not be loaded beyond its rated load except for test purposes as provided in Section 2-2.2". It is from this requirement that a variance is sought.

You have stated that your overhead crane, which has a rated load of 150 tons, is to be used to lift the reactor vessel head twice per year. The approximate weight of the head is 165 tons. You further state that the crane was built to the specifications certified by the manufacturer's guarantee to be suitable for lifting at 20 percent greater than design rating ton load (180 tons) at least twice a year without causing damage. In addition, you have performed and documented tests beyond the rated load.

The standard requires that the employer shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes. It appears that you are meeting the intent of this standard based on the manufacturer's certification and your own tests. We would suggest that if the testing was accomplished in accordance with the requirements contained in Section 1910.179(k) concerning the testing and thorough check by a qualified engineer or the equipment manufacturer, you should determine if a new rated load may be applicable. If applicable, the new rated load should be displayed as required and records should be maintained and readily available.

Since it appears that a variance from this occupational safety and health standard is not required, no further action will be taken on your application. However, those requirements that may be required by local, State, or other Federal agencies would not be negated.
ABSTRACT Overhead and gantry cranes should not be rated in excess of 80 percent of the test load. Therefore, in order to rate a crane to 100 percent of the design intended loading, the test load must be 125 percent of the rated load. The only exception to this requirement would be when a crane manufacturer specifies a different test loading criterion. In that case, the crane manufacturer's procedures shall be adhered to.

(NOTE: This standard was last amended in 1986.)

INTERPRETATION 29 CFR 1910.179(k)(2)

JAN 3, 1989

This in response to your letter of December 7, 1988, concerning the "Rated Load Test" for cranes as specified at 29 CFR 1910.179(k)(2).

Overhead and gantry cranes should not be rated in excess of 80 percent of the test load. Therefore, in order to rate a crane to 100 percent of the design intended loading, the test load must be 125 percent of the rated load. The only exception to this requirement would be when a crane manufacturer specifies a different test loading criteria. In that case, the crane manufacturer's procedures shall be adhered to.

SOURCE LETTER

December 7, 1988

Paragraph K2, part 1910.179, Title 29, specifies the upper limit of a Rated Load Test shall not exceed 125% of the rated load unless otherwise recommended by the manufacturer. Please specify weight minimum load below 125% of the rated load is permissible in the rated load test, since none is specified in K2, 1910.179, Title 29.

Reference K2, 1910.179, Title 29.
Adequate safety procedures may be used in lieu of rail stops to prevent a collision between an active crane and an idle crane. Procedural guidelines are reviewed in the interpretation letter. 

(Note: Subsection (f) under section (l) is no longer in the standard. Subsection (e) now states "...rail stops or other suitable means shall be provided to prevent interference with the idle crane." The word signalman is no longer found in those sections of the standard. The point highlighted by the interpretation letter is applicable to the revised standard.)

**ABSTRACT**

**INTERPRETATION**


October 23, 1978

This is in response to your request for a variance from Section 1910.179(l)(2)(e) and (l) Overhead and Gantry Cranes - Rail Stops, of the Occupational Safety and Health Standards.

Sections 1910.179(l)(2)(e) and (l) state that "other suitable means" or "a signalman" may be used when rail stops are not practical. The standard is intended to prevent a collision between an active crane and an idle crane being repaired by providing a safe means of warning the active crane operator when it is approaching; the limit of safe distance from the idle crane.

You are requesting a variance to utilize your maintenance safety program procedures, rules, and instructions in lieu of rail stops.

After studying your variance application, we have determined that your procedures, rules, and instructions are meeting the intended purpose of the standard. Therefore, a variance is unnecessary.

However, you will be subject to citation in the event of an inspection if the following procedures (as delineated in your application) are not strictly enforced:

1. No one is permitted to bump, push, or move the bridge of any crane or runway bumper on which a red signal light is burning with another crane or to move a crane on which a red light is burning under its own power.

2. Repairmen must be sure that the red signal light is burning and pull, tag and lock main switch on the crane and take other necessary precautions before starting repairs or inspections.

3. Before turning on red signal lights, repairmen must notify crane operators adjacent to the crane.

4. Exceptions to 3 when repairmen are changing light bulbs from a crane, they must first notify crane operators in adjacent cranes before initially turning on red lights and inform them of the nature and time of the work they will be performing this duty. While all other safety procedures must be followed as outlined on this work, repairmen will not be required to notify adjacent crane operators (after the initial notification) prior to each turning on of the red lights.

5. When working on the bridge or trolley, repairmen must also hang the red warning flag sign from the middle of the crane bridge.
6. Crane operators, when entering cages, must look both ways to see whether other cranes, equipment on runways or ground equipment have red signal lights or yellow caution lights burning.

7. Crane operators must not operate the red signal light except when ordered to do so by repairmen, electricians or their supervisors. Crane operators must not turn off red signal lights unless ordered to do so by the same persons who ordered them turned on.

8. Whenever cranes on which red signal lights are burning interfere with normal operations, ground supervision may request the relocation of this crane for such time as interference exists.

9. Repairmen and their supervisors can turn red signal lights on and off.

10. It is forbidden to move a crane on top of, over or into a red light.

11. All maintenance and operating personnel must not adjacent crane operators (in cranes) concerned before turning on red signal lights on any equipment below the crane runway.

12. Whenever a crane is used as a stationary scaffold, work platform or support for a ladder:
   a. Maintenance workers must follow standard red light rules previously outlined.
   b. Runway bumpers with red lights attached must be positioned on both runways at a distance not less than 20 feet from section being worked on.

13. Before beginning work on any crane runway, maintenance workers must:
   a. Attach yellow "MEN WORKING ON RUNWAY" tag to controls of all cranes on runways.
   b. Runway bumpers with red lights attached must be positioned on both runways at a distance not less than 20 feet from section being worked on.

14. Violations of ladder and scaffold rules when related to use on cranes will be considered rule violations of special seriousness and will be dealt with accordingly.

15. When work is being done on crane or crane runways on occasions where there is no other work activity in the area, main feed for the entire runway may be pulled, tagged and locked out. The action will eliminate the need for bumpers and use of red light.

16. When maintenance men are working in close proximity of a crane runway (close enough to be struck by moving crane) the yellow "MEN WORKING ON RUNWAY" tag must be attached to controls of all cranes on runway.

17. SPECIAL WARNING: Violation of any of the rules in this section will be considered high potential rule violation and will result in automatic discipline for those involved.

Affected employees and their authorized representatives shall be notified of our decision in this matter in the same manner they were informed of your request for a variance.
This interpretation letter addresses the DOE adopted Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.179 (e)(4) concerning the use of the word "shall" as it applies to rail sweeps for bridge cranes.

This interpretation is in response to a March 5, 1993, request from a DOE facility asking for a potential discrepancy to be resolved between OSHA and ANSI (American National Standards Institute). OSHA uses "shall" in 29 CFR 1910.179 (e)(4) (bridge trucks shall be equipped with sweeps which extend below the top of the rail and project in front of the truck wheels), and ANSI B30.2, 1990 Section 2-1.9 (b) uses the word "should" (Overhead bridge trucks "should" be equipped with sweeps that extend below the top of the rail and project in front of the crane leading wheels.)

Because the question is for an interpretation between the words "shall" and "should" one must remember that the most stringent standard would always apply. Thus the use of 29 CFR 1910.179 (e)(4) "shall" would apply.
This interpretation letter addresses the requirement for load testing monorails. Monorails shall be load tested and used at no more than 80% of the resultant rating. Management shall ensure that each case is evaluated, such as by the use of engineering calculations, prior to load testing but not in lieu of load testing.

This interpretation is in response to your letter of August 15, 1993, asking if monorails have to be load tested or if engineering calculations could be substituted for the load test.

DOE record ID #1713 (see DOE Interpretations Guide to OSH Standards) states that monorail cranes should meet the requirements of ANSI B30.11 (Monorail Systems and Underhung Cranes), ANSI B30.16 (Overhead Hoists) and ANSI B30.17 (Overhead and Gantry Cranes), all of which require load testing. Also, DOE Record ID #4176 states that new and altered cranes shall be load tested.

OSHA interpretation #19890103 (also found in the DOE Interpretations Guide to OSH Standards) states that cranes should not be rated in excess of 80% of the tested load. The only exception to this requirement would be when a crane manufacturer specifies a different test loading criteria. In that case, the crane manufacturer's procedures shall be followed. It is management's responsibility to ensure that each case is evaluated before load testing, such as through the use of engineering calculations; however, these calculations shall not be used in lieu of load testing.
ABSTRACT

This interpretation letter provides clarification of the applicability of 29 CFR 1910.180(b)(1), to cranes used in drag line, pile driving, and/or clam shell operations. 29 CFR 1926, 1926.603, is applicable to pile driving operations because pile driving would occur in only construction or marine operations. Hazardous operations involving crawler, locomotive, and truck cranes used with a drag line or clam shell attachment in general industry settings shall be cited as general duty clause, 5(a)(1), violations.

INTERPRETATION

29 CFR 1910.180(b)(1); 1926.603; 1910.12

MAR 16, 1987

MEMORANDUM

SUBJECT: Standards interpretation regarding applicability of 29 CFR 1910.180(b)(1) to cranes used with drag line, pile driver or clam shell attachments.

Reference is made to your memorandum dated February 24, 1987, on the above subject.

Commissioner's letter requests a clarification of the applicability of the general industry standard, 29 CFR 1910.180(b)(1), to cranes used in drag line, pile driving, and/or clam shell operations. The general industry standard, 29 CFR 1910, is inapplicable to pile driving operations because under the definition of 29 CFR 1910.12(b) and the scope of 29 CFR 1926, Subpart 0, pile driving would only occur during construction or marine operations. Therefore, 29 CFR 1926, Subpart 0, is applicable to pile driving operations including those which utilize a crawler, locomotive, or truck crane.

Hazardous operations involving crawler, locomotive, and truck cranes used with drag line or clam shell attachments in general industry settings shall be cited as general duty clause, 5(a)(1) violations. Such 5(a)(1) violations should reference the applicable Power Crane and Shovel Association Standards No. 1 and No. 2 of 1968, or No. 3 of 1969. The construction standards may also be referenced.
INTERPRETATION 29 CFR 1910.180(h)(3)(v); 1926.550(b)(2)

August 7, 1975

MEMORANDUM

SUBJECT: Request for Interpretation-Riding Blocks on Oil Field Drilling Rigs

Reference is made to memorandum dated June 10, 1975, subject as above.

There is no standard covering the working condition noted which specifically relates to Oil Field Drilling Rigs. However, the same situation is positively addressed in the General Industry and the Construction Standards relating to material handling devices. 29 CFR 1910.180(h)(3)(v) states: "No hoisting, lowering, swinging or traveling shall be done while anyone is on the load or hook." 29 CFR 1926.550(b)(2) states: "All crawler, truck, or locomotive cranes in use shall meet the testing, maintenance and operation as prescribed in the ANSI B30.5-1968, Safety Code for Crawler, Locomotive and Truck Cranes." ANSI B30.5, Chapter 5-3 operations, Section 5-3.2.3(e) reads: "The operator shall not hoist, lower, swing or travel while any one is on the load or hook."

The practice of transporting personnel immediately on the block would constitute a potential hazard, and in the absence of a specific standard addressing oil field drilling rigs for this situation, the general duty clause could apply.
This interpretation letter addresses the DOE-adopted Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.180 (g)(1) concerning the use of the word "monthly" as it applies to inspections of wire ropes on cranes.

This interpretation is in response to a February 10, 1993, request from a DOE facility asking for a definition of the word "monthly" as it applies to wire rope inspection on cranes. Specifically, does the use of the term "monthly" in inspections mean "at regular 30-day intervals," or "one time each calendar month on any variable date," such as January 1, then February 28.

It is the intent of the standard that the term "monthly," as it applies to inspections of wire ropes on cranes, shall be a period extending from a date in one calendar month to the corresponding date (30 days later) in the following month.
ABSTRACT An interpretation letter concerning clarification of the load chart posting and visibility requirements for mobile cranes. The posting requirements of 29 CFR 1910.180(c)(2), "...securely fixed..." 29 CFR 1926.550(a)(2), "...shall be conspicuously posted..." and 29 CFR 1926.550(f)(1)(ii), "...securely fixed..." are met when the required information is contained in a notebook securely attached to the interior of the crane cab. This interpretation does not change the need to have the relevant instructions, warnings and load rating charts for a lift "visible to the operator" as required by 29 CFR 1910.180(c)(2), 29 CFR 1926.550(a)(2), and 29 CFR 1926.550(f)(1)(ii).

INTERPRETATION 29 CFR 1910.180 (c)(2);1926.550 (a)(2), (f)(1)(ii)

November 05, 1991

This is in response to your August 14 memorandum in which you request clarification of the load chart posting and visibility requirements for mobile cranes.

We agree with your statement that the crane industry is currently supplying information, including load charts, in a manner different than what was done and acceptable to OSHA in the past. Consequently, it is our interpretation that the posting requirements of 29 CFR 1910.180(c)(2), "...securely fixed..." 29 CFR 1926.550(a)(2), "...shall be conspicuously posted..." and 29 CFR 1926.550(f)(1)(ii), "...securely fixed..." are met when the required information is contained in a notebook securely attached to the interior of the crane cab, such as by the use of a lanyard. However, this interpretation does not change the need to have the relevant instructions, warnings and load rating charts for a lift "visible to the operator" as required by 29 CFR 1910.180(c)(2), 29 CFR 1926.550(a)(2), and 29 CFR 1926.550(f)(1)(ii). When information is contained in bookform, a way of complying with these provisions would be to provide a bookholder designed to keep the book open to the relevant page(s), and located so as to be visible to the operator while at the control station.

With these interpretations, we do not believe an OSHA Instruction STD is necessary.
Dear Mr. Y:

This is in response to your June 7, 1991 and November 25, 1991 requests for an interpretation of the Occupational Safety and Health Administration's (OSHA) standards pertaining to the use of cranes to lift personnel work platforms. We apologize for the delay in responding to your inquiry.

Your letter describes the work in question as involving construction of utility substations and maintenance and repair of power transmission lines and equipment. Construction and repair would be covered by the construction standards at 29 CFR Part 1926. Maintenance would be covered by the general industry standards at 29 CFR Part 1910.

Personnel platforms that are suspended from the load line and used in construction are covered by 29 CFR 1926.550(g). When the use of such platforms is permitted under that standard, there is no requirement for controls at the platform station. There is no comparable specific provision for suspended personnel platforms in Part 1910, and the governing provision, therefore, is 1910.180(h)(3)(v), which prohibits hoisting, lowering, swinging or traveling while anyone is on the load or hook. When the personnel platform is attached to the boom of a vehicle-mounted crane, the device is covered by 1910.67, vehicle-mounted elevating and rotating work platforms, or 1926.556, aerial lifts.

When the personnel platform is attached to the boom of a vehicle-mounted crane, the device is covered by 1910.67, vehicle-mounted elevating and rotating work platforms, or 1926.556, aerial lifts. These paragraphs require upper and lower controls for extensible and articulating boom platforms which are primarily designed as personnel carriers. We have reviewed these standards and have concluded that 1910.67(c)(2)(ix) and 1926.556(b)(2)(ix) apply only if the lifting of personnel is a routine function of the crane (i.e., one of the primary uses).

Under such circumstances, the crane and attached platform as a combined unit must be equipped with upper and lower controls. The standards do not address the non-routine attachment of accessory platforms to extensible or articulating booms for the purpose of positioning employees.

Although upper controls are not always required, OSHA believes that there are certain conditions under which the use of an aerial lift without upper controls is unsafe. If work is required to be performed from a personnel platform near energized power lines, moving or rotating components of equipment, or other hazardous location where precise control of the platform is necessary to eliminate or reduce hazards to employees, the absence of upper controls could result in a citation under the General Duty Clause of the Act.
If we can be of further assistance please contact me or D. R. C. of my staff at (202) 219-8136.

SOURCE LETTERS

November 25, 1991

Dear Mr. D:


In recent months, you have kindly advised me of the progress of OSHA's analysis of the request. In September, you indicated that a response would soon be forthcoming following review by the Office of Solicitor.

Our client is eager to learn how to remain in compliance while using its cranes. I would appreciate, therefore, whatever effort you can make to expedite a response to my inquiry.

As always, your cooperation is appreciated.

June 7, 1991

Dear Ms. C:

On behalf of a client in the electric utility industry, we respectfully request an interpretation of OSHA standards which address the use of a personnel work platform suspended from the load line of a crane, and/or attached to the boom of a crane, in general industry and construction work. The standards are 29 C.F.R. 1910.67(c)(2)(ix) and 29 C.F.R. 1926.556(b)(2)(ix), respectively. I also request a meeting with you or members of your staff to discuss this matter.

Our client desires to use a personnel platform attached to the boom, and occasionally, suspended from the load line of a 100-foot crane, to perform work in constructing electric utility substations, and to perform maintenance and repair on de-energized electric power transmission lines and equipment, including transmission towers. We request an interpretation of the cited OSHA standards stating that when our client uses a work platform attached to the boom, and/or suspended from a crane for these purposes, the platform need not have controls at the platform station. Alternatively, we request an interpretation stating that if such a configuration of controls is provided, a violation of the cited OSHA standards because of this condition would be, at most, de minimis. The reasons for this request are set forth below.

Under 29 C.F.R. 1910.67(c)(2)(ix) and 29 C.F.R. 1926.556(b)(2)(ix) as written, upper and lower controls would be required on the work platform. This appears to be so because those standards are based on the American National Standards Institute's (ANSI) A92.2-1986. Indeed, 29 C.F.R. 1910.67(b)(1) and 29 C.F.R 1926.556(a)(1) state that aerial lifts shall be designed and constructed in accord with ANSI A92.2-1969 "unless otherwise provided in this section . . ." A92.2-1969 section 4.3 required that "[a]rticulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls."

We also understand that in a 1976 decision, Arizona Public Service Co., 4 BNA OSHC 1936 (No. 8501, 1976), the Occupational Safety and Health Review Commission (OSHRC) held that under the OSHA standards cited above, upper and lower controls are required when a work platform is suspended from a crane, without regard to the primary purpose for which the aerial lift, i.e., the crane, was designed. However, after the OSHA standards were promulgated and Arizona Public Service decided, ANSI Codes addressing these working conditions were revised to reflect the updated consensus judgment that both upper and lower controls are not required to protect employees working from a work platform suspended from a crane.
First, ANSI A92.22-1979, provides at Section 4.5.1.1 that "[v]ehicle-mounted articulating and telescoping cranes or derricks with accessory platforms need not have controls at the platform station." That Code applies here because the term "aerial device" as defined in section 2 of the 1979 Code includes "any device . . . which is designed to position personnel . . ." (copy attached). Note that ANSI A92.2-1990, due to become effective July 2, 1991, would not be relevant here because its scope covers only aerial devices, and those are defined in Section 3 of the 1990 Code to include only those devices "primarily designed and used to position personnel." (emphasis added). A crane, of course, is not so "primarily" designed.

Second, the Code developed by ANSI and the American Society of Mechanical Engineers (ASME) specifically addressing Mobile and Locomotive Cranes, ASME/ANSI B30.5-1989, contains detailed procedures to be followed when mobile cranes are used to lift personnel. Those procedures, however, which appear in Section 5-3.2.2. of the Code, do not include a requirement for upper and lower controls. (Copy attached). B30.5-1989 would not be applicable if the crane and platform were to be used for work on energized facilities, but in all instances to which this request pertains, the facilities to be worked on would be de-energized.

In C B. H & S Inc., 6 BNA OSHC 1335, 1337 (No. 15983, 1978) OSHRC specifically recognized that where an OSHA standard incorporates a national consensus Code which is subsequently modified, it is at most a de minimis violation when the employer complies with the later version of the Code, but is not in technical compliance with the OSHA standard. The key is whether the employer's "violation" has only a negligible relationship to health and safety.

In H, OSHRC also recognized that a national consensus Code "constitutes an expert opinion" on the existence of hazards addressed by the Code. 4 BNA OSHC at 1337. Here, two national consensus Codes adopted subsequent to ANSI A92.2-1969 establish that the absence of platform controls does not create a hazard for employees working from platforms suspended from cranes. In the absence of a hazard, there would be no violation. We request, therefore, that your Office confirm this conclusion by stating that there would be no violation of 29 C.F.R. 1910.67(c)(2)(ix) and 29 C.F.R. 1926.556(b)(2)(ix). Alternatively, we ask that you make clear that it would be at most a de minimis violation of these standards for our client to use the platform suspended from a crane without platform station controls.

Please do not hesitate to contact me if additional information is needed. I look forward to meeting with you or your staff to discuss this request. I appreciate your attention to this matter.

Vol. 2-58.5
ABSTRACT

An interpretation letter to clarify OSHA's position on the use of crane supported personnel platforms. When use of a conventional means of access to an elevated worksite would be impossible or more hazardous, a violation of 1910.180 (h)(3)(v) will be treated as de minimis if the employer has complied with the provisions set forth in 1926.550 (g)(3), (4), (5), (6), (7), and (8). When the personnel platform is attached to the boom of vehicle-mounted crane, the device is covered by 1910.67 or 1926.556. Where precise control of the platform is necessary to eliminate or reduce hazards to employees, the absence of upper controls could result in a citation under the General Duty Clause [5(a)(1)] of the Act. America National Standards Institute's recommended industry standard ANSI B30.5(b) - 1991, Section 5-32.2 addresses the practice of using wire rope slings. Where OSHA standards do not specifically address a particular activity or hazard, ANSI standards can be used by OSHA as a basis for a citation under 5(a)(1) of the Act.

INTERPRETATION

29 CFR 1910.180 (h)(3)(v); 1926.550(g), (a); 1926.556 (b)(2)(ix); 1910.67 (c)(2)(ix)

April 15, 1993

Dear Mr. K:

Your February 20, 1992, letter to Ms. L. A., Occupational Safety and Health Administration (OSHA) Regional Administrator, requesting comments on the suitability of attaching a personnel basket to a mobil crane boom tip with wire rope slings was referred to the Office of Construction and Maritime Compliance Assistance for response.

Although the response to a similar request from G W may have resolved this specific issue, our desire is to clarify OSHA's position on the use of crane supported personnel platforms. I apologize for the delay in responding to your inquiry.

We understand that the work in question involves construction of utility substations and maintenance and repair of power transmission lines and equipment. Construction and repair would be covered by the construction standards at 29 CFR Part 1926. Maintenance would be covered by the general industry standards at 29 CFR Part 1910.

Personnel platforms that are suspended from the load line and used in construction are covered by 29 CFR 1926.550(g). When the use of such platforms is permitted under that standard, there is no requirement for controls at the platform station. There is no comparable specific provision for suspended personnel platforms in Part 1910, and the governing provision, therefore, is 1910.180(h)(3)(v), which prohibits hoisting, lowering, swinging or traveling while anyone is on the load or hook. OSHA has determined, however, that when use of a conventional means of access to an elevated worksite would be impossible or more hazardous, a violation of 1910.180(h)(3)(v) will be treated as de minimis if the employer has complied with the provisions set forth in 1926.550(g)(3), (4), (5), (6), (7), and (8).

When the personnel platform is attached to the boom of a vehicle-mounted crane, the device is covered by 1910.67, vehicle-mounted elevating and rotating work platforms, or 1926.556, aerial lifts. These paragraphs require upper and lower controls for extensible and articulating boom platforms which are primarily designed as personnel carriers. We have reviewed these standards and have concluded that 1910.67(c)(2)(ix) and 1926.556(b)(2)(ix) apply only if the lifting of personnel is a routine function of the crane (i.e., one of the primary uses).
Under such circumstances, the crane and attached platform as a combined unit must be equipped with upper and lower controls. The standards do not address the non-routine attachment of accessory platforms to extensible or articulating booms for the purpose of positioning employees.

Although upper controls are not always required, OSHA believes that there are certain conditions under which the use of an aerial lift without upper controls is unsafe. If work is required to be performed from a personnel platform near energized power lines, moving or rotating components of equipment, or other hazardous location where precise control of the platform is necessary to eliminate or reduce hazards to employees, the absence of upper controls could result in a citation under the General Duty Clause [5(a)(1)] of the Act.

With regard to the acceptability of using wire rope slings to attach the platform to the crane boom, please be advised that although OSHA standards do not address the attachment of personnel platforms to crane boom, America National Standards Institute’s recommended industry standard ANSI B30.5(b) - 1991, Section 5-3.2.2 addresses this practice. As you know, in instances where OSHA standards do not specifically address a particular activity or hazard, ANSI standards can be used by OSHA as a basis for a citation under 5(a)(1) of the Act. It is our understanding that G W had determined that the wire rope sling attachment you have proposed does not meet the five to one strength factor as required by the ANSI standard and they have declined your request for manufacturers approval.

If we can be of any further assistance, please contact me or D. C. at (202) 219-8124.

SOURCE LETTER

March 18, 1992

The purpose of this memorandum is to forward a request for guidance from the Philadelphia Electric Company as to whether a personnel platform attached directly to the boom of a crane by a wire rope rigging system they developed complies with OSHA Standard 29 CFR 1926.556. This request if being forwarded because if their method of attaching a personnel platform to the boom of a crane is deemed to comply with the applicable OSHA standard it may be used nationwide. Please respond directly to the Philadelphia Electric Company and provide us with a copy of your response.

G C, which is located in Shady Grove Pennsylvania, is the manufacturer of the crane (type RT65S) from which the personnel platform is suspended. The letter, in which the request for guidance from OSHA was sought, was also sent to them. The person (K. C., (717) 597-8121, ext. 1554) at G C to whom the letter was sent was contracted by this office. He indicated that G was in the process of drafting a response to that letter but it was not yet complete. He further indicated that at thus point they were examining the following issues:

• The manner in which the personnel platform was connected to the boom.
• The method to be used for keeping the personnel platform level.
• The distance the personnel basket will be kept from overhead lines.

Mr. C. indicated that when they completed the response a copy would be forwarded to OSHA.

The practice of attaching a personnel basket directly to the boom of a crane is not a new concept. G C permits a personnel basket, manufactured by A C of London, Ontario (519-661- 0252), to be attached directly to the boom of some of their crane. M Inc. also sells a personnel basket that can be attached directly to the boom of a boom truck they manufacture (see enclosed brochure). However, both of these personnel baskets are attached to the boom by a solid connecting device rather than a wire rope rigging system.

If you need any additional information regarding the preceding, please contact J. M. at FTS 596-1201.
February 20, 1992

Enclosed you will find photographs showing the rigging we wish to use on G Cre, type RT65S.

In photos 1 through 5, the basket is mounted on the jib swinging away portion of the boom.

1. Indicated the use of 3,000# SWL slings protected by thimbles.
2. Thimbles are used in all the eyes.
3. 5,000# SWL sling used as a safety.
4. All stress areas on the man basket are encapsulated for extra safety.

All shackles used shall be restricted from coming loose by either 1" Scotch electrical tape or mousing wire. The cable shall be removed and stored on the drum.

PHOTOS 6 & 7 - Indicated the jib is the type that is pinned to the head to prevent toll over of the jib.

PHOTO 8 - Depicts the lineman in the basket with the mandatory sky genie and fall arrest lanyard.

PHOTOS 9 - 11 - Picture of the man basket attached to the head of the boom using the ears on the crane for load. The jib connection is used for attachment of the safety sling. The shackles shall be restricted from coming loose at all times and the cable shall be removed and stored on the drum.

PHOTOS 12 - 14 - Show an alternate method of attaching the basket to the jib.

1. 5000# SWL sling around the sheave with the load slings attached.
2. The basket shall be bonded to the crane at all times in case of accidental contact with an energized source.
3. 3000# load slings.
4. Thimbles are in all slings.
5. 5000# SWL safety sling.

PHOTOS 15 & 16 - Show a man in the basket using the fall arrest lanyard and the sky genie attached to the loops provided. The rigging on the baskets are used only for this purpose and are never removed.

We believe that the above arrangement is inherently safer than use of the load line with the personnel platform. We are requesting your comments on the suitability of this arrangement and if it can be certified as an acceptable "field modification" of an aerial lift as defined in 1926.556(a)(2).

If there are any questions, please call L. K. at 648-7907.
This interpretation addresses a question concerning which construction standard is the parallel standard to 29 CFR 1910.181 (a)(29) (Definition of Safety Hook).

There is no OSHA construction standard that parallels the 29 CFR 1910.181 (a)(29) definition for safety hooks, although the intent and meaning are used in 29 CFR 1926. DOE sites operating within the 29 CFR 1926 requirements, and which are following the DOE Hoisting and Rigging Manual, are operating within the appropriate requirements.

This interpretation is in response to your letter dated August 9, 1993, requesting whether a parallel construction standard for 29 CFR 1910.181(a)(29) (Definition of Safety Hook) exists, and a clarification if DOE sites are currently operating within the 29 CFR 1926 requirements.

29 CFR 1926 does not have a definition for safety hooks, although 29 CFR 1926.550(g)(4)(iv)(B) states that "hooks attachments assemblies shall be of a type that can be closed and locked, eliminating the hook throat opening."

The DOE Hoisting and Rigging Manual, a nonmandatory guide for compliance with applicable OSHA standards, states in Chapter 7.1.2 that hoisting hooks shall be fitted with a latch to bridge the throat opening to prevent the accidental release of slings or attachments. Hooks without latches may be used in special applications where the latch interferes with the proper use of the hook, providing the use of the hook is restricted to the application for which it is approved, and that in questionable cases, concurrence is obtained from the appropriate safety organization.

It also requires in Chapter 7.1.4 that, when a latch is provided, it shall be designed to retain such items as slings under slack conditions. The latch is not intended to support the load.

In answer to your question, there is no OSHA construction standard that parallels the 29 CFR 1910.181 (a)(29) definition for safety hooks, although the intent and meaning are used in 29 CFR 1926. As for whether the DOE sites are operating within the 29 CFR 1926 requirements, if they are following the DOE Hoisting and Rigging Manual, they are operating within the appropriate requirements.
The proof testing of slings is the responsibility of the sling manufacturer as delineated by 29 CFR 1910.184(e)(4), (g)(5), and (i)(8)(ii). Repeatedly proof testing slings at two times the rated load is not a recognized inspection procedure and would be a violation. Slings may not be loaded beyond the rated capacity. Only the manufacturer or equivalent entity is permitted to proof test and certify slings. Certification is exclusively the right of only the manufacturer of new slings. Repaired slings may be certified by an equivalent entity who made the repairs. A certificate shall be retained as proof of performance of tests on the repaired sling.

2. 29 CFR 1910.184(c)(4) prohibits loading any sling beyond the rated capacity.

3. Only the manufacturer or equivalent entity are permitted to proof test and certify.

4. Certification is exclusively the right of only the manufacturer of new slings. Repaired slings may be certified by an equivalent entity who made the repairs.
SOURCE LETTERS

June 7, 1988

MEMORANDUM

SUBJECT: Load Testing of Synthetic Web and Other Slings

This is a request for an interpretation of the following items:

1. Can a prime contractor or other employer require frequent proof testing?

2. Is proof testing after manufacture controlled by lifting working loads in excess of 125 percent of the rated capacity?

3. Do slings have to be sent back to the manufacture or testing laboratory for testing or can the user proof test the slings at the work site?

4. If proof testing is allowed at the site, what would constitute proper procedures for field proof testing and certification?

May 19, 1988

Subject: Load Testing of Synthetic Slings

Per our telephone conversation on the subject matter, I would like to request of Federal OSHA a review of the enclosed documents and give me your comments on their requirements.

The company is quoting out of the WYOSHA General Rules and Regulations, 1910 Chapter 14, Section 7, Paragraph (a) and (b) for the justification to load test synthetic web slings to 200% (2X rated load). This reference deals with repair of synthetic web slings. We do not do any repair on web slings. If they are bad the slings are removed from service and destroyed.

LOAD FACTOR AND INSPECTION FREQUENCY

100.9.4.1
Metallic slings and chokers and synthetic web slings - conduct 200% (2 x Rating) proof load test before placing in service and every 90 days thereafter with comprehensive inspection every 90 days.

(Handwritten next to the above - Here is what (company) requires per the safety requirements document.)

100.9.4.2
Non-metallic rope slings and chokers - conduct 100% (1 x Rating) proof load test before placing in service and every 90 days thereafter with comprehensive inspection every 90 days.

100.9.4.3
Shackles, turnbuckles, eyebolts, swivel ring bolts, hoist rings, and other metallic hardware - conduct 200% proof load test before placing in service.

1009.4.4
Special lifting fixtures and accessories designed for lifting specific materials, assemblies, or equipment such as large lifting fixtures, specially designed slings and spreader bars shall be 200% load tested (2 x Rating) annually with comprehensive inspection every 90 days.

100.9.4.5
Hoist anchorage including lift eyes, pad eyes, eyebolts, and swivel ring bolts, for support of portable hoists such as block and tackle, chain falls and come-a-longs shall be 125% load tested (1.25 x Rating) prior to first use and after rework with comprehensive inspection every 90 days.

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100.9.4.6

Overhead hoists/cranes, trolley/monorail and portable chain hoists shall be 125% load tested (1.25 x Rating) prior to first use, after rework, and annually thereafter with written, dated signed comprehensive inspection every 30 days covering hooks, ropes, and brakes.

(Response from sling manufacturer)

This letter and the attached copy of certification are in response to your inquiry of the above date through our distributor's sales representative, (company). All of our nylon lifting slings meet or exceed all industry and OSHA standards. The rated capacity as listed on the leather identification tag and in our sales literature is based on a 5 to 1 safety factor as all slings are supposed to be.

When nylon lifting slings are "proof-tested" for the purpose of certification they are pulled at the respective bearing points, (at the eyes in a type 3 sling or at the triangles in a type 1 or 2 sling), to twice the rated "vertical" working capacity. We are completely confident in the manufacturing techniques and stitch methods employed in our slings and do regularly test random batches to assure continuing quality control.

If you desire proof-testing for any of our slings we can accommodate you at a nominal testing charge. Sling certifications are free of charge. Attached is a copy of our certification form. If we can be of any further service please contact us.

-------------------------------------------------------------------------------------------------

CERTIFICATE OF COMPLIANCE

IT IS HEREBY CERTIFIED THAT THE MATERIAL AND/OR MANUFACTURED ARTICLE(S) FURNISHED ON THE INDICATED CONTRACT PURCHASE ORDER IS (ARE) IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS APPLICABLE TO THIS ORDER. PHYSICAL AND CHEMICAL DATA PERTAINING TO THIS ORDER (WHEN APPLICABLE) HAS BEEN FURNISHED AS REQUESTED. ALL MATERIALS, ASSEMBLIES, PROCESSES AND FINISHES USED ARE WITH-IN THE REQUIRED SPECIFICATIONS AND MEET INSPECTION TESTS AS CALLED FOR, PRIOR TO SHIPMENT.

SIGNATURE
DATE
ORGANIZATION

-------------------------------------------------------------------------------------------------

(Response from WYOSHA)

April 19, 1988

Re: Load testing of synthetic slings

On a previous occasion you contacted this agency with regard to load testing synthetic slings at 200 percent their rated capacity. At that time you were given a copy of the (state) Occupational Health and Safety rules for Construction. The specific standard that you were shown then, and still should take into account, is Chapter VIII, Section 2.e.(2) which states, "Rated capacity shall not be exceeded."

Section 2.e.(1),(a),(b), and (c) requires that the employer shall have each synthetic web sling marked or coded to show the name or trademark of the manufacturer, rated capacities for the type of hitch, type of material. This would give anyone using the sling all of the pertinent information required to use it safely. Section 2.a.(1) of the same chapter states that "Rigging equipment for material handling shall be inspected prior to use on each shift, and as necessary during its use, to ensure that it is safe. Defective rigging equipment shall be removed from service." This rule is to assure that any type of rigging equipment is inspected before each shift that it would be used on and replaced if there is a problem with it.

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The only place that load testing of rigging equipment is required is under Section 2.a.(4) which states, "Special custom design grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures and similar materials, shall be marked to indicate the safe working loads and shall be proof-tested prior to use to 125 percent of their rated load." This rule requires load testing only of special custom-designed equipment, not slings, and not on a monthly cycle but only a one-time test.

After reviewing the above stated rules, it would be this agency's contention that any sling load tested to 200 percent of its rated capacity would be overloading the sling. With Section 2.e.(2) that sling would have to be removed from service due to the fact that the working capacity of the sling would not be known after such a tremendous amount of overloading has occurred.

(No Date)

Subject: Proof Load Testing of Synthetic Web Slings

Reference:

(a) Letter, dated April 19, 1988, same subject.

(b) (State) Occupational Health and Safety Rules and Regulations for Construction, Section 2a(2).

(c) Safety Requirements Document, D407-21160-1 Paragraph 10.9.4.1


Mr. X. has objected to the periodic proof load test load of 200% of safe working load (SWL), required by reference (c), as being excessive and damaging to the sling. He maintains that the proof load is limited by reference (b), which states "Rigging equipment shall not be loaded in excess of its recommended safe working load...". This position was collaborated with the (State) Occupational Safety and Health office in reference (a).

It is our contention that the intent of the quoted requirement is to prohibit lifting working loads which exceed the rated load capacity of the sling. It does not apply to loads used in proof testing.

The Company B Proof Test load requirement for synthetic web slings is twice the rated capacity (200% SWL), as specified in reference (c). This is confirmed as an OSHA standard by the reference (d) letter.

The claim has been made that proof load testing every 90 days will cause damage to the sling form the effect of fatigue. This claim is invalid based on the following information:

1. Company B performed tests on nylon web slings, reference (e), which showed that nylon web slings did not experience any significant loss of strength under repetitive loading even with loads exceeding the rated breaking strength of the webbing by 10 percent. This loading would be equivalent to a proof load of 550% SWL.

2. Breaking strength of the test samples was first determined by testing eleven samples to destruction. The breaking strength of the weakest sample was 124% of the rated breaking strength; average was 130% of rated breaking strength (650% SWL); indicating that the webbing more than met the legal requirement for strength.

3. The test samples were subjected to 13 to 16 repeated loads of 110% of rated breaking strength (550% SWL) without allowing time between loads for recovery, then pulled to destruction. This was considered a very severe test, as the nylon was not allowed to cool after being heated by the energy developed by the applied load. Single load tests would not be this severe. Final breaking strengths ranged from 121% to 132% of rated breaking strength. Average was 126% of rated breaking strength.
4. To simulate the effect of periodic proof load testing, nine samples were loaded to 120% of rated breaking strength (600% SWL) four times, allowing a recovery period of one day between loadings, then pulled to destruction. The weakest of these samples developed 128% of rated breaking strength; the strongest, 130% of rated break. Average was 129% of rated strength (645% SWL). This was 99% of the average strength of the original unloaded samples.

Consideration of the preceding data leads to the following conclusions:

1. The proof load of 200% of rated load is the one prescribed by OSHA for nylon web slings, and is observed by the sling manufacturer.

2. Proof testing at 200% SWL repeated every 90 days will have no detrimental effect on the strength of the sling. Tests conducted by Company B have shown that nylon web slings can withstand severe and frequent repeated tests at loads of over 550% SWL with a strength loss of less than 2 percent.

The company requirements as currently written comply with the intent of OSHA and will not be changed at this time.
This interpretation letter addresses standards for chain slings in 29 CFR 1910.184(e). The use of other than alloy steel chain is not prohibited specifically by the standard, but only alloy steel chain is recommended by the chain manufacturers for overhead hoistings.

(NOTE: This standard was last amended in 1976.)

This is in response to your letter dated April 24, 1978, regarding interpretations of standards for chain slings in 29 CFR 1910.184.

The Occupational Safety and Health Administration General Industry Standards specifically address alloy steel chain slings used in the movement of material by hoisting machinery. The use of other than alloy steel chain is not prohibited specifically in 29 CFR 1910.184, but only alloy steel chain is recommended by chain manufacturers for overhead hoisting. A copy of the American Society for testing and materials A 391-65 (Reapproved 1970) standard specification for alloy steel chain has been enclosed to properly describe alloy steel chain.
ABSTRACT  Only alloy steel chain is recommended by manufacturers for overhead hoisting. Proof coil and high test chain is not prohibited, but is not recommended for overhead hoisting where failure of the chain would endanger human life or result in serious property damage.

(NOTE: This standard was last amended in 1976.)

INTERPRETATION  29 CFR 1910.184(e)

May 12, 1983

MEMORANDUM

SUBJECT: Evaluation of Variance Application #1666, which Contains (company) Request to Allow the Continued Use of the Proof Coil and High Test Chain Slings Under Certain Procedures

The use of other than alloy steel chain is not prohibited specifically in 29 CFR 1910.184, but only alloy steel chain is recommended by chain manufacturers for overhead hoisting. Proof coil and high test chain is used for purposes where failure of the chain would not endanger human life or result in serious damage to property or equipment. Proof coil and high test chains should only be used in accordance with the manufacturer's recommendations.
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DOE Interpretations Guide to OSH Standards
July 1, 1992
OSHA Instruction STD 1-12.1
October 30, 1978

March 24, 1972

OSHA PROGRAM DIRECTIVE #100-5

Subject: Defining Acceptable Guarding of Fan Blades

1. Purpose. To clarify the applicability of 1910.212(a)(5) and to direct answers to inquiries.

2. Background. This paragraph establishes the guarding requirements for fans within 7 feet of floor or working level. Numerous requests for clarification have been received, principally from employers using floor fans.

3. Interpretation. The subject paragraph means that all fans within 7 feet of the floor or working level must be guarded. The guard must not have openings greater than one-half inch in width. The use of concentric rings with spacing between them not exceeding a one-half inch are acceptable provided that sufficient radial spokes and firm mountings are used to make the guard rigid enough to prevent it from being pushed into the fan blade during normal use. The use of nylon mesh or similar materials with holes not exceeding one-half inch, to modify a substandard guard on an existing fan is acceptable, provided the combination of the two provides adequate protection so that the mesh cannot be pushed into the fan blade during normal use.

4. Effective Date. This instruction is effective immediately, and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-12.5
October 30, 1978

March 23, 1973

OSHA PROGRAM DIRECTIVE #100-25


I. Purpose. To provide guidance on the acceptable methods for guarding meat cutting saws.

2. Background:

   a. The reference standard requires point of operation guarding on machines which expose an employee to injury. Because there is no standard available which gives the specific details for guard requirements for meat saws, there has resulted much confusion as to what is acceptable guarding:

   b. It is understood that the appropriate organizations in the meat industry are presently developing standards. Until these are available, the following policy shall be followed.

3. Interpretation. A circular meat cutting saw shall be guarded in one of the following ways:

   a. A suspended counter balanced circular meat cutting saw that requires two-handed operation shall be deemed adequately guarded, if provided with a guard that covers at least 25 degrees of the circumference of the blade and it conforms to the requirements in d below.

   b. A suspended counter balanced circular meat cutting saw that requires only one-handed operation shall be deemed adequately guarded, if provided with a guard that covers at least 90 degrees of the circumference of the blade and it conforms to the requirements in d below.

   c. A non-suspended circular meat saw, either one hand or two-handed operation, shall be deemed adequately guarded if provided with a guard that covers at least 120 degrees of the circumference of the blade and it conforms with the requirements in d below.

   d. All circular meat cutting saws shall conform to the following:

      (1) A "dead man" control(s) shall be required.

      (2) The guard protecting the operator from contact with the blade shall be located between the operator and the blade.

      (3) The minimum number of degrees of circumferential guarding of the blade shall be provided based on specific applications in meat cutting operations.

      (4) A brake that automatically activates upon release of the operating control(s) is recommended.

4. Effective Date. This instruction is effective immediately, and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-12.7
OCTOBER 30, 1978
July 18, 1975
OSHA PROGRAM DIRECTIVE #100-34

1. Purpose:

2. Directive Affected:
None.

3. Background:
In the 1.1 Scope section of ANSI-B11.1-1971, Safety Requirements for Construction, Care and Use of Mechanical Power Presses the standard applies only to those mechanically powered machines that shear, punch, form or assemble metal or other material by means of tools or dies attached to slides.

4. Clarification:
The Office of Standards Development currently promulgating a change to 29 CFR 1910.217(a)(5) that will add platen presses to the list of excluded machines. Therefore, Section 29 CFR 1910.212 shall apply to point of operation guarding for platen presses.
OSHA Instruction STD 1-12.9

October 30, 1978

OSHA PROGRAM DIRECTIVE #100-41

Subject 29 CFR 1910.212, General Requirement for all Machines

1. Purpose:

To clarify the intent of 29 CFR 1910.212 as applied to chain saws, particularly blade guards for chain saws.

2. Documentation Affected:

None.

3. Background:

Inquiries have been made as to the application of 29 CFR 1910.212 to chain saws. The source standard for 1910.212 is Federal standard 41 CFR 50-204.5. The intent is that Part 50-204.5, machine guarding shall apply to all machines. This is specifically brought out in 50-204.5(c)(4) which lists some of the machines, including portable power tools, that usually require point of operation guarding. Since no OSHA standard other than 1910.212 applies to the guarding of chain saws, the general industry standard 29 CFR 1910.212 shall apply according to 29 CFR 1910.5.

4. Action:

a. When the use of a chain saw blade guard would prevent an employee from performing the particular work function assigned or would offer a more serious hazard than that associated with an unguarded chain saw blade, a chain saw blade guard would not be required. The omission of a chain saw blade guard under these conditions would not be a violation of 29 CFR 1910.212(a)(3)(ii).

b. In intended uses when it would be feasible to have the chain saw blade guarded (a one direction movement of the saw with no other obstructions to the guard), a chain saw blade guard would be required.

c. This interpretation does not exempt the use of personal protective equipment or the application of other relevant standards.
OSHA Instruction STD 1-12.10

OCT 30, 1978

OSHA PROGRAM DIRECTIVE #100-51

Subject: Application of 29 CFR 1910.212(a)(1) to Food Waste Disposal Equipment

1. Purpose:
   To assure uniformity in the application of the subject standard to point of operation guarding on food waste disposal equipment.

2. Directive Affected:
   None.

3. Background:
   Several inquiries have been made regarding the acceptability of a trimboard as a guard on food waste disposal equipment such as the "Garb-el" or equipment of similar configuration and operational characteristics. The guard in question was inspected and tested. It was determined that the worm screw conveyor operates at approximately 2.4 RPM to 3.5 RPM, depending upon the horse power. It was also determined the hopper is open and free with no narrow throat.

4. Clarification:
   Based on actual operation, it was determined that a trimboard properly designed and mounted, provides the nip point protection and meets the intent of the standard. Attachment #1 identifies the nip points. Attachment #2 illustrates the proper placement of the trimboard.

5. Effective Date:
   This directive is effective immediately and shall remain in effect until canceled or superseded.

(Note: Attachments #1 and #2 not available.)
OSHA Instruction STD 1-12.12

October 30, 1978

OSHA PROGRAM DIRECTIVE #100-44 (Revision #1)

Subject: 29 CFR 1910.212, General Requirements For All Machines, As Applied to Power Press Brakes

1. Purpose:

To provide guidance in the application of the subject standard to point of operation safeguarding of Power Press Brakes.

2. Directives Affected:

This directive supersedes OSHA Program Directive #100-44 dated January 21, 1976. Paragraph 4.c. on page 2 has been revised.

3. Background:

A number of comments and requests for variances have been received concerning 29 CFR 1910.212 as it applies to point of operation safeguarding of Power Press Brakes. 29 CFR 1910.212(a)(1) requires that a method of guarding be provided to prevent an operator or other employees from having any part of the body in the danger zone during the operating cycle. It gives examples of guarding methods such as barrier guards, two-hand tripping devices and electronic safety devices. 29 CFR 1910.212 (a)(3)(ii) states: "The point of operation of machines whose operation exposes an employee to injury, shall be guarded."

4. Action:

a. Exposure or potential exposure must be established prior to a citation being issued.

b. Protection of employees from point of operation hazards must be accomplished by the use of guarding devices which are in conformity with any appropriate standards for the specific machine involved. In the absence of applicable specific standards, guarding devices shall be so designed and constructed as to prevent the operator from having any part of the body in the danger zone during the operating cycle.

c. Where guards or guarding devices, as described in the preceding paragraph b., cannot be installed to protect operators and other employees from point of operation hazards, then other methods are acceptable. Other methods of safeguarding can include a safe distance between the employee(s) and the point of operation, which may be accomplished by the location of the operator's controls; the dimensions of the material being held; or the use of hand tools to feed the part. In addition, a safe distance must be maintained between the point of operation and employees who are either working or passing in proximity to the unguarded machine. Where such alternative effective precautions described in this paragraph are taken, the unguarded point of operation will be considered a de minimis violation.

d. Where machine guarding may be installed and will remain in effect until rescinded or revised by standard changes.
OSHA Instruction STD 1-12.19
October 30, 1978
OSHA PROGRAM DIRECTIVE #100-96


1. Purpose:

The purpose of this directive is to provide a uniform means of evaluating the nip point and moving belt hazard on light and medium duty sewing machines such as those used in apparel manufacturing and sewing of light weight materials.

2. Documentation Affected:

This directive supersedes Field Information Memorandum #76-26 dated October 13, 1976.

3. Background:

a. OSHA has received letters and requests for variance from the subject standards for guarding belts and hand wheels above the sewing machine table tops. Most owners and users agree that drive wheels and belts beneath the tables should be fully enclosed, but enclosure of the belt and hand wheels above the tables is unnecessary and would interfere with sewing operations. Since the operator usually uses both hands to feed and guide the material while the belt and hand wheel are in motion, a safe distance is maintained from the nip point. The operator's hands should be near the wheel nip point to raise or lower the needle, only when the motor is disengaged. Reports indicate that accidents and injuries resulting from exposure to belts and hand wheels are very low.

b. 29 CFR 1910.219(a) excludes the following belts, except when they are operating at more than two hundred and fifty (250) feet per minute:

(1) Flat belts one (1) inch wide or less;
(2) Flat belts two (2) inches wide or less, which are free from metal lacing or fasteners;
(3) Round belts one-half (1/2) inch or less in diameter; and
(4) Single strand V-belts, thirteen thirty-seCONDS (13/32) inch wide or less;

c. This directive applies only to flat and round belts without metal fasteners or lacing since the consensus is that V-belts or belts with metal lacing or fasteners are hazardous.

d. Sewing machines used to sew material such as heavy canvas, denim, leather, vinyl or other heavy material are not covered by this directive.

4. Action:

a. When sewing machines with unguarded hand wheels and belts located above the table tops are encountered, the following guide is provided to determine if a hazard exists:

(1) When the belt and wheel are in motion, hands are not placed in the wheel, nip point or belt area.
OSHA Instruction STD 1-12.19 (cont.)

(2) Distance between the point where the operator is holding material with both hands and the belt area is sufficient to prevent any part of the operator's body from being exposed to danger.

(3) The table top is arranged or of such size to prevent any other employee, passing by or working adjacent to the wheel or belt, from being exposed.

(4) There is no past history of injuries.

b. If the preceding conditions are met, the exposure is minimal and it shall be considered de minimis.

5. Effective Date:

This directive is effective immediately and will remain in effect until cancelled or superseded by either a later directive or change in the standards.
OSHA Instruction STD 1-12.22

JANUARY 2, 1978

OSHA PROGRAM DIRECTIVE


1. Purpose:

The purpose of this directive is to provide guidance in applying point of operation guarding requirements relative to hand-fed engraving presses in the engraved stationery industry, when using the face down method of printing.

2. Documentation Affected:

None.

3. Background:

a. Engraving or die stamping presses are not mechanical power presses. The design, control and operation of these presses are not the same as mechanical power presses. Although constructed, in part, of closing dies, the engraving press is a special purpose, continuous operation printing press with an integrally driven sliding lower die which is automatically inked.

b. Guarding the point of operation on hand-fed engraving presses, where the ink is applied to the underside of the paper, poses a difficult compliance problem. Barrier guards may cause ink to smear when the paper is extracted from the press. An awareness barrier is only a partial guard and does not constitute full compliance with 29 CFR 1910.212 (a) (3)(ii). Further technological difficulties in completely guarding the point of operation have been uncovered in investigations by insurance companies, New York State Division of Industrial Services, the Die Stampers and Engravers Union, Local #30, safety specialists in the National Office, and an independent Safety Consultant retained to study the problem in 1976. All these studies have concluded that a point of operation guard which complies with OSHA standards is not technically feasible, within the current state of the act, for engraving presses which use the face-down method of printing. Furthermore, the seriousness of the hazard relative to the point of operation is minimal. The few recorded accidents that have occurred were primarily during setup, cleaning, or maintenance.

4. Action:

a. In order to provide adequate safety for operators of hand-fed engraving presses from point of operation hazards, the intent of 29 CFR 1910.212 is satisfied when the following guidelines are followed:

(1) Automatic or semiautomatic feeders shall be used where feasible

(2) Where automatic feeders are not feasible citations under 29 CFR 1910.212 will not be issued where precautions (a) through (e) are strictly followed.

(a) Stock material of sufficient size so that 2 inches or more of the material being printed projects in front of the closed die is used.

(b) A finger slot in the counterboard which is 2 inches or more from the die is used.
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MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.
OSHA Instruction STD 1-12.22 (cont.)

(c) A safety training program for press operators and maintenance personnel to assure safe operating practice and hazard awareness is instituted.

(d) A sign readily visible to the operator affixed to the press and warning of the point of operation hazard is in place.

(e) A positive locking device on each manual control to protect the press operators from unexpected stroking of the ram is installed. The device shall protect against unintentional engagement of the clutch and shall be engaged in all circumstances when the employees are required to place their hands in the point of operation area such as setup, repairs, changing dies and clearing jams.

b. The engraving industry and the engraving press manufacturer will continue further research to develop an automatic or semiautomatic feeder which is capable of processing the small short-run orders, or develop a positive point of operation safeguarding device. Progress on this research will be reported annually to the Room N3106.

5. Effective Date:

This directive is effective upon receipt and shall remain in effect until revised or canceled by standards changes.
OSHA Instruction STD 1-12.23
January 2, 1979

OCT 10 1978

OSHA PROGRAM DIRECTIVE #100-106

TO: REGIONAL ADMINISTRATORS/OSHA

SUBJECT: 29 CFR 1910.212(a)(1); As Applies to Three Roller Printing Ink Mills

1. Purpose:
The purpose of this directive is to clarify the guarding requirements of the subject standard relative to the in-going nip point on three-roller printing ink mills and to assure uniformity in the enforcement of the standard nationally.

2. Documentation Affected:
None.

3. Background:
   a. It has been brought to the attention of the National Office that citations have been issued for lack of nip point guards on three-roller printing ink mills. The National Association of Printing Ink Manufacturers, Inc. contends that it is not feasible to operate the three-roller printing ink mills with a nip point guard due to the required operating procedures to obtain a homogeneous ink.
   b. There is an American National Consensus Standard, ANSI B177.1-1975, Safety Requirements for Three-Roller Printing Ink Mills and a proposed supplement which clarifies that a nip point guard is required which clarifies that a nip point guard is required on the mill only during the wash-up operation. During the wash-up operation the pressure on the rollers is released just enough for loose contact. With the mill running at its lowest speed the operator holds the cleaning and drying cloth against the roller. A nip point guard prevents the cloth from getting in between the rollers and possibly drawing in the operator's fingers or hand.

4. Action:
   a. The following requirements meet the intent of 29 CFR 1910.212(a)(1) for protecting the operators of three-roller printing mills:
      (1) All three-roller printing ink mills shall be equipped with a sufficient number of safety controls and emergency stops such as pressure-sensitive body bar, safety trip-rod, safety trip cable or wire cord at each work station. The number of safety controls and emergency stops and the location will depend on the mill size (length of the rollers) and the operator's exposure to the in-going nip point at each work station.
      (2) All mills that require the operators to use knives or spatulas to hand-feed the ink onto the feed roller or to throw-back mill ends (spread the ink on the feed roller) shall have knives or spatulas at least 18 inches long.
      (3) All mills that are fed from the apron side with tub tilters and require a platform shall be provided with a bar in front of the feed roller or an expanded metal guard in front of the work platform.
OSHA Instruction STD 1-12.23 (cont.)

(4) Each mill shall be provided with one of the following nip point guards or equivalent which shall be used during the mill wash-up operation:

   (i) A trapezoid shaped guard of hardwood, nylon, or teflon which is one inch longer than the roller surface length.

   (ii) A V-shaped metal guard equipped with vertical hangers that allows suspension from overhead or from the side of the mill and is one inch longer than the roller surface length.

   (iii) A metal folding flat-plate guard that extends across the entire nip point area of the rollers. The guard shall ride on the rollers in such a manner that it prevents access to the nip point area.

5. Effective Date:

   This directive is effective upon receipt and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-12.25

February 23, 1981


A. Purpose. This instruction provides guidance for applying awareness barrier safeguards as installed on metal cutting shears.

B. Scope. This instruction applies OSHA-wide.

C. Action. For compliance purposes, OSHA Regional Administrators/Area Directors shall accept properly applied awareness barrier safeguarding specified by ANSI B11.4-1973, Sections 5.1.4 through 5.1.4.3, as an acceptable form of point of operation safeguarding on metal cutting shears for situations in which it is impossible to employ a fixed guard or point of operation device due to the diversity of operations performed on the shear.

D. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee as requested.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

E. Background. Point of operation awareness barriers conforming to ANSI B11.4-1973, Sections 5.1.4 through 5.1.4.3, may be used in guarding the point of entry of material, where it is not possible to conform with the guidelines of Table 1, Column B of ANSI B11.4-1973, or to employ a point of operation device due to the diversity of operations performed on the shear. Under these circumstances, the awareness barrier is an acceptable form of guarding the point of operation.
OSHA Instruction STD 1-12.28
FEB 14, 1983

Subject: Alternative Abatement Methods of 29 CFR 1910.212(a)(1) and (a)(2) As Applied to the Oil and Gas Drilling Industry.

A. Purpose. This instruction provides guidelines for the use of certain monitoring techniques to comply with 29 CFR 1910.212(a)(1) and (a)(2) in the oil and gas drilling industry.

B. Scope. This instruction applies OSHA-wide.

C. Action. OSHA Regional Administrators/Area Directors shall take action to ensure that 29 CFR 1910.212(a)(1) and (a)(2) are enforced in accordance with E of this instruction.

D. Federal Program Change. This instruction describes a Federal program change which affects State Programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

E. Guidelines. The following alternative techniques shall be considered as meeting the intent of 29 CFR 1910.212(a)(1) and (a)(2) for preventing worker contact with rotating kelly bushings or kellys and exposed portions of rotary tables on oil and gas well drilling rigs in lieu of the physical guarding requirements:

1. The alternative procedures are limited to those rigs utilizing kelly bushings that are classed as "smooth"; i.e., having no projections of the J-bolt type. Thus, drilling rigs using kelly bushings other than the "smooth" type shall have a substantially constructed kelly bushing/rotary table guard. Rigs using the "smooth" type kelly bushing have the option of using a substantially constructed guard for the rotary equipment or of following the guidelines given in (2) through (9).

2. All employees shall be trained in safe operating procedures when around the rotary table and kelly bushing.

3. The employer shall designate the equipment operator and shall ensure that the designated person is trained and competent in the operation of the rotary drilling equipment.

4. The designated equipment operator shall control the access and activity of all personnel on the drilling floor while equipment is rotating and shall stop such equipment from rotating whenever there is danger to personnel from that equipment.

5. The equipment operator shall never engage the rotary clutch without first ensuring that no employees are on or in proximity to the rotary table in such a manner that they could be endangered.
OSHA Instruction STD 1-12.28 (cont.)

6. At any time an employee's work activities require the handling of materials which can become entangled in the rotary table, the kelly bushing or the kelly while such equipment is in motion, the designated equipment operator, who is capable of stopping the rotating equipment, shall be at the controls.

7. No materials which may become entangled in the rotary table, kelly bushing and/or kelly shall be allowed within 6 inches of this equipment when it is to be operated.

8. Wash down hoses shall be of such length or located in such manner that no part of such hoses can be brought to within 6 inches of the kelly bushing.

9. Spinning chain shall not be wrapped around the joint of the pipe in the mousehole nor handled on the drilling floor so that any part of the chain is within 2 feet of the exposed rotating portions of the rotary table, kelly bushing or kelly.

F. Background. Due to the difficulty experienced and the hazards created in complying strictly with the physical guarding requirements of 29 CFR 1910.212(a)(1) and (a)(2), employers in the oil and gas well drilling industry requested OSHA to review the requirements of the standard as they are applied to guarding the exposed portions of the rotary table and kelly bushing on oil and gas well drilling rigs.

1. As a result of this request, the Secretary authorized an experimental variance to demonstrate or validate new and improved techniques of safeguarding employees working around the rotary table and kelly bushing. The successful completion of the experimental program confirmed that the alternative abatement procedures evaluated meet the intent of the standard.

2. Therefore, if the procedures set forth in E of this instruction are complied with, the requirements of 29 CFR 1910.212(a)(1) or (a)(2) shall be considered as met.
OSHA Instruction STD 1-12.28 CH-1

FEB 14, 1983

Subject: Alternative Abatement Methods of 29 CFR 1910.212(a)(1) and (a)(2) as Applied to the Oil and Gas Drilling Industry.

A. Purpose. This instruction transmits a change to OSHA Instruction STD1-12.28, February 7, 1983.

B. Scope. This instruction applies OSHA-wide.

C. Action. Replace the existing page 1 of the present instruction with the attached CH-1 page and file this transmittal page after the signature page of the instruction as a record of the change.

D. Federal Program Change. This instruction describes a Federal program change which affects State Programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State’s plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

E. Background. There was a typographical error incorporated in the instruction which this change corrects.
ABSTRACT

Before manual clearing of a jam, the employer should provide a procedure for lock-out of the machine. The general duty clause would be invoked in instances of an injury or lack of an effective procedure.

(NOTE: This question is covered by the lockout/tagout standard, 1910.147.)

INTERPRETATION

29 CFR 1910.212(a)(1); 1910.147(a)

MAR 4, 1988

This is in response to your letter of November 20, 1987, concerning an interpretation of the Occupational Safety and Health Administration (OSHA) standards for machine safeguarding and confirms your conversation with one of my staff. Please accept our apologies for the delay in response.

Employee safeguarding requirements concerning labeling machines used in industrial operations are regulated under 29 CFR 1910.212, copy enclosed. However, the circumstance of the injury to your client, as described by your letter, does not appear to be related to the requirements of 29 CFR 1910.212. If your client (the operator) was responsible for removing jams in the machine, then the employer should have provided a procedure for lock-out of the machine before the operator attempted manual clearing of a jam. In such instances of injury or lack of an effective procedure, OSHA would generally invoke the general duty clause, 5(a)(1), of the Occupational Safety and Health Act, copy enclosed. In support of such an allegation, OSHA would reference the applicable industry consensus standard ANSI Z244.1-1982, Minimum Safety Requirements for Personnel Protection - Lockout/Tagout of Energy Sources.

ANSI Z244.1-1982, may be obtained from:

The American National Standards Institute, Inc.
1430 Broadway
New York, New York 10018

Telephone: 212-642-4976
INTERP

This is in response to your letter of February 16, regarding the extent to which safety mats provide for compliance with Occupational Safety and Health Administration (OSHA) regulations for machine guarding.

Comprehensive machine guarding is provided through a system of components and integrated with effective employee training and supervision. OSHA's regulations predominantly address the requirements for physical guarding. However, it is recognized that even the most comprehensive guarding concepts provide incomplete employee protection unless adequate training and supervision exist.

The OSHA regulations pertaining to machine guarding are delineated by 29 CFR 1910. Specifically, 1910.212 and 1910.219, copies enclosed, relate to the machines discussed in your letter. It further stipulates that "one or more methods shall be provided." As you will note, the requirements of 1910.212 are performance oriented and require that employee exposures to hazardous portions of machines be prevented through the application of machine guarding. As you are aware, redundant guarding is desirable and on occasion necessary to achieve reliable safeguarding of employees from hazardous machine components. The application of safety mats has generally been to provide such redundant guarding. Employees are therefore guarded by location in addition to physical safeguards affixed to the machines.

Reliance upon safety mats alone for the prevention of injuries is an issue which must be evaluated on a case-by-case basis. Each such installation would require an analysis of the alternatives and an assurance that the system cannot be bypassed. In most instances, safety mats alone do not provide a degree of employee protection deemed necessary to meet the intent of OSHA's regulations.
OSHA accepts the safeguarding specifications delineated by ANSI for power press brakes as the appropriate standard. Safe distance can only be used when safeguarding cannot be achieved with a point of operation guard or device. Safe distance is the distance from the lower die to the edge of the material. Safe distance may not be less than the measured distance of the operator's hand from the juncture of the thumb and hand to the tip of the longest finger plus 1 inch, but not less than 6 inches.

(NOTE: This standard has not been amended since issuance.)

This is in response to your letter and confirms a telephone discussion with a member of my staff. Your letter addressed the safeguarding of power press brakes and requests a definition of "Safe Distance".

As you are aware, the Occupational Safety and Health Administration (OSHA) requires that power press brakes be safe-guarded per 29 CFR 1910.212(a), copy enclosed. Point of operation safeguarding must comply with 29 CFR 1910.212(a)(3)(ii). OSHA generally accepts the safeguarding specifications delineated by the American National Standards Institute, Inc. (ANSI) for power press brakes as being the appropriate standard. The current standard is ANSI B11.3-1982.

Under the requirements of ANSI B11.3-1982, an employer may use the concept of a safe distance only when safeguarding cannot be achieved with a point of operation guard or device, per Section 6.1.4(1). Additionally, the material position gage (back stop) is also required to be used during all such procedures. Although the ANSI standard committee could not agree upon a dimension for safe distance, OSHA has established a value for it. Safe distance is the distance from the lower die to the edge of the material. Safe distance may not be less than the measured distance on the operator's hand from the juncture of the thumb and hand to the tip of the longest finger plus 1 inch, but not less than 6 inches.

OSHA has not issued a directive concerning safe distance as it applies to point of operation safeguarding or power press brakes. However, a memorandum concerning these machines was issued on March 25, 1983, a copy of which is enclosed.

October 15, 1985

Subject: Point of Operation Guarding for Power Press, Brakes

I, along with other members of the safeguarding community are of the understanding that power press brakes must be guarded under the requirement of 1910.212 of the Federal Standards.

However, in recent months several of my industrial accounts have commented about an OSHA directive accepting "Safe Distance" as an alternative to to point of operation guarding. Others have also indicated that citations were issued on press brakes that were not being used at the time of the OSHA inspection. The owners considered these press brakes to be in compliance and will not equip them with point of operation guarding.
In order to avoid misinterpreting the directive or misleading our customers, I would appreciate a written clarification of OSHA’s current position on press brake guarding which should clarify when a “Safe Distance” is determined, and what is a “Safe Distance.” A copy of the directive would also be helpful.
RECORD ID 2136

STANDARD NUMBER 1910.212(a)(2)
INFORMATION DATE 850605

ABSTRACT This interpretation letter addresses application of machine safeguarding requirements of the General Industry Standard, 29 CFR 1910.212, to balers, compactors, and garbage trucks used by employees for the handling of refuse. The ANSI Z245.5-1982, safety requirements for bailing equipment are the guidance for which the OSHA standard requires compliance.

INTERPRETATION 29 CFR 1910.212(a)(2)

June 5, 1985

This is in response to your letter of April 8, concerning the ANSI Z245.5-1982 standard.

As you are aware, the Occupational Safety and Health Administration (OSHA) applies the machine safeguarding requirements of the General Industry Standard, 29 CFR 1910.212, to balers, compactors, and garbage trucks used by employees for the handling of refuse. Therefore, when safeguarding of employees has not been provided, a violation of 1910.212 exists.

The ANSI Z245.5-1982, Safety Requirements for Baling Equipment is an expression of the industry's technology for safeguarding such equipment. Equipment adhering to the specifications and recommendations of that standard is normally determined to be in compliance with OSHA's 1910.212, unless some unusual circumstances beyond the scope of the ANSI standard results in a hazard to which employees are exposed.
OSHA standards that would apply to guarding on package tying machines are 29 CFR 1910.212, General requirements for all machines regardless of where they are manufactured, and 29 CFR 1910.219, Mechanical power transmission apparatus. OSHA regulates employee's exposure in the workplace rather than the manufacturer's design of equipment used in the workplace.

(NOTE: 1910.212 has not been amended since issuance. 1910.219 was last amended in 1984.)

It should be noted that OSHA regulates the employer at a workplace, rather than the manufacturer of the machinery and equipment used at the workplace. It is the responsibility of the employer to ensure compliance with the OSHA standards. Whether a machine is of domestic or foreign manufacture would have no impact on the guarding requirements for the machine; the design of the machine and the resulting exposure to the employee would determine the nature and extent of required guards.

A specific determination regarding compliance with the provisions of the enclosed standards would require a workplace inspection of the equipment and evaluation of the hazards by a knowledgeable individual. We would suggest that your constituent contact our local staff for further guidance at the following address:

U.S. Department of Labor
Occupational Safety and Health Administration
700 Twigg Street
Room 624
Tampa, Florida 33602
Telephone: (813) 228-2821

SOURCE LETTERS

June 12, 1985

I am enclosing a copy of a letter from my constituent, Mr. R, of (city), (state), regarding OSHA requirements on guarding of product.
I have directed his specific questions regarding disparate duty rates to the USTR. However, he notes that OSHA requirements do make his product more expensive and it appears that Japanese imports are not subject to the same requirements.

I would appreciate your suggestions and/or any comments you might have which might be of assistance to Mr. R.

May 15, 1985

I need some assistance from you on behalf of the company, so that we might improve our market share and increase our employment in the area.

The basic competition against the product comes from two manufacturers who copied our machines in the Mid-1960's in Japan. If I am correct, to ship our machines into Japan there is approximately a 15% duty, yet the copies of our designs comes into the USA at 5%.

With the passage of the OSHA regulation, the company elected to fully guard our equipment, top and bottom. Previously, we had only guarded the upper portion of the twine arm swing. We are the only sellers of tying machines who fully guard in an effort to meet OSHA regulations. Unfortunately, that creates higher costs which makes us less competitive to the Japanese models which are not fully enclosed and/or guarded. My question is:

1) To whom do I go to try to get the incoming duty of Japanese tying equalized to that of the product going into Japan?

2) Whom do we contact to question why the difference that our Japanese counter-part, not guarded, is seemingly acceptable by OSHA when, our older machine of similar guarding was not, and therefore, we have higher costs by full guarding?
RECORD ID 2238

STANDARD NUMBER 1910.212(a)(1); 1910.219(a)(1); 1910.144(a); 1910.145(c)(2)
INFORMATION DATE 850712

ABSTRACT There are no OSHA standards specifically dedicated to paper and plastic shredder machines. Shredders would generally be regulated under 29 CFR 1910.144, 145, 212, and 219. In addition, there are ANSI standards which also relate to the safeguarding of paper shredders.

(NOTE: 1910.212 has not been amended since issuance; 1910.219 was last amended in 1984.; 1910.144 was last amended in 1984; 1910.145 was last amended in 1986.)

INTERPRETATION 29 CFR 1910.212(a)(1); 1910.219(a)(1); 1910.144(a); 1910.145(c)(2)
Jul 12, 1985

This is in response to your Freedom of Information Act request of June 10, 1985, received in this office on July 5, 1985. Your request concerns paper and plastic shredder machines.

As relates to any Occupational Safety and Health Administration (OSHA) regulations, statutes, rules or standards, we are enclosing copies of the standards which may have a bearing on your concerns. There are no standards specifically dedicated to shredders; however, they are generally regulated under 29 CFR 1910.212, General Requirements for all Machines. Other references include 1910.219, Mechanical Power-Transmission Apparatus; 1910.144, Safety Color Code for Marking Physical Hazards; and 1910.145, Specifications for Accident Prevention Signs and Tags.

As a source of further reference, you may wish to contact the American National Standards Institute, Inc., (ANSI). Related ANSI standards include: ANSI Z53.1, Color Codes; ANSI Z35.1, Accident Prevention Signs; and ANSI B15.1, Power Transmission Safeguarding. They may be purchased from ANSI at 1430 Broadway, New York, New York 10018. The telephone number is 212-354-3300.
ABSTRACT
This interpretation letter addresses correspondence between the (Association) and OSHA concerning safeguarding devices for chain saws. The ANSI B171.1-1985 standard, which mandates at least two forms of safety devices be installed upon chain saws to minimize exposure to the moving saw chain during kickback, is compared to 1910.212 which requires only a chain brake or a bar tip, in addition to appropriate personal protective equipment (1910.132(a)). While OSHA encourages the industry to provide improved state-of-the-art saw chains and guide bars, such improvements do not provide for compliance with OSHA regulations which require chain saws to be safeguarded from point of operation hazards as described in (a)(2)(3).

(NOTE: This standard has not been amended since issuance.)

INTERPRETATION
29 CFR 1910.212(a)(3)(ii); 1910.132(a)

JUN 30, 1989

This is in response to your letter of May 3, to the former Assistant Secretary concerning his letter of March 23, to the Office of Management and Budget. We have reviewed the letter to Mr. X and his letter of November 17, 1988 to you, and find them to be an accurate presentation of the policy of the Occupational Safety and Health Administration (OSHA).

Please be aware that in the first paragraph of your letter the reference to OSHA's interpretation of a 25 year old design standard requires explanation. As described in the second paragraph of OSHA's letter, OSHA is currently enforcing 29 CFR 1910.212, a general performance standard adopted into the original OSHA standards from the Walsh-Healy Public Contracts Act, 41 U.S.C. 35, under the authority and direction of Public Law 91-596, Occupational Safety and Health Act of 1970 (OSH Act).

OSHA views your intention to submit substantial comments to OSHA during the comment period for the OSHA logging rule with interest and looks forward to your participation.

We appreciate your concern, and agree, that where possible, there should be no discrepancy in Federal policies. It must be kept in mind, however, that OSHA and the Consumer Product Safety Commission (CPSC) have different mandates under different legislation regarding the type of user protection required. Therefore, insofar as OSHA and CPSC are concerned, Federal policies, while appearing to be at times inconsistent, actually address two different requirements and in this sense remain consistent within their particular authorizations.

SOURCE LETTERS

May 8, 1989

This is a follow-up on our conversation of April 17, at the B175 meeting.

All members of the B175 Committee have a vital interest in the ongoing exchange of correspondence, initiated by PPEMA, with the Occupational Safety and Health Administration (OSHA) and the Office of Management and Budget. As I mentioned on April 17, all members of the Committee should receive copies of the correspondence concerning OSHA enforcement actions in professional chain saw usage situations. Individual members may be able to contribute to the discussion in a meaningful way.
This is in response to your letter of November 23, concerning my letter of November 17.

The regulations of the Occupational Safety and Health Administration (OSHA) for machine safeguarding at 29 CFR 1910.212 are applicable to chain saws. Additionally, requirements for personal protective equipment are specified at 29 CFR 1910.132(a). Copies of these standards are enclosed.

Under the requirements of 29 CFR 1910.212, it is noted that the point of operation for all machines presenting a hazard to workers shall be guarded. Various configurations and advancements in chain design do not presently constitute a guard. Furthermore, even the ANSI B175.1-1985 standard does not list a reduced-kickback guide bar and/or a reduced-kickback saw chain as a guard at section 4.9 of that standard. It is apparent that the only anti-kickback guards and/or safeguarding devices specified by the ANSI B175.1 committee include tip guards and chain brakes. Therefore, in order to safeguard the point of operation, one of these devices is necessary to comply with the OSHA standard.

Requirements for the guards described in section 4.9 of the ANSI B175.1 also exist by virtue of the OSHA requirements at 29 CFR 1910.212 and .219. A copy of 29 CFR 1910.219, which concerns safeguarding power transmission components, is also enclosed.

OSHA encourages the industry to provide improved state-of-the-art saw chains and guide bars which in turn assure increased safety of operation. However, such improvements in the point of operation mechanism does not, of itself, provide for compliance with OSHA safety regulations. Your observation concerning the removal of tip guards by commercial loggers is essentially correct. For compliance with OSHA regulations, only a chain brake is acceptable to most commercial users for this aspect of saw chain safeguarding.

November 23, 1988

Re: Letter of approximately November 17, 1988 (undated)

This man has made the referenced letter available to the (company). As a manufacturer of gasoline and electric chain saws often used by professional loggers, landscapers, tree surgeons, farmers and other professional users, the (company) is particularly interested in further clarification of the second paragraph of page 2 of your letter.

Are you saying that because bar tip guards are often removed by commercial loggers so as to expand the cutting capacity of their saws, that only a chain brake together with personal protective equipment is acceptable to OSHA?

The (company) has long been a staunch advocate of chain brake, includes chain brake as a standard feature on every saw manufactured at a cost premium that fluctuates between four and five percent of the total product cost, and believes chain brake should always be one of the two anti-kickback safety devices advocated by the Consumer Products Safety Commission. Your comments would be most appreciated.

NOV 17, 1988

This is in further response to your letter of September 19, in which you expressed concern in regard to certain enforcement actions taken by our Area Office in city, (state), relative to the safe use of chain saws. The Occupational Safety and Health Administration (OSHA) was created by Congress under the Occupational Safety and Health Act of 1970 (OSH Act). As stated by the OSH Act, OSHA is tasked with assuring that employers provide a safe and healthful workplace for all of their employees. In contrast, the Consumer Products Safety Commission (CPSC) is vested with the regulation of commercial products offered to the general public. Products regulated by CPSC occasionally are purchased by employers for use by employees. In those instances, the use of such products must comply with OSHA regulations regardless of other requirements imposed by the CPSC.
The standards published by the American National Standards Institute, Inc., as ANSI B175.1-1985, Safety Requirements, Gasoline-Powered Chain Saws, is a standard apparently supported by the CPSC for the manufacture of chain saws. The purpose as stated by the standard, "is to establish minimum safety requirements with respect to the manufacture of portable, hand-held, gasoline-powered chain saws." Therefore, under the stated purpose of ANSI B175.1, it does not address the safe use of such chain saws except to indicate that the manufacturer's instructions shall be given to every operator.

On the other hand, OSHA has in place, the requirements of 29 CFR 1910.212(a)(1) and 1910.212(a)(3)(ii), copy enclosed, which require that employees using portable power tools, such as chain saws, be safeguarded from exposure to the hazards of the point of operation. The point of operation is, of course, the moving surface of the saw chain. The standard at 29 CFR 1910.212(a)(3)(ii) specifies that the point of operation of machines whose operation exposes an employee to injury, shall be guarded, and that the guarding device shall be in conformity with any appropriate standards.

Under the specifics of the OSHA standard at 29 CFR 1910.212(a)(3)(ii), the only factor remaining for determination is the manner of the guarding device. After reference to ANSI B17.1-1985 standard, it is clear that section 4.12.2 mandates at least two forms of safety devices be installed upon the chain saws to minimize exposure to the moving saw chain during kickback. It is observed that, as a minimum, only a chain brake or a bar tip guard would meet the OSHA guarding requirement. Either device, in addition to appropriate personal protective equipment, meets OSHA's requirement at 29 CFR 1910.212(a)(3)(ii).

Unfortunately, a bar tip guard is often not acceptable to commercial loggers. Therefore, a chain brake together with personal protective equipment is generally acceptable to employers for use in commercial operations.

As you can see, the rationale of the (City) Area Office staff is logical and correct. Their enforcement actions are not the result of a new interpretation, but are simply the result of correctly and effectively applying the OSHA standards.

OCT 12, 1988

This is an interim response to your letter of September 19, in which you expressed concern in regard to certain enforcement actions taken by our Area Director in (City, State), relative to the safe use of chain saws.

In order to respond to your request, we are gathering information from our Regional Office. As soon as we receive the information, we will provide you with a response.

September 19, 1988

As President of (an association), I respectfully urge your attention to a recent development in OSHA's Area Office in (City, State). As set forth more fully in the attached position paper, it is (the association's) view that a recent interpretation of an OSHA regulation by that Area Office is deficient in several respects. In particular, this new interpretation comes without benefit of any administrative procedural protection and it conflicts with the position of another important regulatory agency, the Consumer Product Safety Commission. association believes that this situation has established an unjustifiable precedent that will inure to the detriment of both industry and OSHA.

If at all possible I would request a meeting with you to elaborate upon (the association's) genuine concern over this development.
RECORD ID 4205

STANDARD NUMBER 1910.212(a)(1)
INFORMATION DATE 910304

ABSTRACT This interpretation letter answers an inquiry of November 2, 1990, concerning the reissuance of guidance on factory installed guards on iron worker machines. The OSHA machine guarding standard, 1910.212(a)(1), requires guarding on the iron worker machine. The specific manufacturer and employer safety requirements are specified in the ANSI consensus standard, ANSI B11.5-1988. An employer meets OSHA's machine guarding requirements by providing an iron worker machine (at the workplace), which is manufactured in compliance with the safety requirements specified in ANSI B11.5-1988, and by maintaining the guarding as required.

(NOTE: This standard has not been amended since issuance.)

INTERPRETATION 29 CFR 1910.212(a)(1)

MAR 4, 1991

Thank you for your inquiry of November 2, 1990, concerning the reissue of a current letter documenting to users of the iron worker machine that if factory installed guards are left in place, or replaced if removed, the machine complies with the Occupational Safety and Health Administration (OSHA) standards.

The OSHA machine guarding standard 29 CFR 1910.212(a)(1) requires guarding on the iron worker machine. The specific manufacturer and employer safety requirements are specified in the American National Standard Institute (ANSI) consensus standard, ANSI B11.5-1988. Safety Requirements for the Construction, Care, and Use of Iron Workers. These safety requirements may be acquired from the following address:

American National Standard Institute
1430 Broadway
New York, New York 10018

Telephone: 212-354-3300

If an employer provides an iron worker machine (at his or her workplace), which is manufactured in compliance with the safety requirements specified in ANSI B11.5-1988, and the guarding is maintained as required; then that employer meets OSHA's machine guarding requirements for that machine.
This letter states that OSHA prohibits the riding of vertical reciprocating conveyors by personnel, since they are not intended for such transport, and lists standards regulating their use.

(NOTE: This standard has not been amended since issuance.)

July 30, 1984

This is in response to your letter of July 10, 1984, concerning vertical reciprocating conveyors.

The Occupational Safety and Health Administration (OSHA) regulates the use of vertical reciprocating conveyors used in general industry under various standards relative to specific types of applications. These regulations can be found at 29 CFR 1910.107(b)(7), 1910.108(c)(6), 1910.218(j)(3), 1910.263(d)(7), 1910.265(c)(18), and 1910.212. All other applications of conveyors are regulated under 29 CFR 1910.212, general requirements for all machines. In this regard, OSHA relies on the recommendations of the ANSI B20.1-1976 for the acceptable safeguarding of employees exposed to conveyors.

ANSI B20.1-1976, sections 5.12.4 and 6.21.1.3 prohibit the riding of vertical and vertical reciprocating conveyors. As a result of these recommendations, OSHA does not permit the riding of such conveyors by personnel. Therefore, since these conveyors are not intended for the transport of personnel, they are not properly within the scope or application of the elevator standards set forth by ANSI A17.1.

OSHA considers the riding of vertical reciprocating conveyors by employees to be in violation of 29 CFR 1910.212(a)(1) in that, the safety of personnel cannot be assured. However, should such an installation also meet the criteria of ANSI A17.1, OSHA would reevaluate this position relative to such specific installations.

July 10, 1984

As Chief Elevator Inspector for the State, I have served as a member of our Elevator Advisory Panel for some time. This panel was set up in order to review and revise elevator safety codes and standards, and to discuss any new materials relative to the elevator industry. It's main purpose is to insure safety for all types of vertical transportation.

During our last meeting, the panel raised several questions concerning vertical reciprocating conveyors, equipped with a rideable platform. It would seem that the association, committee, does not agree with our interpretation of these installations. The committee feels that these types of units do not fall under the classification of an elevator and therefore are not subject to the elevator code.

It is our feeling that the vertical reciprocating conveyor, equipped with a rideable platform, moving in fixed guides, and serving two or more stories is an elevator and should be subject to the elevator codes.
We are very interested in obtaining information from other States relative to this type of installation, and would like to request your enforcement agency forward said information, if available, to our office. Any information which can be supplied to us would be greatly appreciated, and very helpful to our panels discussion of these units.
ABSTRACT  Lathe chucks shall be guarded in situations as specified using the criteria in the ANSI B 11.6-1975 standard. Even though there is no specific standard for lathe chucks, they like all other machines, must comply with 1910.212(a)(1).

(NOTE: This standard has not been amended since issuance.)

INTERPRETATION  29 CFR 1910.212(a)(1)

January 26, 1979

MEMORANDUM FOR

SUBJECT: Letter Dated June 9, 1978 Concerning the Guarding of Lathe Chucks and the Appropriate Standard

There is no specific OSHA standard for lathe chucks. It has been, and continues to be OSHA's policy that in the absence of an applicable specific standard for a machine, the general requirements for all machines, 29 CFR 1910.212(a)(1) shall apply. When there is a National Consensus Standard, it can be used as a guideline for applying the general requirements of 29 CFR 1910.212(a)(1).

There is a National Consensus Standard, ANSI B11.6-1975, Safety Requirements for the Construction, Care, and Use of Lathes. Section 5 of this standard contains the safeguarding requirements. Paragraph 5.3 states:

Work-Holding-Device Hazard. When the work holding or driving device in the clamped mode has components that extend beyond the outside diameter of the holding device; or the periphery of the body of the holding device is of irregular shape; or a pinch point is created and the operator is not effectively protected by location, machine components, or other means from coming into contact with these projections; a fixed or moveable guard, device, awareness barrier, or peripheral cover over area exposed to the operator shall be required.

Therefore, automatic or semiautomatic lathes used for production operations that have work-holding device such as a lathe chuck, operating under the conditions outlined in paragraph 5.3 of the ANSI B11.6-1975, requires a fixed or movable guard. All guarding methods stated in paragraph 5.3 are acceptable except the awareness barrier as this latter barrier does not meet the requirements of 29 CFR 1910.212(a)(1). All work-holding devices do not require guarding. Therefore, a thorough evaluation must be conducted of the work-holding device.
Point of operation guarding on power press brakes in job shops varies with each unique situation. ANSI B11.3 lists no state of the art safeguard for these machines. Other safeguarding methods, including supervision and training, in addition to acceptable less than optimum, are required.

(NOTE: This standard has not been amended since issuance. The compliance directive 1-12.12 referenced in the interpretation letter is still valid with regard to 1910.212(a)(1).)

SUBJECT: Point of Operation Guarding on Job Shop Operations Utilizing Power Press Brakes

March 25, 1983

MEMORANDUM

This is in response to your memorandum of February 14, 1983, reference (b), in which you request clarification of the OSHA requirements pertaining to point of operation guarding on power press brakes as used in job shop establishments.

OSHA's machine safeguarding regulation is one which requires that physical guards or positive acting safeguarding devices protect against each and every point of operation hazard. The OSHA policy regarding the absolute enforcement of this concept is tempered by the many variable circumstances that can occur in the workplace and the existing state-of-the-art regarding available safeguards. Responsible enforcement requires that the unique circumstances associated with the method of manufacture at each establishment be fully evaluated. As a result of manufacturing constraints, less than optimum safeguards may be acceptable if the employer supervises procedures and provides employee training to achieve an effective level of employee safety.

It is necessary to understand that safeguards are defined to mean physical barrier guards or physical devices which will prevent hazardous employee exposure and that safeguarding procedures for the point of operation on power press brakes, both mechanical and hydraulic, is the subject and intent of the ANSI B11.3-1982 consensus standard. Furthermore, OSHA accepts the safeguarding procedures presented in that standard as the current state-of-the-art capability, and numerous contested case actions have been resolved by applying appropriate safeguarding as presented by ANSI B11.3.

A review of the consensus standard B11.3 indicates that the effected industries have not established a safeguarding state-of-the-art for these machines which absolutely precludes employee exposure. The extremely broad versatility of press brakes, as well as the various methods of manufacturing and workpiece configurations to which they are adapted, does not give rise to a completely viable general purpose safeguarding concept for all circumstances. Under some conditions absolute safeguarding with present technology appears impracticable. Therefore, in some circumstances alternative safeguarding methods must be applied to provide for employee safety while operating the press brakes.

In job shop or model shop establishments: (1) operators independently accomplish frequent die set-up and adjustments as the tasks require, (2) high volume rates of production forming are not anticipated, (3) the operators are not required to work under stressful conditions, and (4) the piece parts being fabricated are primarily unique, small quantity runs, which are being developed and produced in close coordination with engineering or the customer. Therefore, considerable supervisory (administrative) control may be
necessary to enforce adherence to procedural safety practices. Due to the model shop or job shop nature of the operations, each set-up should be independently evaluated so that a procedure, guard, and/or device will assure the safety of the operator(s). The utilization of hazard analysis assessments, effective employee training, and engineering/management control over the manufacturing process should provide acceptable assurance that safe operating procedures are developed and followed.

OSHA Instruction STD 1-12.12, paragraph 4.c, recognizes the need for professional judgement by the compliance staff regarding effective alternative precautions. Compliance personnel must be knowledgeable of the applications for alternative safeguarding procedures in instances where full physical guarding is impractical or impossible.

The OSHA requirement for safeguarding mechanical and hydraulic power press brakes is presented by 29 CFR 1910.212. Since OSHA enforcement actions regarding power press brakes are unique for the circumstances of each manufacturing operation, a fairly comprehensive evaluation must be conducted. The evaluation must ascertain the particular circumstances involved in the production, job shop (limited short run production), or model shop manufacturing process.

Each category of manufacturing in which press brakes are used is indicative of the degree of physical safeguarding which can be reasonably accomplished. The following figure illustrates that the safeguarding concept most suitable, and usually most cost effective, is related to the type of manufacturing.

<table>
<thead>
<tr>
<th>Production:</th>
<th>Job Shop:</th>
<th>Model Shop:</th>
</tr>
</thead>
<tbody>
<tr>
<td>More costly safeguarding</td>
<td>Higher production rates</td>
<td>More sophisticated safeguarding</td>
</tr>
<tr>
<td>More employee training</td>
<td>More supervision</td>
<td>More versatility of safeguards</td>
</tr>
</tbody>
</table>

The state-of-the-art relative to safeguarding of the point of operation as it applies to power press brakes is presented by ANSI B11.3-1982. Section 6. Section 6.1.4(1) (portion attached) of that standard discusses the use of safe distance to provide safeguarding by location where full physical guarding is impractical or impossible, and is an alternative applicable to situations found in model shop and job shop operations where effectively trained operators of the journeyman category operate the equipment. Section 6.1.2 of B11.3 (attached) describes an effectively trained operator.

The use of hand tools to feed a press brake, in order to provide for a safe distance, is another acceptable alternative if supervisory controls are exercised and operators are effectively trained.

Under the guidance of STD 1-12.12, if the conditions for a safe distance are met and the press brake is provided with applicable guarding as specified by ANSI B11.3 (e.g. guarding of the unused portion of the dies and consistent use of material gages/back stops), a de minimis violation pertaining to point of operation guarding may exist. The determination must be resolved between the compliance officer and the Area Director.
ABSTRACT

A chain saw blade guard is not required if it inhibits work or presents an accident hazard itself as provided in 1910.212(a)(2).

(NOTE: This standard has not been amended since issuance.)

INTERPRETATION


August 12, 1975

This is in response to your letter of April 17, 1975, requesting an interpretation of 29 CFR 1910.212(a) with the regard to the application of that paragraph to chain saws. In addition, this letter confirms the phone call of a member of my staff, apologizing for the loss of the file, thus causing a delay in our answer.

The source standard for 29 CFR 1910.212 is established in Federal Standard 41 CFR 50-204.5. The intent of Part 50-204.5 Machine Guarding is to apply all machines. This is substantiated by the list of machines in 50-204.5(c)(4) or 1910.212(a)(3)(iv).

There is no specific Occupational Safety and Health Administration (OSHA) standard that covers the guarding of chain saws. In this situation, according to 29 CFR 1910.5, the general industry standard 29 CFR 1910.212 would apply. Then a chain blade guard would prevent an employee from using the chain saw for the particular work function assigned or the blade guard presents a hazard itself, a chain blade guard would not be required. The omission of a chain blade guard under these conditions would not be a violation of 29 CFR 1910.212(a)(3)(iii).

In certain intended uses, it would be feasible to have the saw blade guarded. For example, a one direction movement of the saw with no other obstructions to the guard, in which the operation exposes an employee to injury, would require that a saw blade be guarded. Otherwise, an apparent violation of 29 CFR 1910.212(a)(3)(ii) would exist.

This interpretation does not exempt the use of protective equipment or of applying other applicable standards.
An alternative approach to the standard requiring that barrels, containers, and drums be guarded by a specific interlocked system is described. Alternative approaches that meet the intent of the standard and do not affect the safety and health of employees would be issued a de minimis violation. Guidance for developing and implementing a lock-out program can be found in 1910.147. The lockout/tagout standard 1910.147 deals with interlocking devices and lockout procedures.

(NOTE: This standard has not been amended since issuance.)

**INTERPRETATION**

29 CFR 1910.212(a)(4); 1910.147(a)

October 18, 1977

This is in response to your request for a variance from Section 1910.212(a)(4) Guarding of Barrel, Containers, and Drums, of the Occupational Safety and Health Standards.

The above section requires that barrels, containers, and drums be guarded by an enclosure interlocked with the drive mechanism, to prevent the barrel from revolving unless the guard is in place.

You have indicated that instead of using an interlock, you have:

1. Completely enclosed the entire barrel tumbling area with a chain link fence;
2. Installed a padlock on the entrance gate and issued keys to only the supervisor and one employee;
3. Located all main control switches outside the enclosed area; and,
4. Established a written lockout procedure which requires that, before any person can enter the enclosed area, the main disconnect switch must be turned off and the padlock must be removed from the gate and used to secure the power switch in the off position.

A Program Directive is being prepared by our technical staff. This Directive appears to be applicable in your situation, in that it will allow the issuance of a de minimis notice in a situation where there is not strict compliance with the standard, but the deviation does not affect safety and health. A de minimis notice carries no penalty and no abatement is required. Upon completion of the Program Directive, a copy will be forwarded to you. Your compliance with the requirements of the Directive will eliminate your need for a variance.

Your application has been discussed with the (City) Area Office and they concur with our decision -- your situation appears to meet the conditions for de minimis notice.
ABSTRACT

Restricting fan usage to low speed is not an acceptable alternative for complying with the Machine Guarding (exposure of blades) standard (1910.212(a)(5)).

(NOTE: This standard has not been amended since issuance.)

INTERPRETATION

29 CFR 1910.212(a)(5)

February 10, 1975

The Assistant Secretary has asked me to respond to your letter dated January 21, 1975, relative to Section 1910.212(a)(5) Machine Guarding, Exposure of Blades, of the Occupational Safety and Health Standards.

The additional information supplied to you has been evaluated and has been discussed with your staff. The guarding requirements of the above standard, as they relate to the moving parts of your fans, are valid. As an alternative to these guarding requirements, you have suggested modifying the fans to restrict their usage to "low speed". This is not an acceptable alternative.

We understand that there are only a relative few fans that are located in areas that due to the close proximity to other parts of the structures cannot be raised to the required seven feet. Since they are used primarily for decorative purposes we suggest that they be completely disconnected electrically. In those instances where the movement of air is needed, suitable floor or wall fans should be utilized.

No further action is contemplated in your request for variance from Section 1910.212(a)(5) dated November 24, 1974.
This interpretation letter addresses the DOE-adopted Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.212 (a)(2) concerning the method for attaching shields used for machine guarding and whether it is acceptable to use magnetically-attached shields. The inquiry also addressed OSHA's use of American National Standards Institute (ANSI) standards as consensus standards in situations such as this.

INTERPRETATION

29 CFR 1910.212(a)(2); 1910.3(b)(1)

This interpretation is in response to an August 6, 1993, request from a DOE facility asking if the use of magnetically-attached protective shields is acceptable for machine guarding purposes or if shields have to be permanently affixed to the machine. The requester also asked if OSHA accepts ANSI standards as consensus standards.

29 CFR 1910.212(a)(2) describes the manner in which guards shall be affixed. The proper application of devices is not described; therefore, other similar OSHA or pertinent industry standards must be referred to for guidance. Since OSHA accepts ANSI standards as consensus standards, and since OSHA does not have a specific standard to address this question, it is appropriate to refer to ANSI guidance. ANSI B11.8-1983, "Machine Tools - Drilling, Milling, and Boring Machines - Safety Requirements for Construction, Care and Use," section 5.6.4, states "Shields shall ... be effectively mounted through mechanical, magnetic, or other means."

OSHA encourages employers to abide by the most current industry consensus standards. As stated in 29 CFR 1910.3(b)(1), the OSH Act "indicates congressional recognition of the American National Standards Institute...as the major source of national consensus standards." OSHA also uses other industry consensus standards, related to the safe operation of equipment, as guidance for industry accepted practice for safe operation. These standards are more likely to be consistent with state of the art technologies and practices than current OSHA standards. Furthermore, consensus standards will usually describe a variety of techniques for preventing exposure to hazards.

In conclusion, the use of magnetically-attached protective shields is acceptable, but management shall ensure that the shields are used correctly and provide acceptable protection. Management should review each case and determine the appropriate actions based on the above information and the appropriate standard.
This interpretation letter addresses the DOE-adopted Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.212 (a) concerning "the need to guard drill press chucks."

This interpretation is in response to a January 20, 1993, request from a DOE field office asking for a clarification of the need for guards on drill press chucks as required by 29 CFR 1910.212 (a). (Request No. 93-01-09)

29 CFR 1910.212 (a)(1) states "One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by rotating parts. Examples of guarding methods are barrier guards, two-hand tripping devices, electronic safety devices, etc."

Also, as stated in 29 CFR 1910.212 (a)(3)(ii) "The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards therefore, or, in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle."

Thus the use of a guard, awareness barrier or shield shall be required when it is necessary for any part of the operator's body to be within the hazard area. These shall be used to make the operator aware of a potential hazard and/or to prevent entry or access to the hazard area.

American National Standard for machine tools - drilling, milling, and boring machines (ANSI B11.8 - 1983) section 5.5.1 states the employer shall ensure that all operators and helpers are trained and competent to safely perform the function for which they are responsible, and also for the selection and proper use of appropriate personnel protection equipment (ANSI B11.8 section 6.1.5).

In conclusion, the use of a guard, awareness barrier or shield shall be required when it is necessary for any part of the operator's body to be within the hazard area of rotating parts. Management should also review each case and determine the necessary actions based on the above information and the appropriate standard.
An interpretation letter confirming that there are no OSHA standards written specifically for tabletop centrifuges. The general provision at 1910.212(a)(1) does cover hazards created by rotating parts or the point of operation. Centrifuges that present such hazards must comply with the provisions of 1910.212(a)(1), (a)(2), and (a)(3).

April 15, 1993

Dear Ms. B:

This is in response to your letter of January 4, and to your telephone conversations of February 4 and March 5, with Mr. J. C. D., a member of my staff, in which you requested an interpretation of whether the Occupational Safety and Health Administration's (OSHA) 29 CFR 1910.212 standards apply to tabletop centrifuges that are designed for use in physicians' offices and laboratories.

During the telephone conversations, Mr. D. informed you that the specific standard at 1910.212(a)(4) does not apply to tabletop centrifuges, and that there are no OSHA standards written specifically for tabletop centrifuges. This letter is written to confirm the information provided by Mr. D. Although such machines are not specifically mentioned in the machine-guarding regulations and are not covered by the particular provision at 1910.212(a)(4), the general provision at 1910.212(a)(1) does cover hazards created by rotating parts or the point of operation. Accordingly, centrifuges that present such hazards must comply with the provisions of 1910.212(a)(1), (a)(2), and (a)(3). An interlock would seem to be the most effective type of guard for this situation, although under the general provision other types of guarding may be used provided they meet the requirement of being "designed and constructed [so] as to prevent the operator from having any part of his body in the danger zone during the operating cycle".

If we can be of further assistance, please feel free to contact Mr. D.
OSHA Instruction STD 1-12.4
October 30, 1978

March 8, 1973

OSHA PROGRAM DIRECTIVE #100-24

Subject: Caution Labeling of Radial Saws: 29 CFR 1910.213(h)(5)

1. Purpose. To provide guidance in the enforcement of the subject provision.

2. Background. The intent of the standard is to insure that ripping and ploughing performed on radial saws is done against the direction of saw blade rotation. The provision further states that "a permanent label . . . shall be affixed to the rear of the guard . . . , reading as follows:

"Danger: Do Not Rip or Plough From This End."

It has been pointed to us by employers and manufacturers that, in many cases, to meet the intent of the standard, the caution label should be located on the front of the guard. Further, strict adherence to the provision could result in a danger to employees. The National Office is taking steps to clarify the standard. In order to avoid confusion in the meantime, the following interpretation should be made known as widely as possible.

3. Interpretation. The intent of 29 CFR 1910.213(h)(5) must at all times prevail. The caution label must be located at the end of the guard at which the blade teeth exit the upper guard during the operation of the saw. Thus, the requirement concerning the location of the label, in Section 1910.213(h)(5), shall be deemed violated when (1) the label is omitted; or (2) it is placed anywhere but the end of the guard at which the blade teeth exit the upper guard during the operation of the saw.

4. Effective Date. This instruction is effective immediately and will remain in effect until canceled, superseded, or an amendment is made to 29 CFR 1910.213(h)(5).

Vol. 2-102
OSHA Instruction STD 1-12.15

October 30, 1978

OSHA PROGRAM DIRECTIVE #100-71

SUBJECT: 29 CFR 1910.213(a)(4), Woodworking Machinery Requirements

1. Purpose:

The purpose of this directive is to provide guidance to the field on the applicability of 29 CFR 1910.213(a)(4) in protecting employees from automatic cut-off saws that stroke continuously without the operator being able to control each stroke.

2. Documentation Affected:

None.

3. Background:

a. The word "automatic" used to describe cut-off machine in the original ANSI Standard (1954, revised 1961) was a misnomer. The machine was commonly identified in industry as being power stroked. For a machine of this type, each foot pedal or push button activation resulted in a complete cycle or stroke consisting of a forward cut-off motion and a motion returning the head to its starting position. It was a machine intended for use where the operator's manual handling and/or positioning of the workpiece was required with each combination forward and return motion of the head (e.g., load, clamp, cut-off, unload, etc.).

b. 29 CFR 1910.213(a)(4) was not intended to restrict automation when the hazardous elements of operation involvement are eliminated and effective methods of guarding the point of operation are used.

4. Action:

a. In work situations where employees are not exposed to any hazards involving automatic cut-off saws, such saws that stroke continuously without the operator being able to control each stroke may be used without violation of 29 CFR 1910.213(a)(4).

b. In work situations where employees are exposed to any hazards involving automatic cut-off saw, (e.g., load, clamp, cut-off, unload, etc.) such saws that stroke continuously without the operator being able to control each stroke are in violation of 29 CFR 1910.213(a)(4) and shall be cited.

5. Effective Date:

This directive is effective upon receipt and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-12.17
October 30, 1978

January 31, 1978

OSHA PROGRAM DIRECTIVE #100-91

SUBJECT: 29 CFR 1910.213(h)(1), Radial Saw Guards

1. Purpose:
The purpose of this directive is to provide clarification on the applicability of the subject standard as it relates to the saw mill industries.

2. Documentation Affected:
This directive supersedes Field Information Memorandum #75-49A dated November 9, 1975.

3. Background:
The Office of Standards Development is proposing a change in 29 CFR 1910.213(h)(1) that will limit its applicability to saw mill operations.

4. Action:
Under existing regulations, 29 CFR 1910.213(h)(1) shall continue to apply to saw mill operations. However, pending final promulgation of the proposed change, a failure to install a lower guard on the type of saws used in production-line operations in saw mills (these saws are specified in 29 CFR 1910.265) shall be considered de minimis, providing that there has been no sacrifice to employee safety.

5. Effective Date:
This directive is effective immediately and will remain in effect until canceled or superseded.
OSHA PROGRAM DIRECTIVE #100-92

Subject: 29 CFR 1910.213 (c)(1) and (h)(1), Woodworking Machinery Guarding Requirements

1. Purpose:

The purpose of this directive is to provide guidance in the application of 29 CFR 1910.213 by specifying the application of paragraph (c)(1) to hand-fed ripsaws and paragraphs (g)(1) and (h)(1) to swing cutoff saws and radial saws.

2. Documentation Affected:


3. Background:

This directive was developed to inform field personnel of the alternate methods of meeting the intent of 29 CFR 1910.213(c)(1), (g)(1) and (h)(1) to eliminate employee exposure to point of operation hazards.

4. Action:

a. In those instances where fixed enclosures, fixed barrier guards, or manually adjusted guards are used that provide protection equivalent to the protection of automatically adjusted guards, thereby preventing employee exposure to the saw blade, no citation shall be issued.

b. Accordingly, when a fixed enclosure, fixed barrier, or manually adjusted guard is used instead of an automatic guard, it shall be considered de minimis. That is, provided the guards are used in accord with manufacturer's instructions and under sufficient supervision to insure consistent compliance with these instructions.

5. Effective Date:

This directive is effective immediately and will remain in effect until canceled or superseded.
The performance specification of 1910.213(b)(3) requires that woodworking machines be equipped with automatic power interrupters or other provisions to prevent hazardous employee exposures resulting from equipment restart when power is restored. A further OSHA requirement pertaining to protection from the hazards of equipment restart after power interruption can be found in 1910.217(b)(8)(iii).

(NOTE: 1910.213 was last amended in 1984. 1910.217 was last amended in 1989.)

The performance specification of 29 CFR 1910.213(b)(3) requires that woodworking machines be equipped with automatic power interrupters to avert hazardous employee exposures resulting from equipment restart when power is restored. It appears that the product offered by your company permits compliance with this OSHA standard, but whether or not your product would fully meet the conditions as stated in 29 CFR 1910.213 would depend upon its application. Alteration or misapplication of an otherwise safe piece of equipment could create a hazardous condition beyond the control of the manufacturer. Therefore, compliance with our standards can only be determined when related to the specific circumstances of its use.

A further OSHA requirement pertaining to protection from the hazards of equipment restart after power interruption can be found in 29 CFR 1910.217(b)(8)(iii). In addition to OSHA requirements pertaining to power interruption protection, the American National Standards Institute (ANSI) recommends such protection for most machine tools specified by the ANSI Bill series of documents. ANSI may be contacted at:

American National Standards Institute, Inc.
1430 Broadway
New York, New York 10018
Telephone: 212-354-3364
This interpretation letter responds to a letter addressing requirements for automatic return attachments on radial saws. OSHA has not issued any field directives nor has it rendered interpretation of the 1910.213(h)(4) standard with respect to the use of automatic return devices or attachments on radial saws. OSHA interprets the 1910.213(h)(4) standard language to mean automatic return. ANSI 01-1975 requires the placement of a warning label instructing the user to return the carriage to the rear-most position after each cross cut. OSHA area offices are correct in issuing citations to employers where the radial saw cutting head does not return gently to its starting position upon its release by the saw operator.

(MORE: This standard was last amended in 1984.)

This is in response to your letter of December 10, 1990, in which you inquired if the Occupational Safety and Health Administration (OSHA) has issued any directives with regard to requirements for automatic return attachments on radial saws, in keeping with the requirements of our 29 CFR 1910.213(h)(4), radial saws standard. You also requested the Agency's official position on this matter. Please excuse the delay in our response.

OSHA has not issued any field directives nor has it rendered interpretation of the 1910.213(h)(4) standard with respect to the use of automatic return devices or attachments on radial saws. We agree with your contention that our .213(h)(4) standard does not contain any specific language concerning the use of automatic return attachments. As you may be aware, OSHA adopted this standard from the American Standard Safety Code for Woodworking Machinery of 1954, Section 01.1-1954, R 1961, which was the latest edition at the time of OSHA's adoption. OSHA feels that the language of this requirement is interpreted as "automatic return" of the cutting head when released by the operator.

The American National Standards Institute (ANSI) standard 01.1-1971, Safety Requirements of Woodworking Machinery, pertaining to radial saws, recommends that, as an alternative to the elevation of the front end of the saw, other devices be installed so as to cause the cutting head to return gently to the starting position when released by the operator. Additionally, ANSI 01.1-1975, on the same subject, states that a means shall be provided to prevent the cutting head from rolling or moving away from the column due to vibration or gravity, and requires the placement of a warning label instructing the user to return the carriage to the rear-most position after each cross cut.

Notwithstanding the various changes in ANSI requirements, as listed above, OSHA will continue to require that the cutting head on the radial arm saw return gently to its starting position upon release by the operator. The employer may use devices, attachments or other means to accomplish this requirement. OSHA area offices are correct in issuing citations to employers where the radial saw cutting head does not return gently to its starting position upon its release by the saw operator.

Your concern about the operator inadvertently introducing his hands into the path of the saw blade while it is returning to the column should be satisfied by appropriate saw blade guarding and employee training. In addition, your concern about the saw rebounding from the column is answered by the intent of the standard, which uses the phrase "return gently". This means that the speed of return should not allow for potential rebound.
The "product" conforms to the hand-fed ripsaw requirements of 1910.213(c) when used properly in the workplace. The "product" is equipped with the anti-kickback fingers and can be manually adjusted to afford protection. A splitter is also supplied with each guard. OSHA will not issue a citation if manually adjustable fixed barrier guards, such as the "product", provide protection equivalent to the protection of automatically adjusted guards.

(NOTE: This standard was last amended in 1984.)

This is in response to your letter of April 26, in which you requested of the Occupational Safety and Health Administration (OSHA) whether the product style blade guard complies with 29 CFR 1910.213(c)(1-3), hand-fed ripsaw requirements. Additionally, during an October 16 telephone conversation with a member of my staff on the same subject you indicated that the product manufacturer informed you that the guard is not equipped with a splitter (spreader), anti-kickback fingers, and does not ride on top of the stock being cut. Please excuse the delay in our response.

We reviewed the latest product table saw guard brochure, (copy enclosed for your information) and discussed this matter with Mr. D and Mr. T, of company, the guard's manufacturer. On October 25 and November 27, misters D. and T. informed us that the guard is equipped with the anti-kickback fingers and can be manually adjusted to afford protection. Additionally, a splitter is sent at no charge with each guard. If manually adjustable fixed barrier guards, such as the product, provide protection equivalent to the protection of automatically adjusted guards thereby preventing employee exposure to the blade, as described in OSHA Instruction STD 1-12.18, October 30, 1978, OSHA will not issue a citation. A copy of the instruction is enclosed for your information. On the basis of these facts, the product when properly utilized in the workplace conforms to the requirements of 1910.213(c).
This interpretation letter details the requirements for guarding radial saws, e.g., that the upper portion of the saw blade be guarded by a hood, and the lower exposed portion of the blade must be guarded by a device that will adjust itself automatically to the thickness of the stock being cut.

(NOTE: Even though the interpretation letter applies to a specific request for variance, the information in the interpretation letter is taken directly from the standard.)

INTERPRETATION 29 CFR 1910.213(h)(1)

June 30, 1977

This is in response to your letter dated May 25, 1977, requesting a permanent variance from Section 1910.213(h)(1) Woodworking Machinery Requirements - Radial Saws, of the Occupational Safety and Health Standards.

This standard requires, in part, that the upper portion of the saw blade be guarded by a hood to protect the operator from flying splinters and broken saw teeth. The lower exposed portion of the blade must be guarded by a device that will adjust itself automatically to the thickness of the stock being cut, thereby remaining in constant contact with it in order to provide the maximum protection possible during the operation being performed.

In your application, you have stated that adequate side guard protection from the blade is provided by the 3/4" deep by 3/8" wide channel in the cutting table in which the saw blade rides. However, you also state that the cross cutting operation with which you are concerned necessitates guarding the front of the blade as well as the sides. Therefore, you have designed an adjustable guard with a 1/8" front opening to provide this protection.

A review of your application and photographs reveal that your adapted guard design appears to meet the requirements of Section 1910.213(h)(1). However, it is extremely important that this fixed guard be properly installed, adjusted, and maintained to meet the intent of this standard.

We have discussed your situation with the (City) Area Director and he concurs with our decision.
In the guarding of radial saws, any guard may be judged acceptable regardless of whether or not it is supplied by the saw manufacturer, provided that certain conditions specified in sub-section (h) are met.

February 12, 1975

This is in response to your letter dated January 30, 1975, relative to the guarding of radial saws as required by Section 1910.213(h)(1), Woodworking Machinery Requirements - Radial Saws, of the Occupational Safety and Health Standards.

You have asked that OSHA approve or accept a plastic guard used for guarding the lower blade of your radial saws. The use of this guard is in lieu of the guard supplied by the manufacturer. Please be advised that the Occupational Safety and Health Administration does not exercise approval authority for proprietary items such as your saw guards.

The above standard requires, in part, that the sides of the lower exposed portion of the blade shall be guarded to the full diameter of the blade by a device that will automatically adjust itself to the thickness of the stock and remain in contact with stock being cut to give maximum protection possible for the operation being performed. It would appear from the photographs and description of the operation of the guard that this is being accomplished.
RECORD ID 3127

STANDARD NUMBER 1910.213(h)(1)
INFORMATION DATE 900313

ABSTRACT This interpretation letter addresses alternative methods of meeting the intent of 1910.213(h)(1). OSHA developed STD 1-12.18 (see attch) to give direction to enforcement personnel in reviewing the guarding requirements of 1910.213(h)(1). A leaf guard used on a radial saw manufactured by (Company), which covers the tips of the teeth and gullets of the saw blade but which does not cover the sides of the blade, is determined to meet the intent of OSHA standards.

(NOTE: This standard was last amended in 1984.)

INTERPRETATION 29 CFR 1910.213(h)(1)
MAR 13, 1990

This is in response to your letter of August 29, 1989, in which you requested the Occupational Safety and Health Administration’s (OSHA) interpretation of the specification for lower blade guards for radial arm saws, as found at 29 CFR 1910.213(h)(1) of the standard. Please excuse the delay in our response to your request.

OSHA provided guidance to Regional Administrators on the application of 1910.213(h)(1) in its OSHA Instruction Memorandum of October 30, 1978, STD 1-12.18 (enclosed). The directive was developed to inform enforcement personnel of alternate methods of specifically meeting the intent of 1910.213(h)(1), as it pertained to guarding the sides of the lower portion of radial saw blades.

The Agency reviewed the photograph that accompanied your letter, and feels that the lower portion of the blade, as it is shown, does meet the intent of the standard as found at 1910.213(h)(1).

In regard to the modification of OSHA’s 1910.213(h)(1) to reflect the latest changes of Paragraph 6.1.9.1, of ANSI O1.1 (1975), OSHA does not have this issue currently on its regulatory agenda. We will consider your letter a written request to place this issue on our future standards development/modification agenda. A copy of your letter has been provided to the Office of Safety Standards Programs for their consideration.

SOURCE LETTER

August 29, 1989

I would like to request an interpretation on the specifications for lower blade guards for radial saws as documented in paragraph 1910.213 (h)(1) of the OSHA Standards.

The specific sentence I am referencing is as follows:

1910.213(h)(1) radial saws...The sides of the lower exposed portion of the blade shall be guarded to the full diameter of the blade...

We have had several OSHA Inspectors issue citations on (Company)’s product because the Inspectors claim our standard leaf guards do not completely cover the lower section of the radial saw blade.

I can see how an Inspector can interrupt paragraph 1910.213(h)(1) to mean that the entire lower half of a radial saw blade must be guarded. We supply our radial saws with leaf guards which cover the tips of the teeth and gullets of a radial saw blade. We believe our leaf guards adequately protect the operator from accidentally contacting the hazards of a rotating saw blade, e.g., tips of the teeth and gullets. In our opinion there is no hazard in the possible accidental contact with the side of a rotating saw blade and
hence we do not supply a lower blade guard on our radial saws that completely covers the lower half of the blade.

For your reference a photograph showing a typical leaf guard for one of our radial saws is shown below.

Does the radial saw leaf guard system described and shown above meet the intent of the OSHA Standards for lower blade guards on radial saws as specified in paragraph 1910.213(h)(1)?

If the (Company) leaf guards comply to the intent of the OSHA requirements for lower blade guards on radial saws, what can be done to eliminate citations issued by Inspectors claiming the (Company) radial saws do not comply to OSHA because the leaf guards do not cover the complete lower half of the blade?

Would it be possible to have the OSHA Standards modified such that they are in agreement with the ANSI 01.1 Standards?

Paragraph 6.1.9.1 of ANSI 01.1 (1975) states:

6.1.9.1 Hoods and Guards. . . . The sides of the lower exposed portion of the saw blade shall be guarded from the tips of the blade teeth inward radially with no greater than 3/8 - inch gullet exposure.

As you can see from the above, the ANSI 01.1 (1975) Standard permits a leaf guard type blade guarding system for radial saws.
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DOE Interpretations Guide to OSH Standards
July 1, 1992
OSHA Instruction STD 1-12.8
October 30, 1978

OSHA PROGRAM DIRECTIVE #100-39


1. Purpose:
To provide clarification on the acceptable methods for the use of work rests.

2. Background:
   a. There have been several variance requests and inquiries received concerning the use of work rests on offhand grinding machines. A problem exists when, due to the size, shape, weight and finishing areas of workpieces, interferences with the work rest or contacts with the wheel below the horizontal plane of the spindle are unavoidable.
   b. The stated purpose of a work rest, properly adjusted to within one-eighth inch of the wheel, is to prevent the workpiece from being jammed thereby causing wheel breakage which could result in injury to the operator. In those instances, where due to the size of the workpiece, jamming is precluded, the enclosure (side guard) itself may provide protection.
   c. The need for stabilizing the workpieces when grinding tools such as bits, chisels, drill bits, etc., is clear.

3. Action:
In those instances where jamming or contact with a grinding wheel is precluded by the size of the workpiece, a side guard offers sufficient protection to the operator. Accordingly, in such situations, the failure to have a work rest shall be cited as de minimis. It is not the intent of this clarification to minimize the use of work rests when required to protect the operator of a wheel grinder from injury.
OSHA Instruction STD 1-12.13
OCTOBER 30, 1978

February 22, 1977

OSHA PROGRAM DIRECTIVE #100-59

TO: REGIONAL ADMINISTRATORS - OSHA


1. Purpose:

To clarify the standards relative to masonry saws.

2. Background:

   a. It has been noted that compliance personnel have been citing masonry saws under 29 CFR 1910.212, point of operation guarding, when making inspections in general industry.

   b. The masonry saw is an abrasive wheel and should be cited under 29 CFR 1910.215, abrasive wheel machinery. The referenced standard, ANSI B7.1-1970, addresses cut-off wheels which are basically the same as masonry saws. In addition, the ANSI supplement, B7.1a-1973, specifically addresses masonry cutting and masonry saws. This supplement states that the maximum angular exposure of the cutting-off wheel periphery for the safety guard shall not exceed 180 degrees.


3. Action:

   The applicable subsections of 29 CFR 1910.215 and 29 CFR 1926.700 (a) shall be used for the issuance of citations when masonry saws are found to be in violation of the standards in their respective industry. However, because of the conflict between the requirements in the present subsection 29 CFR 1910.215(b)(5) and 29 CFR 1926.700(a), any citation issued for a masonry saw whose guard fails to comply with the 150 degree maximum angular exposure for the cutting-off wheel periphery as required in 29 CFR 1910.215(b)(5), but it is in compliance with the 180 degrees maximum angular exposure, shall be cited as de minimis.

4. Effective Date:

   This directive is effective upon receipt and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-12.26

June 30, 1981


A. Purpose. This instruction clarifies the appropriate citing for cutoff wheels.

B. Scope. This instruction applies OSHA-wide.

C. Action. The applicable subsections of 29 CFR 1910.215 shall be used for the issuance of citations when cutoff wheels are found to be technically in violation of the guarding standards. Any citation issued for cutoff wheels, where the guard fails to comply with the 150-degree maximum angular exposure for the cutoff wheel periphery as required in 29 CFR 1910.215(b)(5), but does not exceed a 180-degree maximum angular exposure, shall be deemed to be a de minimis violation.

D. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designees as requested.

3. Ensure that the State designees are asked to acknowledge receipt of the Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

E. Background.


2. The existing OSHA regulation was adopted from the ANSI B7.1-1970, and therefore requires 150-degree maximum angular exposure on cutoff machines.

However, OSHA has no information to support a choice between 150 and 180 maximum angular exposure or to substantiate any direct and immediate relationship to safety and health. Therefore, cutoff machines with more than 150 degrees of angular exposure, and not exceeding 180 degrees, shall be noted as de minimis violations.
ABSTRACT
The angular exposure of the grinding wheel periphery and sides for safety guards used on machines with bench and floor stands shall not exceed 90 degrees or 1/4 of the periphery. Whenever work is required that contacts the wheel below its horizontal plane of spindle, the exposure shall not exceed 125 degrees.

(NOTE: The OSHA Program Directive 100-39 referenced in the interpretation letter was renamed OSHA Instruction STD 1-12.8.)

INTERPRETATION
29 CFR 1910.215(a)(4); (b)(3); (b)(5)

June 28, 1978

This is in response to your letter dated June 16, 1978, requesting a permanent variance from Section 1910.215(a)(4) and (b)(3) Abrasive Wheel Machinery - Work Rests, and Bench and Floor Stands, respectively, of the Occupational Safety and Health Standards.

The grant of variance, enclosed with your letter, is very vague, and does not fully describe your present operations. However, it is unlikely that a Federal variance will be required.

Section 1910.215(b)(3) requires, in part, that "The angular exposure of the grinding wheel periphery and sides for safety guards used on machines known as bench and floor stands should not exceed 90 degrees or one-fourth of the periphery." As a possible solution to your problem, we would suggest that you investigate the feasibility of either lowering the work rest below the horizontal plane of the spindle or removing it. In addition, enclosed is a copy of Section 1910.215(b)(3). Note that wherever the nature of the work requires contact with the wheel below the horizontal plane of the spindle, the exposure shall not exceed 125 degrees.

Regarding the suggestion above concerning either lowering or removing the work rest, also enclosed is a copy of OSHA Program Directive 100-39 which delineates acceptable methods for the use of work rests. It should be noted that the intent of this document is not to minimize the use of work rests when required to protect the operator of a wheel grinder from injury.

Hopefully, this clarification of the subject standards will solve any problem associated with your grinding operation. If after evaluating your grinding operation, you still feel a variance is necessary, enclosed, for your guidance, is a copy of 29 CFR 1905. Section 1905(11)(b) describes the requirements necessary to seek a permanent variance.
ABSTRACT The "contact surface" of an abrasive wheel is defined as the mounting surface and not the grinding face as previously interpreted by some CSHO's.


January 3, 1980

MEMORANDUM FOR: AREA DIRECTORS /DISTRICT SUPERVISORS


In response to an inquiry from Mr. D, Esquire, of the law firm representing (Company), the National Office of Compliance Programming has interpreted the subject standard on abrasive wheels in the attached letter dated December 26, 1979.

It is important that all members of your safety staff realize the significance of the attached interpretation which specifies the "contact surface" of the abrasive wheel as the mounting surface and not the grinding face as previously interpreted by some CSHO's.

SOURCE LETTER

(No date provided.)

This will confirm a telephone conversation with a member of my staff, Mr. J, regarding your request for an interpretation of 29 CFR 1910.215(d)(3), pertaining to a citation alleging a violation issued to the (Company) at (City, State) on March 21, 1979.

The grinding face of an abrasive grinding wheel is not a contact surface within the meaning of the regulation.

The standard 29 CFR 1910.215 addresses abrasive wheel machinery, often referred to as grinders. The OSHA standard was adopted from portions of the American National Standards Institute consensus standard, ANSI B7.1-1970. Pages 2 and 52 of that document, copy enclosed, verify that the standard, as it was applied in this instance, was misconstrued. The surface of hazardous concern, as presented in your letter, was the grinding surface or face per ANSI definition. The contact surface, as clarified by ANSI under explanatory information, specifically concerns the mounting surfaces on the wheel.
OSHA Instruction STD 1-12.7
OCTOBER 30, 1978

July 18, 1975

OSHA PROGRAM DIRECTIVE #100-34


1. Purpose:


2. Directive Affected:

None.

3. Background:

In the 1.1 Scope section of ANSI-B11.1-1971, Safety Requirements for Construction, Care and Use of Mechanical Power Presses the standard applies only to those mechanically powered machines that shear, punch, form or assemble metal or other material by means of tools or dies attached to slides.

4. Clarification:

The Office of Standards Development currently promulgating a change to 29 CFR 1910.217(a)(5) that will add platen presses to the list of excluded machines. Therefore, Section 29 CFR 1910.212 shall apply to point of operation guarding for platen presses.
OSHA Instruction STD 1-12.20

OCTOBER 30, 1978

OSHA PROGRAM DIRECTIVE #100-98


1. Purpose:

The purpose of this directive is to provide an interpretation of 29 CFR 1910.217(b)(3)(i) and guidance for field personnel for the requirement of single stroke mechanisms on full revolution type mechanical power presses.

2. Documentation Affected:

This directive supersedes OSHA Field Information Memorandum #77-3 dated February 9, 1977.

3. Background:

Complaints and variance applications have been received concerning the requirement for single-stroke mechanisms. This requirement was questioned when full revolution type mechanical power presses were used for production type work, automatically fed on continuous operation and the points of operation were protected by a fixed barrier guard. The requirement for the single stroke mechanism was not intended to apply to the preceding type of operation since there is no operator exposure to point of operation hazards when the danger zone is fully enclosed. This exception will be included in a change to the standard, which is presently under review.

4. Action:

When encountering full revolution type mechanical power process that are being operated on continuous mode only, feeding and ejection are accomplished by an automatic system, the points of operation are fully enclosed by a fixed barrier guard, and no single stroke mechanism is required, it shall be considered de minimis.

5. Effective Date:

This directive is effective immediately and will remain in effect until rescinded or canceled by standards changes.
OSHA Instruction STD 1-12.21

OCTOBER 30, 1978

OSHA PROGRAM DIRECTIVE #100-100


1. Purpose:

This directive provides a guide to aid in the recognition of mechanical power presses' point of operation hazards and uniform clarifications of definitions, guards, develop and methods of safeguarding.

2. Documentation Affected:

This directive cancels OSHA Program Directives #100-40 dated September 29, 1975, and #100-43 dated January 21, 1976.

3. Background:

a. On December 3, 1974, the final amendments to 29 CFR 1910.217 were published in the Federal Register, Volume 39, Number 233. The detailed statement of reasons preceding the amendments noted that while the previous "no hands in die" ruling had as its goal the elimination of any need for an operator to ever have his hands in the point of operation that requirement alone did not result in hazard-free operation. The installation of redundant guards and devices as backup safeties were not judged to significantly improve safety. Moreover, questions of technological and economic infeasibility were raised. While it is believed that "no hands in die" should continue to be an industry goal, the determination was made to reveal the absolute "no hands in die" requirement in favor of improving the utilization of a single means of press safeguarding. For most operations, adequate protection can be afforded by a single guard or guarding device as long as that means of protection is properly designed, installed, maintained, and, most importantly, used under supervision. From an enforcement standpoint, employer adherence to each of these elements of a press guarding program in the workplace takes on increased importance.

b. 29 CFR 1910.217 covers the protection of press operators, die setters and maintenance personnel engaged in mechanical power press operations such as stroking, die tryout, die setting and maintenance. Press machines which are not mechanical power presses such as forging presses, press brakes, shears, iron workers, powder metal presses, die presses, brick presses, dinkers and clickers, engraving and others are covered by other sections of Subpart O. Most mechanical power presses work on metal, however, some mechanical power presses work on metal, however, some mechanical power presses are use on materials such as plastic, paper and fiberboard.

c. This directive is not intended as a training guide but is a tool to provide uniformity in interpretation and application of the existing standards.

4. Clarifications:

a. Mechanical Power Press Recognition

(1) A mechanical power press is defined as a mechanically powered machine that shears, punches, forms or assembles metal or other material by means of cutting, shaping or combination by dies attached to slides (29 CFR 1910.211(d)(46)). However, there are many machines, such as platen presses in the shoe industry, clickers and die presses in the shoe industry, ironworkers and many others that perform these functions but are not power presses. The question commonly arises as to whether a particular machine is in fact a mechanical power press under the standard. The two most important recognition points are that the tools or dies are mounted on a slide (also called a ram, plunger or platen) and the slide operates in a controlled reciprocating motion toward and away from the stationary bed or anvil, the slide being guided in a definite path by the frame of the press.

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(2) The power presses to which 29 CFR 1910.217 applies can be divided into two categories depending on the type of clutches they are equipped with (the clutch being the means of transmitting energy from the flywheel to the crankshaft which in turn is connected to the slide). The two types are full revolution type clutches and part revolution type clutches. The full revolution type, once activated, makes one complete revolution of the crankshaft and a full cycle of the slide before the clutch can be disengaged (29 CFR 1910.211(d)(5)). The part revolution type can be disengaged at any point before the crankshaft has completed a full revolution and full stroke of the slide (29 CFR 1910.211(d)(6)).

NOTE: Direct drive presses have no clutches but some do have brakes. Direct drive presses can be stopped at any point by deenergized the drive motor, therefore, they are considered as a part revolution type press (29 CFR 1910.211(d)(7)).

(a) Recognition of full revolution type.
   (i) The clutch mechanism is generally visible between the flywheel and the crankshaft (sometimes is on the countershaft on larger presses).
   (ii) Will not normally have a brake monitor system.
   (iii) Will not have a dual air control valve or clutch brake.
   (iv) Will not have an inch mode of operation.
   (v) Will complete a full cycle after activated.
   (vi) Will be equipped with a brake which is usually continuously applied (band-type brake).
   (vii) The clutch engaging mechanical linkage will usually be visible.

(b) Recognition of the part revolution type.
   (i) May have an inch-control.
   (ii) Will usually have a chain or direct drive from the crankshaft to a limit switch assembly.
   (iii) The clutch/brake mechanism is one unit mounted on the crankshaft or countershaft and is generally enclosed.
   (iv) Will usually have a control panel with a press stroke selector switch.
   (v) May have clutch brake dual air control valve.
   (vi) The ram will stop on the down stroke when the two-hand controls are released.
   (vii) Will be equipped with a friction brake that is applied when a clutch is deactivated.

b. Guards, Devices, Other Methods and Handy Feeding Tools

(1) Guards or fixed barriers are attached to the frame, die, or base of a press and prevent the operator from putting his hands or fingers into the point of operation even when the press is not cycling (29 CFR 1910.211(d)(32)).

(2) Devices are press controls or attachments which either stop normal press operation before the operator can reach into the point of operation or automatically withdraw his hands before the die closes, if the operator's hands are inadvertently within the point of operation. Examples of such devices are two-hand-controls and two-hand trips, Type A and B gates, pull-outs and presence sensing devices (29 CFR 1910.211(d)(11)-(17)).
(3) Other Methods. Occasionally a machine without guards or devices may be adequately safeguarded by reason of its location, the location of other equipment, or the location of the other operator's station. To be guarded by location, the hazardous area must be inaccessible to all employees during the operating cycle. For example, the feeding equipment of an automatically fed press may function as a barrier in preventing entry into the point of operation. Such circumstances must be carefully analyzed to determine if additional guards or devices are needed.

(4) Hand Feeding Tools. The use of hand feeding tools (regardless of their length or size) does not replace guards or devices (29 CFR 1910.217(c)(4)). When used, close supervision is essential because of the tendency to put such tools aside to expedite feeding. The use of hand tools also involves other hazards. For example, should the die close while a hand tool is in the point of operation, the operator could have the tool wrenched from his grasp and be struck by it or he could be forcibly jerked against the machine and injured.

c. Types of Guards

(1) The following information is intended to clarify, with reference to the standards, the various means of protecting operators from the point of operation hazard. An employer is required to provide and ensure the usage of “point of operation guards” or properly installed devices on every operation performed on a press when the opening of the die is more than one-fourth inch (29 CFR 1910.217(c)(1)(i) and (ii)). 29 CFR 1910.217(c)(2) and (3) describe the guards and devices as they shall be used to protect the operator.

(2) A guard is the most positive form of protection if designed and constructed to prevent entry of hand or fingers into the point of operation by reaching through, over, under or around the guard (29 CFR 1910.217(c)(2)(i)(a)).

(3) An inadequate enclosure is not a guard and may be used only in conjunction with point of operation devices (29 CFR 1910.217(c)(2)(vii)). If guards are installed and function correctly, no other guard or device is required.

(a) A die enclosure guard is a barrier attached to the die shoe or stripper (29 CFR 1910.211(d)(33); 29 CFR 1910.217(c)(2)(ii)).

(b) A fixed barrier guard is a guard attached to the press frame or bolster plate (base) (29 CFR 1910.211 (d)(34); 29 CFR 1910.217(c)(2)(iii)).

(c) An interlocked barrier guard is attached to the press frame and bolster plate and be equipped with hinged, or movable sections. The guard itself or the hinged or movable sections are locked in the closed position. The interlock also prevents opening the guard or the movable sections as long as the slide is in motion (29 CFR 1910.211(d)(35); 29 CFR 1910.217(c)(2)(iv) and (v)). The hinged or movable sections, of the guard are intended for infrequent use such as setup or adjustment and not for manual feeding (29 CFR 1910.217(c)(2)(v)).

(d) An adjustable barrier guard is attached to the press bed, bolster plate, or die shoe and requires adjustment (by authorized personnel only) for each job or die setup (29 CFR 1910.211(d)(36) and 29 CFR 1910.217 (c)(2)(vi)).

d. Types of Devices

Since fixed guarding is not always possible due to the nature of an operation, devices are acceptable as a means of protection against point of operation hazard. When the following devices are properly installed and function properly, no other point of operation guarding is required recess the operation is such that a combination of guards or devices is necessary:
OSHA Instruction STD 1-12.21 (cont.)

(1) A movable barrier or gate device resembles an interlocked barrier guard in appearance since it is interlocked into the press' clutch so that slide motion cannot be initiated unless the gate is closed (29 CFR 1910.211(d)(13)). A Type "A" gate must enclose the point of operation before a stroke can be initiated and remain closed as long as the slide is moving (29 CFR 1910.217(c)(3)(ii)(a) and (c)(3)(i)(f)). A Type "B" gate when used on a press prevents entry only during the downstroke and must prevent access prior to cessation of motion or die closure (29 CFR 1910.217 (c)(3)(ii)(b) and (c)(3)(i)(g)).

(2) Pull-out devices consist of operator wristbands connected by cords and linkage to the slide or upper die so that when the die descends the operator's hands will be automatically withdrawn from the point of operation if he had not already withdrawn them (29 CFR 1910.211 (i)(15); 1910.217(c)(3)(iv) and (c)(3)(i)(b)). Close supervision is required to assure their use and proper adjustment. Records must be kept of safety checks (29 CFR 1910.217(c)(3)(iv)(d)).

(3) Holdout or restraint devices consist of attachments, for each of the operator's hands, which are securely anchored and adjusted to prevent the operator from reaching into the point of operation at any time (29 CFR 1910.211(d)(14); 1910.217(c)(3)(vi) and (c)(3)(i)(c)).

(4) Presence sensing devices are restricted to use only on part revolution clutch presses. A presence sensing device is a light curtain or other type sensing field between the operator and the point of operation interlocked into the control system so that slide motion is prevented or stopped prior to die closure if the operator's hands or any part of his body is within the sensing field (29 CFR 1910.211(d)(6) and (12); 1910.217(c)(3)(i)(a) and (c)(3)(iii). Areas not protected by the pressure sensing devices must be guarded.

NOTE: Sweep type devices consist of single or double arm or rod attached to the slide of the press so that it will push the operator's hands away from the point of operation as the slide descends. This device cannot be used as a single safeguard for point of operation guarding after December 31, 1976 (29 CFR 1910.211(d)(16); 1910.217(c)(3)(v) and (c)(3)(i)(o)).

e. Types of Controls

(1) Two-hand control devices are used only on presses With a part revolution clutch, and the operator must depress two buttons concurrently to initiate slide action. The buttons must be depressed continuously disengages time) on the downstroke or else the clutch disengages, the brake is applied and the slide stops (29 CFR 1910.211(d)(17); 1910.217(c)(3)(vii) and (c)(3)(i)(e)).

(2) Two-hand trip devices once pressed do not have to be held during the downstroke, and the slide will stop only after it has completed a full cycle. The device be generally applicable to full revolution clutch presses (29 CFR 1910.211(d)(57); 1910.217(c)(3)(viii) ar.d (c)(3)(i)(e)).

NOTE: In addition to proper design, installation and correct operation, it is required that two-hand controls, two-hand trips and presence sensing devices be located far enough away from the point of operation (depending on the stopping time of the press) that when the operator releases the control buttons or disturbs the presence sensing field, he does not have time to reach into the point of operation before the die closes or slide stops (29 CFR 1910.217(c)(3)(iii)(e), (c)(3)(vii)(c), and (c) (3)(viii)(c)). Safety distance formulas for two-hand, buttons and presence sensing devices are included, in the standard. Since time factors will actually be in milliseconds rather than seconds, the National Office is presently evaluating several units that will measure brake stopping time and distance for field use.
OSHA Instruction STD 1-12.21 (cont.)

1. Control Reliability and Brake Monitor Systems

A control reliability system detects a failure within the controls and prevents initiation of a successive stroke until the failure is corrected. (29 CFR 1910.217(b)(13)).

A brake monitor system monitors the performance of the brake on each stroke and automatically prevents the activation of a successive stroke if the stopping time or braking distance has deteriorated beyond the predetermined safe stopping distance. (29 CFR 1910.217(b)(14)).

Safeguarding devices such as two-hand controls, presence sensing device, Type "B" gate, or movable barriers allow the operator to feed or remove parts by placing one or both hands in the point of operation. Therefore, when these devices are used on part revolution clutch presses, the control reliability system and brake monitor system are required to assure operator's safety from the point of operation hazard. (29 CFR 1910.217(c)(5) and 29 CFR 1910.217(c)(5)(i)).

5. Effective Date. This directive is effective immediately and will remain in effect until rescinded or revised by standards changes.
OSHA Instruction STD 1-12.24

JULY 30, 1979

SUBJECT: Clarification and Interpretation of 29 CFR 1910.217, Mechanical Power Presses, as Applied to the Safeguarding Requirements for Diesetters

A. Purpose. This instruction provides guidance in applying point-of-operation guarding requirements on mechanical power presses during diesetting operations. Also, it provides for the application of consensus standards and identifies topographical errors in 29 CFR 1910.

B. Scope. This instruction applies OSHA-wide.

C. Action. OSHA Regional Administrators/Area Directors shall use the guidelines set forth in paragraph F. of this instruction for enforcement of the referenced standard.

D. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.
2. Explain the technical content of the change to the State designees as requested.
3. Ensure that State designees are asked to acknowledge receipt of the Federal Program change in writing, within 30 days of notification, to the Regional Administrator. The acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.
4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections, spot check visits and case reviews) shall also be used to determine if this change has been implemented in actual performance.

E. Background. 29 CFR 1910.217(c)(1)(i) requires protection of employees through the use of point-of-operation guards or devices (as defined in 29 CFR 1910.211(d)(11) and (32)) on every operation performed on a mechanical power press. Diesetters working on mechanical power presses are covered by the provisions of 29 CFR 1910.217(c).

1. 29 CFR 1910.217(d) provides specifically for the protection of diesetters. 29 CFR 1910.217(d)(9)(i) was intended to clarify that the provisions of 29 CFR 1910.217(c) apply to diesetters concerning point-of-operation guarding. When 29 CFR 1910.217(d)(9)(i) was adopted, it erroneously referred to paragraph (b) of 1910.217 rather than to paragraph (c). The typographical error occurred during a reorganization of the provisions of the ANSI B11.1-1971 standard when it was incorporated into 29 CFR 1910 as Section .217. Additional typographical errors included:
   a. Erroneous references to paragraph (b) rather than to paragraph (c) by 29 CFR 1910.217(d) (3) and (d)(5).
   b. 29 CFR 1910.217(b)(8)(iv) erroneously refers to "a nominal 240-volt d.c. supply obtained from a transformer" where it should have read "120-volt a c."
3. Full revolution mechanical power presses cannot normally be safeguarded with guards during diesetting operations. However, in instances when guards are not applicable and for presses provided with barring holes in the flywheel, the diesetter is protected if:
a. The power press is deenergized and the flywheel is brought to rest; and
b. The prime mover power to the power press is locked-out; and
c. The slide is moved by manually turning the crankshaft with the aid of a turnover bar (a lever) inserted through the barring hole in the flywheel.

4. On some full revolution mechanical power presses, primarily those over 60 tons in size, the slide cannot be moved manually during diesetting. Safeguarding is provided if they are equipped with a jog mode of operation, and
a. The flywheel is brought to rest and the clutch is engaged before the drive motor is jogged, and
b. The jog control requires two-hand operation, or
c. The jog control is a single control protected against accidental actuation and so located that the worker cannot reach into the point-of-operation while operating the single control.

5. For full revolution mechanical power presses, safeguarding of the diesetter, as set forth in E.3., and E.4. constitutes a "device" as defined in 29 CFR 1910.211(d)(11).

6. ANSI B11.1-1971, Section 2.51 regarding turnover bars states: Two methods of insuring the removal of the turnover bar from the barring hole have been found acceptable. They are (1) use of spring action on the end of the bar, and (2) use of storage pockets for the bar, incorporating an interlock switch.

F. Guidelines. For compliance purposes, OSHA field staff will assure that the requirements of 29 CFR 1910.217 and applicable sections are interpreted in the following manner:

1. As the result of the errors noted in paragraph E.1., when diesetters are operating a mechanical power press, such as running test and production parts, diesetting or trouble shooting, they shall be protected by point-of-operation guards or devices. Failure to provide such safeguards shall constitute a violation of 29 CFR 1910.217(c)(1)(i).

2. When diesetters operate a mechanical power press, equipped with a part revolution clutch, in the inch mode where such device is not installed per 29 CFR 1910.217(b)(7)(iv), a violation exists and a citation shall be issued if no alternative safe guard is provided

3. As the result of the errors noted in paragraph E.1., when a diesetter operates a full cycle mechanical power press without point-of-operation guards or devices such as those described in paragraphs E.3. and E.4., the employer shall be for a violation of 29 CFR 1910.217(c)(1)(i).

4. On mechanical power presses equipped with part revolution clutches, turnover bar operations shall comply with 29 CFR 1910.217(b)(7)(xv). (See also paragraph E.6.)

OSHA Instruction STD 1-12.27

June 30, 1981

Subject: Applicable Standards As They Pertain to Iron Workers and Mechanical Power Presses

A. Purpose. This instruction provides guidelines to aid in the recognition of the difference between iron workers and similarly configured mechanical power presses as they are used in industry. Proper identification will permit the correct application of standards.

B. Scope. This instruction applies OSHA wide.


D. Action. OSHA Regional Administrators/Area Directors shall use the guidelines set forth in F of this instruction for the enforcement of 29 CFR 1910.212 and 29 CFR 1910.217, as applicable.

E. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. The acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

F. Guidelines. For compliance purposes, OSHA field staff will assure that the requirements of 29 CFR 1910.212 and 217, with applicable sections, are applied as interpreted by this instruction.

1. This instruction applies to those combination, multipurpose powered machines that punch, shear, notch, cope, and form metals or other materials, commonly referred to as iron workers, and also applies to certain single-purpose powered machines, noted below.

   a. Specific machines to which 29 CFR 1910.212 shall apply/include, but are not limited to, the following:

      (1) Single-end punches
      (2) Double-end punches
      (3) Structural shearing machines
      (4) Notching machines
      (5) Coping machines
      (6) Beam punches
      (7) Detail punches
      (8) Spacing punches
      (9) Combinations of (1) through (8)

   b. Machines similar in construction and function to mechanical power presses, but which are identified by the respective machine manufacturers as iron workers, are regulated under 29 CFR 1910.212.
OSHA Instruction STD 1-12.27 (cont.)

c. Machines whose most distinguishing feature is the multiple work stations at which various operations may be performed singly or simultaneously, including, but not limited to, punching, shearing, notching, coping, and forming, shall be evaluated as an iron worker, and are regulated under 29 CFR 1910.212.

2. Mechanically powered machines that shear, punch, form, or assemble metal or other material by means of tools or dies attached to slides, and identified by their respective manufacturers as mechanical power presses, are regulated under 29 CFR 1910.217.

G. Background. Compliance officers have frequently confused the applicability of standards as they pertain to iron workers and certain configurations of mechanical power presses. In addition, field personnel have incorrectly attempted to enforce provisions of 29 CFR 1910.217 with regard to iron workers. 29 CFR 1910.212 is the appropriate standard to apply to ironworker machines.

1. ANSI B11.5-1975, Safety Requirements for the Construction, Care, and Use of Iron Workers, deals specifically with ironworkers. Although this standard has not been adopted by OSHA under section 6(b), it provides useful guidance in evaluating and correcting ironworker hazards.

2. ANSI B11.5-1975 should be consulted when considering a citation under 1910.212 or when attempting to enforce a citation issued under that standard for exposure to a hazard on an ironworker machine.
OSHA Instruction STP 2-1.146A

August 7, 1989
Office of State Programs

Subject: Presence Sensing Device Initiation of Mechanical Power Presses: Final Rule

A. Purpose. This instruction describes a Federal program change to the Regions and State designees.

B. Scope. This instruction applies OSHA-wide.

C. Cancellation. OSHA Instruction STP 2-1.146, June 27, 1988, Presence Sensing Device Initiation of Mechanical Power Presses, is canceled.

D. Reference. OSHA Instruction STP 2-1.117, State Standards.

E. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this instruction is forwarded to each State designee.

2. Provide a copy of the Federal Register notice to the State designee upon request.

3. Explain the technical content of the Federal Register notice at 53 FR 8322, March 14, 1988, Presence Sensing Device Initiation of Mechanical Power Presses; Final Rule, to the State designee upon request. This final rule amends the Federal mechanical power press standard (29 CFR 1910.217, Subpart O), to allow (but not require) presence sensing device initiation (PSDI) on certain types of power presses. It also requires certification/validation of PSDI equipment by a third party recognized by OSHA.

4. Ensure that each State designee acknowledges receipt of this instruction in writing, within 30 days of notification, to the Regional Administrator. The acknowledgment should include (a) the State's plan to adopt and implement an identical standard amendment, modified to clearly explain that the State will not establish its own program for recognition of third party validation organizations but will instead use the Federal program; (b) the State's plan to develop an alternative standard amendment, which is as effective, including establishing an independent State third-party recognition program; or (c) the reasons why no change is necessary to maintain a program which is as effective.

5. Explain that, because of the technical complexity involved in the recognition process for third-party validation organizations, and because one certification program with nationwide applicability allows a more efficient use of resources, the States are encouraged to adopt a standard that relies on the Federal third-party certification program; i.e., presence sensing device certification/validation must be conducted by a third party organization that has met the Federal requirements and received Federal OSHA recognition States choosing to establish their own third-party recognition programs may do so but must (1) honor Federal OSHA's recognitions; (2) assure that third-party validation organizations understand that State recognition applies only within that State; (3) establish an at least as effective program including site inspections of the facilities of third-party validation organizations, etc. No 23(g) or State matching funds may be used for the establishment or operation of State third-party certification programs.

6. Inform each State designee that the State must amend its standard to ensure that it remains at least as effective as the amended 29 CFR 1910.211 and 1910.217, and submit a plan supplement within 6 months of the date of Federal publication.

7. Inform each State designee that States which have adopted a standard prior to the issuance of this amended instruction should review and revise their standard as appropriate or issue necessary clarifying policy documents to assure that State requirements for third-party validation and recognition of third-party validation organizations clearly reflect the State's intent to either accept only Federally-recognized third parties or establish an independent State program. Such amendments/clarifications must be submitted as part of the plan supplement.

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OSHA Instruction STP 2-1.146A (cont.)

F. Effective Date. The provision for OSHA recognition of third-party validation organizations (to validate employer and manufacturer certifications that their equipment and practices meet the requirements of the PSDI standard) set forth in Appendix C became effective 30 days (April 13, 1988) after publication in the Federal Register. The remaining provisions of the standard became effective the later of 90 days (June 13, 1988) after publication in the Federal Register or the date of OSHA recognition of a third-party validation organization. At this time, no such organizations have been recognized by OSHA. Therefore, the provisions of the standard other than Appendix C have not yet been implemented. A Federal Register notice will be published when a third-party validation organization has been recognized by OSHA.

G. Interim Enforcement. Under 29 CFR 1953.23(a) and (b), State plan States are provided up to 6 months from publication of the Federal standard in the Federal Register to promulgate an identical or at least as effective standard. If a State, for whatever reason, is unable to promulgate a standard in a timely manner (6 months for a permanent standard, 30 days for an emergency temporary standard) the state shall be expected to provide assurance that it will enforce the substantive provisions of the new or revised Federal standard through such means as use of its general duty clause or equivalent, temporary adoption of an identical standard, or an alternative, specified enforcement mechanism.

H. Different State Standards. Section 18(c) (2) of the OSH Act requires that State standards be at least as effective as the Federal and, when applicable to products used or distributed in interstate commerce, be required by compelling local conditions and not unduly burden interstate commerce. In addition to the at least as effective criterion, this "product clause test" will be applied to State standards with substantially different requirements from the comparable Federal standards, as discussed in OSHA instruction STP 2-1.117.

I. Explanation.

1. On March 14, 1988, OSHA issued a final rule on its standard for mechanical power presses (53 FR 8322). That action amended Section 1910.211 and Section 1910.217 to allow (but does not require) presence sensing device initiation (PSDI) on certain types of power presses. The amended standard addresses the use of presence sensing devices as well as the entire mechanical power press safety system involved in operating the PSDI mode. OSHA is also amending the related standard on definitions, 29 CFR 1910.211, as appropriate, to support the revision to the mechanical power press standard.

2. Until this rulemaking, OSHA did not permit PSDI, but rather required that a mechanical power press operator physically initiate the stroke of the press by using hand controls or a foot pedal.

3. Because presence sensing device initiation has been used safely in other countries, in one case for over 30 years, and on an experimental basis in the United States since 1976, OSHA believes this prohibition is technically outdated. This revision allows a presence sensing device to initiate the stroke of the press automatically when the operator's body is out of the danger zone.

4. The PSDI standard at Section 1910.217(h)(11)(i) provides that employers may use PSDI devices on their mechanical power presses only after the manufacturer and employer certifications on design and installation have been validated by an OSHA-recognized third-party validation organization. Annual recertification/revalidation is also required.

Appendix C to Section 1910.217 provides mandatory requirements for OSHA recognition of third-party validation organizations for the PSDI standard, including notice in the Federal Register and a comment period. A letter of recognition is issued that is valid for 5 years, but subject to revocation by OSHA at any time.

5. No organizations have yet applied to OSHA for recognition as a third-party validation organization.

6. No 23(g) or matching State funds may be used for the development or operation of any independent State recognition programs for third-party validation organizations as they would duplicate a complex technical process already available Federally.
7. Under 29 CFR 1953.23(a) and (b), States are provided up to 6 months from publication in the Federal Register for adoption of parallel State standards and amendments.
ABSTRACT

The information on presence sensing devices and hand speed criteria is part of the OSHA standard 1910.217. If an employer complies with the clear intent of the standard but deviates from its particular requirements in a manner that has no direct relationship to employee safety or health, the presence sensing devices and hand speed criteria may be used consistent with OSHA Instruction CPL 2.45B CH-1 on de minimis violations. 1910.217 uses 63 inches per second as a hand speed constant. The information on ergonomics is contained in an company report released in 1991 by OSHA, and it applies to punch press operations.

(NOTE: This standard was last amended in 1989.)

INTERPRETATION.

29 CFR 1910.217(c)(2)(i); (c)(3)(iii)(e)

MAR 20, 1991

MEMORANDUM

SUBJECT: Information on Robotics, Presence Sensing Devices, Ergonomics, and Hand Speed Criteria

Attached are documents with highlighted information that may be used in order to implement recommendations 4 and 5, made to you in my letter of January 28.

The information on presence sensing devices and hand speed criteria is part of the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.217. However, if an employer complies with the clear intent of the standard but deviates from its particular requirements in a manner that has no direct or immediate relationship to employee safety or health, the presence sensing devices and hand speed criteria may be used on any machine per the attached OSHA Instruction CPL 2.45B CH-1 on de minimis violations. The OSHA standard 29 CFR 1910.217 uses 63 inches per second as a hand speed constant.

The information on ergonomics is contained in an company report released in 1991 by OSHA, and it applies to punch press operations. This problem could occur on any machine requiring similar movements by a person during production and machine guarding operations.

The information on robotics is derived from a draft copy (still not released) of chapter 20 of the OSHA Technical Manual.
ABSTRACT
An Interpretation letter regarding the retention period for inspection and maintenance records for mechanical power presses. The employer must retain the last two records of inspection and maintenance on presses to achieve minimum compliance. The employers failure to maintain pertinent records may lead to the issuance of a citation.

INTERPRETATION
29 CFR 1910.217(e)(1)(i)

June 12, 1978

MEMORANDUM

SUBJECT: Retention Period for Inspection and Maintenance Records as Required by 29 CFR 1910.217(e)(1)(i) and (e)(1)(ii)

This is in response to your memo of March 23, 1978, which requested guidance on the subject standards regarding the retention period for the inspection and maintenance records.

The Office of Safety Standards is presently reviewing the retention of record requirements of the various standards. Until such changes are accomplished, the following may be used as a guideline for compliance with 29 CFR 1910.217(e)(1)(i) and (e)(1)(ii):

If an employer retains the last two records of the inspection and maintenance performed on each of his presses then he has complied with the intent of the standards.

A organization is authorized to review records which he believes are relevant to the inspection or investigation (29 CFR 1903.3). Usually, this authority is most likely to be exercised during an investigation of a complaint, fatality, or catastrophe to determine whether a violation of the Act or regulations occurred at the time alleged, or at the time of the accident. The employer's failure to maintain pertinent records may lead to the issuance of a citation. Therefore, this determination does not preclude an employer from retaining additional records, if in his judgment he feels they are essential to this operation. This guidance furthers OSHA's "common sense" approach for implementation of the Act and enforcement efforts.
Guards are required for flywheels at any height from the floor. The construction of the guard shall comply with 1910.219(b)(1)(i). A widely used basis for design is to support twice the static weight of the contained parts.

INTERPRETATION
29 CFR 1910.217(b)(1); 1910.219(b)(1)(i)

December 18, 1975

MEMORANDUM

This memorandum is in response to your correspondence dated October 6, 1975, requesting clarification of the required strength of flywheel guards.

The requirements of 29 CFR 1910.217(b)(1) applies to flywheels on all presses regardless of their distance in height from the floor, with construction such as described in 29 CFR 1910.219(b)(1)(i). In addition, the design of the brackets is intended to be of such strength to contain the wheel if the shaft should break or the wheel come off. A widely used basis for design of these brackets is the ability to support twice the static weight of parts to be contained. There is no provision for the guard to retain fragments in the event of disintegration.
RECORD ID 1190

STANDARD NUMBER 1910.217 (b)(3)(ii); 1910.217(b)(4)(iii)

INFORMATION DATE 780223

ABSTRACT Documentation is not available in the National Consensus Standard (for which information was gathered on compression and tension springs) to support the theory that compression springs are more reliable than tension springs. However, the use of tension springs on power presses shows that the employer has complied with the intent of the standard and, therefore, should receive only a de minimis violation.


February 23, 1978

MEMORANDUM


This is in response to your letter of September 28, 1977, regarding a request for comments and guidelines concerning the use of tension springs in lieu of the required compression springs on power presses. It further confirms discussions between Mr. N and Mrs. P on this subject.

Our research reveals that the requirement originated years ago in the National Consensus Standard with the theory that compression springs are more reliable than tension springs. However, there are no documents available to support this requirement.

In view of the fact that the standard requirements for compression springs are not supported and the tension springs appear not to present a hazard, the employer has complied with the intent of the standards. Therefore, the situation would be considered a de minimis violation.

A copy of your correspondence and this response are being forwarded to the Directorate of Safety Standards Programs for information purposes.
Hair pin guards are adequate for mechanical power presses if they adjust to the size of the material being fed to the press and return to the closed position when the material is removed as described in 1910.217(c)(1)(i) and Table 0-10.

March 5, 1980

Assistant Ms. E has asked me to respond to your letter dated February 8, 1980, requesting a permanent variance from Section 1910.217(c)(1)(i) Mechanical Power Presses - Point of Operation Guarding, of the Occupational Safety and Health Standards.

You have stated that you operate mechanical power presses to size the ends of metal tubing. These tubes range from approximately 10" to 50" in length and from approximately 1-1/2" to 5" in diameter. You further state that the point of operation on your presses are currently guarded on all sides by hair pin guards. You insert the tubes to be sized into an opening in the hair pin guard which is slightly larger than the diameter of the material being fed. The opening is approximately 7-1/2" to 9-1/2" from the point of operation depending on the press. You have requested a variance on the basis that the opening on your hair pin guard to insert the material does not meet the time and distance requirements of Table 0-10 of the standard.

OSHA Program Directive STP 1-12.21, Mechanical Power Presses authorizes in Section 4.b. a guard or fixed barrier attached to the frame, die, or base of a press and prevents the operator from putting his hands or fingers into the point of operation even when the press is not cycling (copy enclosed). If your hair pin guard is attached to the frame and fully encloses the point of operation (danger zone) and the opening is adjustable to the size of the material being fed to the press and the adjustable guard returns to the closed position when the material is removed from the press, you will be meeting the intent of Section 1910.217(c)(1)(i). Therefore, a variance is unnecessary.

Affected employees and their authorized representatives shall be informed of this clarification in the same manner they were informed of your request for a variance.

Our (City) District Office is in agreement with this clarification.
This interpretation letter reviews engineering methods suggested by OSHA for meeting requirements of 1910.217(c) after a request for variance was denied. The recommendation included barrier guard with foot pedal or a descending barrier guard.

Interpretation

29 CFR 1910.217(c)(3)(vii)

October 2, 1979

Assistant Secretary E has asked me to respond to your letter dated September 18, 1979, concerning your request for a permanent variance from Section 1910.217(c)(3)(vii) Mechanical Power Presses - Point of Operation Devices, of the Occupational Safety Standards.

You have indicated that the product is equipped with a barrier guard and a two-hand control device. Although neither the device nor the guard meets the requirements of the standards, you contend that together they afford greater protection than that provided by the standards. Since the two-hand control device was determined inadequate by an OSHA representative, we have concluded that a variance in your situation is inappropriate because you have failed to provide an acceptable alternative to the standard. However, we believe that protecting the press operator from the point of operation can be accomplished with an effective barrier guard.

After an evaluation of the photographs and discussion with the (City, State) Area Office, we recommend that one of the following guards be utilized to bring your press into compliance with applicable requirements of Section 1910.217(c) and Table 0-10:

(1) a barrier guard with a foot pedal or
(2) a descending barrier guard (basket type) which does not permit entry into the point of operation when the ram descends, and operates in front of the ram and before the ram.

If compliance with the standards is not feasible with one of the above barriers, compliance with the two-hand control device requirements in Section 1910.217(c)(3)(vii) will then become mandatory.

Accordingly, no further action will be taken on your request for variance. Affected employees and their authorized representatives shall be informed of our decision in this matter in the same manner they were informed of your request for variance.

The (City) Area Office is in agreement with our decision.
This interpretation letter provides clarification of the meaning of the term "Hands in the Die" in 29 CFR 1910.217(c)(5). "Hands in the Die" means placing the hands between stamping dies either to insert new sheet material or to remove stamped goods. The use of hand feeding tools precludes putting one's "Hands in the Die". If an employer permits an employee to stick his hands into a point of operation, then control reliability and brake monitoring must be provided.

(NOTE: The Program Directive No. 100-100 is no longer valid.)

INTERPRETATION
29 CFR 1910.217(c)(5)

OCT 28, 1983

MEMORANDUM

SUBJECT: Interpretation of 29 CFR 1910.217(c)(5) Relative to "Hands in the Die"

This memorandum was prepared in response to your recent request for a written interpretation of the "Hands in the Die" question. Your specific question addressed the condition where hand feeding tools are utilized for placing and removing materials in and from the power press point of operation, and whether this latter procedure constituted placing "Hands in the Die."

The attached settlement of the case of D vs (Company), thoroughly discussed the above situation along with the conditions for the employer using a control system and brake monitor in accordance with 1910.217(c)(5)(i). Inputs to this settlement were provided by Messrs. A, B, J, D, and T.

A reading of this settlement indicates the consensus of people involved, that "Hands in the Die" has a literal meaning and that the use of hand feeding tools precludes putting one's "Hands in the Die."

Questions on this memorandum may be directed to Mr. B in the Technical Support group of this office.

FURTHER RECOMMENDATION OF SETTLEMENT

This memo updates settlement memos dated May 4, 1981 and August 17, 1981. The attached Stipulation incorporates the following modifications from the Stipulation previously forwarded on May 4, 1981:

1) The penalty sums have been rearranged to reduce the penalty for Item 1 - serious to $20.00. Respondent had sought a characterization of "other", we agreed instead to reduce the penalty from $65 to $20, to reflect a low probability of an accident occurring (due to the short period of time spray painting was performed).

2) Citation 1, Item 10 involves a violation of 1910.217(c)(5)(i). We are agreeing to permit the use of hand tools in conjunction with a two hand control to abate this violation.

The standard applies to machines with two hand control guarding where employees "feed or remove parts by placing one or both hands in the point of operation." Under these circumstances, the machines' braking and clutching systems must be supplemented with control reliability and brake monitoring systems.

This requirement can be traced back to the debate which inevitably forced OSHA to drop the "no hands in dies" requirement from 1910.217. OSHA had wanted employees to keep their hands out of the point of operation at all times, hence "no hands in dies."
Industry argued that the type of feeding systems needed to fulfill this requirement were both technologically and economically infeasible and that statistics did not support the alleged need for "no hands in dies."

Thus the standard was modified to require additional safeguards for those employees who would place their hands in the dies. As a result, control reliability and brake monitoring system requirements were added to improve the reliability of the machines' braking and clutching systems while hands are under the dies.

During this investigation, person determined that an employee was feeding the cited press by hand. Respondent seeks to abate by the use of hand tools, which if properly used will keep hands out of the dies.

Digging into this abatement request, I found that there is still some debate as to what constitutes acceptable abatement. The debate has been fueled by what some regard as varying interpretations of the standard issued by OSHA's National Office.

In a 1976 public statement, Mr. J, OSHA's Chief of Standards Development, advised industry that "If hand tool feeding is feasible and hand tools are always used, that constitutes a hands out of dies operation and there is no requirement for a brake monitor or control reliability." (CCH 10,387, p. 10,601 in the transfer binder).

In Program Directive #100-100 issued 2/2/78, discussing control reliability and brake monitoring requirements, the following is found: "Therefore, when these devices i.e., two-hand controls, etc. are used on part revolution clutch presses, the control reliability system and brake monitor system are required to assure operator's safety from the point of operation hazard." This is due to the fact that the two-hand control will not prevent an employee's hand from entering the point of operation during feeding. (See CCH 11,201, p. 12316).

The debate concerns whether Directive #100-100 constitutes a different interpretation than the 1976 position. OSHA had been operating with the position that hand tools are not an acceptable alternative to the extra reliability systems. This position is taken by Mr. J of the National Office's Office of Safety Standards Programs. Mr. B of the Regional Office advised that the use of hand tools should suffice, but recommended that advice be sought from Mr. A, the OSHA Institute's instructor on machine guarding. This man he has advised me is the most knowledgeable in the agency.

Mr. A advised that the use of hand tools would keep hands out of dies and is safer and preferable to working with hands in dies, even with the extra safety systems in place. It is interesting to note that he wrote the control reliability and brake monitoring sections of the standard which he claims is misunderstood by the National Office.

Mr. J and Mr. B have advised me that Mr. A is the recognized expert and that his advice is correct.

The irony of this debate is that the National Office would have the employer spend a great deal of money installing brake monitoring and brake reliability and allow the employee to stick his hands in the dies all day long. At the same time, the use of an inexpensive system of hand tools used in conjunction with a two-hand guard, which would prevent entry of the hands into the point of operation, would not be considered acceptable.

I believe that Messrs. A, B, J and T are right. First, it is safer to keep hands out of dies altogether. Secondly, I believe that the agency's bulletins are consistent with the use of hand tools. The standard only comes into play if hands are in the point of operation. Hand-tools prevent that possibility. Further, Directive #100-100 requires control reliability and brake monitoring because the two-hand control will "allow" entry of hands to the point of operation. The use of hand tools prevents that possibility.

Accordingly, if an employer will permit employees to stick their hands into a point of operation, then control reliability and brake monitoring must be provided. But if hands do not enter the point of operation, there is no requirement under 1910.217(c)(5)(i) for the implementation of those systems.

Based on the above, I have reduced abatement time from one year to 30 days.
An interpretation letter regarding a two-hand control device, used to operate a mechanical power press in continuous mode. Any adjustment of the two-hand control device that does not require concurrent use of both hands for operation of the press is in violation of the OSHA 29 CFR 1910.217 (c)(3)(vii). If one of the buttons is released during the continuous run, the control circuitry must be such that the press will stop.


December 21, 1992

Dear Mr. S:

Thank you for your inquiry of June 24, requesting an interpretation of Occupational Safety and Health Administration (OSHA) standards concerning a two-hand control device, used to operate a mechanical power press in continuous mode. We apologize for the delay in responding.

The enclosed OSHA requirements for two-hand controls, 29 CFR 1910.217(c)(3)(i)(e), (c)(3)(vii) and STD 1-12.21, specify by design, construction and separation the concurrent use of both hands to trip the press. This means that the control circuitry must be such that the press cannot be tripped unless the initiating depression of the control buttons occurs at the same or nearly the same instant for each button. A discrepancy of only a small fraction of a second is allowed between the initiating depressions of the buttons. Since this is the case, it appears that the control circuitry of the press referenced in your letter does not conform to the requirements of 1910.217.

We are providing the following additional clarification of the issue with respect to all mechanical power presses. If the two-hand control is adjusted to the requirements of OSHA 29 CFR 1910.217(c)(3)(i)(e) and (c)(3)(vii) standards, and STD 1-12.21, and then, one of the buttons of the two-hand control device is tied down, the power press would be inoperable since the two hand controls could not be operated concurrently to initiate and maintain the continuous operation of the press. The initiation of the initial stroke requires the nearly simultaneous depression of both of the controls. Any adjustment of the two-hand control device that does not require concurrent use of both hands for operation of the press is in violation of the OSHA 29 CFR 1910.217(c)(3)(vii). If one of the buttons is released during the continuous run, the control circuitry must be such that the press will stop.

The clutch/brake control systems which contain both single and continuous functions must be designed so that completion of continuous circuits may be supervised by the employer. The initiation of continuous run must require a prior action or decision by the operator in addition to the selection of continuous on the stroking selector, before actuation of the operating means will result in continuous stroking.

We appreciate your interest in employee safety and health. If we can be of any further assistance, please do not hesitate to contact us.
OSH A Program Directive #100-29

Subject: 29 CFR 1910.218 Forging Machines.

1. Purpose:
To clarify appropriate enforcement of 29 CFR 1910.218.

2. Directives Affected:
Cancels FIM #74-82 dated October 15, 1974.

3. Background:
Several situations have arisen where alleged violations of hot forging operations have been cited under 29 CFR 1910.212 and Section 5(a)(1) of the Act. The citations were inappropriate in that there were specific standards to cover the operations in 29 CFR 1910.218.

4. Clarification:
Employees working with machines used in the forming of hot metal including hot trimming Presses, forging hammers, hot forging presses, upsetters, hot bending and hot metal presses, etc., use tongs of a sufficient length to avoid heat as well as the ram. Therefore the standards contained in 29 CFR 1910.218 shall be applicable.

5. Action:
All citations which have been issued for a violation of 29 CFR 1910.212, Point of Operation Guarding, or 5(a)(1) of the Act involving the above situations shall be withdrawn. It is further advised that all penalties which have been collected as a result of such citations be returned to the employer involved.

A citation for violations of 29 CFR 1910.212 or 5(a)(1) would be appropriate only when a condition exists that could be recognized as a hazard and conditions are other than normal forging machine operations covered by 29 CFR 1910.218.
RECORD ID 2053

STANDARD NUMBER 1910.218(a)(3)(viii)
INFORMATION DATE 750214

ABSTRACT  This interpretation letter addresses the standard for Forging machines -- Hammers and Presses. The requirement for a scale guard at the back of the hammer is intended to protect other employees from flying scale. If other employees are not present within 6 feet of the forging hammer, the scale guard is not required.


February 14, 1975

Dear Sir:

This is in reference to your application for a variance from Section 1910.218(a)(3)(viii) Forging Machines - Hammers and Presses, of the Occupational Safety and Health Standards.

Section 1910.218(a)(3)(viii) requires that a scale guard be provided at the back of every hammer to stop flying scale. The requirement for the guard at the back of the hammer is to protect other employees from flying scale. The operators would be at the front of the hammer protected from the flying scale by proper protective clothing. In addition, it is recognized that a scale guard on the front of the hammer would interfere with the work procedures.

Your variance application and the information obtained in the visit to your facility indicate that your forging hammers do not fall within the scope of the standard in that the operators work completely around the hammer, and that there are no other employees working within 20 feet of the hammer. Therefore, there are no employees exposed to a hazard from the flying scale and a scale guard is not required.

If the current operations should change so that there are other employees within 6 feet of the forging hammers, a barricade should be installed behind the operators to prevent flying scale from striking these employees. Frequent cleaning of the area is also necessary to maintain good housekeeping.

Accordingly, no further action will be taken on your variance application. The interim order granted in the Federal Register of July 2, 1974 (39 FR 24442) is now moot.
An interpretation letter regarding Standard 1910.218(e)(1)(i) and if it applies to pneumatic drop hammers used in hot forging operations. There are different standards which cover pneumatic drop hammers used in hot and cold forging operations.

Dear Sir:

This is in response to your inquiry addressed to Mr. J concerning the application of 29 CFR 1910.218(e)(1)(i) to the type of hammer referenced in your attached brochure.

As you were informed in a telephone conversation with a member of my staff, the use of the forging machines must be determined before the standard can be properly enforced. 29 CFR 1910.218(e)(1)(i) shall be enforced for pneumatic drop hammers used in hot forging operations. However, pneumatic drop hammers used for cold forging operations are not covered by the standard, but are covered by other applicable standards and section 5(a)(1) of the Act.

April 18, 1979

After reviewing the case file of a survey made by one of my consultants, I am left with the question does 1910.218(e)(1)(i) of the Occupational Safety and Health Standards, relate to the type of hammer of which I am enclosing a brochure.

This appears to be a fairly simple question but when the need for a safety cylinder head was drawn to our client's attention, he contacted the manufacturer of the hammer and received the following information:

"We are at a loss as to the function a safety cylinder head would perform as applied to our type of drop hammer."

"We feel that the safety cylinder head described by OSHA applies to Steam or Hot FORGING type Hammers and not Pneumatic Lift Gravity Drop Head Hammers."

Analyzing these quotations, we are assuming that the cylinder does not have a safety cylinder head. So we feel that there is a violation of 1910.218(e)(1)(i) should it apply to this particular Hammer. Your assistance and interpretation in solving this condition will be appreciated.
OSHA Instruction STD 1-12.14
October 30, 1978
April 25, 1977

OSHA PROGRAM DIRECTIVE #100-64

Subject: Clarification of 29 CFR 1910.219, the Terms "Enclosed" and "Fully Enclosed", As applying To Power Transmission Belts.

1. Purpose:
To provide clarification of the application of "enclosed" and "fully enclosed" as applying to power transmission belts, and guarding by location.

2. Documentation Affected:
None.

3. Background:
In some instances the application of "enclosed" and "fully enclosed" has been interpreted to mean that all four sides of a power transmission belt must be covered by an enclosure. This application has been enforced even when guarding by location has been accomplished by the belts running close enough to walls and other objects to present no exposure to employees.

4. Action:

a. When there is no employee exposure to power transmission belts because they are naturally guarded by location, then no enclosure or guarding is required.

b. "Enclosure", as used in 29 CFR 1910.219(e)(3) (ii), for vertical and inclined belts is intended to mean that only the portion of a belt seven (7) feet or less from the floor is required to be enclosed by a guard.

c. "Fully enclosed" applies to the sides of a power transmission system not guarded by location as described in 29 CFR 1910.219(e) (1)(i) which includes both runs of a horizontal belt, pulley and flywheel (small units with slightly inclined belts are included in this category.)

5. Effective Date:
This directive is effective upon receipt and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-12.19
October 30, 1978
OSHA PROGRAM DIRECTIVE #100-96


1. Purpose:

The purpose of this directive is to provide a uniform means of evaluating the nip point and moving belt hazard on light and medium duty sewing machines such as those used in apparel manufacturing and sewing of light weight materials.

2. Documentation Affected:

This directive supersedes Field Information Memorandum #76-26 dated October 13, 1976.

3. Background:

a. OSHA has received letters and requests for variance from the subject standards for guarding belts and hand wheels above the sewing machine table tops. Most owners and users agree that drive wheels and belts beneath the tables should be fully enclosed, but enclosure of the belt and hand wheels above the tables is unnecessary and would interfere with sewing operations. Since the operator usually uses both hands to feed and guide the material while the belt and hand wheel are in motion, a safe distance is maintained from the nip point. The operator's hands should be near the wheel nip point to raise or lower the needle. only when the motor is disengaged. Reports indicate that accidents and injuries resulting from exposure to belts and hand wheels are very low.

b. 29 CFR 1910.219(a) excludes the following belts, except when they are operating at more than two hundred and fifty (250) feet per minute:

   (1) Flat belts one (1) inch wide or less;

   (2) Flat belts two (2) inches wide or less, which are free from metal lacing or fasteners;

   (3) Round belts one-half (1/2) inch or less in diameter; and

   (4) Single strand V-belts, thirteen thirty-seconds (13/32) inch wide or less.

c. This directive applies only to flat and round belts without metal fasteners or lacing since the consensus is that V-belts or belts with metal lacing or fasteners are hazardous.

d. Sewing machines used to sew material such as heavy canvas, denim, leather, vinyl or other heavy material are not covered by this directive.

4. Action:

a. When sewing machines with unguarded hand wheels and belts located above the table tops are encountered, the following guide is provided to determine if a hazard exists:

   (1) When the belt and wheel are in motion, hands are not placed in the wheel, nip point or belt area.

   (2) Distance between the point where the operator is holding material with both hands and the belt area is sufficient to prevent any part of the operator's body from being exposed to danger.
OSHA Instruction STD 1-12.19 (cont.)

(3) The table top is arranged or of such size to prevent any other employee, passing by or working adjacent to the wheel or belt, from being exposed.

(4) There is no past history of injuries.

b. If the preceding conditions are met, the exposure is minimal and it shall be considered de minimis.

5. Effective Date:

This directive is effective immediately and will remain in effect until cancelled or superseded by either a later directive or change in the standards.
OSHA cannot approve stopping time limitations of conveyor systems. The stopping distance is dependent on the length of the conveyor as well as the material it carries. Quickly stopping a conveyor with large items on it could create another hazard. Employers must prevent employee access and exposure to the hazardous components of an operating conveyor system as provided at 1910.212(a)(1). There are ANSI standards for conveyor systems which provide guidance for compliance with OSHA. When there is no employee exposure to a hazard, stopping distance is a moot issue.

(NOTE: This standard was last amended in 1984.)

Employers are required to provide for the safety of employers who are potentially exposed to a moving conveyor system. Fixed or interlocked barrier guards and work practices which eliminate employee exposure are required by OSHA under 29 CFR 1910.212 (a)(1) and 29 CFR 1910.219. The American National Standards Institute, Inc. (ANSI) has published the following pertinent standards:

1. ANSI/ASME B20.1-1984, Conveyors
2. ANSI/ASME B15.1-1984, Power Transmission

For repair, maintenance, and other service related activities where employees are exposed to the hazards of unexpected energization, start-up, or release of stored energy from conveyor systems, the employer must provide and implement a lockout/tagout procedure. The procedure must require isolating all potentially hazardous energy while the task is being performed and be at least as effective as the ANSI 44.1-1982 consensus standard. Employers who permit worker access to conveyor systems without worker safeguarding may be in violation of the Occupational Safety and Health Act (the Act), Section 5(a)(1), which states:
“Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.”

Conveyor systems which meet the safety guidelines and requirements of the ANSI/ASME B20.1-1984 standard are generally acceptable to OSHA. Since these systems do not remain in the control of the manufacturer and because users may misuse, modify or otherwise introduce hazardous employee exposures, OSHA safety professionals can only evaluate each system in the working environment to ascertain compliance with the Act.

SOURCE LETTER

September 17, 1986

Reference: Safe Stopping For Tilt Tray Sorter

Dear Sir:

(Company) manufacturers a tilt tray sortation conveyor being used extensively in industry for distribution warehousing, mail order houses, airline baggage handling facilities, postal facilities, etc. These material handling conveyors consist of a carriage supported by four wheels and pulled by a continuous chain, with carriages on approximately 27" centers. These carriages are equipped with a tilting and latching mechanism on which is attached a fiberglass or sheet metal tray. These conveyors run at a speed of approximately 400 feet per minute and can be automatically induction loaded or manually loaded. Depending upon the load or package placed on the tray, that tray is programmed to tilt or discharge into a particular chute for sorting purposes. As an example, all baggage designated for a particular flight will be dumped in a specific chute, all automatically by a programmable controller and computer operated system so that all baggage destined for a particular flight will be dumped into a specific chute.

Enclosed are three (Company) brochures which will hopefully give you a better indication and visualization of a company tilt tray sortation system.

Our stopping time using standard braking devices would take approximately two seconds with the conveyor traveling at 400 feet per minute after the pullcord or stop button has been energized. This equates to approximately 6.75 feet of travel. Any less stopping time would require specially designed stopping devices, and stopping a moving mass of approximately 12,000 pounds in less than two seconds, could cause overstressing of critical chain pins or driving lugs on the conveyors.

We request that OSHA review this information and send to my attention a letter approving the two second stopping time for this material handling conveyor, so that both we and our customers will be assured that we are in compliance with OSHA.
RECORD ID 1315

STANDARD NUMBER 1910.219(b)(1)(vi)
INFORMATION DATE 830608

ABSTRACT An interpretation letter regarding the guarding of flywheels on power presses. Press flywheels must be guarded if any part is 7 feet or less above a floor or platform. If the flywheels are above the working area, the guard must be able to contain the flywheel in the case of shaft or mounting failure, as provided in ANSI B15.1-1972. The guard can be designed to provide access.

INTERPRETATION 29 CFR 1910.219(b)(1)(vi)

June 8, 1983

Dear Sir:

This is in further response to your letter dated April 5, 1983, concerning the guarding of flywheels on power presses.

The Occupational Safety and Health Administration's General Industry Standards 29 CFR 1910.219(b)(1) and (c)(1)(vi) require guarding of the press flywheel. Furthermore, the latter provision requires that flywheels above working areas be provided with guards of sufficient strength to contain the flywheel in the event of shaft or wheel mounting failure.

Reference to ANSI B15.1-1972, the current version of the source standard, rapidly demonstrates that structural failures are possible. Appendix AB.1 of ANSI B15.1 indicates that failures of a fatigue nature can be anticipated, particularly for older machines that have been continually exposed to cyclic loads. Therefore, substantial guarding is necessary to provide safety.

That company die setter's need to have easy access to the flywheel for die-setting for is completely valid and should be a major consideration of the guarding provided. In that regard, the guard configuration enclosed is recommended for consideration.
OSHA INSTRUCTION STD 1-13.1
October 30, 1978

OSHA PROGRAM DIRECTIVE #100-1

SUBJECT: Reduction of Air Pressure Below 30 psi for Cleaning Purposes

Attachment: Acceptable Methods for Complying with 41 CFR 50-204.8 and 29 CFR 1910.242(b)

1. Purpose. To provide guidance and examples of what alternate systems will meet the requirements of this section, and to clarify its intent.

2. Background. A number of inquiries have been received requesting a clarification of the meaning of 1910.242(b) also known as 41 CFR 50-2048 under the Walsh-Healey Act.

3. Interpretation. The phrase "reduce to less than 30 psi" means that the downstream pressure of the air at the nozzle (nozzle pressure) or opening of a gun, pipe, cleaning lance, etc., used for cleaning purposes will remain at a pressure level below 30 psi for all static conditions. The requirements for dynamic flow are such that in the case when dead ending occurs a static pressure at the main orifice shall not exceed 30 psi. This requirement is necessary in order to prevent a back pressure buildup in case the nozzle is obstructed or dead ended. See enclosure (1) for two acceptable methods of meeting this requirement. Also, there is no intent to restrict the diameter of the nozzle orifice or the volume (CFM) flowing from it.

"Effective chip guarding" means any method or equipment which will prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other workers. Effective chip guarding may be separate from the air nozzle as in the case where screens or barriers are used. The use of protective cone air nozzles are acceptable in general for protection of the operator but barriers, baffles or screens may be required to protect other workers if they are exposed to flying chips or particles.

4. Action. Inquiries about subject section should be handled in accordance with this instruction.

5. Effective Date. This instruction is effective immediately, and will remain in effect until canceled or superseded.

Vol. 2-149
ABSTRACT An interpretation letter regarding a response to request for variance from 1910.242(b). Compressed air for cleaning purposes at pressures at or greater than 30 psi is permissible if the outlet or source is fitted with a relief device that drops the pressure to less than 30 psi and the flow is dead-ended. In addition, the end nozzle will be fitted with an effective chip guard. Appropriate personal protective equipment shall be worn as called for in the standard. OSHA's STD 1-13.1 gives guidance for determining the appropriate configuration to comply with the standard.

(NOTE: This standard has not been amended since issuance.)

INTERPRETATION 29 CFR 1910.242(b); 1910.132(c)

Dec 6, 1985

Dear Sir:

The acting Assistant Secretary has asked me to respond to your letter dated November 25, requesting a permanent variance from Section 1910.242(b). Compressed air used for cleaning, of the Occupational Safety and Standards.

The enclosed copy of the OSHA Instruction STD 1-13.1 describes the intent and application of this standard. In short, the use of compressed air for cleaning purposes at pressures at or greater than 30 psi is permissible if the outlet or source is fitted with a relief device that drops the pressure to less than 30 psi if the flow is dead-ended. Appropriate personal protective equipment shall be worn as called for in the standard.

You will have to evaluate your procedures in terms of this directive.

A variance from Section 1910.242(b) is unnecessary, therefore, no further action will be taken on your application.

SOURCE LETTER

November 25, 1985

Dear Sir:

On the 6th of June, 1985, Mr. J, an OSHA inspector appeared at the establishment for an on-site inspection as the result of a complaint received in the City Office (Exhibit A). Appropriate tests were conducted with regard to the air quality of the laboratory cited (Research Building 324B) and everything was found to be satisfactory. However, during the course of the inspection, we were cited for an air hose which was in violation of OSHA-29CFR 1910.242(b) "compressed air used for cleaning purposes" which was not reduced to 30 psi or less. A citation was issued on 6/21/85 (Exhibit B). The problem was rectified and notice of our compliance was sent to Mr. J on 7/10/85 (Exhibit C).

The purpose of this letter is to file for a permanent variance to 29CFR 1910.242(b) for the establishment. The establishment has an active Care of Collections Program and part of that program has been the lacquering of brass and silver objects entrusted to its care. In dealing with precious objects of art, special care must be given to the polishing of these objects prior to lacquering. The individuals involved with this task consider the procedures established by them to be a safe way to remove tarnish from an object. Commercial polishes cannot be used for the removal of tarnish from delicate art objects for they contain large amounts of abrasive material as well as tarnish inhibitors and other chemicals such as ammonia which can cause further degradation of the object if not completely removed. The establishment has chosen to...
use only a fine abrasive called whiting (calcium carbonate) which is made into a slurry by mixing with limited amounts of reagent alcohol (denatured ethyl alcohol) for the polishing of its precious metal works of art.

When an object is polished in Room 324B of the Research Building (Photo 1) small amounts of abrasive residue are trapped in the crevices of the object (Photo 2). All of the polish residue must be removed from the object prior to lacquering and this is done by blowing compressed air over the object (Photos 3 & 4). All of the polish residue is removed from the object by this procedure (Photo 5), thereby rendering the surface suitable for lacquering.

As the result of the citation, the compressed air supply has been fitted with a product which is in compliance with 29CFR 1910.243(b). However, there is insufficient pressure to remove the polish residue that is trapped in the crevices of the object as the result of the polishing process (Photo 6). While it is sometimes possible to brush the residue from brass or bronze objects, this method cannot be applied to silver objects. Silver is soft in comparison to brass and bronze, and if a brush which is stiff enough to remove the residue is used, scratching of the surface of the object results. Consequently, compressed air with sufficient pressure to remove the residue is the only way to completely remove the residue from the surface of the object.

The compressed air line also serves another very important function in that it is used to dry the object. Metal holloware pieces are often intricate in design with many nooks and crannies that can hold liquid cleaning solutions. These areas often cannot be reached by anything other than compressed air. If the object is not thoroughly dried inside and out, such solutions can escape at a later time after the object has been placed back in the establishment and thereby severely damage other objects such as tables, carpets, floors, etc. in the establishment.

The bottom line is that we need to have a compressed air source with a nozzle pressure in excess of the 30 psi limit imposed by OSHA. The photographs clearly demonstrate that every precaution is being taken to insure the safety of the technician(s) carrying out the process as is illustrated by the fact that gloves are worn as part of the cleaning procedure. The establishment feels that it has explored every alternative to work within the confines of 29CFR 1910.242 (b) and has not found an acceptable alternative. Therefore, the establishment wishes to be granted a permanent variance to 29CFR 1910.242 (b) for the purpose of cleaning and preparing works of art for our lacquering program.

Inadequate ventilation for workers using solvents (acetone, xylene, petroleum benzine, lacquer thinner) and aluminum oxide in lab 324B of the Research Bldg. Two workers work here cleaning and lacquering metal objects. Two elephant trunks and a hood are available but still not enough.
OSHA Instruction STD 1-13.2A

DEC, 9 1985

Subject: Explosive Actuated Fastening Tools

A. Purpose. This instruction provides specific interpretation as to when magazine-fed, explosive power operated hand tools are loaded.

B. Scope. This Instruction applies OSHA-wide.


D. Action. OSHA Regional Administrators and Area Directors shall ensure that when magazine-fed tools covered by these standards are inspected, the tool is not considered loaded until the magazine feeds the tool, even though the magazine is in the tool. The operator's instructions shall provide for removing the magazine when the tool is left unattended.

E. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is promptly forwarded to each State designee.

2. Explain the technical content of this change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions, and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring shall also be used to determine if this change has been implemented in actual performance.

F. Application. For the General Industry, Construction and Maritime industries, the following standards shall apply:


Construction, 29 CFR 1926.302(e)(5) and (6).

Maritime, 29 CFR 1915.135(c)(3).

G. Explanation. In developing and promulgating the standards, the magazine or clip-fed explosive power load was not considered. The magazine contains several explosive power loads and single loads are fed into the ram (firing chamber) as needed. Until such time as single loads are fed into the ram, explosive power loads, be made to place the load into the firing position.
OSH A
Ins
struc
tion ST
D 1-13.4
AUGUST 5, 1981
SUBJECT: Portable Belt Sanding Machines as Covered by 29 CFR 1910.243(a)(3) and 29 CFR
1926.304(f)
A. Purpose. This instruction provides guidance to allow equitable enforcement of 29 CFR 1910.243
(a)(3) and 29 CFR 1926.304(f) as they pertain to the guarding of portable belt sanders.
B. Scope. This instruction applies OSHA-wide.
C. Action. OSHA Regional Administrators/Area Directors shall classify violations of 29 CFR
1910.243(a)(3) and 29 CFR 1926.304(f) as de minimis violations where the employer has complied with
appropriate safeguarding precautions as follows:
1. Portable belt sanding machines shall be provided with guarding on one side at the nip point
where the sanding belt runs into a pulley,
2. Handles shall be so located that a barrier interrupts any straight line path between the gripping
surface of a handle and the nip point of a pulley, and
3. The unused run of the sanding belt shall be guarded on one side and at the rear.
D. Federal Program Change. This instruction describes a Federal program change which affects State
Programs. Each Regional Administrator shall:
1. Ensure that this change is forwarded to each State designee.
2. Explain the technical content of the change to the State designee as requested.
3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in
writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should
include a description either of the State's plan to implement the change or of the reasons why the
change should not apply to that State.
4. Review policies, instructions and guidelines issued by the State to determine if this change has
been communicated to State program personnel. Routine monitoring activities (accompanied
inspections and case file reviews) shall also be used to determine if this change has been
implemented in actual performance.
E. Background. Revision of 29 CFR 1910.243(a)(3) and 29 CFR 1926.304(f) are under consideration by
the Mechanical Engineering and Construction Standards Divisions. The standards presently in effect
prescribe guarding requirements which essentially prevent flush sanding at corners, and important feature
and an application of portable belt sanders. The modified form of guarding, as presented by this
instruction, permits flush sanding at corners and provides for operator safety.
OSHA Instruction STP 2-1.118

March 20, 1985
Office of State Programs

Subject: Power Lawnmowers; Amendments

A. Purpose. This instruction describes a Federal Program change to the Regions and State designees.

B. Scope. This instruction applies OSHA-wide.

C. Reference. OSHA Instruction STP 2-1.117, August 31, 1984.

D. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this instruction is forwarded to each State designee.


3. Explain the technical content of the Federal Register notice at 50 FR 4648, February 1, 1985, Power Lawnmowers; Amendments, to the State designee as requested.

4. Ensure that each State designee acknowledges receipt of this instruction in writing, within 30 days of notification, to the Regional Administrator. The acknowledgment should include (a) the State's plan to adopt and implement the standard, (b) the State's plan to develop an alternative standard, which is as effective, or (c) the reasons why no standard is necessary to maintain a program which is as effective.

5. Inform each State designee that the State must promulgate a standard within 6 months of the date of Federal publication that is "at least as effective" as 29 CFR 1910.243 and submit a plan supplement to the Regional Administrator. If a State already has a standard in this area that it deems to be "at least as effective" as the Federal, the State must submit it to the Regional Administrator as a plan supplement.

E. Different Standards. Section 18(c)(2) of the OSH Act requires that State standards be "at least as effective" as the Federal and, when applicable to products used or distributed in interstate commerce, be required by compelling local conditions and not unduly burden interstate commerce. In addition to the "at least as effective" criterion, this "product clause test" will be applied to State standards with substantively different requirements from the comparable Federal standard, as described in STP 2-1.117. A State standard expanded in scope from the Federal is considered to be a substantively different standard.

F. Interim Enforcement. Under 29 CFR 1953.23(a) and (b), State plan States are provided up to 6 months from publication of the Federal standard in the Federal Register to promulgate an identical or "at least as effective" as standard. If a State, for whatever reason, is unable to promulgate a standard in a timely manner (6 months for a permanent standard, 30 days for an emergency temporary standard) the State shall be expected to provide assurance that it will enforce the substantive provisions of the new or revised Federal standard through such means as use of its general duty clause or equivalent, temporary adoption of an identical standard, or an alternative, specified enforcement mechanism.

G. Explanation.

1. A final rule, published in the Federal Register on October 24, 1978 (43 FR 49726), revoked certain general industry safety and health standards. An error was made in revoking the definitions for "sulky type mower," 1910.241(c)(10) and "deadman control," 1910.241(c)(11). These terms are still used in 1910.243 and should not have been deleted. The term "sulky type mower" is used in the current standard for power lawnmowers at 1910.243(e)(1)(i), while the revoked definition for "deadman control is referenced in the same standard at 1910.243(e)(3)(vii) and 1910.243(e)(4)(vi).
2. OSHA is issuing the appropriate correction at this time by explaining the meaning of the terms "sulky type mower" and "deadman control" in the above mentioned paragraphs of 1910.243 in which those terms are used.
JUN 20, 1984

Should statistical data become guar

The requirement and not a consideration

The new threaded bushings become, in application. It has been

The standard

As you are aware, OSHA adopted the ANSI B7.1-1970 consensus standard and incorporated that standard into 29 CFR 1910 as 1910.243(c). 29 CFR 1910.243(c)(2)(ii) permits the use of "revolving cup guards," as did the ANSI B7.1-1970 standard. Since that time, the ANSI B7.1 committee has updated B7.1-1970 to B7.1-1978 and has eliminated mention of revolving cup guards, but has not prohibited their use. OSHA has not updated this standard and therefore continues to permit "revolving cup guards" as acceptable safeguards.

INTERPRETATION
29 CFR 1910.243(c)(2)(ii)

JUN 20, 1984

Dear Sir:

This is in response to your letter of May 10, 1984, to Mr. K of our (City) Regional Office. Your letter pertains to the acceptance by Occupational Safety Health Administration (OSHA) of certain threaded bushings on type 11 grinding wheels as being safety guards.

As you are aware, OSHA adopted the ANSI B7.1-1970 consensus standard and incorporated that standard into 29 CFR 1910 as 1910.243(c). 29 CFR 1910.243(c)(2)(ii) permits the use of "revolving cup guards," as did the ANSI B7.1-1970 standard. Since that time, the ANSI B7.1 committee has eliminated mention of revolving cup guards but has not prohibited their use. OSHA has not updated this standard and therefore continues to permit "revolving cup guards" as acceptable safeguards.

The standard for revolving cup guards specifies certain minimum physical requirements for their application. It has been determined that some configurations of "threshold bushings" accommodate the requirement for revolving cup guards in that they are "made of steel or other material with adequate strength and enclose the wheel sides upward from the back for one-third of the wheel thickness." In these instances threaded bushings become, in fact, revolving cup guards and an integral part of the device. The need to maintain a clearance of up to 1/16 inch between the wheel and guard becomes a superfluous requirement and not a consideration for such integral devices.

Under our standard, therefore, OSHA must accept the use of integral revolving cup guards including appropriately configured safety bushings. However, if manufacturers declare and label the units equipped with "safety back bushings" as not constituting an equivalency to "revolving cup guards" in that their dimensions and/or strength do not conform to the requirements of 1910.243(c)(2)(i) insist upon safety guards such as those recommended by the ANSI B7.1-1978 standard.

Should statistical data become available verifying your concern for the continued use of revolving cup guards, OSHA would further explore the need for a modification of the standard.
OSHA Instruction STD 1-14.1

October 30, 1978

February 22, 1973

OSHA PROGRAM DIRECTIVE #100-23

Subject: Replacement Welding Tips


2. Background. Numerous requests for clarification have been received from employers and manufacturers concerned with the application of the term "approved apparatus" to replacement welding tips and convertor/adaptors (used for mounting tips). These inquiries were prompted by the fact that nationally recognized testing laboratories will not accept tips or convertor/adaptors for testing except as part of a completely assembled torch.

3. Interpretation. Use of replacement tips will not nullify the "approved apparatus" status of a torch, if such replacement tips are made to the same specifications as the original tip of the torch at the time of approval by the nationally recognized testing laboratory, or if the use of such tips in conjunction with convertor/adaptors results in the same specifications as the original tip at the time of approval by the nationally recognized testing laboratory.

4. Effective Date. This instruction is effective immediately and will remain in effect until canceled or superseded.
Dear Sir:

This is in response to your letter of December 15, 1985, concerning the Occupational Safety and Health Administration (OSHA) standard on welding, 29 CFR 1910, Subpart Q.

We do not recommend the use of any spray which contains chlorinated hydrocarbons for the control of spatter buildup, since phosgene or hydrogen chloride gases may be generated during welding. Carbon tetrachloride has been reported as a suspected carcinogen, therefore, its use should be severely restricted. If you must use the silicone spray to reduce spatter buildup during welding, air monitoring must be conducted to determine whether the welder’s exposure to carbon tetrachloride, and/or phosgene or hydrogen chloride has exceeded the established standards which are enforced in your country. The alternative choice to monitoring is to provide the welders with positive-pressure supplied air respirators.

We are enclosing the National Institute for Occupational Safety and Health (NIOSH) sampling and analytical methods for carbon tetrachloride, phosgene and hydrogen chloride for your reference.
ABSTRACT  This interpretation letter responds to a request for information on possible adverse effects of metal inert gas (MIG) and tungsten inert gas (TIG) welding on the eyes. 1910.252(b)(2)(H) discusses the necessary specifications for protectors and includes a table, found at (b)(2)(H), that lists the proper shield shade numbers required for various welding operations.

(NOTE: Standards 1910.251-257 were completely revised in 1910. The information referenced in interpretation letter is found in 1910.252(b)(2) of the revised standard.)

INTERPRETATION  29 CFR 1910.252(b)(2)

JAN 9, 1987

This is in response to your inquiry of December 19, 1986, to the Occupational Safety and Health Administration (OSHA) requesting information on possible adverse effects of metal inert gas (MIG) and tungsten inert gas (TIG) welding on the eyes and what precautions should be taken to negate these effects. Your letter was forwarded to the Directorate of Technical Support for response.

Enclosed for your information are excerpts on welding and eye and face protection from the encyclopedia, published by the organization, 1983. As described on page 2293, even the briefest exposures to the brilliant ultraviolet-rich light emitted by electric arcs can produce a painful conjunctivitis. This is avoided by the use of helmets and shields fitted with proper grades of optical filters.

OSHA has promulgated standards that includes requirements for welding eye protection. Enclosed is a copy of the Code of Federal Regulations, Parts 1900 to 1910. Subpart Q of Part 1910 covers welding, cutting and brazing in general industry. Section 1910.252(e)(2) of Subpart Q discusses the necessary specifications for protectors and includes a table that lists the proper shield shade numbers required for various welding operations.
MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.
This interpretation letter addresses the point in time when, under 29 CFR 1910.252 that a fire watcher for monitoring welding and cutting activities becomes a designated employee as defined in a facilities Emergency Action Plan.

This interpretation is in response to a June 1, 1993, request from a DOE Operations Office asking if by virtue of designating an employee on a "cutting, welding, hot work" permit as a fire watcher, he or she becomes a designated employee under Occupational Safety and Health Administration (OSHA) regulations. If so, would annual refresher training on fire extinguishers then be required.

Fire watchers are not considered prior designated employees under Emergency Action Plans required by OSHA. An employer may not have an Emergency Action Plan, but may still perform activities, such as cutting and welding, that would require a fire watcher. The OSHA requirements for fire watchers do not specifically address refresher training.

However, it is the Department of Energy's position that refresher training is warranted on an annual basis to include site specific training in fire alarm initiation and fire extinguishers.
Response to a letter regarding male infertility and welding engineers. It is not possible to cite specific exposures and toxicological effects based on a job title. Welding engineers may be exposed to a wide variety of hazards depending on many factors. Health hazards from arc welding and cutting result primarily from exposure to metal fumes and to ultraviolet radiation. Manganese is known to cause impotence and reduce sperm count. Hazards from gas welding and brazing differ from arc welding hazards primarily because they involve metals with the lower melting points. Overexposure to lead is known to be a factor. The voltage supplies for electron beam welding often emit X-Ray radiation. This can cause sterility. In most cases the amount of exposure will determine the extent of resulting effects.

Dear Ms. A:

Thank you for your letter of August 27 regarding male infertility and welding engineers. Your letter was forwarded to Occupational Safety and Health Administration (OSHA) the Directorate of Technical Support for response.

It is not possible to cite specific exposures and toxicological effects based on a job title. Welding engineers may be exposed to a wide variety of hazards depending on the industry, the duties, the materials welded, the adjunct processes, the equipment used and many other factors. Some general remarks, however, can be made concerning typical hazards from welding operations.

Health hazards from arc welding and cutting result primarily from exposure to metal fumes and to ultraviolet (UV) radiation. The UV radiation can burn the eyes and skin; chronic exposure can result in cataracts and skin cancer. Typical metal fume exposures include compounds of arsenic, beryllium, chromium, cobalt, copper, iron, magnesium, manganese, molybdenum, nickel, tungsten, and vanadium. Of these exposures, only manganese is associated with infertility; manganese is known to cause impotence and reduced sperm count (hypospermia).

Hazards from gas welding and brazing differ from arc welding hazards primarily because they involve metals with lower melting points. One such metal is lead. Overexposure of male workers to lead compounds is known to decrease the sexual drive and reduce the ability to produce healthy sperm. Sperm effects include malformed sperm (teratospermia), decreased number (hypospermia) and decreased motility (asthenspermia). Fumes from other low-melting point metals, such as cadmium, silver, tin and zinc, have not been implicated in causing infertility.

The voltage supplies for electron beam welding often emit X-ray radiation. Plasma arcs can also emit X-rays and many processes use X-ray radiography to determine the quality of welds. Radiation from X-ray emissions can cause sterility; however, the dose of this radiation must be sufficient to produce this effect. Other effects are known to occur at much lower levels.

Welding radioactive metals can increase the exposure hazard from ionizing radiation. Heating materials which emit alpha particles can bypass the body's protective mechanism for alpha radiation.

Normally the skin protects the body from alpha radiation because this type of radiation cannot penetrate it. When the material is vaporized, it becomes airborne and permits the radiative particles to be inhaled.
When the alpha particles are inside the body, the radiation can be readily absorbed. As with X-ray radiation, the resulting effects depend on the exposure level.

Other inhalation hazards can result from the reaction of air with heat and radiant energy to produce nitrogen dioxide, ozone and carbon monoxide. Inert gases used to shield the weld, such as carbon dioxide, helium and argon, can also produce inhalation hazards. Flux coatings on the rods or other alloys are known to cause severe short-term illnesses. None of these hazards, however, are associated with infertility.

For general discussion of welding hazards, lead, manganese and ionizing radiation exposure are possible sources of infertility. These sources, however, do not constitute a complete list of the biological insults that could produce infertility. Welding processes can involve materials which might be contaminated with solvents, greases or oils; welding can include operations that inadvertently vaporize plastics, rubber or other compounds; and welding can produce radiant energy that can affect adjacent processes and produce toxic gases or compounds.

In other words, there are many elements of the specific worksite that must be reviewed to make an informed judgment. We will be happy to assist you if you need further information about specific processes or hazards. Please contact H. W. at (202) 219-7065, if we can answer any additional questions about welding hazards.
This interpretation letter addresses the point in time when, under 29 CFR 1910.252 that a fire watcher for monitoring welding and cutting activities becomes a designated employee as defined in a facilities Emergency Action Plan.

This interpretation is in response to a June 1, 1993, request from a DOE Operations Office asking if by virtue of designating an employee on a "cutting, welding, hot work" permit as a fire watcher, he or she becomes a designated employee under Occupational Safety and Health Administration (OSHA) regulations. If so, would annual refresher training on fire extinguishers then be required.

Fire watchers are not considered prior designated employees under Emergency Action Plans required by OSHA. An employer may not have an Emergency Action Plan, but may still perform activities, such as cutting and welding, that would require a fire watcher. The OSHA requirements for fire watchers do not specifically address refresher training.

However, it is the Department of Energy's position that refresher training is warranted on an annual basis to include site specific training in fire alarm initiations and fire extinguishers.
This interpretation letter addresses the level of training, under 29 CFR 1910, that fire watchers are required to have for monitoring welding and cutting activities.

INTERPRETATION

29 CFR 1910.252(a)(2)(iii); 1910.38(b)(4)(i); 1910.157(g)(3), (g)(4)

This interpretation is in response to a June 1, 1993, request from a DOE Operations Office regarding the Occupational Safety and Health Administration's (OSHA) requirements for the training of fire watchers of welding and cutting activities. Should fire watchers receive initial and refresher training as required of designated employees under an Emergency Action Plan, or would training in the use of portable extinguishers as required by the welding operation standards be sufficient.

Designated members of an emergency action plan team would potentially be responsible for more than incipient fire suppression with portable extinguishers. As such, the training program for these members, as mandated by 29 CFR 1910.157, would be more comprehensive than the training required for fire watchers. As delineated in 29 CFR 1910.252, training for fire watchers must only address the use of fire extinguishers and the means to initiate the facility fire alarm.
Dear Sir:

This is in response to your letter of July 21, 1988, concerning a "safety cap" designed by you and intended for use on portable DOT compressed gas cylinders. Please excuse the delay in response.

Your specific request was for an interpretation of "special trucks" as identified at 29 CFR 1910.252(a)(2)(v)(b)(4), copy enclosed. The Occupational Safety and Health Administration (OSHA) provides the following:

A "special truck" is a vehicle or cart which provides for stable support of vertical standing DOT portable gas cylinders during movement and at various work locations.

There is provision in the OSHA regulations for the use of a device, such as your safety cap, beyond that required to protect compressed gas cylinder valves as defined by DOT shipping requirements. The movement of compressed gas cylinders with a regulator attached is only permitted while the cylinder is mounted on a special truck. In the workplace, concern is for the protection of the regulator as well as the protection of the cylinder valve. Should a regulator become damaged it is possible for its parts to be ejected with great velocity thereby presenting a significant hazard to workers. For this reason, movement of a compressed gas cylinder with regulator installed may only be accomplished when the cylinder valve and regulator are assured of protection from damage and the cylinder is moved in an erect or nearly erect position on a special truck. Installation of your safety shield does not alter the requirement for a special truck, because the product does not provide for protection of the regulator.

Use of the product in place of the DOT one piece safety cap for all situations in which installed caps are required by OSHA regulations is acceptable, if the caps are listed by UL as indicated by your letter. The cap may be used with a regulator installed providing the procedures used assure compliance with the regulations.

SOURCE LETTER

July 21, 1988

Dear Sir:

I have designed a "safety cap" or the protection of the main valve on high pressure cylinders while the regulator is attached and the tank is in use. (A patent was issued July 7, 1987.)
The "product" is installed on the tank after the transportation cap is removed; the cap opens for access to the valve and installation of the regulator; the cap is then closed and secured with a latch-pin. With the "product" the valve is protected at all times.

The "product" is UNDERWRITERS LABORATORIES INC. LISTED and meets Department of Transportation requirements allowing the cap to be used as a transportation cap with regulator attached and the valve in the off position.

The "product" meets OSHA/MSHA standards.

Section 1910.252, Paragraph 2, Code of Regulations 29, Parts 1900 to 1910 reads: "Unless cylinders are secured on a special truck, regulators shall be removed and valve-protection caps, when provided for, shall be put in place before cylinders are removed."

Please provide me with your interpretation of this code and specifically "special truck." Will the "product" meet OSHA requirements for a valve protection when transporting cylinders with regulators attached and the valve closed?

March 30, 1988

REPORT ON MISCELLANEOUS MECHANICAL EQUIPMENT

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DESCRIPTION

PRODUCT COVERED:

Miscellaneous Mechanical Equipment; Compressed Gas Cylinder Safety Caps.

GENERAL:

These are safety caps intended to protect the cylinder valve of compressed gas cylinders at the work site. They are hinged and provided with an opening to permit a compressed gas regulator to be installed at the cylinder valve. The safety cap is not intended to replace the cylinder cap during shipping of cylinders.

MARKING:

The safety cap is marked with the applicant's name company and bears the authorized Listing Mark of Underwriters Laboratories.
SAMPLES:

Representative samples of the "company" compressed gas cylinder safety cap were subjected to the following test to determine their suitability and mechanical strength.

For these tests an empty DOT3AA240C cylinder was used as being representative of all high pressure DOT Specified Compressed Gas Cylinders.

RESULTS

<table>
<thead>
<tr>
<th>Impact (ft-lb)</th>
<th>Damage to Cap</th>
<th>Damage to Cylinder valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>74</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>111</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>150</td>
<td>Slight vertical distortion between cap and collar</td>
<td>None</td>
</tr>
<tr>
<td>200</td>
<td>Vertical distortion between cap and collar</td>
<td>None</td>
</tr>
<tr>
<td>250</td>
<td>Extensive damage to cap</td>
<td>None</td>
</tr>
</tbody>
</table>

These results are considered acceptable in that the cap provides a reasonable degree of protection from impact to the cylinder valve.

VERTICAL DROP TEST:

METHOD

An empty DOT3AA240C compressed gas cylinder with safety cap was dropped from 3 and 4 ft as to strike a concrete floor on the top of the cap. After each drop, the cap and cylinder valve was examined for damage.

RESULTS

The cap was flattened approximately 1 and 1-1/2 in. as a result of 3 and 4 ft vertical drops. No damage was noted to the cylinder valve as a result of the 3 ft drop. The cylinder valve wheel was broken as a result of the 4 ft drop; however, there was no damage to the cylinder valve.

DROP TEST:

METHOD

An empty DOT3AA compressed gas cylinder with the safety cap was dropped from various heights ranging between 2 and 6 ft as to strike a concrete floor at an angle of 45 degrees. After each drop, the safety cap and cylinder valve were examined for damage. Prior to each drop, a new safety cap was installed on the test cylinder.
RESULTS

<table>
<thead>
<tr>
<th>Drop height (ft)</th>
<th>Cap damage</th>
<th>Valve Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Impacted area of cap caved</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Cap damaged</td>
<td>Valve wheel damaged; no damage to cylinder valve</td>
</tr>
<tr>
<td>5</td>
<td>Cap damaged</td>
<td>Valve wheel bent; cylinder valve bent 5 degrees</td>
</tr>
</tbody>
</table>

These results are considered acceptable in that the safety cap provides a reasonable degree of protection to the cylinder valve.

CONCLUSION

Samples of the products covered by this Report have been found to comply with the requirements covering the class and the products are judged to be eligible for Listing and Follow-Up Service. The manufacturer is authorized to use the Laboratories' Mark on such products which comply with the Follow-Up Service Procedure and any other applicable requirements of Underwriters Laboratories, Inc. Only those products which properly bear the Laboratories' Mark are considered as Listed by Underwriters Laboratories, Inc.
ABSTRACT

An interpretation letter regarding a "collar" type valve protector. It is not addressed in either the construction or maritime standards, but is mentioned in 1910.252(a)(2)(i)(d). Because this type of valve protector is not specifically prohibited, it should be allowed if the collar protects the valve so that it would not be subjected to a blow if the container is dropped on a flat surface.

(NOTE: This standard was completely revised in 1990. The information referenced in 1910.252(a)(2)(i)(d) is now found in 1910.253 (b)(5)(ii) of the revised standard.)

INTERPRETATION

29 CFR 1910.253(b)(5)(ii)

26 JUL, 1989.

MEMORANDUM

SUBJECT: Compressed Gas Cylinder Valve Proctor

This is in response to your memorandum requesting clarification of whether or not a collar type valve protector would fulfill the OSHA requirement for valve protection on compressed gas cylinders.

The collar type valve protector is used extensively in laboratory settings as well as in light industry where frequent valve changes are necessary and service direction varies. Also the cylinders are normally secured to a permanent wall, counter or fixture.

At this time, a "collar" type valve protector is not addressed in either the construction or maritime standards, but is mentioned in the general industry standards in Subpart Q - Welding, Cutting and Brazing, 1910.252(a) (2)(d). Since this type of valve protector is not specifically prohibited, it should be allowed if the collar protected the valve so that it would not be subjected to a blow if the container is dropped on a flat surface. This requirement would meet the Department of Transportation's standard regarding valve protection (49 CFR 172.301(g)(3).)

The catalog you referenced is primarily directed and distributed to the laboratory community, is recognized in the general industry standards, and, therefore, would not be a violation in that work setting. Because the construction and maritime standards do not recognize or prohibit collar protectors, any violation cited within a specific work setting situation would have to be based on the possibility of valve damage within a specific work setting situation.

Due to the limited application of this type of valve protective device to the construction or maritime industry, issuance of a field directive or information bulletin is not warranted at this time. If you disagree with this decision or have specific evidence to warrant a formal directive to the field offices, please feel free to contact this office at FTS 523-8136.
Interpretation on interlocking device for laundry washer tumbler or shaker in the textile standard. The Textiles, Laundry Washer Tumbler or Shaker (interlocking device) Standard requires a mechanical or electrical device on the door which shuts off power when opened on machines driven by belts and shafting, a locking type shifter or an equivalent positive device shall be used. Power failure restart antistart devices shall also be installed on those machines where injury to the operator could result.

INTERPRETATION

29 CFR 1910.262(c)(1)

August 28, 1975

Dear Sir:

This is in reference to your letter dated January 29, 1975, concerning your request for a variance from Section 1910.262(c)(1) Textiles, Laundry Washer Tumbler or Shaker - Interlocking Device, of the Occupational Safety and Health Standards.

Enclosed you will find a copy of Program Directive #100-35 which provides an interpretation of Section 1910.262(c)(1). The interpretation states, in part, that a properly installed and operating micro switch on the door which shuts off the power when the door is opened will meet the intent of this standard. Please review this Directive to insure that your tumbler dryers are in compliance with all aspects of this interpretation.

No further action will be taken on your request for a variance.
An interpretation letter regarding the OSHA regulations pertaining to the bakery industry. A vertical standard is provided for bakeries. However, all industries regulated under 1910 are obligated to comply with all other applicable portions of the general industry standards as well.

(Note: This standard was last amended in 1978.)

Interpretation


Jul 11, 1989

Dear Sir:

This is in response to your letter of June 1, concerning the Occupational Safety and Health Administration (OSHA) regulations pertaining to the bakery industry.

The OSHA General Industry Standards contained in 29 CFR Part 1910 pertain to all industries other than Construction, Maritime, or Agriculture. Certain industries within the general industry category are provided with a vertical standard, as is the case for bakeries. However, all industries regulated under 29 CFR Part 1910 are obligated to comply with all other applicable portions of the general industry standards as well. Employers should be aware of the general standards that apply to their workplaces, in addition to those specific to their industry.

Compliance information is available to employers through many publications and services provided by OSHA. The publications include announcements in the Federal Register, pamphlets, directives, and notices. Services provided by our agency through which employers may obtain guidance include the following:

1. Compliance courses available to the public are offered by the OSHA Training Institute at Des Plaines, Illinois; telephone: 312-353-2500.

2. A qualified no-cost consultant is available to employers in all States by requesting assistance from the local OSHA Consultation Service. This service is not connected to OSHA enforcement activities. Requests may be made through telephone contact with any OSHA office.

3. OSHA's outreach policy provides extended advisory services from each of the field office staffs. This policy also encourages field staff to offer speeches to labor and management gatherings or organizations when requested.

4. Pamphlets, directives and notices of concern to employers may be obtained from the local Area Office.

It would not be feasible to develop a completely independent set of standards for each industrial group. As a matter of fact, if however, your suggestion for inclusion of language which would alert bakers to other sections of the code may be possible at some future revision of the standard. The suggestion will be forwarded to the Directorate of Safety Standards Programs for consideration.
SOURCE LETTERS

June 1, 1989

Dear Sir:

Thank you for your response (attached) of May 5 regarding the safety standards for bakery equipment.

I'd appreciate it, however, if you could provide an explanation of one additional aspect of the situation. A baker who was cited by OSHA had complained that he followed all of the standards listed under 1910.263 Bakery Equipment. As you have pointed out in your letter, however, employers sometimes have to study additional areas of the regulations to ensure they're in compliance.

Would it be feasible to make the bakery standards more complete so that members of the industry could rely solely on the requirements at 1910.263 to ensure they were in compliance? Or, could language be included in 1910.263 alerting bakers to the fact that other sections of the code may also be applicable?

Enclosures

MAY 5, 1989

Dear Sir:

This is in response to your letter dated March 31, inquiring about the Occupational Safety and Health Administration's (OSHA) policy concerning standards covering bakeries and bakery equipment.

Bakery equipment, including vertical mixers, is covered under 29 CFR 1910.263 of our general industry standards. The standards for bakery equipment are "vertical" standards. A standard which applies to a particular operation, or type of equipment, such as bakery equipment, is called a vertical standard. "Horizontal" standards are those standards that apply when a condition is not covered by a vertical standard.

Where a hazardous condition is covered by both a vertical and a horizontal standard, the vertical standard would take precedence. However, if there is no vertical standard that can be applied to correct a hazard, the applicable horizontal standard would pertain. The standard at 29 CFR 1910.263(e)(2) for vertical mixers does not specify a point of operation safeguarding requirement. Therefore, it is necessary to apply the horizontal standard at 29 CFR 1910.212(a)(3)(ii), copy enclosed, relative to observed point of operation hazards.

The general industry standard at 29 CFR 1910.5(c)(1), copy enclosed, states that "if a particular standard is specifically applicable to a condition it shall prevail over any general standard which might otherwise be applicable to the same condition." The OSHA policy is in agreement with this standard.

Enclosures

March 31, 1989

OSHA's regulations on bakery equipment have me puzzled. As I understand it, vertical mixers are covered in the bakery standards. However, I'm told that these regulations are superseded by the general standards which are more restrictive. I'd appreciate it if you could explain the rationale for that. If OSHA believes vertical mixers in bakeries deserve stricter regulation, why doesn't it revise the bakery standards to reflect that need? The current policy has caused confusion for bakeries trying to find out what appropriate rules are.
ABSTRACT
An interpretation of the applicability of 1910.263 (i) (6) (ii) to transportation racks for the bakery industry. Transportation racks are not intended to be covered by this standard and shall be considered a de minimis violation, as used in the bakery industry.

INTERPRETATION
29 CFR 1910.263(i)(6)(ii)

January 8, 1976

Dear Sir:

This letter is in response to your inquiry dated August 28, 1975, addressed to Mr. J. Your letter was subsequently forwarded to the National Office by memo dated September 23, 1975, through the (City) Regional Office for a decision. Your letter addressed the problem of transportation racks as covered under 29 CFR 1910.263(i)(6)(ii) for the Bakery Industry.

Based on data provided in your communication, telephone conversations with you and Mr. R first hand information gained while observing the actual operations at a local bakery, it has been decided that transportation racks should be excluded from coverage in the standard.

By a transportation rack it is meant; "the roller mounted rack that is designed and used primarily to transport the finished bakery product from the final conveyor belt operations in the bakery to the various distribution points outside the bakery via over the road trucks." Proof racks used in the main baking processes are not to be considered transportation racks.

Therefore until 1910.263(i)(6)(ii) is changed to read as the proposed revision of the source standard ANSI Z50.1-1971, it will be recommended to the field that this violation be considered de minimis until the standard has been revised. Mr. K has been informed of this decision.

Thank you for the cooperation extended to the members of the Offices of Compliance Programming and Standards Development during their recent tour of the company in (City).
Abstract

Interpretation letter regarding oven inspections as required by 1910.263(I)(9)(ii). 1910.263(I)(9)(ii) specifies that annual inspections of bakery ovens shall be conducted by representatives of the oven manufacturers. Inspections may be accomplished by qualified representatives of any oven manufacturer. Equipment manufactured by still existing manufacturers should be inspected by these manufacturers or their designated representatives. However, responsible inspection by a competitive company would be acceptable.

(Note: This standard was last amended in 1978.)

Interpretation


May 12, 1989

Dear Sir:

This is in response to your letter dated February 9, and confirms your conversation with Mr. B of my staff, concerning oven inspections required by the standard at 29 CFR 1910.263(I)(9)(ii). Please excuse the delay in response.

The Occupational Safety and Health Administration (OSHA) standard at 29 CFR 1910.263(I)(9)(ii) specifies that annual inspections of bakery ovens shall be conducted by representatives of the oven manufacturers. Since the impact of a literal interpretation could be profound, OSHA feels that such inspections may be accomplished by qualified representatives of any oven manufacturer who are knowledgeable of the various safety considerations and who by training and experience are capable of verifying the safe operational characteristics of the equipment.

Equipment manufactured by still existing manufacturers should be inspected by these manufacturers or their designated representatives however, responsible inspection by a competitive company would be acceptable to OSHA.

Source Letter

February 9, 1989

Dear Sir:

I am writing on behalf of the association, a trade association that represents the nation's wholesale baking industry. association is composed of more than 300 baker and allied member firms which produce nearly 80 percent of the nation's baked goods.

The purpose of this letter is to seek clarification on Section 29 CFR 1910.263 (I)(9)(ii).

As stated, the regulation is as follows:

(ii) All safety devices on ovens shall be inspected at intervals of not less than twice a month by an especially appointed, properly instructed bakery employee, and not less than once a year by representatives of the oven manufacturer.

Many of the association's members are in a position where the manufacturer of their ovens are no longer in business. Therefore, it is impossible for these companies to have their ovens inspected by companies which no longer exist.

Vol. 2-169
How and in what manner can our members achieve compliance with 29 CFR 1910.263 (l)(9)(ii) under these conditions?

A clarification from your offices would be most helpful since our members only wish to comply with all OSHA regulations affecting the baking industry.
RECORD ID 1849

STANDARD NUMBER 1910.263(l)(9)(ii)
INFORMATION DATE 890523

ABSTRACT
An interpretation letter regarding oven inspections as required by 1910.263 (l) (9) (ii) and definitions of "Protecting Devices" and "Safety Devices". Annual inspections of bakery ovens required by 1910.263(l)(9)(ii) shall be conducted by qualified representatives of any oven manufacturer. "Safety Devices," as referred to in 1910.263(l)(9)(ii), are interpreted as fail-safe devices and as components of safety control systems installed prevent explosions within an oven. "Protecting Devices," as specified under 1910.263(l)(9)(i), are devices which protect employees from fire and explosion hazards in the event a safety device fails. "Safety Guards" are protective barriers installed to safeguard employees when an oven is in operation and are not considered to be protecting devices.

(NOTE: This standard was last amended in 1978.)

INTERPRETATION 29 CFR 1910.263(l)(9)(ii)

Dear Sir:

This is in response to your letter dated February 21, addressed to Mr. W at the (City, State), Occupational Safety and Health Administration (OSHA) Area Office. A response was sent to you by the (City) Regional Office on March 9. As you needed further clarification, your letter was subsequently forwarded to this office. Your letter requests interpretation of 29 CFR 1910.263(l)(9)(i) and 1910.263(l)(9)(ii) standards pertaining to the inspection of bakery ovens.

The OSHA standard at 29 CFR 1910.263(l)(9)(ii) specifies that annual inspections of bakery ovens shall be conducted by representatives of the oven manufacturers. Since the impact of a literal interpretation could be profound, OSHA feels that such inspections may be accomplished by qualified representatives of an oven manufacturer who are knowledgeable of the various safety considerations and who by training and experience are capable of verifying the safe operational characteristics of the equipment.

OSHA interprets "Safety Devices", as referred to in 29 CFR 1910.263(l)(9)(ii), as fail-safe devices and as components of safety control systems installed to ensure that explosions or explosive conditions are not developed within an oven. Safety devices are installed to automatically shut down the oven in a safe manner in the event of an occurrence of a hazardous condition. As the safety controls installed on the various ovens vary, a list of typical safety controls and devices presented in Table 4-5A (enclosed) of the association Fire Protection Handbook (Fourteenth Edition) may further clarify your questions on safety devices.

Your letter states that some of your clients and customers believe that barrier guards are protecting devices. OSHA interprets "Protecting Devices" in this context as devices which protect employees from fire and explosion hazards in the event a safety device as defined above does not eliminate development of a hazardous condition. Examples of protecting devices are explosion vents, automatic fire sprinklers, etc.

As indicated by Mr. J of the (City) Regional Office, in his letter dated March 9, "Safety Guards" are protective barriers installed to safeguard employees when an oven is in operation and are not considered to be protecting devices as specified under 29 CFR 1910.263(l)(9)(i).

Additional information pertaining to ovens is detailed in NFPA 86 (1985 edition) and Chapter 4 of the association Fire Protection Handbook, Fourteenth Edition.

Vol. 2-171
MEMORANDUM


Attached is a letter from the above-named attorney's office. They are requesting an interpretation of our regulations regarding periodic inspections of bakery ovens for their client, company, a bakery oven manufacturer.

The regulation 29 CFR 1910.263(I)(9)(ii) requires all safety devices be inspected not less than once a year by representatives of the oven manufacturers. The source of the regulation was ANSI Z50.1-1947, "Safety Code for Bakery Equipment,"

We have reviewed the most recent publication of ANSI Z50.1, which was published in 1983. The ANSI Standard now allows the plant management or the authority having jurisdiction, or both, to prescribe the time interval at which the equipment and safety controls be tested for service reliability. ANSI/NFPA 86A-1977 is listed as a guide for establishing an inspection schedule. As you know, if the workplace is in compliance with current industry consensus standards, a violation of the applicable OSHA regulation may be considered to be de minimis. Therefore, the following two issues require clarification:

(1) Is the oven manufacturer responsible for annual inspections of safety devices on ovens?

(2) What is OSHA's definition of a "safety device" as it relates to this regulation?

We have informed the oven's manufacturer's attorney, Mr. C, that his letter has been forwarded to the National Office, and you will be responding to him directly. We would appreciate a copy of your response.

Attachments:

April 6, 1989

Dear Sir:

This is in response to your letter dated February 21, 1989 requesting an interpretation and clarification of the safety devices required by 29 CFR 1910.263(I)(9)(ii) for bakery ovens.

Mr. K, responded to your questions in a letter dated March 9, 1989. Subsequently, you have requested further clarification. Due to the National scope of these issues, we have decided to forward your letter to the National Office, and have requested that they respond to your inquiries directly. A copy of the letter is enclosed.

Attachments:

March 9, 1989


Dear Sir:

This letter is in response to your letter of February 21, 1989 which was addressed to Mr. W, of our Lansing, Michigan OSHA Area Office. He has forwarded this letter to the Regional Office for an interpretation and clarification of the safety devices outlined in the subject, paragraph 29 CFR 1910.263(I)(9)(ii).

Safety devices are the components which were installed by the manufacturer when they built (fabricated) the oven and/or devices which were/ was installed to improve the safety and operable aspects of the oven.
These devices are required to be inspected bimonthly by a qualified employee. The paragraph is clear on the requirements and the qualifications of the employee to perform the inspection.

Safety guards, on the other hand, are components such as barriers, guards, or other components which were installed to safeguard employees when the oven is in operation.

The safety devices will render the oven inoperable while a person or employee is working the oven, or is in or at its burners or nozzles, etc. The circuit breakers shall be locked with a padlock.

I have highlighted the components on the checklist which will require the inspection because of the excessive flour dust which is for ever present in the area.

February 21, 1988

Dear Sir:

I am writing to follow up on a conversation which my associate, Mr. C, had with you today. This office represents company, which is a manufacturer of various equipment utilized in the food production industry, including ovens. Company has received numerous requests pursuant to 29 CFR 1910.263(1)(9)(ii) to perform inspections of "safety devices" on ovens manufactured by it. A dispute has arisen between company and one of its customers as to the scope of this requirement. We are seeking some guidance from you with regard to this matter.

It is the understanding of company's engineering staff that a "safety device" refers to any feature included in the electrical or mechanical design of equipment which shuts down the equipment in the event of an occurrence of some abnormal operation. It does not, on the other hand, include guards, which are referred to in the regulation as "protecting devices" and are governed by 29 CFR 1910.263(1)(9)(i) and therefore need not be inspected by the manufacturer on an annual basis.

Company has been utilizing the enclosed checklist in order to perform the required inspections. As you will note, the checklist is intended to identify those items falling within the checklist is intended to identify those items falling within the checklist is intended to identify those items falling within the definition of "safety device" outlined above. Company's customer has questioned whether other items, such as guards, should be included within the annual inspection. While such an inspection could be conducted, company is concerned that under this broader definition virtually every safety aspect of the equipment, including its original design, would have to be inspected on an annual basis.

I would appreciate your providing us with any assistance you might be able to offer with regard to the intended scope of this regulation. (Enclosures 1 & 2/Sections 1 thru 3 follow:)

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Enclosure 1:
SECTION 1 - HEATING SAFETIES

1.1) Purge Damper Limit
1.2) F.M. Pressure Switch (1" WC)
1.3) Turbine Pressure Switch (12" WC)
1.4) Low Gas Pressure (2" WC)
1.5) High Gas Pressure
1.6) Purge Exhauster Air Flow Switch
1.7) Purge Exhauster Electrical Interlock
1.8) Turbine Electrical Interlock
1.9) Maxon Delay Circuit
1.10) High Temperature Limit Set 600 deg. F
1.11) Balance Damper
1.12) Propane Exhauster Air Flow Switch
1.13) Propane Exhauster Electrical Interlock
1.14) Purge Timer...Minutes required....Minutes set....Minutes Actual....
1.15) Ignition Circuit breaker Interlock
1.16) Turbine Overload Interlock
1.17) Automatic Combustion Start After Purge
1.18) Oven has Dual Maxon Valves With N.O. Vent Between
1.19) Are the Heating Operating Instructions and Data Plates properly Posted and Correct
1.20) Ovens Equipped with D.S.I. Flame Monitoring System
1.21) Turn individual burner switch off and remove High Tension Wire at the D.S.I. Unit. Turn burner switch on and after approximately (11) seconds the gas solenoid should close and the burner failure light illuminates.

COMMENTS 1.1 thru 1.21

SECTION 2 - MECHANICAL SAFETIES

2.1) Safeload Control..Set...
2.2) Tray Overhang Bar (Tray)
2.3) Loader Tension
2.4) Loader Laggard Pan
2.5) Loader Front Feed Eyes
2.6) Loader Finger Safety
2.7) Unloader Cycle (Tray)
2.8) Unloader Cycle Complete
2.9) Unloader Discharge Conveyor Dwell
2.10) Unloader Tension
2.11) Unloader Circuit Breaker Interlock (Tray)

COMMENTS 2.1 thru 2.11

SECTION 3 - ELECTRICAL CONTROL

3.1) Oven electrical panel front must have 4'-0 clear from another elect panel or 3'-0 from other obstructions. Door should be free to open.
3.2) Main circuit Breaker
3.3) Branch Circuit Breakers
3.4) Motor Starters and Contactors
3.5) Are Push Buttons, Selector Switches and Pilot Lights Identified
3.6) Are Warning Alarms Operable
3.7) Are the Control Fuses and Circuit Breaker in Place
3.8) Are the Motor Overload Heaters in Place

COMMENTS 3.1 thru 3.8

Enclosure 2:
(Reference AMERICAN NATIONAL STANDARD Z50.1-1983 (Page C-3))
OSHA Instruction STD 1-15.2
October 30, 1978

September 8, 1975

OSHA PROGRAM DIRECTIVE #100-37


1. Purpose:

To clarify the requirement that all lifting cylinders of hydraulically operated log handling machines be equipped with a positive device to prevent the uncontrolled lowering of the load or forks in case of a failure in the hydraulic system.

2. Directive Affected:

None.

3. Background:

a. 29 CFR 1910.265(d)(1)(ii)(b) requires that lifting cylinders of all hydraulically operated log handling machines shall be equipped with a positive device. A number of comments have been received pointing out the difficulties encountered applying this requirement to the mobile lift-type log handling equipment. An investigation by the Seattle Regional Office revealed that an additional hazard may be created in the operation of mobile lift-type log handling equipment when equipped with this device.

The Office of Standards Development plan to modify 29 CFR 1910.265(d)(1)(ii)(b) to render it applicable only to the boom lifting cylinders of all hydraulically operated crane type log handling machines in which the load is lifted by wire rope. When the new rule is promulgated mobile-type log handling machines will no longer fall within the scope of this standard.

4. Action:

"Any citation issued concerning the lack of positive device for the controlled lowering of the load on a mobile lift-type log handling machine shall be de minimis, when there is no recognized employee exposure to load hazards."

5. Effective Date:

This instruction is effective upon receipt and will remain in effect until canceled or superseded by the modified standard.
OSHA Instruction STD 1-15.5
OCTOBER 30, 1978

January 31, 1978

OSHA PROGRAM DIRECTIVE #100-94

Subject: 29 CFR 1926.604(a)(2)(i) and (ii) and 29 CFR 1910.266(d)(2)(v) and (vi); Use of 1/2-inch Plastic Sheets As A Substitute for Open Mesh Material.

1. Purpose:

The purpose of this directive is to provide specific clarification on the applicability of 1/2-inch plastic sheets as a substitute for open mesh material.

2. Documentation Affected:

This directive supersedes Field Information Memorandum #76-14 dated April 6, 1976.

3. Background:

As a result of several petitions for modifications or interpretations of 29 CFR 1910.266(d)(2)(v) and (vi) and 29 CFR 1910.604(a)(2), (i) and (ii), a review of specific test data provided to OSHA has been completed. This information is under consideration for the standards revisions.

4. Clarification:

The use of 1/2-inch plastic sheets or other thicknesses of plastic sheets (that have the same physical properties) in lieu of 1 or 1 3/4-inch open mesh material is acceptable providing equivalent protection to the employee is assured. All panels shall be installed in a manner which can withstand the initial impact and maintain the protective barrier integrity. All panels must be labeled or marked to distinguish between acceptable materials and inferior panels.

5. Action:

The foregoing will appear in a proposed revision. Until the standards have been revised, a violation of either referenced standard shall be considered de minimus, providing the preceding requirements are met.

6. Effective Date:

This directive is effective immediately and will remain in effect until canceled or superseded.
OSHA Instruction STD 1-15.1

October 30, 1978

OSHA PROGRAM DIRECTIVE # 100-28

Subject: Clarification Of "Operations Which Involve Construction Work" as Related to Telecommunication Work.

I. Purpose:

To clarify the intent of Paragraphs 1910.268(a)(2)(i) and (3).

2. Directives Affected:

None

3. Background:

Paragraph 1910.268(a)(2)(i) states, "These standards do not apply to construction work as defined in Section 1910.12. "Paragraph 1910.268(a)(3) states, "Operations or conditions not specifically covered by this section are subject to all the applicable standards contained in this Part 1910. See Section 1910.5(c). Operations which involve construction work, as defined in Section 1910.12 are subject to all the applicable standards contained in Part 1926 of this chapter. " Requests for clarification have been received as to the intent of these statements on construction work as they relate to telecommunication work.

4. Clarification:

The intent of these two paragraphs is to indicate that all construction activity performed by the telecommunication industry (and for that matter, any industry) would be governed by the rules and regulations of 29 CFR 1926.

This means that operations presently subject to Part 1926 will continue to be subject to those standards and that 1910.268 (Telecommunications) standards do not alter this present system.
OSHA Instruction STD 1-15.4

OCTOBER 30, 1978

OSHA PROGRAM DIRECTIVE #100-46


1. Purpose:

To provide specific interpretation as to the intent of the application of 29 CFR 1910.268(h)(8)(i), (ii), (iii), (iv), (v), and (vi).

2. Directive Affected:

None.

3. Background:

a. The intent of the proposed and final standard at 29 CFR 1910.268(h)(8), Metal Manhole Ladders, published in the Federal Register on August 28, 1973, and March 26, 1975, respectively, was to limit its scope to "portable metal manhole ladders.

b. This intent is evident when Section 1910.268 (h)(8) is compared to 29 CFR 1910.26 - the General Industry standard which applies to portable metal ladders. The language of section 1910.26 is virtually identical to that contained in Section 1910.268(h)(8). Moreover, the language of Section 1910.268(h)(8) is inconsistent with 29 CFR 1910.27 - the General Industry standard which applies to fixed ladders.

4. Action:

The enforcement of 29 CFR 1910.268(h)(8)(i) through (vi) as written shall be limited to "portable" metal manhole ladders used in the telecommunication industry. Fixed manhole ladders are not covered by 29 CFR 1910.268(h)(8).

5. Effective-Date:

This directive is effective immediately and shall remain in effect until canceled or superseded.
INTERPRETATION 29 CFR 1910.268(f)(5)

October 4, 1984

Dear Sir:

This is in response to your letter of August 7, concerning the Occupational Safety and Health Administration's (OSHA) telecommunications standard.

As you noted in your letter, Section 1910.268(f)(5) requires rubber insulating equipment to be periodically tested at intervals ranging from nine months to 18 months. This requirement protects employees from the hazards resulting from the deterioration of the insulating equipment due to aging or use. Employees can not rely on insulating equipment which has not been tested within the amount of time given in the standard, even if the equipment has been properly stored in accordance with paragraph (f)(7) of Section 1910.268. Considering the fact that a breakdown in the insulating properties of this equipment can lead directly to a fatal accident, OSHA feels that allowing, as you suggest, up to five years between tests can unreasonably jeopardize employee safety.

The national consensus standards on this subject, American Society for Testing and Materials "Standard Specification for the In-Service Care of Insulating Gloves and Sleeves" (ASTM F496-80) and "Standard Specification for In-Service Care of Insulating Blankets" (ASTM F479-81), require a 12 month testing interval for insulating equipment used in the telecommunications industry. Therefore, the OSHA standard is consistent with current industry practice. However, to minimize unnecessary burden on employers, the existing OSHA standards are not interpreted as requiring the testing of equipment that is not in use for prolonged periods of time. Equipment in storage need not be tested until it is made available for use by employees. For example, a pair of rubber insulating gloves in storage and not available for use by employees for three years would not be required to be tested during the three-year period, but the gloves would have to be tested before being made available for use. Therefore, under the existing standard, the cost of testing is minimized to that necessary for the safety of employees.
ABSTRACT  An interpretation on metal manhole ladder standards. This standard does not apply to fixed metal ladders that are permanently attached inside a manhole; but does apply to metal ladders left in manholes and that are moved around.

(NOTE: 1910.26-portable metal ladders, 1910.27-fixed ladders, and section (c) of 1910.21-definitions, further support the interpretation letter.)

INTERPRETATION  29 CFR 1910.268(h)(8); 1910.26(a); 1910.27(a); 1910.21(e)(2)

Feb 3, 1977

Dear Sir:

This is in response to your letter dated August 4, 1976, addressed to Mr. S., regarding metal manhole ladder standards in 29 CFR 1910.268(h)(8) and confirms a telephone conversation with a member of my staff. You state that the Occupational Safety and Health Administration (OSHA) agreed in previous meetings and correspondence that the metal ladders you use and leave in the manhole are not portable and ask that we clarify OSHA Program Directive #100-46 so that metal manhole ladders of the type you describe are excluded from the requirements of 29 CFR 1910.268(h)(8).

As you know, the Program Directive states that 29 CFR 1910.268(h)(8)(i) through (vi) applies to "portable" metal manhole ladders used in the telecommunication industry. Therefore, if your ladders are "portable" they must comply with that standard's requirements.

Based on your discussions with a member of my staff, and further review, we have concluded that some of the ladders described in your letter are portable metal ladders. As such, standards 29 CFR 1910.268(h)(8)(i) through (vi) are applicable.

Although the phrase "portable ladder" is not defined in the OSHA standards, it is clear that in promulgating OSHA standards the Secretary distinguished between portable and fixed ladders, see 29 CFR 1910.26 and 1910.27. 29 CFR 1910.21(e)(2) defines a fixed ladder as a ladder permanently attached to a structure, building, or equipment. It follows therefore that a portable ladder is one that is not fixed, i.e., one that is not permanently attached.

The information you furnished indicates some of your metal manhole single ladders are not permanently attached to anything, are moved around in the manhole, and are kept in the manhole. OSHA's position is that under these conditions the ladders would be portable metal ladders. (No more text to letter)
This interpretation letter addresses the use of insulating rubber gloves in telecommunications work. Class I and Class II gloves are discussed based on the voltage in the lines handled.

July 11, 1983

Dear Sir:

This is in response to your letter of June 2, 1983, addressed to Mr. J, requesting an interpretation of 29 CFR 1910.268(n)(11)(iv) as it applies to the use of insulating gloves.

29 CFR 1910.268(f)(1) specifies that rubber gloves used for telecommunications work must meet the requirements of ANSI J6.6-1971, "Standard Specification for Rubber Insulating Gloves." This standard places gloves in classes depending on their protective characteristics. However, the standard permits gloves (referred to as "modified Class I" gloves) acquired before July 1, 1975, to meet a few different test specifications. For example, the "modified Class I" glove must have a breakdown voltage of 17kV, compared to 20kV for the standard Class I glove.

The ANSI standards have been revised, and the most recent corresponding national consensus standard is ASTM D120-79a, "Standard Specification for Rubber Insulating Gloves and Sleeves," addresses the care and use of this equipment.

29 CFR 1910.268(n)(11)(iv) requires the use of the insulating gloves for employees handling utility poles if there is a possibility that the pole may contact a power conductor. If the lines are more than 15kV to ground, the gloves must be Class II or better. If the lines are 15kV or less to ground, the gloves must have a breakdown voltage of at least 17kV. According to S1910.268(f)(1), "modified Class I" gloves meet this requirement. Also, since ASTM D120-79a, Table 2, lists the minimum breakdown voltage of standard Class I gloves as 20kV, these gloves are also acceptable for handling poles near power lines of 15kV or less.

Use of insulating gloves as thus outlined will provide protection to employees handling wooden utility poles near electric power lines. It should be noted that the maximum use voltages given in ASTM D120-79a and ASTM D496-80 are not appropriate for this type of work. (See appendices A and B.) Section 3.2 of ASTM D120-79a and sections 3.2 and 3.2.1 of ASTM F496-80 indicate that the listed maximum use voltages are for protection against direct contact with energized lines, when the gloves are the only protection provided.
This interpretation clarifies the confined space requirements for telecommunication activities operating under the scope of 29 CFR 1910.268 (o), Telecommunications, and responds to a question about the applicability of 29 CFR 1910.146, Permit-Required Confined Spaces, to DOE facilities.

**INTERPRETATION**

29 CFR 1910.268 (o)(2)(i)(A); (o)(2)(ii)(A); (a)(3); 1910.146 (a), (c)

This is in response to your letter of August 6, 1993, requesting interpretations pertaining to the Occupational Safety and Health Administration (OSHA) standards for Telecommunications, 29 CFR 1910.268, and Permit-Required Confined Spaces, 29 CFR 1910.146.

**Question 1:**

If 29 CFR 1910.268 (o)(2)(ii)(A) of the Telecommunications standard, is followed, isn't it possible to get erroneous combustible gas readings if an oxygen deficiency exists? Shouldn't the procedure be to test the oxygen level first and then test for combustible gas?

**Answer 1:**

Actually, 29 CFR 1910.268 (o)(2)(ii)(A) refers to providing an adequate continuous supply of air while work is performed in manholes "where combustible or explosive gas vapors have been initially detected and subsequently reduced to a safe level by ventilation."

Since your inquiry calls into question the proper sequence for sampling of unknown confined space atmospheres, we will infer that your request for interpretation actually lies with the requirements of 29 CFR 1910.268 (o)(2)(i)(A), which does state, "The internal atmosphere shall be tested for combustible gas and, except when continuous forced ventilation is provided, the atmosphere shall also be tested for oxygen deficiency."

Erroneous equipment response in oxygen-deficient atmospheres is a widely known limitation of most combustible gas and vapor monitors and is covered in the operations manuals for most combustible gas meters. Most manufacturers of combustible gas indicators clearly specify the operating parameters necessary for proper operation of their specific equipment. This normally includes verification of adequate oxygen levels to ensure proper meter response. It is therefore appropriate to direct your attention to the manufacturer's operational guidelines for your equipment. Most manufacturers will indicate that oxygen levels must be clearly determined prior to obtaining accurate combustible gas readings with their equipment. This is consistent with the prudent practice you describe.

29 CFR 1910.268 (o)(2)(i)(A) does not specify a sequential method that calls for the measurement of combustible gases before measuring the concentration of oxygen. However, this section does rely upon the introduction of "continuous forced ventilation" to eliminate the potential for oxygen deficiency. In short, the standard requires the measurement of oxygen and combustible gas if no ventilation is being provided to the space but does not clearly indicate the sequence of sampling. Prudent practice dictates that any unknown atmosphere be tested for oxygen content prior to any additional sampling for combustible gas or vapor, as reflected in your correspondence. This sequence of sampling does not violate the requirements of 29 CFR 1910.268 (o)(2)(i)(A), since the standard does not specify an exact order for the monitoring.
Question 2:

Shouldn't OSHA's new confined space standard, 29 CFR 1910.146, Permit-Required Confined Space, apply to paragraph 1910.268 (e), as it does not exclude telecommunications?

Answer 2:

Standard 29 CFR 1910.268 (a)(3), Telecommunications, states that "Operations or conditions not specifically covered by this section are subject to all the applicable standards contained in this Part 1910."

OSHA's approach, which is stated in the Preamble to 29 CFR 1910.146, is to have industry-specific provisions take precedence over the generic permit space provisions. However, in cases where the generic standard provides the only coverage for a particular subject matter, OSHA would apply the generic standard.

Question 3:

OSHA standard, 29 CFR 1910.146, Permit-Required Confined Space, does not apply to construction, but what about construction on a DOE facility? We could use the rule of "common sense and within reason," but what about specific DOE determination for assessment purposes?

Answer 3:

You are correct that 29 CFR 1910.146, Permit-Required Confined Space, does not apply to construction activities. Nevertheless, it is a good reference to use in developing confined space programs. The reason this standard does not apply to construction, as stated in the Preamble to 29 CFR 1910.146, is that OSHA believes that confined space activities in the construction industry are already covered adequately under specific sections of industry regulations that deal with confined spaces. Examples include Section (b)(6) of 29 CFR 1926.21, Safety training and education; Section (g) of 29 CFR 1926.352, Fire protection; and Section (b) of 29 Cr-R 1926.353, Ventilation and protection in welding, cutting, and heating. Regardless of which standard applies to a particular confined space, management should ensure that all employees are protected from confined-space hazards.
October 20, 1988

In response to your concerns about analytical services necessary to support the new OSHA Grain Handling Standard I am supplying you with the following information:

Fugitive Grain Dust is defined in the new standard as “combustible dust particles, emitted from the stock handling system, of such size as will pass through a U.S. Standard 40 mesh sieve (425 microns or less)”.

The standard specifies that fugitive grain dust accumulations of 1/8 inch will trigger the employer to initiate actions to remove these accumulations.

This definition greatly simplifies the analytical work necessary to characterize the dust found in a grain handling facility. To determine the percentage of fugitive dust in a sample obtained from one of these facilities where dust levels exceed 1/8 of an inch, a laboratory would need to perform the following analyses:

Percent Fugitive Dusts (Lab Tests).

1. The sample will be passed through a Standard 40 mesh sieve. The laboratory would need to make a weight determination to measure the percentage of the material that passes through the sieve.

2. An aliquot of the material that passed through the 40 mesh sieve would then need to be ignited in a furnace at 600 degrees C. The combustible fraction of the sample is determined by measuring the difference in weight of the sample aliquot before and after ignition.

These two parameters are then combined mathematically and a value, in percent, is reported as “% Combustible Dust”. These analyses are all that are necessary to meet the requirements for the characterization of a sample found in a grain handling facility as “Fugitive Grain Dust” as defined by the standard.

Additional tests may be conducted. They include suspending some of the dust in a 20-liter explosibility test chamber and igniting it with a strong chemical ignitor. By monitoring the pressure developed in the chamber we are able to determine if the sample exploded. This is not a requirement of the standard, but it is done to provide additional supportive documentation about the explosive nature of the samples.

To answer your question about the containers we recommend for sampling I have enclosed one of the containers that we are currently using for sampling grain dust. This container will hold 8 oz. (~ 250 ml) of material. This will be enough sample to perform the following tests:

1. % 40 mesh - Percent that passes through a 40 mesh sieve (i.e. particles less than 425 microns in size)

2. % Combustible Dust - Percent Combustible Dust

3. Kst - Normalized Rate of Pressure Rise - This is a parameter associated with explosions that indicates that the dust exploded. (This test is performed only if specifically requested for special purposes.)
I have also included three bottles of sieved dust for reference in regard to particle size. This material was obtained from a pooled grain dust that we have at the laboratory. This material may be useful as a training aid for your staff so they can recognize the size of dust the standard addresses. They are composed of the following sized grain dusts:

1. Coarse dust greater than 40 mesh (425 micron).

2. Dust that is less than 40 mesh but greater than 200 mesh (425 micron and 75 micron). Dust this fine or finer is what we need to meet the criteria of the Grain Handling Standard.

3. Fine dust less than 200 mesh (75 microns).

Finally, I have included pages from the 1988 (company) Scientific supply catalog for sieves, containers and furnaces to give you an idea of their cost. This equipment is readily available from any number of scientific supply distributors besides (company) so you may check with some other suppliers to get the best price. The 20-liter explosibility testing chamber used for the supplemental tests is not available as an off the shelf item, but can be obtained through specialty suppliers.
RECORD ID 1819

STANDARD NUMBER 1910.272(b); (c)
INFORMATION DATE 890327

ABSTRACT Alfalfa processing plants or mills that are not involved with grain handling are excluded from coverage under the grain handling standard. Alfalfa is not a grain but a forage.

(NOTE: This standard was last amended in 1988.)

INTERPRETATION 29 CFR 1910.272(b); (c)
MARCH 27, 1989

MEMORANDUM

This memorandum is written to offer guidance to the Regional offices in their enforcement of the grain handling standard, specifically as it relates to the exclusion of alfalfa processing plants from coverage by the standard.

Per attachment, alfalfa is not a grain but a forage. After reviewing a request from Mr. D of the (association) for a reconsideration of the inclusion of alfalfa processing mills by the grain handling standard, the Directorate of Safety Standards Programs has concluded that it is not OSHA's intention to cover alfalfa processing plants that are not involved with grain handling. Alfalfa processing, by itself, is excluded from coverage by the standard.

The Regional Offices should take appropriate actions to ensure compliance with this policy. The grain handling directive, OSHA Instruction CPL 2-1.4B August 29, 1988 will be changed accordingly upon next revision.

SOURCE LETTER
January 25, 1989

MEMORANDUM

The attached letter to me from Mr. D of the (association) complains of OSHA citations (apparently in the (city) Region) given to alfalfa processing plants for being in violation of 1910.272, Grain Handling Facilities. It is Mr. D's contention that the grain handling standard does not cover alfalfa processing mills or plants.

I am in agreement with Mr. D. It was never our intent to cover alfalfa processing plants that are not involved with grain handling. If grains are processed at the same facility, the facility would be covered. But alfalfa by itself, no. The broad use of the SIC groups in the program directive is more encompassing than was the intent of the grain handling standard. For instance, mineral plants are covered by SIC 2048, however, these facilities do not handle grain and they are not covered by the OSHA grain handling standard either.
A sensor located at the discharge side of a dryer to detect excessive grain temperature, and to prevent further movement of the grain in the event of an excessive temperature's detection, meets the requirements of 29 CFR 1910.272(o)(1)(ii). The standard requires that all direct-heat grain dryers be equipped with automatic controls that shut off fuel supply in case of power or flame failure or interruption of air movement through an exhaust fan. The automatic controls are to stop the grain from being fed into a dryer, and to prevent further transfer of any ignited or burning material to storage or other processing areas in the event of an excessive temperature's detection.

The OSHA standard 1910.272(o) states, "Continuous-flow bulk raw grain dryers

(1) Not later than April 1, 1991, all direct-heat grain dryers shall be equipped with automatic controls that:

(i) Will shut-off the fuel supply in case of power or flame failure or interruption of air movement through the exhaust fan; and

(ii) Will stop the grain from being fed into the dryer if excessive temperature occurs in the exhaust of the drying section."

As you may know, the implementation of the standard at 1910.272(o)(1)(ii) serves two purposes. First, the grain is stopped from being fed into a dryer. Second, further transfer of any ignited or burning material to storage or other processing areas is eliminated. Therefore, a sensor(s) located at the discharge side of the dryer, which would detect excessive grain temperature and would stop the grain from further movement in the event of an excessive temperature's detection, will meet the requirements of the standard.

Thank you for your interest in employee safety and health. If we may be of further assistance, please contact us.
On April 25, 1990, the Fifth Circuit Court of Appeals issued its decision in National Grain and Feed Association v. OSHA and Food & Allied Service Trades v. Secretary of Labor. The court lifted the stay of enforcement of the 1/8 inch action level for priority areas. Therefore, section 29 CFR 1910.272(i)(2) of the standard, which requires the removal of fugitive grain dust accumulation of more than 1/8 inch in priority housekeeping areas of grain elevators or equivalent employee protection, is enforceable effective August 1, 1990. Each region shall cite for non-compliance with this provision of the standard, starting on that date.

29 CFR 1910.272(i)(2)(ii)

MEMORANDUM

On April 25, 1990, the Fifth Circuit Court of Appeals issued its decision in National Grain and Feed Association v. OSHA and Food & Allied Service Trades v. Secretary of Labor. A copy of this decision is also attached.

The court lifted the stay of enforcement of the 1/8-inch action level for priority areas and, therefore, the requirement of section 29 CFR 1910.272(i)(2) of the standard, which requires the removal of fugitive grain dust accumulation of more than 1/8-inch in priority housekeeping areas of grain elevators or equivalent employee protection, is enforceable effective August 1, 1990. Each region shall cite for non-compliance with this provision of the standard, starting on that date. We will advise you of any further legal developments in this regard.

FEB 7, 1989

MEMORANDUM FOR: REGIONAL ADMINISTRATORS

On January 24, 1989, the Fifth Circuit Court of Appeals issued its decision, copy attached, in response to the Department's petition for rehearing on several aspects of the court's earlier decision of October 27, 1988, including the issue of the 1/8 inch action level. As part of its decision, the court declared that its mandate would be issued forthwith and, in fact, was entered on January 25, 1989. As of that date, the court's previously announced stay of the 1/8 inch action level became effective and the provisions remanded to OSHA for further consideration. Therefore, grain elevator operators need not comply with the provisions of 29 CFR 1910.272(i)(2).

Moreover, it has been determined as a policy matter that violations of this provision that were observed subsequent to October 27, 1988, should not be cited, and any citations issued for such violations, out not yet a final order, shall be withdrawn. It is requested that this office be provided with a copy of any outstanding citations regarding this provision, regardless of the time period.

Please provide a copy of this memorandum and the court's decision to State Designees and 7(c)(1) Consultation Project Managers to ensure that they are aware of OSHA's enforcement posture in this regard.
On October 27, 1988, the Fifth Circuit Court of Appeals issued its decision in National Grain and Feed Association v. OSHA (copy attached). Various industry and union challenges to the grain handling facilities standard, 29 CFR 1910.272, were rejected, but the court did direct the Secretary: (1) to reconsider the economic feasibility of the 1/8" action level for grain elevator operators, and (2) to consider whether the 1/8" action level can be applied feasibly on a facility-wide basis. The decision states that pending this review "enforcement of . . . 29 CFR 1910.272(i)(2) shall be stayed."

The Department has recently filed a petition for rehearing on certain aspects of the court's decision. This filing has the effect of delaying the issuance of the court's stay of enforcement of 29 CFR 1910.272(i)(2). The provision may therefore be enforced according to its terms.

For the above reasons, the requirement of 29 CFR (i)(2) that cleaning measures be initiated whenever dust accumulations exceed 1/8" in the specified priority housekeeping areas of grain elevators remains in effect. Each region shall continue to inspect and cite for noncompliance with this provision. We will advise you immediately of any further legal developments affecting the enforceability of 29 CFR 1910.272(i)(2).
April 25, 1990

MEMORANDUM TO COUNSEL OR PARTIES LISTED BELOW:

No. 87-4960 -
THE NAT'L GRAIN & FEED ASSOC. vs. OSHA

AND

No. 88-4256 -
FOOD & ALLIED SERVICE TRADES DEPT. vs. DOLE
(#'s 29 C.F.R. Section 1910.272 and 52 Fed. Reg. 49592 and 49631)

The following action has been taken in the above case:

AN EXTENSION OF TIME has been granted to and including

for filing appellant's/petitioner's brief.
for filing appellee's/respondent's brief.
for filing reply brief.
for filing petition for rehearing.

Motion to consolidated granted.
Motion to supplement or correct the record granted.
Motion for leave to file supplemental brief granted.
Motion for leave to file brief amicus curiae is granted.

Joint motion as to time for filing briefs granted.

[ ] Order enclosed has been entered.

IN THE UNITED STATES COURT OF APPEALS FOR THE FIFTH CIRCUIT

No. 87-4960

NATIONAL GRAIN & FEED ASSOCIATION, INC.,
and
Great River Grain Corporation,

Petitioners,

VERSUS

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
and
UNITED STATES DEPARTMENT OF LABOR,

Respondents.
No. 88-4256

FOOD & ALLIED SERVICE TRADES DEPARTMENT, AFL-CIO, et al.,

VERSUS

Secretary of Labor,

Respondent.

Petitions for Review of Orders of the Occupational Safety and Health Administration

Before GARZA, WILLIAMS, and SMITH, Circuit Judges.

BY THE COURT:

We have under submission three motions filed subsequently to the issuance of our substitute opinion, 866 F.2d 717 (5th Cir. 1989). Petitioners Food & Allied Service Trades Department, AFL-CIO, et al. ("the unions"), move this court for an order enforcing our judgment. Petitioners National Grain & Feed Association, Inc., et al. ("the industry"), move that we reopen the public record. Respondent, the Secretary of Labor, moves for a lifting of our stay of enforcement. For the reasons set forth herein below, we deny the motions for enforcement and reopening of the record and grant the motion to lift the stay.

I. Motion To Enforce

The unions call for immediate enforcement of our judgment, asserting that workers are in need of the protection to be offered by the proposed grain-dust standards and that the secretary has taken inadequate steps, since the issuance of our prior opinions, to comply with our directive. The Secretary opposes the motion, asserting that on remand the agency is working to accommodate the court's requirements. The industry opposes the motion primarily by means of its motion to reopen the record.

There is little doubt that we have ample authority to issue an order directing compliance with our mandate. See, e.g., American Trucking Ass'ns v. Interstate Commerce Comm'n, 669 F.2d 957, 960-61 (5th Cir. 1982) (per curiam), cert. denied, 460 U.S. 1022 (1983). Here, the unions seek an order requiring the Secretary (a) to file a statement regarding the feasibility of the 1/8-inch action level utilizing sweeping rates that are supported by substantial evidence and (b) to submit an expedited timetable to govern its reevaluation of whether the 1/8-inch action level should be expanded facility-wide. The first request is moot, as the Secretary has now, issued her statement regarding feasibility.

In her response, the Secretary observes that we have remanded for two purposes: (a) a reconsideration of compliance costs and (b) a consideration of whether to adopt a facility-wide grain-dust standard. The secretary notes that we set no time limit within which she was to act. Generally, courts "begin with recognition that an administrative agency is entitled to considerable deference in establishing a timetable for completing its proceedings," as "an agency has broad discretion to set its agenda and to first apply its limited resources to the regulatory tasks it deems most pressing." Cutler v. Hayes, 818 F.2d 879, 896 (D.C. Cir. 1987).

The administrative scheme is such that we accord great deference to the agent in its rulemaking determinations. One factor weighing in the agency's favor is its declared intent to take action. See, e.g., Telecommunications Research & Action Center V. Federal Communications Comm'n, 750 F.2d 70, 80 (D.C. Cir. 1984).

In, Cutler, 818 F.2d at 897-98, the court enunciated the factors to be considered in evaluating an agency's lack of action: (1) the length of time that has elapsed since the agency came under a duty to act, and any prospect of early completion; (2) the presence of any legislative mandate, and the degree of discretion given the agency by Congress with respect to timing; (3) whether injury will likely result from avoidable delay; (4) the presence or absence of bad faith on the agency's part; and (5) administrative necessity, the need to establish priorities given limited resources, and complexity of the task. Having weighed these factors, we determine that the time is not yet ripe for an order of enforcement.

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The most troubling factor is that of injury. Nevertheless, the Secretary has convinced us that the agency is making good-faith progress and, not unexpectedly, has limited resources with which to accomplish that task.

While we deny the motion for immediate enforcement, we direct the Secretary to report to this panel on the status of the agency's review of whether to extend the action level facility-wide. Such report shall be by letter to the clerk filed on or before June 15, 1990. In requesting this status report, we emphasize that we intimate absolutely no view as to whether the action level should be extended facility-wide.

II. Motion To Reopen the Public Record.

The industry asserts that in light of our remand, the agency should reopen the administrative record and engage in additional rulemaking proceedings, including the usual notice and comment procedures, with regard to the economic feasibility and the costs and benefits of the 1/8-inch action level standard and with regard to consideration of a facility-wide standard. The industry asserts that there has been inadequate opportunity for review of all of the relevant factors and that, in any event, the agency now is working with stale data.

Both the Secretary and the unions oppose the motion. They note that nothing in the Administrative Procedure Act, our prior opinions, or the Occupational Safety and Health Act requires the Secretary to reopen the record to comply with our order of remand. It is well established that we may not require additional procedures not mandated by law. Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council. Inc., 435 U.S. 519, 524 (1978). The respondents also observe that additional formal proceedings also would serve to delay even further the implementation of the 1/8-inch action level.

We are persuaded that we should not depart here from the usual rule that a reviewing court should leave the agency free on remand to determine whether supplemental fact-gathering is necessary for correction of the perceived error or deficiency. See Federal Communications Comm'n v. Pottsville Broadcasting Co., 309 U.S. 134, 141-46 (1940); Fly v. Heitmeyer, 309 U.S. 146 (1940) (agency has discretionary authority to reopen record if it so chooses). Here, particularly in regard to the issue of the correct sweeping rate, we have already observed, 866 F.2d at 739, that the existing record is well developed.

The agency must also be given latitude on the issue of staleness. Here, the record was closed in 1985, and the standard was published in 1987. Given the time required for agency review, such gaps are inevitable, though regrettable. See Vermont Yankee, 435 U.S. at 554-55.

The agency has deferred decision on whether to reopen the record on the issue of a facility-wide action level until the sweeping-rate and cost-benefit questions are resolved. Correctly, the agency concludes that the assessment of costs for priority-area housekeeping will have a bearing upon the agency's decision as to whether to expand the 1/8-inch action level beyond priority areas.

In declining to order a reopening of the administrative record, we of course leave the agency free to do so. We expect the agency to take whatever course will ensure a record adequate for a fair and comprehensive determination of the issues.

III. Motion To Lift Stay.

The Secretary requests that we lift our stay of enforcement as to the 1/8-inch action level requirement in priority areas. The Secretary asserts that the standard should now be enforced in light of her new Supplemental Statement of Reasons setting forth, in the Secretary's words, "OSHA's findings and conclusions concerning the economic feasibility of the standard when considered in light of this Court's January 24, 1989, decision." As the Secretary describes the newly-filed document,

OSHA recalculated the total costs of the 1/8-inch action level requirement for priority areas using the industry's suggested cleaning rate of 1,500 square feet per hour. Although the resulting cost estimates were significantly higher than OSHA originally projected, OSHA concluded that the standard is economically feasible for the industry as a whole.

In our previous opinion, we remanded for a type of cost-benefit justification, namely, that the cost of the rule be reasonably related to the expected benefits. 866 F.2d at 733. We noted, however, that in this
context, cost benefit does not mean a rigid arithmetical exercise or a "formal, specific weighing of quantified benefits against costs.

866 F.2d at 733. More specifically, in Asbestos Information Ass'n/N Am. v. OSHA, 727 F.2d 415 (5th Cir. 1984), we indicated that the "reasonably related" language means that the proposed standard "must, on balance, produce a benefit the costs of which are not unreasonable. The protection afforded to workers should outweigh the economic consequences to the regulated industry." Id. at 423 (citing, inter alia, American Petroleum Inst. v. OSHA, 581 F.2d 493, 502-03 (5th Cir. 1978), aff'd sub nom. Industrial Union Dept v. American Petroleum Inst., 448 U.S. 607 (1980)). As we stated in our prior opinion, 866 F.2d at 733, "We cannot say that the cost of compliance is unreasonable if the standard in fact alleviates a grave danger" (quoting Asbestos Information, 727 F.2d at 424 (brackets in prior opinion)). The determination that is called for involves a "considerable" amount of deference to agency discretion. Texas Indep. Ginners Ass'n v. Marshall, 630 F.2d 398, 411 n. 44 (5th Cir. 1980).

We conclude that the Secretary has met this standard. The new statement filed by the secretary sets forth in detail her new calculation of costs, based upon the industry's claimed sweeping rate, and explains her analysis that such costs will not result in a threat to the existence or competitive structure of the industry. Given our deference to such administrative findings, we accept the Secretary's conclusion. Moreover, our prior determinations regarding the efficacy of the proposed standard in alleviating death and injury satisfies the other side of the equation, now that the Secretary has performed the modified cost-benefit analysis that our case law requires.

Hence, we now lift the stay of enforcement of the 1/8-inch action level for priority areas. Our lifting of the stay shall be effective at 12:01 a.m. August 1, 1990, in order to provide the industry with a reasonable time to effect compliance.

In summary, we DENY the motion for enforcement, DENY the motion to reopen the record, and GRANT the motion to lift the stay, effective August 1, 1990. SO ORDERED.
ABSTRACT
This interpretation letter addresses OSHA's position on the (association) warning alert regarding imported circuit breaker panels. The responsibility for determining whether a circuit breaker has been installed in a load center or panel board for which it has not been listed or labeled rests with the installer and the local electrical building inspector's enforcement of the NEC.

INTERPRETATION
29 CFR 1910.303(b)(2)

Jun 28 1988

MEMORANDUM

SUBJECT: (Association) Warning Alert Regarding Imported Circuit Breaker Panels

In response to your memorandum dated April 18, 1988, regarding the (association) warning regarding imported circuit breaker panels, the following information is forwarded.

The OSHA standards require the following: 1910.303(a) Approval. The conditions and equipment required or permitted by this subpart shall be acceptable only if approved. 1910.303(b)(2) Installation and Use. Listed or labeled equipment shall be used or installed in accordance with any instructions included in the listing or labeling.

The difficulty in determining whether a circuit breaker has been installed in a load center or panel board for which it has not been specifically listed or labeled, and hence not acceptable to the Assistant Secretary, is one which is not readily discernible to the OSHA compliance officer. The primary responsibility rests with the installer and the local electrical building inspector's enforcement of the NEC.

The time involved in researching the basic problem of whether a UL listed device has been improperly installed in concealed portions of permanent wiring is not consistent with the anticipated hazard. In fact, no specific hazards are mentioned by (association), therefore OSHA should consider this a de minimis violation which has no direct bearing on safety or health.

WARNING TO INSTALLERS AND INSPECTORS OF CIRCUIT BREAKER PANELS

Circuit breakers are being brought into the U.S. by a number of importers. Some of these importers are advertising, promoting, and selling these circuit breakers as substitutes for circuit breakers furnished by a number of other manufacturers. Some imported circuit breakers carry the U/L mark and are indeed U/L Listed, but they are listed by U/L for installation only in load centers manufactured by the same manufacturer as the circuit breakers, unless they have been specifically classified by U/L for use in designated load centers and panel boards manufactured by others. Thus, the U/L mark alone does not indicate that circuit breakers bearing the mark may be safely substituted in load centers and panel boards manufactured by others, even though the load centers and panel boards will physically accept those imported circuit breakers.

A violation of NEC 110-3(b) occurs whenever a circuit breaker is installed in a load center or panel board for which it has not been specifically listed or labeled.

Failure to follow written installation instructions and/or violation of the National Electrical Code may result in liability to those involved.
Installers and electrical inspectors need to be alert to misleading claims regarding the suitability of products for use in load centers and panel boards.

(Association) authorizes this public service message to be reproduced only in its entirety.
I am responding to your letter addressed to the Assistant Secretary for Occupational Safety and Health, concerning OSHA practices in recognizing electrical testing laboratories, and their impact on electrical product vendors and manufacturers.

Through its electrical standard, OSHA is trying to provide for a reasonable level of safety protection for workers when they are exposed to, or are using, electrical products and installations. Our standard also states that employer utilization of certain electrical products and materials--those which have been successfully tested against National Electrical Code (NEC) requirements (and which are also being monitored in their production) by nationally recognized testing laboratories-- would be an acceptable means of compliance with our requirements. We believe that this approach greatly facilitates employer compliance with the standard, while protecting the integrity of the NEC and avoiding the problems and costs inherent in workplace testing, both by employers (product acceptance) and by OSHA (compliance inspection). For these reasons, these laboratories are to be nationally recognized by OSHA (under the terms of our regulation at 29 CFR 1907).

However, since OSHA to date has recognized only two of these electrical testing laboratories, and since your new product bears the approval/certification of a non-OSHA-recognized organization, i.e., (association), the marketability of your product may be somewhat less than you had anticipated.

While this may be so, it is important to recognize that OSHA does not seek, in any way, to control the manufacture or sale of your product. You and any purchaser (employer) should proceed as you wish in the marketplace. In this situation, however, you can give no assurance, a priori, that an employer using your product will not be cited--after inspection by OSHA--for using unacceptable/unapproved electrical equipment.

In addition, and perhaps more importantly, none of the above should be interpreted to mean that we believe your product is not safe; we simple do not know, one way or the other. Should you decide not to seek a determination by an OSHA-recognized organization, or until such time that CSA would become nationally recognized by OSHA, the acceptability of your product can only be determined by OSHA on the basis of observed workplace operation in the future, combined with a review of the specifications and test results related to your product which you and CSA have developed.

I am asking my Deputy, Mr. H, with whom you have already spoken, to contact you to explain this situation further and to pursue these ideas as they relate to your product.

You may be interested to know that, while addressing your questions, my staff and I have also been working on the question of how to change our current regulatory procedures for laboratory recognition. We hope to rejuvenate the previously established recognition process, so that applications from additional organizations, such as (association), may more easily and quickly be processed. This Agency
definitely intends to develop proposals for change which, after policy decision making is completed, will be pursued through regular, public, government rulemaking procedures.

In addition, it is also possible that additional related proposals and actions will develop in the course of resolving a formal legal challenge against our laboratory recognition process in the Federal courts by another non-recognized laboratory.
Local DOE tells researchers they can put equipment in front of electrical boxes, not maintaining clearance. An Interpretation is requested of Subpart S on maintaining a required clearance by giving an option to stencil "Keep Clear" or "No storage inside this space". This will help in allowing 36" of unobstructed access to electrical panel boxes located in a required workspace.

Your first question asked why Subpart S, 1910.303(g)(1)(i) requires a 36" clearance in the front of electrical panel boxes. The reason for this requirement is to allow electrical panel boxes to be readily accessible. The unobstructed access is required in Subpart S, 1910.304(e)(1)(iv). "Overcurrent devices shall be readily accessible to each employee or authorized building management personnel. Overcurrent devices may not be located where they will be exposed to physical damage nor in the vicinity of easily ignitable material." In the event of an emergency necessitating power shutoff to a particular piece of equipment, the need to have unobstructed access to electrical panel boxes becomes apparent. Furthermore, 1910.303(g)(1)(ii) states that this required workspace "may not be used for storage."

Your second question asked if this distance must be maintained and the answer is yes, to do so otherwise would compromise a violation of the DOE-adopted OSHA standard.

An option to ensure this is to use a stencil/template to paint the required clear spaces on the floors in front of electrical installations. The legends "Keep Clear" or "No storage inside this space" would be appropriate.
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DOE Interpretations Guide to OSH Standards
July 1 1992
This interpretation provides clarification of OSHA’s requirement for 29 CFR 1910.303(g)(1)(i) which requires 30 inch working clearances in front of electrical components installed prior to April 16, 1981 and 36 inches for installations after April 16, 1981.

This is in response to your letter of October 8, 1993 requesting a variance from the OSHA requirements contained in 29 CFR 1910.303(g)(1)(i) for working clearances in front of electrical components. This interpretation is being provided in lieu of a variance for the following reasons.

Since your letter does not include information regarding the obstructions that limit the working clearances, for the purposes of this interpretation, it is assumed the obstructions are previously installed, permanently affixed structures and/or equipment. This is based upon the presumption that you require portable equipment and/or movable equipment/supplies, etc. to be stored or placed in such a manner as to meet the applicable standards.

In your letter you state that an acceptable alternative to the requirement would be to install caution stickers on applicable electrical devices that do not have required working clearances that state “Caution. Electrical panel does not have required working clearance. Electricity must be disconnected before work is performed or work must be done in accordance with Health and Safety Procedures.” In 29 CFR 1910.303(g)(1)(i) it is stated that “...the dimension of the working space in the direction of access to live parts operating at 600 volts or less and likely to require examination, adjustment, servicing or maintenance while alive must be less than indicated in table S-1.”

Additionally, 29 CFR 1910.333(a)(1) states “Live parts to which an employee may be exposed shall be deenergized before the employee works on or near them, unless the employer can demonstrate that deenergizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.”

It is clear that any work upon electrical components must be done while such equipment is in a deenergized state and locked out or tagged out in accordance with 29 CFR 1910.333 and/or 29 CFR 1910.147. In situations where work must be done on energized parts, both the requirements of 29 CFR 1910.333(a)(2) and 29 CFR 1910.303(g) must be met to protect employees from energized parts.

However, since deenergized equipment does not expose the employee to live electrical circuits as addressed in 29 CFR 1910.303(g), a variance from its requirements is not necessary. While the caution signs described are acceptable to the DOE, management must bear in mind that if the act of physically deenergizing the equipment exposes the employee to energized parts, this deenergizing work would be subject to the clearance requirements of 29 CFR 1910.303(g)(1)(i).

Accordingly, no further action at the DOE Headquarters level will be taken on your request for a variance.
There is no specific requirement for grounding of battery racks, but 1910.304(f) applies generally. Provisions shall be made for sufficient diffusion and ventilation of gases from storage batteries to prevent accumulation of explosive gas mixtures (1910.305(j)(7)). Record ID 3749 has also been attached as supplemental information on the HAZCOM program on electrical installation, maintenance or repair.

(NOTE: Neither 1910.304 nor 1910.305 has been amended since 1981).

August 9, 1983

Mr. A has asked me to respond to your letter of June 30, concerning Occupational Safety and Health Administration (OSHA) requirements on battery installations.

OSHA regulations for battery installation are contained in 29 CFR 1910.305(j)(7), which requires ventilation of gases from storage batteries to prevent the accumulation of explosive mixtures. There are no OSHA regulations specifically applicable to the grounding of battery racks; however, the provisions of 29 CFR 1910.304(f) on the grounding of systems and equipment applies generally. For your convenience, I have enclosed a copy of the electrical safety standards contained in Subpart S of 29 CFR Part 1910. These standards are based on the National Electrical Code (National Fire Protection Association Standard NFPA 70), which contains additional details on battery installations in Article 480. It should be noted that OSHA's regulations apply only to workplaces and not to private residences.

ATTACHMENT: The following interpretation (Record ID 3749) is included as supplemental information for the first instance of OSHA Standard 1910.304.
INTERPRETATION

29 CFR 1910.1200(e)(4); 1910.1200(e)(2); 1910.1200(g)(9); 1910.1200(e)(1); 1910.331(a); 1910.332(a); 1926.59(e)(1)

OCT 18, 1990

This is in further response to your letter of August 13, to the Occupational Safety and Health Administration (OSHA), in which you requested a response to two questions. One of the questions concerned OSHA's new final rule concerning the amendments to Subpart S, Electrical, Sections 1910.331 and 1910.332, and the other question concerned the requirement for the employer to maintain the written hazard communication program on-site, as per 1910.1200 and 1926.59(e)(1).

Question 1:

Do the new 1910 Subpart S amendments cover painting, decorating and paper hanging and electrical work related to supply (as opposed to electrical work on equipment/machines beyond the supply interface)?

Response:

In responding to your question, the key concept which must be considered is the distinction between maintenance and repair. These activities are often very close and may require a case-by-case determination based on actual circumstances at the worksite. In general the following observations are pertinent. If the project involves only a change of color or wallcovering, or maintenance on existing wiring or circuitry, the work would be covered under the General Industry Standards, 29 CFR Part 1910, and the new amendments would apply. On the other hand, if the project involves structural remodeling or repair, and includes painting, hanging wallpaper, or installation of new electrical supply wiring and components, the construction standards, 29 CFR Part 1926, would apply. Electrical work on equipment/machines other than supply components would be covered under the new amendments.

Question 2:

I note that OSHA has issued citations to employers for failure to produce their written Hazard Communication program at the time of the inspection. These citations have been issued in General Industry and in Construction.

While I would agree that it is good safety practice to have such a document "present" at each work site, please inform me if employers must have their written program at the work site at all times to be in compliance with either 1910.1200 or 1926.59.

Response:

This question regarding the requirement for on-site availability of the written hazard communication program ("HCP") is an issue that has arisen often in OSHA enforcement of the provisions at section (e)(1) and (e)(2) of the standard, and has caused the Agency to reconsider its compliance policy on the issue.

There is no question that the written HCP must be maintained on-site at fixed worksites or establishments. However, an exception to the requirement that the written hazard communication (HCP) be kept on-site may be allowed on multi-employer worksites and in situations where an employee(s) travels between workplaces yet who at times reports to a primary workplace facility where the written HCP is maintained. The standard sets forth, at (e)(1), a positive requirement for the written program to be maintained "at the workplace." OSHA previously interpreted this requirement to mean that the written program must be kept on-site at all times or even in the truck of employees who travel between worksites.

The Agency proposed, however, in the 1988 Notice of Proposed Rulemaking, to add a new subparagraph to the paragraph (e) requirements which allows the written program to be maintained at
a "central location at the primary workplace facility" for employees who travel between workplaces during a workshift (proposed new paragraph (e)(5)). The final rule presently allows MSDSs to be maintained at the central workplace for employees who travel between workplaces during a workshift (paragraph (g)(9)). The (g)(9) provisions also require that employees have immediate access to MSDS information in the event of an emergency.

Unlike MSDS information which may be necessary to assure the safety of employees in the event of an emergency, the information contained in an employer’s written HCP is mainly procedural and the presence of a written document on the worksite may not have a direct or immediate relationship to employee safety or health. This is especially true in situations where employers are implementing an effective overall HCP and whose employees have already received the required hazard communication training. The need for the program to be on-site, therefore, in situations where employees travel or are dispatched from a primary workplace location (e.g., administrative offices) where the written program is maintained to a multi-employer worksite may bear no immediate relationship to safety and health and may, in the professional judgement of the Compliance Safety and Health Officer (CSHO) and Area Director, be considered a "de minimis" violation of section (e)(1) (see OSHA’s Field Operation Manual, (FOM), Chapter IV, B.6., pages IV 30-31).

This policy also applies in situations where the employee does not return to the primary workplace during the workshift as long as the employee(s) is aware of the content of the program and the methods the program contains that affect the sharing of the hazard communication information required at (e)(2)(i-iii) Stated in another way, if hazard communication information (accessibility of MSDSs, the employer's labeling system, etc.) is not being shared with other on-site employers and the employees are unaware of the methods outlined in the program which have been developed to accomplish this intent, then the need for the program to be on-site would bear a direct relationship to safety and health and the absence of the program on-site would not be a “de minimis” violation.

This change in citation policy will be communicated to Agency Regional staff by copy of this correspondence, and incorporation into new program guidance presently under development in the form of an updated compliance directive on inspection procedures for the Hazard Communication Standard.

At fixed worksite locations, the requirement for the written hazard communication program to be maintained on-site and readily accessible to employees remains.

SEP 3, 1990

This is an interim response to your letter of August 13, concerning the Occupational Safety and Health Administration's (OSHA) new final rule amending Subpart S, Electrical, Section 1910.331 and .332, and OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

SOURCE LETTER

AUG 13, 1990

I have the following two questions. One concerns the new final rule concerning the amendments to Subpart S, Electrical, Section 1910.331 and 1910.332. The other concerns the Hazard Communication Standard, 29 CFR 1910.1200.

1. The preamble to the Subpart S Electrical amendment suggests that painters and paper hangers are covered by the new rule (see 55 FR 32012; Table 7 - Occupations Requiring Training) as well as electricians.

Also 29 CFR 1910.332, Training, Table S-4 refers to the above occupations.

The authority noted for Subpart S of part 1910 is Sections 4, 6, 8 of the OSH Act of 1970.
According to the Standard Industrial Classification Manual (1972), Painting, Paper Hanging and Decorating (SIC 172) and Electrical Work (SIC 173) are classified as Special Trade Contractors.

Under 29 CFR 1926, Subpart C - General Safety & Health Provision, (authority, Section's. 4, 6, 8 of the OSH Act of 1970) section 1926.20 notes contractor requirements and sets out the scope of coverage for "construction, alteration, and/or repair, including painting and decorating...." (Underlining added for emphasis.)

In my experience, it has been OSHA's policy to include painting and decorating as a construction activity. In addition, when electricians in General Industry install new service, or repair existing service, OSHA has considered that activity to be construction.

Does the new 1910 Subpart S amendments cover painting, decorating and paper hanging, and electrical work related to supply (as opposed to electrical work on equipment/machines beyond the supply interface)?

2. I note that OSHA has issued citations to employers for failure to produce their written Hazard Communication program at the time of the inspection. These citations have been issued in General Industry and in Construction.

I note in 1910.1200 and 1926.59, paragraph (e)(4), that "the employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.20(e)." (Underlining added for emphasis.)

29 CFR 1910.20(e) provides that "...the employer shall assure that access is provided in a reasonable time, place, and manner, but in no event later than fifteen (15) days after the request for access is made". (Underlining added for emphasis.)

29 CFR 1910.1200 and 1926.59, paragraph (e)(1) states that "Employees shall develop, implement, and maintain at the workplace, a written hazard communication program..." (Underlining added for emphasis.)

Paragraph (e)(1) would seem to conflict with 1910.20(e)(4) in that "maintain" could mean that it must be present at all times at the work site, rather than meaning the maintenance of such a program. However, since 1910.20(e)(4) is specific to the time frame required to produce such a document, it would seem that the specific overrules the general if "maintain" means "present".

While I would agree that it is good safety practice to have such a document "present" at each work site, please inform me if employers must have their written program at the work site at all times to be in compliance with either 1910.1200 or 1926.59.
OSHA Instruction STP 2.19

February 27, 1981
Office of State Programs

SUBJECT: Electrical Standards

A. PURPOSE. This instruction informs the Regions and State designees that OSHA has revised 29 CFR 1910 Subpart S.

B. SCOPE. This instruction applies OSHA-wide.

C. ACTION. Each Regional Administrator shall ensure that D. of this instruction is followed and implemented.

D. FEDERAL PROGRAM CHANGE. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this instruction is forwarded to each State designee.
2. Provide a copy of the standard to the State designee upon request.
3. Explain the technical content of the revised standard to the State designee as requested.
4. Inform the State that adoption of the standard, or of a standard which is at least as effective, is required within 6 months of the date of publication of the Federal standard in the Federal Register.
5. Ensure that the State's progress in adoption and implementation of the standard is monitored and evaluated in accordance with the Field Operations Manual, Chapter XVII.

E. BACKGROUND.


2. This revised Subpart S replaces detailed specification requirements of the National Electrical Code (NEC) with more general performance language, deletes provisions of the NEC which do not apply to employee protection and incorporates all other relevant NEC provisions into the OSHA standards.

3. Under 29 CFR 1953.23(a)(1), States are provided up to 6 months for adoption of standards which are as effective.
This interpretation addresses a perceived conflict between the DOE-adopted Occupational Safety and Health Administration (OSHA) Lockout/Tagout (LOTO) standards and OSHA Standard 1910.304(e)(1)(iv), which states that over current devices shall be readily accessible to each employee or authorized building management personnel.

This interpretation responds to a December 7, 1993, request from a DOE facility asking for a clarification between LOTO requirements and the requirement to maintain electrical disconnects fully accessible for emergency use as specified in 29 CFR 1910.304(e)(1)(iv). (Request No. 12-92-002).

Additional correspondence from the facility stated that current LOTO practices allowed employees to lock the exterior access door to the circuit breaker handles of an electrical distribution panelboard after opening one, but not all, of the circuit breakers within the panelboard. The facility noted that this particular LOTO procedure was quick and also efficient since it eliminated the need to keep an inventory of individual circuit breaker locking devices from numerous manufacturers.

The facility indicated that the other circuit breakers in the electrical distribution panelboard were not used for disconnect purposes, because other disconnect means were available downstream with the equipment, and that this fact should negate the requirements of 29 CFR 1910.304. This contention is incorrect since the use of other downstream disconnects and the requirement for full accessibility to circuit breakers are separate issues. The portion of the circuit between the circuit breaker and the downstream disconnect would still remain energized, and the ability of employees to manually control it would be hindered by the locked access door. As such, we do not see the standard as waiving the ready access requirement under these conditions.

The practice of locking the exterior access door of an electrical distribution panelboard containing circuit breakers (overcurrent devices), while all or some of these circuit breakers are in their normal (closed) operating position, does not comply with the intent of either 29 CFR 1910.304(e)(1)(iv) or the NEC 240-24(b). There may be times or conditions, other than Lockout/Tagout (e.g. security areas, areas open to the public), in which the locking of an electrical panelboard access door could be warranted. Management should review each of these cases and determine the appropriate actions based on the requirements of 29 CFR 1910 and the National Electrical Code (NEC).
ABSTRACT
This interpretation provides clarification of requirements for secondary motor control circuit transformer grounding.

INTERPRETATION

October 27, 1993

This is in response to your letter of September 10, 1993 requesting interpretation of the Occupational Safety and Health Administration (OSHA) requirement for secondary motor control circuit transformer grounding.

Question:
Does the secondary of motor control circuit transformers need to be grounded? The transformer in question is a 0.5 KVA single phase 480 to 120 transformer.

Answer:
29 CFR 1910.304(f)(1)(v) states "AC systems of 50 volts to 1000 volts are not required to be grounded under the following conditions:

1. If the system is used exclusively to supply industrial electrical furnaces for melting, refining, tempering and the like.
2. If the system is separately derived and is used exclusively for rectifiers supplying only adjustable speed industrial drives.
3. If the system is separately derived and is supplied by a transformer that has a primary voltage rating less than 1000 volts, providing all of the following conditions are met:
   a. The system is used exclusively for control circuits,
   b. The conditions of maintenance and supervision assure that only qualified persons will service the installation,
   c. Continuity of control power is required, and
   d. Ground detectors are installed on the control system.
4. If the system is an isolated power system that supplies circuits in health care facilities."

Your question appears to fall within the scope of 1910.304(f)(1)(v)(C) as stated above. If all four of the requirements listed in 1910.304(f)(1)(v)(C)(1-4) are met and maintained then the system need not be grounded. This is consistent with the requirements contained in the National Electric Code (NEC), Article 250-5 (b)(4), exception 3.

It is also important to address the potential for inadvertent ground faults in ungrounded control circuits which may cause a motor to start without warning and constitute a hazard to either personnel or property. A review of NEC article 430-73 is highly recommended and should be conducted prior to design or installations of ungrounded motor control circuit transformers. This is consistent with the OSHA requirement to ensure employees a place of employment free from recognized hazards, that are causing or are likely to cause death or serious physical harm.
ABSTRACT  This interpretation letter is in response to a letter of February 26 requesting OSHA's opinion on the use of power strips. Power strips or noise/surge protector are generally referred to as temporary power taps. If the temporary power tap is used to provide transient voltage surge suppression, then these devices would meet OSHA standards. However, if the temporary power taps are being used solely as wiring to provide extra or more convenient outlets, then this is a violation of 29 CFR 1910.305(g)(1)(iii)(A).

INTERPRETATION  29 CFR 1910.305(g)(1)(iii)(A)

June 11, 1993

Dear Mr. C:

This is in response to your letter of February 26, regarding the use of "power strips". You apparently want our opinion on whether certain working conditions relative to the described "power strips" might constitute a violation of OSHA standards. You were also concerned about the cost of abatement should a violation exist. Please accept our apologies for the delay in the response.

"Power strips" as mentioned in your letter or "surge/noise protective strips" as termed in the literature you sent as enclosures are generally referred to as temporary power taps. Temporary power taps that incorporate switches, indicator lights, filters for electromagnetic interference, fuses, varistors, or other overcurrent mechanisms in their design could be devices for transient voltage surge suppression of equipment. Transient voltage surge suppressors when used to preserve the components of the equipment listed in your letter (computer, printer, fax, miscellaneous appliances and analytical instruments) could be considered a device as defined in 29 CFR 1910.399:

Device. A unit of an electrical system which is intended to carry but not utilize electric energy.

If the temporary power taps are being used to provide transient voltage surge suppression, then these devices would meet the OSHA standards. If the temporary power taps are being used solely as wiring to provide extra or more convenient outlets, then this is a violation of 29 CFR 1910.305(g)(1)(iii)(A):

... flexible cords and cables may not be used: (A) As a substitute for the fixed wiring of a structure;....

The selection of the surge/noise protective devices should be made following the manufacturer's recommendations for each piece of equipment that is to have this safeguard. An assessment of the electric branch circuits in the facility should be made to assure there is no potential for an electric overload situation where the equipment is used.

If you should need further assistance please do not hesitate to contact us.

Vol. 2-200.3
This interpretation letter addresses the maximum gap that is allowable in dead front electrical panels. All openings in electrical boxes shall be effectively closed to provide protection equivalent to that of the walls of the electrical box.

29 CFR 1910.305 (b)(1) states that unused openings in cabinets, boxes, and fittings shall be effectively closed. The National Electrical Code also states that unused openings in boxes, conduit bodies, and fittings shall be effectively closed to afford protection substantially equivalent to that of the wall of the electrical box.

To answer your question, although neither OSHA nor NEC gives a numerical tolerance, they both state that openings shall be effectively closed to afford protection equivalent to that of the wall of the electrical box. As such, management should evaluate each case to determine the hazard to employees and obtain an effective closure of unused openings to give the same level of protection as the walls of the electrical box.
ABSTRACT

This interpretation clarifies the Occupational Safety and Health Administration (OSHA) requirements under 29 CFR 1910.305(j)(2)(ii) concerning the use of ground fault circuit interrupters (GFCIs) in older buildings where electrical receptacles are located in damp and wet areas. Although OSHA does not require the use of GFCIs in such locations, OSHA regulations do require that employees be protected from electrical hazards, and GFCIs are one option for providing this protection.

INTERPRETATION


This interpretation is in response to your inquiry asking whether ground fault circuit interrupters (GFCIs) are required in older existing buildings with wet or damp conditions. DOE Order 6430.1A, "General Design Criteria," Section 1605-2.3, states that GFCIs are required within 6 feet of sinks and building entrances in new or renovated facilities. This requirement would include wet and damp conditions where employees are exposed to potential electrical shock hazards. Receptacles in wet and damp conditions should be rated for the service (as recommended by the National Electrical Manufacturers Association) and installed above any possible immersion level. The use of "pigtailed" is not recommended.

GFCIs are intended to protect the individual using a cord-and-plug-connected tool or appliance. The intent is to prevent parts from becoming energized that are, or may potentially be, in contact with a person. This may be accomplished in three ways. First, a GFCI may be installed between the receptacle and the cord and plug of the equipment of concern; second, the receptacle may be a GFCI; or third, the circuit breaker in the power distribution panel may be a GFCI.

29 CFR 1910.302(b)(2) states "Every electrical utilization system and all utilization equipment installed after March 15, 1972, and every major replacement, modification, repair or rehabilitation after March 15, 1972, of any part of any electric utilization system or utilization equipment installed before March 15, 1972, shall comply with the provisions of §§1910.302 through 1910.308."

29 CFR 1910.304(f)(5)(v)(C)(3),(5) and (7) require grounding of hand-held motor-operated tools; cord- and plug-connected appliances used in damp and wet locations; and tools likely to be used in wet and conductive locations, that have exposed non-current carrying metal parts which may become energized.

29 CFR 1910.305(j)(2)(ii) states, "A receptacle installed in a wet or damp location shall be suitable for the location." Therefore, the question of the use of a GFCI, except for construction situations, depends on the purpose of the receptacle or the intention of the person using a cord- and plug-connected tool or appliance. Management’s responsibility is to assure that procedures and equipment are in place, and are being followed, and used for maintaining ground continuity under all working conditions.

A GFCI will be an important part in complying with this responsibility. Maintaining the ground continuity is most easily demonstrated with least reliance on the human element if the circuit is protected by a ground fault circuit interrupter.

In conclusion, although 29 CFR 1910.305 does not require that a GFCI be used, it is definitely one way to meet the intent of the standard for protecting employees from electrical shock in wet and damp locations. Therefore, installation of a GFCI would be an adequate means to fulfill the requirements of 29 CFR 1910.305(j)(2)(ii) and provide an extra margin of safety when employees are exposed to potential electrical shock hazards. Use of GFCIs would also satisfy the requirements of DOE Order 6430.1A.
Section 1605-2.3, as stated above. It is important that the GFCI be installed correctly and that management evaluate each area to establish the potential for employee exposure to shock hazards.
ABSTRACT

An interpretation pertaining to shop-made extension cords. OSHA interprets cord sets as being temporary wiring extensions of the branch circuit. As such, temporary electrical power and lighting wiring methods, as specifically modified in 1926.405(a)(2) and 1910.305(a)(2), may be of a class less than that required for a permanent installation and the requirement for lasting by a nationally recognized test laboratory does not apply. Temporary wiring must be removed immediately upon completion of construction or purpose for which the wiring was installed. However, factory manufactured temporary wiring assembly, such as ready-made extension cords, temporary lighting strings (UL-1088), "on-the-spot" emergency lighting, etc., is desired, then the prefabricated temporary wiring assembly to be installed must be of a type that a nationally recognized testing laboratory accepts, certifies, lists, labels or determines to be safe. The criteria OSHA uses to determine if sets meet existing electrical standards are stated.

INTERPRETATION

29 CFR 1910.305 (a)(2)(iii);1926.405 (a)(2)(i), (g)(2)(iv), (g)(2)(v); 1926.403 (a); 1926.404 (a)(2); 1926.403 (g), (b)(1)(i)

March 03, 1992

This is in response to your November 13 memorandum requesting an interpretation of OSHA requirements pertaining to shop-made extension cords. I apologize for the delay in responding to you.

Normally, equipment must be approved as an assembly by a nationally recognized testing laboratory before it would be acceptable under the General Industry or Construction Electrical Standards (Part 1910, Subpart S and Part 1926, Subpart K, respectively). In the case of cord sets used in construction, it is common for them to be assembled in the field by electrical contractors. It should be noted that OSHA interprets cord sets as being temporary wiring extensions of the branch circuit. As such, temporary electrical power and lighting wiring methods, as specifically modified in 1926.405(a)(2) and 1910.305(a)(2), may be of a class less than that required for a permanent installation. Thus, temporary electrical power and lighting installations are permitted during the period of construction, remodeling, maintenance, repair or demolition of buildings, structures, equipment or similar activities. In addition, temporary wiring must be removed immediately upon completion of construction or purpose for which the wiring was installed. When the temporary wiring consists of shop-made cord sets, self-fabricated lighting installations, emergency or experimental wiring etc., as permitted by 1926.405(a)(2) and 1910.305(a)(2) to be assembled and installed at the work site using approved parts, the requirement for listing by a nationally recognized test laboratory does not apply. If a factory manufactured temporary wiring assembly, such as ready-made extension cords, temporary lighting strings (UL-1088), "on-the-spot" emergency lighting, etc., is desired, then the prefabricated temporary wiring assembly to be installed must be of a type that a nationally recognized testing laboratory accepts, certifies, lists, labels or determines to be safe.

In regard to electrical contractors assembling cord sets at construction sites, the practice is acceptable provided the assembled cord sets are constructed in a manner equivalent to those that are factory-assembled and approved. (The same approach applies to the General Industry Electrical Standards. However, your question pertained to construction, so the remaining references are to Subpart K of Part 1926.) Criteria for determining whether shop-made cord sets meet existing electrical standards include:

1. All components must be approved for the purpose by a nationally recognized testing laboratory (1926.403(a)). Individual components must be compatible for use with the other components of the completed assembly.
2. The cord set must meet all applicable requirements of Subpart K. For example, the assembly must be marked appropriately (1926.403(g)); boxes intended for use in a permanent installation may not be used (1926.403(b)(1)(j)); cords must be connected to devices and fittings so as to provide strain relief (1926.405(g)(2)(iv)); cords passing through holes in enclosures must be protected by bushings or fittings designed for the purpose (1926.405(g)(2)(v)- fittings designed to fasten cables to metal boxes are not acceptable); and no grounded conductor shall be attached to any terminal or lead so as to reverse designated polarity (1926.404(a)(2)).

3. The cord set must be assembled by a qualified person.

4. The wiring of the completed assembly must be checked before the cord set is first used. For example, the following, or equivalent, tests should be performed:
   a. All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.
   b. Each receptacle and attachment plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.
OSHA Instruction STD 1-16.6A

December 12, 1981

Subject: Electrical Equipment Used in Sewage Wetwells

A. Purpose. This instruction provides guidance to insure appropriate enforcement of certain requirements pertaining to electrical equipment used in sewage wetwells (Hazardous Locations, 29CFR 1910.307).

B. Scope. This instruction applies OSHA-wide.

C. Cancellation. OSHA Instruction STD 1-16.6, April 22, 1980, is canceled.

D. Action. OSHA Regional Administrators/Area Directors shall ensure that the enforcement of 29 CFR Part 1910 Subpart S, for electric pumps used in sewage wetwells is consistent with the guidelines in this instruction.

E. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

F. Guidelines. Whether a sewage wetwell location is or is not a Class I, Division 1 location under OSHA's standards depends on the conditions in the particular wetwell. Even if the wetwell is a Class I, Division 1 location, this does not mean that an explosion-proof motor is the only acceptable type for this location. NEC paragraph 501-8(a), which can be followed as a means of complying with 29 CFR 1910.307 (b)(3), states: 501-8. Motors and Generator Motors and generators shall conform to the following:

(a) Class I, Division 1. In Class I, Division 1 locations, motors, generators and other rotating electric machinery shall be:

(1) approved for Class I, Division 1 locations (explosion-proof), or

(2) of the totally enclosed type supplied with positive-pressure ventilation from a source of clean air with discharge to a safe area, so arranged to prevent energizing of the machine until ventilation has been established and the enclosure has been purged with at least 10 volumes of air, and also arranged to automatically deenergize the equipment when the air supply fails; or

(3) of the totally enclosed inert-gas-filled type supplied with a suitable reliable source of inert gas for pressuring the enclosure, with devices provided to insure a positive pressure in the enclosure and arranged to automatically deenergize the equipment when the gas supply fails; or
OSHA Instruction STD 1-16.6A (cont.)

(4) of a type designed to be submerged in a liquid which is flammable only when vaporized and mixed with air, or in a gas or vapor at a pressure greater than atmospheric and which is flammable only when mixed with air, and the machine is so arranged to prevent energizing it until it has been purged with the liquid or gas to exclude air, and also arranged to automatically deenergize the equipment when the supply of liquid, or gas or vapor fails or the pressure is reduced to atmospheric.

Totally enclosed motors of types (2) and (3) shall have no external surface with an operating temperature in degrees Celsius in excess of 80 percent of the ignition temperature of the gas or vapor involved, as determined by ASTM test procedure (Designation: D-2155-69). Appropriate devices shall be provided to detect any increase in temperature of the motor beyond design limits and automatically deenergize the equipment or provide an adequate alarm. Auxiliary equipment shall be of a type approved for the location in which it is installed.

An installation or equipment is acceptable to the Assistant Secretary of Labor, and approved within the meaning of Subpart S under the following conditions as stated in 29 CFR 1910.399(a)(1):

1. If it is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory, such as, but not limited to, Underwriters' Laboratories, Inc., and Factory Mutual Engineering Corporation, or

2. With respect to an installation or equipment of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, if it is inspected or tested by another Federal agency, or by a State, municipal, or local authority responsible for enforcing occupational safety provisions of the National Electrical Code, and found in compliance with the provisions of the National Electrical Code as applied in this Subpart, or

3. With respect to custom-made equipment or related installations which are designed, fabricated for, and intended for use by, a particular customer, if it is determined to be safe for its intended use by its manufacturer on the basis of test data which the employer keeps and makes available for inspection to the Assistant Secretary and his authorized representatives.

G. Background. Recently, an advertisement in a trade magazine was interpreted as inferring that OSHA requires all motors in a sewer wetwell to be explosion proof. To the contrary, whether a sewer wetwell is a Class I, Division 1 location must be established by investigation of the conditions in a specific wetwell. Moreover, as indicated in F. of this instruction, an explosion-proof motor is not the only means of complying with OSHA standards in a sewer wetwell which is determined to be a Class I, Division 1 location.
OSHA Instruction STD 1-16.7

JUL 1, 1991
Directorate of Compliance Programs

Subject: Electrical Safety-Related Work Practices--Inspection Procedures and Interpretive Guidelines.


B. Scope. This instruction applies OSHA-wide.

C. References:


D. Effective Dates of Requirements. All requirements of the standard for Electrical Safety-Related Work Practices have an effective date of December 4, 1990, except for 29 CFR 1910.332 (training), which will become effective on August 6, 1991.

E. Action. Regional Administrators and Area Directors shall ensure that the policies and interpretive guidelines in this instruction are followed as to the enforcement of the standard.

F. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is promptly forwarded to each State designee using a format consistent with the Plan Change Two Way Memorandum in Appendix P, OSHA Instruction STP 2.22A, Ch-3.

2. Explain the technical content of this change to the State designee as required.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing to the Regional Administrator as soon as the State's intention is known, but not later than 70 calendar days after the date of issuance (10 days for mailing and 60 days for response). This acknowledgment must include a description either of the State's plan to follow the guidelines in paragraphs H., Inspection guidelines, I., Interpretive Guidance, and J., Enforcement/Citation Guidance, to implement the change, or of the reasons why this change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State compliance personnel.

OSHA Instruction STD 1-16.7 (cont.)

1. The current electrical standards in Subpart S of the General Industry Standards cover electrical equipment and installations rather than work practices. The electrical safety-related work practice standards that do exist are distributed in other subparts of 29 CFR 1910. Although unsafe work practices appear to be involved in most workplace electrocutions, OSHA has very few regulations addressing work practices necessary for electrical safety. Because of this, OSHA determined that standards were needed to minimize these hazards.

2. The new rule addresses practices and procedures that are necessary to protect employees working on or near exposed energized and deenergized parts of electric equipment. The new rule also promotes uniformity and reduces redundancy among the general industry standards. The new rule is based largely on NFPA 70E, Part II.

   a. That standard addresses practices and procedures that are necessary to deenergize machinery or equipment and to prevent the release of potentially hazardous energy while maintenance and servicing activities are being performed.
   b. Although that rule is related to electrical energy, it specifically excludes "exposure to electrical hazards from work on, near, or with conductors or equipment in electric utilization installations, which is covered by Subpart S of 29 CFR 1910." Therefore, the lockout/tagout standard does not cover electrical hazards.
   c. The final electrical safety-related work practices standard has provisions to achieve maximum safety by deenergizing energized parts and, secondly, when lockout/tagout is used, it is done to ensure that the deenergized state is maintained.

H. Inspection Guidelines. In so far as possible the compliance officer shall integrate inspection procedures for this standard with those of 29 CFR 1910.147 (lockout/tagout standard).

1. The following guidance provides a general framework to assist the compliance officer during all inspections:
   a. The employer's written procedures required under 29 CFR 1910.333(b)(2)(i) shall be reviewed to determine if they cover the hazards likely to be encountered.
      (1) A copy of paragraph (b) of 1910.333 maintained by the employer will fulfill this requirement.
      (2) A copy of the written procedures for locking and tagging required by 29 CFR 1910.147 will also comply with this requirement, provided those procedures address the electrical safety hazards covered by Subpart S and provided the procedures conform to 1910.333(b).
      (3) If the employer has chosen to utilize procedures developed to comply with 1910.147 for electrical as well as other hazards, the written procedures must include steps corresponding to requirements in Section 1910.333 for application of locks and tags and verification of deenergized conditions (29 CFR 1910.333(b)(2)(iii)(D) and (b)(2)(iv)(B)).
   b. Beginning August 6, 1991, the training practices of the employer for qualified and unqualified employees shall be evaluated to assess whether the training provided is appropriate to the tasks being performed or to be performed.
OSHA Instruction STD 1-16.7 (cont.)

(1) All employees who face a risk of electric shock, burns or other related injuries, not reduced to a safe level by the installation safety requirements of Subpart S, must be trained in safety-related work practices required by 29 CFR 1910.331-.335.

(2) In addition to being trained in and familiar with safety related work practices, unqualified employees must be trained in the inherent hazards of electricity, such as high voltages, electric current, arcing, grounding, and lack of guarding. Any electrically related safety practices not specifically addressed by Sections 1910.331 through 1910.335 but necessary for safety in specific workplace conditions shall be included.

(3) The training of qualified employees must include, at a minimum, the following:
   
   (a) The ability to distinguish exposed live parts from other parts of electric equipment.
   
   (b) The ability to determine the nominal voltage of live parts.
   
   (c) The knowledge of clearance and/or approach distances specified in 1910.333(c).

(4) During walkaround inspections, compliance officers shall evaluate any electrical-related work being performed to ascertain conformance with the employer's written procedures as required by 1910.333(b)(2)(i) and all safety-related work practices in Sections 1910.333 through 1910.335. (See J. of this instruction for clarification.)

(5) Any violations found must be documented adequately, including the actual voltage level.

I. Interpretive Guidance. The following guidance is provided relative to specific provisions of the standard for Electrical Safety-Related Work Practices:


   a. The standard defines a qualified person as one familiar with the construction and operation of the equipment and the hazards involved. "Qualified Persons" are intended to be only those who are well acquainted with and thoroughly conversant in the electric equipment and electrical hazards involved with the work being performed.

   (1) Whether an employee is considered to be a "qualified person" will depend on various circumstances in the workplace. It is possible and, in fact, likely for an individual to be considered "qualified" with regard to certain equipment in the workplace, but "unqualified" as to other equipment. (See 29 CFR 1910.332(b)(3) for training requirements that specifically apply to qualified persons.) Only qualified persons may place and remove locks and tags.

   (2) An employee who is undergoing on-the-job training, who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training, and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.
b. Where the term "may not" is used in these standards, the term bears the same meaning as "shall not".

c. Training requirements apply to all employees in occupations that carry a risk of injury due to electrical hazards that are not sufficiently controlled under 29 CFR 1910.303 through 1910.308.


a. The provisions of the standard cover all employees working on, near or with premises wiring, wiring for connection to supply, other wiring, such as outside conductors on the premises and optical fiber cable, where the fiber cable installations are made along with electric conductors and the optical fiber cable types are those that contain nonconcurrent-carrying conductive members such as metallic strength members and metallic vapor barriers.

b. The standard does not cover qualified workers (but does cover unqualified workers) performing work on the following:

(1) Electric power generation, transmission, and distribution installations located in buildings used for such purposes or located outdoors.

NOTE: Work on the specified electrical installations is excluded, but work on other electric equipment in the buildings is not excluded.


(3) Installations in ships, watercraft, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles.

(4) Installations of railways for generation, transformation, transmission, or distribution of electric power used exclusively for operation of rolling stock or installations of railways used exclusively for signaling and communication purposes.

c. The standard for Electrical Safety-Related Work Practices was developed to complement the existing electrical standards. The new standard includes requirements for work performed on or near exposed energized and deenergized parts of electric equipment, use of electrical protective equipment, and the safe use of electrical equipment.

d. Exposure to unexpected electrical energy release that could result in electric shock or burns or in an explosion caused by an electric arc is covered by the standard for Electrical Safety-Related Work Practices. Safeguarding workers from other hazards related to the unexpected release of hazardous energy during servicing and maintenance operations is covered by 29 CFR 1910.147, the lock-out-tagout standard.

(1) 1910.333(a)(1) requires that live parts be deenergized before a potentially exposed employee works on or near them. OSHA believes that this is the preferred method for protecting employees from electrical hazards. The employer is permitted to allow employees to work on or near exposed live parts only:

(a) If the employer can demonstrate that deenergizing introduces additional or increased hazards; or
(b) If the employer can demonstrate that deenergizing is infeasible due to equipment design or operational limitations.

(2) Under 1910.333(a)(2) if the employer does not deenergize (under the conditions permitted in 1910.333(a)(1)), then suitable safe work practices for the conditions under which the work is to be performed shall be included in the written procedures and strictly enforced. These work practices are given in 1910.333(c) and 1910.335.

(3) Only qualified persons shall be allowed to work on energized parts or equipment.

3. Working on Deenergized Parts.

a. Circuit parts that cannot be deenergized using the procedures outlined in 1910.333(b)(2) must be treated as energized (as specified in 1910.333(b)(1)), regardless of whether the parts are, in fact, deenergized.

b. Deenergized parts are required to be locked and tagged unless exempted under 1910.333(b)(2)(iii)(C) or 1910.333(b)(2)(iii)(E), as discussed below. If so exempted, either a lock or a tag is required.

(1) If a tag is used without a lock, it shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

(2) A lock may be placed without a tag only under the following conditions:

(a) Only one circuit or piece of equipment is deenergized, and

(b) The lockout period does not extend beyond the work shift, and

(c) Employees exposed to the hazards associated with reenergizing the circuit or equipment are familiar with this procedure.

4. Verification of Deenergization Is Mandatory. This verification must be done by a qualified person.

a. The qualified person shall activate the equipment operating controls or otherwise verify that the equipment cannot be restarted.

b. Test equipment shall be used to ensure that electrical parts and circuit elements have been deenergized.

c. Testing instruments and equipment shall be visually inspected for external defects or damage before being used to determine deenergization (29 CFR 1910.334(c)(2)).

d. For circuits over 600 volts nominal, the test equipment shall be checked for proper operation immediately before and immediately after the test.

5. Reenergization. The following requirements shall be met, in the order given, before circuits or equipment are reenergized, even temporarily.
a. A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed so that the circuits and equipment can be safely energized.

b. Potentially exposed employees shall be warned to stay clear of circuits and equipment prior to reenergizing.

c. Each lock and tag shall be removed by the employee who applied it. However, if the employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that the employer ensures:

1. That the employee who applied the lock or tag is not available at the workplace, and
2. That the employee is informed that the lock or tag has been removed before he or she resumes work at the workplace.
3. That there is to be a visual determination that all employees are clear of the circuits and equipment prior to lock and tag removal.


a. OSHA believes that the preferred method of protecting employees working near overhead power lines is to deenergize and ground the lines when work is to be performed near them.

b. In addition to other operations, this standard also applies to tree trimming operations performed by tree workers who are not "qualified persons". In this respect the exclusion in 1910.331(c)(1) applies only to "qualified persons" performing line-clearance tree trimming (trimming trees that are closer than 10 feet to overhead power lines).

c. The standard does not prohibit workers who are not "qualified persons" from working in a tree that is closer than 10 feet to power lines so long as that person or any object he or she may be using, does not come within 10 feet of a power line. However, it would require "qualified persons" to perform the work if the worker or any object he or she may be using will come within 10 feet of an exposed energized part or if a branch being cut may be expected to come within 10 feet of an exposed energized part while falling from the tree. (See 29 CFR 1910.333(c)(3)(ii).

d. The purpose for the approach distance requirements is to prevent contact with, and/or arcing, from energized overhead power lines. The approach distance applies to tools used by employees as well as the employees themselves. Table S-5 calls for the following approach distances for qualified employees only:

<table>
<thead>
<tr>
<th>Voltage Range (AC)</th>
<th>Minimum Approach (phase to phase) Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>300V and less</td>
<td>Avoid contact</td>
</tr>
<tr>
<td>Over 300V, not over 750V</td>
<td>1 ft. 0 in. (30.5cm)</td>
</tr>
</tbody>
</table>

NOTE: Unqualified employees are required to adhere to the 10 ft. minimum.
OSHA Instruction STD 1-16.7 (cont.)

e. Employees working on or around vehicles and mechanical equipment, such as gin-pole trucks, forklifts, cherry pickers, garbage trucks, cranes and elevating platforms, who are potentially exposed to hazards related to equipment component contact with overhead lines, shall have been trained by their employers in the inherent hazards of electricity and means of avoiding exposure to such hazards.

f. The standard for Electrical Safety-Related Work Practices can be applied with respect to electrical hazards related to any size, utilization or configuration of overhead power lines in general industry; e.g., residential power lines, remotely located overhead power lines, temporarily rigged overhead power lines, and overhead power lines along streets and alleys.

7. Portable Ladders. Such ladders may not have conductive siderails in situations where the employee or the ladder could contact exposed energized parts. All ladders shall be in compliance with requirements of the standards found elsewhere in Part 1910.

8. Conductive Apparel. Articles of jewelry and clothing such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear shall not be worn if there is a possibility of contacting exposed energized parts. However, such articles may be worn if they are rendered nonconductive by covering, wrapping, or other insulating means (29 CFR 1910.333(c)(8)).

9. Housekeeping Duties. The employer has the burden to provide adequate safeguards (such as insulating equipment or barriers) where live parts present an electrical contact hazard to employees who are performing housekeeping duties. Electrically conductive cleaning materials (such as steel wool, metalized cloth, and silicon carbide, as well as conductive liquid solutions) may not be used in proximity to energized parts unless procedures are followed which will prevent electrical contact.

10. Electrical Safety Interlocks. Interlocks found on panels, covers and guards are designed to deenergize circuits to prevent electric shock to persons using equipment or performing minor maintenance or adjustments and shall not be defeated or bypassed by an unqualified person.

11. Cord- and Plug-Connected Equipment. Energized equipment here means either the equipment being plugged or the receptacle into which it is being plugged, or both (29 CFR 1910.334(a)(5)(i)).

12. Eye and Face Protection. 29 CFR 1910.335(a)(1)(v) requires employees to wear protective equipment for the eyes or face wherever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from electrical explosion.

13. Insulated Tool. This means a tool encased within material of composition and thickness that is recognized as electrical insulation.

J. Enforcement/Citation Guidance.

1. A deficiency in the employer's program that could contribute to a potential exposure capable of producing serious physical harm or death shall be cited as a serious violation.

2. The failure to train "qualified" and "unqualified" employees as required for their respective classifications shall normally be cited as a serious violation.

3. Paperwork deficiencies in the safe work practice program where effective safe work practice procedures are in place shall be cited as other-than-serious.
Your question is whether those portions of the plant that generate electricity are exempt for unqualified persons even in those portions of an installation that are exempt. Furthermore, Part II applies to unqualified persons in all circumstances otherwise exempted by the exclusions contained in Subpart S - Electrical, at 1910.302(a)(2)(v). The term "workplace" in 1910.333(b)(2)(v)(C)(1) and the term "facility" in 1910.147 are synonymous.

In general, if Subpart S, Part I, of the Electrical Standards applies to a given installation, then Part II, the Electrical Safety-Related Work Practices, would apply as well. Normally, if a company is selling electric power to a utility, the installation used for the generation of power would not be covered under 1910.302 or 1910.331, except for unqualified employees. In the specifically referenced examples of a sugar beet plant that generates some of its own electricity and a sawmill that generates electricity, using some of it and selling some of it to a nearby town, both Parts I and II of Subpart S would apply for all utilization equipment. The new Part II Electrical Safety-Related Work Practices standard applies to unqualified persons even in those portions of an installation that are exempt.

We would point out that the new Part II Electrical Safety-Related Work Practices standard applies to unqualified persons even in those portions of an installation that are exempt. Furthermore, Part II applies to unqualified persons in all circumstances otherwise exempted by the exclusions contained in Subpart S - Electrical, at 1910.302(a)(2)(v), which states the following are not covered: "Installations under the exclusive control of electric utilities for the purpose of communication or metering; or for the generation, control, transmission, distribution, and distribution of electric energy located in buildings used exclusively by utilities for such purposes or located outdoors on property owned or leased by the utility or on public highways, streets, roads, etc., or outdoors by established rights on private property."
1910.147 the term "facility" is used. You asked if both terms were synonymous. Yes, both terms are synonymous.
The new Electrical Safety final rule, 29 CFR 1910, Subpart S, does not specifically address the construction industry. Because the OSHA regulations are minimum requirements, employers are encouraged to comply with all applicable safety and health guidance. The following provisions of the new rule are recommended to construction industry employers: 29 CFR 1910.333(c)(2) and (c)(10); 29 CFR 1910.334(a)(1), (a)(2)(iii), (a)(5), (b)(1), (b)(2), (c) and (d). Construction industry employers are encouraged to comply with the specific provisions at 29 CFR 1910.335 where 29 CFR 1926 contains only broad, general requirements.

Additionally, construction industry employers are encouraged to comply with the specific provisions at 29 CFR 1910.332 through 29 CFR 1910.335 where 29 CFR 1926 contains only broad, general requirements.

At some future time, it is anticipated that the Advisory Committee on Construction Safety and Health (ACCSH) may recommend that these new regulations should, in part, be made applicable to the construction industry. In that event, OSHA will seriously consider their recommendation. Should that occur, OSHA could determine that it would be desirable to incorporate this general industry standard for application in the construction industry, or could promulgate a parallel standard at 29 CFR 1926.
"For hot work (electrical energized work), what are the lockout/tagout requirements?"

When employees are exposed to 50 volts or greater the primary method of protection shall be deenergize and lockout/tagout the circuit. If it is not feasible to deenergize or if deenergization creates an increased hazard, the employees must be trained, qualified, and provided the appropriate PPE. Suitable work practices for the conditions under which the work is to be performed, which include the level of supervision, must be incorporated into written and approved procedures that are strictly enforced by the employer.

The preamble to the standard on the "Selection and use of [electrical] work practices" - 29 CFR 1910.333, stated that; "Deenergizing equipment is the primary method of protecting employees. Under certain conditions employees may be allowed to work on or near exposed energized parts, if the employer can demonstrate that deenergizing: (1) Would be infeasible, or (2) Would introduce additional or increase hazards, e.g., interruption of life-support equipment." In addition OSHA has not accepted the argument that a qualified employee can work on energized circuits as safely as he or she can work on deenergized circuits. Therefore, OSHA is not leaving it to the employer's discretion as to whether or not to deenergize electrical circuits on the basis of convenience, custom, or expediency.

The requirements of 29 CFR 1910.333 (a)(2) covers work on energized parts and states "If exposed live parts are not deenergized...other safely-related work practices shall be used to protect employees..." Contained in 1910.333 (c)(2) are the minimal requirements for employees working on energized equipment and it stated "Only qualified persons may work on electric circuit parts or equipment that has not been deenergized...[they] shall be capable of working safely on energized circuits and shall be familiar with precautionary techniques, personal protective equipment (PPE), insulating and shielding materials, and tools". In addition 29 CFR 1910.335 (a)(1)(i) states "Employees working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed."

Thus when employees are exposed to 50 volts or greater the primary method of protection shall be to deenergize and lockout/tagout the circuit. If it is not feasible to deenergize or if deenergization creates an increased hazard, the employees must be trained, qualified, and provided the appropriate PPE. Suitable work practices for the conditions under which the work is to be performed, which include the level of supervision, must be incorporated into written and approved procedures that are strictly enforced by the employer.
An interpretation letter regarding enforcement of the requirements of 29 CFR 1910.333 (c)(7) [nonconductive siderails for portable ladders] for private or contractual fire departments. There are no explicit exemptions in the standards that would relieve private or contractual fire departments from complying with 1910.333. Portable ladders used by these employees must have nonconductive siderails if the ladders or the employees could contact exposed energized parts, to comply with the provisions found at 1910.26 (c)(3)(viii), Portable metal ladders, and 1910.333 (c) of the Safety-Related Work Practices Standards. Requirements for non-conductive siderails on portable ladders, required by 1910.333 (c)(7), do not apply to the powered extensible ladders permanently affixed to trucks. However, the provisions of 1910.333 (c), (c)(3), and (c)(3)(iii) do apply.

September 11, 1992

This is in response to your request of June 5, for a determination of whether OSHA would enforce the requirements of 29 CFR 1910.333(c)(7) [nonconductive siderails for portable ladders] for private or contractual fire departments.

Employees of private or contractual fire departments are considered non-public sector employees, and thus are covered by the general industry standards issued pursuant to the Occupational Safety and Health Act (OSH Act). There are no explicit exemptions in the standards that would relieve private or contractual fire departments from complying with 1910.333. These employees are afforded the same protections as other private sector employees covered by the OSH Act.

Portable ladders used by these employees must have nonconductive siderails if the ladders or the employees could contact exposed energized parts, to comply with the provisions found at 1910.26(c)(3)(viii), Portable metal ladders, and 1910.333(c), of the Safety-Related Work Practices Standards. Conversely, the requirements of the above standards do not apply where the employees or ladders could not have contact with exposed energized parts. Private and contractual fire department employees are included in the scope of the Safety-Related Work Practices Standards in 1910.331(b).

Please be aware that the requirements for non-conductive siderails on portable ladders, required by 1910.333(c)(7), do not apply to the powered extensible ladders permanently affixed to trucks; however, the provisions of 1910.333(c), Working on or near exposed energized parts, 1910.333(c)(3), Overhead lines and in particular 1910.333(c)(3)(iii), Vehicular and mechanical equipment, do apply to the fire fighting apparatus in all situations involving potential exposure to electricity.

If you have any questions, please feel free to contact J. C. D., of my staff, at FTS 202-523-8041.
This interpretation addresses dry type 5kV to 15 kV transformers and defines the terms "acceptable" and "special equipment". Under the requirement at 1910.303(a), only "approved" equipment is "acceptable" when required or permitted for use in workplaces. 1910.399(a)(1)(i) defines "acceptable" as those items certified or listed by a nationally recognized testing laboratory (NRTL). "Special equipment" is not now, nor has it previously been, defined by the standard.

(NOTE: This standard was last amended in 1988.)

This interpretation addresses dry type 5kV to 15 kV transformers and defines the terms "acceptable" and "special equipment". Under the requirement at 29 CFR 1910.303(a), only "approved" equipment is "acceptable" when required or permitted for use in workplaces. 29 CFR 1910.399(a)(1)(i), copy enclosed, defines "acceptable" as those items certified or listed by a nationally recognized testing laboratory (NRTL). Since dry type 5-15 kV transformers are presently tested by NRTL, such as Underwriters' Laboratory (UL), the transformers so certified would be acceptable under the standard.

"Special equipment" is not now, nor has it previously been, defined by the standards. 29 CFR 1910.361 through 1910.380 is reserved for future use of a section to be titled: Safety Requirement for Special Equipment. This term does not apply to dry type transformers.

29 CFR 1907 and 1910, Safety Testing or Certification of Certain Workplace Equipment and Materials, was published as a final rule on April 12, 1988, and addressed the methods by which NRTL's are designated by OSHA. During the next five years, UL and (Corporation) will continue to be recognized testing laboratories. Additional laboratories are being considered as NRTL's and will be recognized by OSHA for specific types of testing. This modification to the standards has no effect upon the interpretation concerning the transformers.

August 22, 1988

It has come to our attention that an interpretation of an OSHA Standard came out of the Technical Support Group of the OSHA Regional Office in (City).

Since this is an interpretation from one Region, we are asking for an interpretation as far as the National Office is concerned.

It was stated that:

a) 1910.361 through 1910.380, Special Equipment, has not been determined yet. The dry type of transformer, 5-15 kV, must be tested and approved by the U.L. (Underwriter Laboratory); they are not considered Special Equipment is "a component or any assembly designed and fabricated for a specific installation, and will never be used in any other operation of installation."
b) 1910.399 (a) paragraph states: "An installation of equipment is acceptable to the Assistant Secretary of Labor if it is tested and approved by a nationally recognized testing laboratory." We would like to inform you that 5-15 kv dry transformers are not considered as Special Equipment. When they are tested and approved by UL, they will be considered as meeting OSHA requirements.

It must be clearly understood that OSHA is not an approving agency, and the term "OSHA approved" must not and should not be used.

The above covered dry type transformer equipment has not previously been tested by a third party, but now is being tested by UL and similar organizations. We are asking for clarification as follows:

(1) With reference to 1910.399 (a)(l), the definition for "Acceptable", what will OSHA require for new dry type transformers to be "acceptable" when installed in the workplace?

(2) How does the recently issued Standard 29 CFR Part 1910.7, (final rule for Safety testing or certification of certain workplace equipment and materials) dated April 12, 1988, affect this interpretation?

(3) Is the Chicago Regional Office definition of "Special Equipment" correct regarding future OSHA electrical standards? Specifically our concern involves to the following point:

Certain electrical equipment such as dry type transformers which until recently no nationally recognized laboratory has every listed, labeled, or certified, has now been accepted for testing by a nationally recognized laboratory.

With third party certification for dry type transformers (5-15 kv) available, we would appreciate an interpretation of the OSHA Standard by the National Office.
ABSTRACT The regulation at 29 CFR 1910.399(a)(1) provides a definition for installations and equipment which are acceptable to OSHA. OSHA does not test, evaluate, approve, endorse or promote goods or services of any kind. Evaluation of the safety features of devices may be conducted by a nationally recognized testing laboratory.

INTERPRETATION 29 CFR 1910.399(a)(1)

July 16, 1985

Thank you for your letter of May 17, requesting a review of the safety features and the technical capabilities of the "Isolation Transformer Electronically Controlled (ITEC)" invention on behalf of your constituent, Mr. K.

The Occupational Safety and Health Administration (OSHA) is a regulatory agency responsible for assuring safe and healthful conditions in the workplace. OSHA does not test, evaluate, approve, endorse or promote goods or services of any kind. However, we would like to mention that Section 1910.399(a)(1) of OSHA's General Industry standards provides a definition for installations and equipment which are acceptable to OSHA.

As you can see in Section 1910.399(a)(1), if Mr. K wants an assessment of the safety features of his device, he should contact a nationally recognized testing laboratory such as, but not limited to, Underwriters' Laboratories, Inc., and (corporation). Their address(es) and telephone number(s) are:

Underwriters' Laboratories, Inc.
Public Information Office
333 Pfingsten Road
Northbrook, Illinois 60062

Telephone: (312) 272-8800

SOURCE LETTER

May 17, 1985

Mr. K, one of my constituents, has requested an OSHA review of the particular safety features of his proposed electronic home control unit model 1075 which is designed to protect against fire and help prevent electrical shock.
OSHA Instruction STD 1-23.2

OCTOBER 30, 1978

OSHA PROGRAM DIRECTIVE #100-70 (Revision #1)


1. Purpose:

The purpose of this directive is to revise OSHA Program Directive #100-70 dated October 28, 1977. The revisions are indicated with a vertical black line in the left-hand column. This directive provides guidelines for the permanent occupational safety and health standard for commercial diving operations, 29 CFR 1910.401-1910.441.

2. Documentation Affected:

This directive revises and cancels OSHA Program Directive #100-70 dated October 28, 1977.

3. Background:

The permanent standard for commercial diving operations was printed in the Federal Register, July 22, 1977. The preamble, between pages 37650 and 37668, contains information and background on the purposes and intent of the standard. A study of this appended document should be made in conjunction with the review of this directive, Appendix A. Supplemental information and guidance will be provided to the field as required.

4. Action:

a. CSHO Diving - CSHO's shall not perform any type of diving during the course of an investigation or inspection.

b. CSHO inspecting - Only those CSHO's who have received the diver familiarization training, or are otherwise qualified by similar training or experience, shall make diving inspections. In emergencies, when these CSHO's are not available, a regular CSHO may be utilized until a diver-trained CSHO is available.

c. Oil and gas development maps - Area Offices that have offshore activities shall obtain Oil and Gas Development Maps for each State having such operations. These maps are available from the United States Department of the Interior, Geological Survey.

d. Variance - Normal variance procedures are in effect with respect to the diving standard. If an employer indicates that he has a variance request pending which has not yet been acted upon, a citation shall still be issued for any violation, although the employer should be informed that the variance will be taken into account in considering the proper abatement period or proposed penalty. Questions regarding variances shall be referred through channels to the OSHA National Office, Office of Variance Determination.

e. 29 CFR 1910.401 Scope and application.

(1) This standard applies (except as noted in the following paragraph (2)) to all commercial diving and related support operations under the jurisdiction of OSHA.
OSHA Instruction STD 1-23.2 (cont.)

(2) Maritime jurisdiction.

In general, OSHA maritime jurisdiction is the same as OSHA jurisdiction over any other industry as expressed under Section 4(a) of the Act. Since OSHA covers all employment and places of employment within a State, the Act's requirements apply to both inland maritime operations and any other type of maritime employment within the 3-mile limit extending seaward from the coastal States and from other land masses listed in Section 4(a) of the Act, and in the case of the Great Lakes, to the international boundaries. Section 4(a) also covers maritime workplaces beyond the 3-mile limit that are engaged in employment operations in connection with the outer continental shelf lands and work related to these operations.

(3) Commercial diving operations performed in connection with the following standards:

29 CFR 1910.401-.441 - General Industry
29 CFR 1915.59 - Ship Repairing
29 CFR 1916.59 - Shipbuilding
29 CFR 1917.59 - Shipbreaking
29 CFR 1918.99 - Longshoring
29 CFR 1926.605 - Construction shall be subject to Subpart T of 29 CFR 1910, Section 401-441 of this chapter.

NOTE: The amending of 29 CFR 1928.21(b) by substituting T for S in line 4 changes that paragraph to read "Except to the extent specified in paragraph (a) of this section, the standards contained in Subparts B through T and Subpart Z of Part 1910 of this title do not apply to agricultural operations." Agricultural operations include those industries listed in the Standard Industrial Classification Manual, 1972 edition, under Division A (except 091). This division includes establishments primarily engaged in agricultural production as follows:

SIC 01 - Crops
SIC 02 - Livestock
SIC 07 - Agricultural Services
SIC 08 - Forestry

Therefore, any diving operations conducted by agricultural employees engaged in employments under these SIC codes are exempt from this diving standard. Contractors of agricultural employers who do not fall within these SIC codes are covered by 29 CFR 1910.401-.441.

(4) When a part of 29 CFR 1910.401-.441 differs or conflicts with any other OSHA standard, the requirements of this standard shall take precedence when applied to diving operations. The CSHO should review 29 CFR 1910.5 for guidance before issuing a citation for a violation of a general industry standard to a diving employer. Questions regarding this procedure shall be referred to the OSHA National Office, Office of Variance Determination.

(5) Citing standards.

(a) The proper standards to cite for violations shall be determined by the type of work for which the diving operation is required. For example:

Repairs on vessels requiring a diver to examine damage to the hull. Violations would be cited under 29 CFR 1915.59, with specific reference to the section of 29 CFR 1910.401-.441 which was violated.
Maintenance work requiring a diver to enter a sewer line to free debris from a strainer. Violations would be cited as appropriate, under 29 CFR 1910.401-441.

A company is erecting an offshore oil rig that requires a diver to perform construction work (construction work includes the actual erection, alteration and maintenance of the rig). Violations would be cited under 29 CFR 1926.605(e), with specific reference to the section of 29 CFR 1910.401-441 which was violated.

If the OSH is not sure which standard applies to the operation, the OSHA shall cite both standards.

(6) This standard does not apply to diving operations under the following conditions:

(a) Diving for Instructional purposes by persons using only open-circuit compressed air SCUBA within the no-decompression limits. In addition, it should be noted that individuals engaged in recreational or sport diving (generally SCUBA) for their own personal enjoyment, and not otherwise related to their respective employments are not within the jurisdiction of this standard.

(b) Search, rescue and related public safety diving by or under the control of a governmental agency. Diving contractors who perform such emergency services not under the control of the governmental agency but as an independent contractor for private purposes do not come under this exclusion; however, they may be covered by the provisions concerning application of the standard in an emergency (29 CFR 1910.401 (b)).

(c) This diving standard does not apply to those specific working conditions of diving operations over which other Federal agencies exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety and health. (See section 4(b)(1) of the Act.) Questions of jurisdiction shall be referred to the OSHA National Office, Office of Variance Determination.

(d) This standard does not apply to diving operations when performed for research, development and related activities in which human subjects are involved which are covered by the standards contained in 45 CFR Part 46, Protection of Human Subjects, administered by the U.S. Department of Health, Education and Welfare, or equivalent Federal standards. Questions of equivalence or applicability shall be referred to the OSHA National Office, Office of Variance Determination.

(7) Federal programs.

In addition, pursuant to Section 3(5) of the Act, employees of Federal agencies of the United States Government are excluded from the jurisdiction of the standard. Instead, such employees shall be protected in accordance with Section 19 of the Act under which it is the responsibility of each agency which engages in diving operations to establish and maintain an effective and comprehensive safety and health program which is consistent with this standard.

(8) Inspection priorities.

Diving operations which do not fall within one of the exemption categories and which involve an employer-employee relationship are covered by 29 CFR 1910.401-441. Inspection priorities shall be followed as stated in the Field Operations Manual, Chapter IV, with respect to different kinds of diving operations.
OSHA Instruction STD 1-23.2 (cont.)

(9) 29 CFR 1910.401(b) Application in emergencies.

(a) This exclusion has been included to permit the designated person-in-charge discretion to deviate from the requirements of the standard in situations where death, serious harm or major environmental damage is likely to occur, but only to the extent that such action is immediately necessary to prevent or minimize the harm. This applies only for the duration of the emergency. The employer is required to notify the OSHA Area Office within 48 hours of the onset of the situation requiring such deviation. The Area Director may request that the employer submit a written record of the notification explaining what deviations from the standard were made and what additional precautions were instituted to provide for the safety and health of the employees during the emergency. Failure of the employer to notify the OSHA Area Office of the emergency situation within the specified time shall be considered a violation of this provision of the standard. These incidents shall be closely monitored to insure that this provision is not abused. A pattern of repeated deviations shall be cause for an inspection.

(b) This emergency provision does not apply to situations involving only economic or property damage.

(10) Federal/State jurisdiction.

(a) All States that have an approved plan have 6 months from the effective date of this standard (October 20, 1977) to either adopt the OSHA diving standard, promulgate a diving standard as effective as the OSHA standard or modify their present State diving standard to be as effective as the OSHA standard. In the interim, OSHA shall enforce the diving standard wherever diving operations are being conducted under OSHA jurisdiction.

(b) As soon as a State with an approved plan has an approved diving standard, the State will enforce the standard under its jurisdiction.

(c) States with approved plans that have included the maritime issue and have adopted the OSHA diving standard, or have a State diving standard as effective as the OSHA diving standard, will have jurisdiction over diving operations conducted in conjunction with the maritime operations from an onshore site such as a pier, wharf, jetty, etc. The dive location (see 4.1. 4(f), this directive) determines the jurisdiction; however, the Federal OSHA retains jurisdiction for diving operations conducted on the navigable waters of the United States in these States, as well as the States that do not have an approved plan.


(1) "ASME Code or equivalent": "equivalent" refers to equipment that is designed, built and maintained to standards which will provide the employees the same protection as if the equipment met the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Unfired Pressure Vessel, Section VIII. The employer shall be responsible for demonstrating equivalency. Questions of equivalency should be referred to the OSHA National Office, Office of Variance Determination.

(2) "Bursting pressure": The pressure at which a pressure containment device such as a pipe, hose, cylinder, tank, etc. would fail structurally. 29 CFR 1910.430(c)(1)(ii) requires that breathing gas supply hoses shall have a bursting pressure at least 4 times the working pressure.
OSHA Instruction STD 1-23.2 (cont.)

(3) "Decompression chamber": As used in this standard, this term refers to any pressure vessel for human occupancy used to decompress divers and to treat decompression sickness. A closed bell, if used as a decompression chamber, shall meet the design criteria as stated in 29 CFR 1910.430(t).

(4) "Dive location": This term refers to the location from which operations are conducted such as a vessel, barge, wharf, pier, river bank or offshore rig and does not mean the diver's work location under the water.

(5) "Dive location reserve breathing gas": This refers to a secondary breathing gas supply at the dive location connected and ready for use for each dive.

(6) "Dive team": This term includes all divers and support employees involved at the dive location in the diving operations, including the designated person-in-charge.

(7) "In water stage": This term means a platform sufficient to carry the weight of the diver and gear in and out of water.

(8) "No-decompression limits": This term applies to those depth/time combinations where no staged decompression of the diver is required. Dives to 35 fsw do not require decompression, regardless of bottom time. Dives deeper than 35 fsw may require decompression. The no-decompression tables from the U.S. Navy Manual are attached as Appendix B. The standard provides for use of either the U.S. Navy Tables or equivalent limits which the employer can demonstrate to be equally effective.

(9) "Standby diver": The requirement that the standby diver be at the dive location, which by definition is a location at the surface or on a vessel, eliminates the possibility that another diver in the water or at another dive location would be considered a standby diver. The standby diver does not necessarily have to be fully dressed but must be in that degree of readiness which will allow him to render the necessary assistance in a timely manner. A degree of readiness means to be clothed and equipped ready to enter the water at a moment's notice. The temperature at some dive locations makes it extremely uncomfortable to a standby diver fully clothed in a wet or dry suit, so it may be necessary to wear more comfortable dress, yet adequate enough to provide protection when the standby diver enters the water. Such articles of gear as face masks, air cylinders and harness can be quickly donned and need not be worn on standby.

(10) "Working pressure": The term maximum working pressure is equivalent to rated working pressure or that pressure level up to which it is safe to operate as determined by construction and tests. By definition it must not exceed 1/4 of the bursting pressure.

g. 29 CFR 1910.410 Qualifications of dive team.

(1) The level of experience or training required by the standard depends upon the job the employees are required to do. Employee qualifications achieved through field experience or classroom training or both may be used to meet the requirements of the standard. For example:

(a) Most divers begin as tenders and advance to diving status after a period of field experience and/or classroom training. A diving tender trainee performing on-the-job training shall be utilized only under the supervision of a qualified diver.

(b) Tenders are those members of the dive team who provide surface support to divers at the site. A tender employed in shallow water air diving would be required to have a basic understanding of the breathing air system, the operating and emergency procedures and knowledge of the care and use of equipment.
OSH A

(c) A mixed-gas (system) diver is a diver who conducts underwater work using mixed-gas techniques. A mixed-gas diver would be required to have an advanced understanding of diving, including a working knowledge of mixed-gas equipment such as a decompression chamber, bell and mixed-gas breathing supply system, the operations and emergency procedures associated with mixed-gas diving and the equipment used. In addition, he must have an understanding of the physics and physiology of mixed-gas diving.

(d) A chamber operator would be required to have experience or training in the carrying out of decompression procedures, knowledge of the physics and physiology of decompression, and the operation of the decompression equipment to which he is assigned.

(e) Each dive team member must be trained in cardiopulmonary resuscitation and standard first aid. The American Red Cross standard course (14 hours) or equivalent training is specified. Employees completing this training are issued a card attesting they have successfully completed the course. Any first aid course acceptable to OSHA as meeting the requirement of 29 CFR 1910.151(b) and 1926.50(a) is deemed to meet the requirements of this standard. Some other first aid courses which have been accepted by OSHA are: American Petroleum Institute, U.S. Bureau of Mines and American College of Orthopedic Surgeons.

(2) The following methods may be used to check individual qualifications:

(a) Field experience- Employment records. Written statements from previous employers. Written statements from diving officers or commanding officers (military). Field operations records.

(b) Diving proficiency- Company field operations records. Federal service operations records (military).

(c) Technical training- Federal service qualification certificates. Diving school certificates of completion. Company training program completion statements or equivalent proof of competency.

(3) The phrase "known to the employer" in 29 CFR 1910.410 (b)(3) of this part relates to the requirement that the designated person-in-charge inquire into the employee's health prior to the task assignment, a required aspect of pre-dive planning (29 CFR 1910.421 (f)(2)).

(4) The designated person-in-charge can be the employer or an employee chosen by the employer. The designated person-in-charge shall have experience in and knowledge of all phases of the particular diving operation for which he is responsible. The designated person-in-charge shall be at the dive location; therefore, this team member shall not be a diver in the water or a person at another dive location. In two-person operations, where the diver may be more qualified than the tender, the diver can be in charge of pre-dive and post-dive procedures and maintain overall responsibility for the operation, but during the dive the tender must be the person-in-charge. For instance, he must be the one authorized to terminate the dive in accordance with 29 CFR 1910.422(i) of the standard although, if the diver himself requested termination, there would be no discretion involved. The qualifications of the designated person-in-charge can be checked by the same methods suggested in the preceding paragraph (2).
OSHA Instruction STD 1-23.2 (cont.)

h. 29 CFR 1910.411 Medical requirements.

(1) 29 CFR 1910.411(a)(1) - The employer is ultimately responsible for determining whether affected dive team members are medically fit to perform assigned tasks in a safe and healthful manner. However, the decision is to be based on the best available medical opinion. The standard does not set qualifications for physicians, although employers should be encouraged to engage examining physicians who are familiar with and experienced in the physical requirements and medical aspects of diving. In the absence of physicians with knowledge of hyperbaric medicine, examinations should be done by a physician qualified to understand the need and purpose for the examination and who has prior experience in examining individuals who will be exposed to strenuous work conditions and hazardous environments.

(2) 29 CFR 1910.411(a)(2) and (3) - The standard requires that any dive team member who is, or is likely to be, exposed to hyperbaric conditions shall be provided the medical examinations by the employer at no cost to the employee. Therefore, it applies to any dive team member who is expected to dive, enter a decompression chamber, or be otherwise exposed to increased pressure. In addition to divers, this requirement shall apply, for example, to dive team members such as tenders or designated persons-in-charge who might reasonably be expected to enter a decompression chamber to treat, or aid in the treatment of, a diver suffering from decompression sickness.

(3) 29 CFR 1910.411(b)(3) - The standard requires the employer to provide a medical examination after an employee has been hospitalized for 24 hours or more. The employer has the responsibility to inquire as to his employee's current state of physical fitness including any recent hospitalizations. If an employee conceals the fact of a hospitalization from the employer, and the employer has no knowledge or reason to know of the hospitalization, no citation shall be issued under this section.

(4) 29 CFR 1910.411(d)(1) - Information concerning an employee's diving-related work history and medical history is to be gathered primarily during the examining physician's interview with the employee. Verification of such information, as necessary, is to be obtained by the physician through established medical channels.

(5) The tests indicated in Table I are intended to be mandatory minimum requirements. The standard does not preclude an employer from subjecting his employee to a more comprehensive examination but allows additional tests to be given at the discretion of the physician based on likely job duties, likely hyperbaric exposure and employee work and medical histories (29 CFR 1910.411(a)(1)(v)). For example, Table I requires that a standard 12-lead EKG be given once at age 35 or over. This is a minimum requirement and intended to provide a baseline tracing at a relatively early age. The standard does not preclude the physician from making the EKG a routine part of the diver's annual medical examination. Similarly, an examining physician who felt that an X-ray survey would assist in detection or evaluation of bone necrosis could have that test performed, and the findings could be used as part of the basis for a determination of medical fitness.

(6) 29 CFR 1910.411(e) - The written reports prepared by the examining physician are generally kept in the company office. The CSHO should make his on-site inspection before reviewing the medical records to avoid giving advance notice to the employer. The CSHO shall examine those records to determine that:

(a) Medical examinations have been given as required (.411(a) and (b)).

(b) A copy of the standard and a summary of the nature and extent of the hyperbaric conditions to which the dive team members will be exposed were provided to the physician (.411(c)).

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(c) The employer has a physician's written report on each employee required to be examined (411(e)).

(d) The employer has determined the extent and nature of the employee's fitness for the designated job (411(f)(1)).

(e) The second has given the opportunity for second and third opinion, if appropriate (411(f)(2) and (3)).

(7) 29 CFR 1910.411(f) is intended to apply to all employees who will be exposed. At this time there is a case pending in which the extent of the employer's obligations to pay for examinations (including new hires and free-lance divers) and to follow the procedures for a second and third opinion under 29 CFR 1910.411 Medical requirements, is being challenged. Until further notice is provided by OSHA, do not issue citations under this particular standard without first consulting with the National Office.

(8) Appendix A of the standard contains a list of examples of medical conditions which may restrict or limit employee exposure to hyperbaric conditions. This appendix is advisory, not mandatory to the physician. (Note: typographical error in Federal Register where Appendix "B" was printed instead of "A").

(9) In addition to Appendix A of the standard, the following conditions may be reasons for temporary disqualification from exposure to hyperbaric exposure (29 CFR 1910.410(b)(3)):

(a) Acute alcoholism and/or drug intoxication.
(b) Acute gastrointestinal syndrome.
(c) Acute infections, skin, respiratory, ear, etc.
(d) Recent incident of serious decompression sickness.


(1) The employer may refer to the safe practices manual as the diving manual, employer's operational log or diving guide. The manual shall be at the dive location and available to all team members.

(2) The safe practices manual must provide a written operational procedure for each diving mode engaged in by the employer which contains the employer's implementation of the standard. The CSHO shall review the manual to ascertain if it contains safety procedures and checklists for diving operations, assignment and responsibilities of the dive team members, equipment procedures and checklists and emergency procedures.


(1) The provisions of this section must be followed by the employer for all diving modes with the designated person-in-charge responsible for overall compliance and briefings.

(2) 29 CFR 1910.421(a) - The CSHO shall check to see that the emergency aid list is complete and available to all dive team members.

(3) 29 CFR 1910.421(b) - The CSHO shall check to see that there is a first aid kit at the dive location. If used in a decompression chamber or bell, the first aid supplies shall be suitable for use under hyperbaric conditions; e.g., they should not include bottles of liquids, mercury thermometers or ammonia ampules.
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(4) 29 CFR 1910.421(d) - Planning and:essment is essentially a "dive plan" requirement for which the designated person-in-charge is responsible. Most of the information required by this subsection should be found in the safe practices manual (29 CFR 1910.420). Some information may not be found in written form because it cannot be ascertained until the team reaches the dive location. The CSHO shall question the team members to determine that the employer has complied with the requirements of this subsection.

(5) 29 CFR 1910.421(d)and (e) - Certain hazards encountered such as weather, water temperature, current and bottom conditions can be recognized and taken into account in the planning and execution of the operation. When other operations being conducted in the vicinity (dredging, marine traffic, etc.) are likely to interfere with the diving operation, the designated person-in-charge shall plan the operation after appropriate coordination with persons responsible for the other activities, so that any hazard to the dive team will be eliminated or minimized. Failure to plan for such recognizable conditions or to coordinate activities shall be a basis for a citation.

(6) 29 CFR 1910.421(f) - The employee briefing is usually conducted by the designated person-in-charge just prior to the divers entering the water. It is particularly important that the designated person-in-charge shall inquire into each dive team member's current state of physical fitness before making individual assignments. To determine compliance the CSHO can question dive team members and observe the operation, if one is ongoing.

(7) 29 CFR 1910.421(g) - As in the preceding subsections, compliance with the pre-dive inspection requirement can only be determined by observations and questioning employees. The standard makes no distinction between employer-provided equipment and employee-provided equipment with regard to the requirement of pre-dive inspection. While an employee can individually make such inspections, it is the employer who is responsible for assuring compliance with all equipment requirements of the standard.


(a) There are two distinctions in the requirements for displaying the warning signal:

(i) 29 CFR 1910.421(h) only requires the warning signal to be displayed when diving from surfaces other than vessels such as wharfs, piers, pilings, jetties, fixed caissons, levees, dikes, dams, breakwater, artificial islands (secured to the continental shelf) etc., and then only when the dive location is capable of supporting marine traffic. Violations of this requirement shall be cited under this section.

(ii) The requirements for displaying the warning signal when the dive location is located on a vessel is covered by the U.S. Coast Guard Navigation Rules, International-Inland, contained in OSHA INSTRUCTION Department of Transportation, U.S. Coast Guard pamphlet CG-169, May 1, 1977, Rule 27, and is not enforceable by OSHA. (See Appendix C.) If the CSHO observes violations of the warning signal when the dive location is a vessel, no citation shall be issued. The CSHO shall nevertheless inform the employer of the violation and recommend abatement. The CSHO shall also note the incident on the OSHA-1 Form and notify the nearest U.S. Coast Guard, Office of Maritime Inspection, of all particulars of the violations.

(b) The warning signal is a rigid replica of the international code Flag "A", at least one meter in height (depicted below). As long as the flag is displayed to achieve virtual all around visibility, the requirement for rigidity shall have been met.
k. 29 CFR 1910.422 Procedures during dive.

(1) This requirement covers the time the diver enters the water until the diver leaves the water.

(2) 29 CFR 1910.422(c) - The requirement for two-way voice communication shall be checked. Pull signals do not meet the requirements except in the SCUBA mode.

(3) 29 CFR 1910.422(d) - The CSHO shall check that the proper decompression and treatment tables are at the dive location.

(4) 29 CFR 1910.422(e) - The dive profile information may be recorded by whatever means and whatever form the employer wishes provided the information is maintained accurately and completely.

(5) 29 CFR 1910.422(f) - Hand-held power tools and equipment.
   (a) The standard does not require a hand-held power tool to have a pressure sensitive manual control switch. However, when electrically powered hand-held tools are used underwater and the source of power is supplied from the dive location, bell or habitat, the hand-held power tool shall not be supplied with power from the dive location until requested by the diver.
   
   (b) In addition to the requirements of 29 CFR 1910.422(f)(1) and (2), all hand-held electrical power tools and equipment must be acceptable within the meaning of the National Electrical Code Section 110-2 (adopted by 29 CFR 1910.309(b)).

   NEC Section 110-2 states: The conductors and equipment required or permitted by this code shall be acceptable only when approved. (Approved means acceptable to the authority enforcing this code, NEC Section 100). Clarification of "approved" is given in 29 CFR 1910.308(d)(1) which states in part: "The authority enforcing the code under subpart S is the Assistant Secretary for Occupational Safety and Health." Further, "acceptable" is defined under 29 CFR 1910.308(d)(2) which states: An installation or equipment is acceptable to the Assistant Secretary of Labor, and approved within the meaning of this subpart S:

   If it is accepted, or certified, or listed, or labeled, or otherwise determined to be a safe by a nationally recognized testing laboratory, such as, but not limited to, Underwriters Laboratories, Inc. and Factory Mutual Engineering Corp.; or with respect to an installation or equipment of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, if it is inspected or tested by another Federal agency, or by a State, municipal, or other local authority responsible for enforcing occupational safety provisions of the National Electrical Code, and found in compliance with the provisions of the National Electrical Code as applied in 29 CFR 1910.309; or with respect to custom-made equipment or related installations which are designed, fabricated for, and intended for use by a particular customer, if it is determined to be safe for its intended use by its manufacturer on the basis of test data which the employer keeps and makes available for inspection to the Assistant Secretary and her authorized representatives.

(6) 29 CFR 1910.422(g) - Personnel designated to operate electric cutting and welding equipment used in diving operations shall have experience or training in the safe use of underwater cutting and welding equipment (29 CFR 1910.410(a)(2)(i)). There shall be a positive acting disconnect switch in the electrical circuit, located so that the tender on the intercommunication system can oversee and operate the switch at all times that the diver is in the water (29 CFR 1910.422(g)(1)(i)). The disconnect switch must be in the open position except when the diver is actually cutting or welding (29 CFR 1910.422(9)(1)(ii)).
OSHA Instruction STD 1-23.2 (cont.)

The employer must provide insulated gloves for the diver's protection (29 CFR 1910.422(g)(4)). The CSHO shall check to see that the welding machine's frame is properly grounded and that cables, electrode holders and connections are insulated (29 CFR 1910.422(g)(2) and (3)).

(7) This standard does not place any restriction on the use of AC current or rectified AC current arc welding.

(8) 29 CFR 1910.422(g)(5) - "Closed compartments" means any space which is enclosed by bulkheads and overheads (walls and ceilings) such as inside large diameter pipes, or any other space which by its size and closed nature can hold or contain a flammable gas or vapor. The compartments, structures and pipes shall be freed of all flammable gases and vapors prior to hot work by ventilating, flooding or purging with an inert gas. Venting alone is not sufficient unless it results in freeing the compartments, structures or pipes from flammable gases. Closed compartments, structures and pipes already under flow, as in hot tapping operations, by necessity meet the requirement for being flooded.

(9) 29 CFR 1910.422(h) - Explosive charges are used to perform some types of work underwater, including demolition, sheet cutting, cable cutting and the making of holes. Explosives suitable for underwater work include primacord, various gelatins, plastic blocks and some liquids. The requirements of this subsection are addressed to the need for proper handling, storage and use of explosives as covered by 29 CFR 1910.109 and 1926.912 and to the hazard of premature detonation while the diver is still in the water. The standard requires the diver to be out of the water when detonating the explosive or testing the electrical continuity of the explosive circuits. Only personnel who are properly trained or experienced shall handle explosives (29 CFR 1910.410(a)(1) and (2)(i)).

(10) 29 CFR 1910.422(i) - Termination of a dive. This sub-section applies to all diving modes. The designated person-in-charge is responsible for determining when a dive shall be terminated. Termination means the ending of the working interval of a dive; it may still be necessary to complete the decompression procedures.


(1) 29 CFR 1910.423(c) Re-compression capability.

(a) The 6-month delayed effective date as stated in 29 CFR 1910.441 has now expired. Therefore, whenever the standard requires the use of decompression chambers or bells, all employers shall be subject to meeting these requirements.

(b) Whenever the standard requires a decompression chamber, there must be a member of the dive team available at the dive site trained in its use (1910.423(c)(5)).

(c) 29 CFR 1910.423(c)(3)(i) - The expression "dual-lock" is meant to include multi-lock components, each of which is large enough to transfer personnel and supplies into and out of the main compartment while it is pressurized. A medical lock is a relatively small dual-lock compartment that permits equipment be passed into and out of a decompression therefore would not meet the intent of 10.423(c)(3)(i).

(d) To be used as a re-compression facility (i.e., in lieu of a chamber), a diving bell must meet all the criteria listed in 29 CFR 1910.423(c)(3) and 1910.423(c)(1). Chambers used for dives in the depth range of 0-300 fsw shall have a pressure capability of at least 165 fsw (6 ATA). Chambers used for dives in the depth range of 300 fsw and deeper shall have a pressure capability equal to the maximum depth of the dive. (The CSHO shall check the dive plan and tables for maximum depth of the dive).
(2) 29 CFR 1910.423(d) - The standard does not require a standard form or that the dive records for each individual diver be kept on a separate sheet. Where there is more than one diver working, the information required may be kept for all divers on one record, although there should be separate entries for each different diver exposure or decompression table used.

(3) The information required shall also be recorded on the OSHA-200 Form (Log of Occupational Injuries and Illnesses). Each employer shall maintain in each establishment a log of recordable occupational injuries and illnesses. The key word is “recordable.” The intent of this section is to request documentation of a recordable illness, including an incident of decompression sickness, when the initial symptoms were such manifestations as skin itch, slight joint cramps, and slight numbness of the extremities. Although seemingly innocuous, such symptoms or indications are recognized and suspect as mild forms of decompression chamber. Such occurrences and treatments shall be recorded similarly to any other case of injury or illness.

(4) 29 CFR 1910.423(e) - This section requires the employer to investigate and evaluate each incident of decompression sickness, to take appropriate corrective action, and to prepare a written evaluation assessing the incident within 45 days. The corrective action may include an adjustment of the dive procedures, reassessment of the decompression tables or a reexamination of the particular dive involved. A check of the dive records should reveal whether an incident took place requiring an investigation, corrective action and a written evaluation.

m. 29 CFR 1910.424-427 Specific diving operations.

(1) The requirements of sections 29 CFR 1910.424 through 1910.427 are in addition to any other applicable requirement in Subpart T.

(2) 29 CFR 1910.424(c)(3), 1910.425(c)(2) and 1910.426(c)(3) - There shall be a diver at the point of entry of an enclosed or physically confining space when there is a significant entanglement hazard. Depending on the situation, a point of entry may be under water or on the surface (e.g., a marine railway). An enclosed or physically confining space in this context includes any diving situation where there is a significant possibility of entrapment or line entanglement, or the diver is required to make one or more sharp turns around wrecks, pilings, or has to enter closed compartments, caves or pipes, etc.


(1) The limits for SCUBA diving are more restrictive than for surface-supplied air diving or mixed-gas diving. (See chart on following page.)

(2) 29 CFR 1910.242(b)(3) - Three basic types of currents affect diving operations: river or major ocean currents; currents produced by the ebb and flow of the tides (which may add or subtract from any existing current); and underwater, or rip-current, caused by the rush of water returning from waves breaking along a shoreline. The CSHO shall determine that the employer has ascertained the strength of the local currents at the dive site from Tide and Current Tables, Coast and Geodetic Survey Charts, Coast Pilot Publications or other sources. A SCUBA diver is handicapped when swimming against a current greater than one knot and the standard prohibits such activity unless line-tended. A SCUBA diver may, however, swim downstream with a current if means are provided to pick him up.

(3) 29 CFR 1910.424(c)(1) - The standard requires a standby diver for all operations. He shall be available at the dive location equipped and ready to go to the assistance of the diver in the water. A buddy-diver in the water does not satisfy the requirement of a standby diver. A tender can be the standby diver if the diver is line-tended and visible from the surface.
OSHA Instruction STD 1-23.2 (cont.)

COMPARISON OF REQUIREMENTS ACCORDING TO THE THREE DIVING MODES
(Note: this table was unreadable and not reproduced for this guide.)

(4) In addition to any conditions listed in 29 CFR 1910. 422(i) for termination of the working interval of the dive, the standard requires termination of the dive in instances where the designated person-in-charge is also the standby diver and he is required to enter the water to assist a diver, thereby creating a situation where there would not be a designated Person-in-charge remaining at the dive location (29 CFR 1910.410(c)(11)).


(1) When required (see chart), decompression chambers and bells when used as a re-compression facility shall meet the criteria as stated in 29 CFR 1910.423(c) and 29 CFR 1910.430(l) (decompression chamber only).

(2) In addition to any condition listed in 29 CFR 1910.422(i) for termination of the working interval of the dive, the standard requires termination of the dive whenever the required standby diver, entering the water to assist a diver, creates a situation where there would not be a designated person-in-charge (29 CFR 1910.410(c)(1)), or a tender remaining at the dive location (29 CFR 1910.425(c)(1)). The standby diver can be either the person-in-charge or the tender or both for dives less than 100 fsw.

(3) Below 100 fsw or outside the no-decompression limits, each diver must have his own tender. In addition, a standby diver must be available at the dive location. The standard does not require a standby tender for the standby diver.

(4) 29 CFR 1910.425(c)(4)(iv) - The reserve breathing gas supply required at the dive location for dives deeper than 100 fsw or outside the no-decompression limits shall be "on line" ready for use and its source shall be independent of the primary breathing gas supply. The dive location breathing gas supply shall be of sufficient quantity, pressure and quality to allow each diver to complete the planned decompression interval.


(1) When required (see chart), decompression chambers and bells when used as a re-compression facility must meet the criteria as stated in 29 CFR 1910.423(c) and 29 CFR 1910.430(l) (decompression chambers only).

(2) In addition to any condition listed in 29 CFR 1910.422(i) for termination of the working interval of the dive, the standard requires termination of the dive whenever the required standby diver, entering the water to assist a diver, creates a situation where there would not be a designated person-in-charge (29 CFR 1910.410(c)(1)) or a tender remaining at the dive location (29 CFR 1910.426(c)(1)).

(3) 29 CFR 1910.426(c)(1) and (2) - Because a mixed-gas diver must have his own tender at all times, as well as a standby diver available to assist him in the water, the tender cannot be used as a standby diver unless there is someone qualified and available to take his place as the tender. The standard does not require a separate standby diver for each diver in the water.
OSHA Instruction STD 1-23.2 (cont.)

(4) 29 CFR 1910.426(c)(5) - The reserve gas supply required at the dive location shall be "on line" ready for use and its source shall be independent of the primary breathing gas supply. The dive location reserve breathing gas supply shall be in sufficient quantity, pressure and quality (mix) to allow each diver to complete the planned decompression interval.


(1) Liveboating is conducted in either the surface-supplied air or mixed-gas mode, and is subject to the requirement of the particular mode used and to the applicable general requirements. In addition, it is also subject to those requirements which are specific to liveboating.

(2) 29 CFR 1910.427(d)(2)* - When inspecting a live-boating operation, the CSHO shall check to see that there is a device designed to minimize the possibility of the diver's hose becoming entangled in the vessel's propeller. Such a device may be a propeller shroud, or a weighted fairlead hose system or an air tugger with a heavy weight. The use of a tender to prevent hose entanglement without some mechanical support is not sufficient to satisfy this requirement. If a floating hose is used, the hose shall be checked carefully to make sure that the requirements for breathing gas supply hoses are met (29 CFR 1910.430(c)).

(3) In addition to any condition listed under 29 CFR 1910.422(i) for termination of the working interval of a dive, the standard requires termination of the dive whenever the standby diver, entering the water to assist a diver, creates a situation where there would not be a designated person-in-charge (29 CFR 1910.410(c)(1)) or a tender remaining at the dive location (29 CFR 1910.425(c)(1) or 1910.426(c)(1)).


*NOTE: Typographical error in Federal Register - 29 CFR 1910.427(c) was mistakenly printed as .427(d). The CSHO should nevertheless cite to 1910.427(d) until a correction is made in the Federal Register.

r. 29 CFR 1910.430 Equipment.

(1) 29 CFR 1910.430(a)(2) - The CSHO shall check to see that the employer has recorded the information required by this section. The information may reveal whether or not the equipment is in need of maintenance, testing or replacement, in that it does not currently meet the substantive requirements of 29 CFR 1910.430. These records (logs or tags) must be kept by the employer until replaced by a subsequent up-to-date record or until the equipment is withdrawn from service.

(2) 29 CFR 1910.430(b) - Air compressor systems shall be inspected to see that they have a volume tank, check valve, pressure gauge, relief valve, drain valve and an air intake which is located away from the exhaust or other contaminants.

(3) 29 CFR 1910.430(b)(4) - The employer is responsible for checking the output of the air compressor every 6 months to ensure that the respirable air of the diver does not contain contaminants in excess of the concentrations listed in 29 CFR 1910.430(b)(3) or a noxious or pronounced odor. The CSHO shall interview appropriate employees and examine the records indicating results of such tests. The CSHO shall also check to see that the air sample was taken as near as possible to where the air enters the distribution system to the diver. If required, the CSHO or Industrial Hygienist should obtain a sample for later checking ashore or, when possible, test for contaminants on-site.
OSH A Instruction STD 1-23.2 (cont.)

(4) 29 CFR 1910.430(c) - Breathing gas supply hoses.

(a) It is the intent of 29 CFR 1910.430(c)(1)(i) to require the hoses to meet the pressure level requirement of the part of the system to which it is connected. Therefore, a hose connected in the part of the system on the low pressure or downstream side of a regulating valve must meet only the pressure level of that part of the system. For instance, the hose does not need to have a working pressure equal to the pressure of the bottles of gas in the bank but only equal to that of the system downstream of the regulator. The working pressure rating will usually be found on each length on a decal with the manufacturer's name.

(b) 29 CFR 1910.430(c)(1)(ii) - See definition of bursting pressure, paragraph 4.f.(2) of this directive.

(c) 29 CFR 1910.430(c)(2)(i) - Installation of cadmium-plated or other corrosion resistant Plated fittings are acceptable and meets the requirements of "corrosion resistant" to the extent that the plating is intact during the diving operations. However, when the plating becomes badly worn and the parent metal becomes pitted, the fitting shall be replaced.

(5) 29 CFR 1910.430(c)(3)(ii) - This requirement for kink resistant hoses in umbilicals is applicable to the breathing gas hose, hot water hose or other control hoses that carry air or liquids. The breathing gas hose in the umbilical must also meet the applicable requirements of 29 CFR 1910.430(c).

(6) 29 CFR 1910.430(c)(3)(iii) - The maximum allowable working pressure of the breathing gas hose can be calculated by subtracting the maximum depth of the supply source (surface or bell in p.s.i.) from the maximum depth of the dive for which it will be used (in p.s.i.) and adding 100 p.s.i. The determining factor is the pressure differential between the supply source and the diver.

(7) 29 CFR 1910.430(f)(1) - The meaning of ASME or equivalent code is covered under 4.f of this directive.

(8) 29 CFR 1910.430(f)(3)(i) - Appropriate means to maintain the oxygen level below 25 percent may include a ventilation system or an overboard dump system. An overboard dump system is a system designed to exhaust the expired gases from the 02 system (used for respiratory purposes inside a decompression chamber), to prevent a build-up of 02 inside the Decompression Chamber above 25 percent by volume of the ambient atmosphere.

(9) 29 CFR 1910.430(g)(4) - The requirement for a time-keeping device applies to all diving modes including SCUBA.

(10) 29 CFR 1910.430(h)(2) - The intent of this "helmet and mask" provision is to assure that air is supplied to the diver at a rate sufficient to meet the breathing requirements of the diver and to dilute or flush from the masks and helmets the diver's expelled air. The specifications are based on recommendations of the National Institute of Occupational Safety and Health (NIOSH) and the U.S. Coast Guard. This section is intended to guide the design and selection of masks and helmets, not to serve as a basis for routine operational tests or field verification. Although this section does not require the employer to perform any particular test on helmets and masks, it does require that the appropriate ventilation rate be maintained throughout operational use. Citations shall be issued under this section only after a check with the OSHA National Office of Compliance Programming.
OSH
A Instruction STD 1-23.2 (cont.)
(11) 29 CFR 1910.430(i)(2) - The intent of this section on "oxygen cleaning" is to make sure that certain equipment must be cleaned internally of flammable materials before initially being placed into oxygen service. Similarly, whenever new or replacement components are added, they shall also be cleaned before being connected into the system.

s. 29 CFR 1910.440 Recordkeeping requirements.
(1) 29 CFR 1910.440(a)(1) - The 48-hour time period for reporting fatality and hospitalization (five or more) cases is the maximum time allowed by 29 CFR 1904.8. Employers should be encouraged to report such cases as soon as possible after the occurrence.

(2) 29 CFR 1910.440(a)(2) - The CSHO shall examine the employer's record of diving-related injuries and illnesses which result in the hospitalization for 24 hours or more of any dive team member. These incidents do not have to be reported (unless five or more hospitalizations are involved) but the record must be made available to OSHA on request. Frequency of injuries and illnesses may be an indication of improper planning or dive procedures.

(3) 29 CFR 1910.440(b)(1) - This section gives the CSHO the authority to inspect and copy any record required by this standard.

(4) 29 CFR 1910.440(b)(2) - In order to protect employee Privacy, it is intended that authorized representatives of employees obtain the specific consent of employees involved prior to receiving individual medical records. OSHA's policy in regards to the medical records is to prevent any misuse of such information that may be available through any requirement of this recordkeeping standard.

(5) 29 CFR 1910.440(b)(4) - This requirement is to provide a mechanism for extended retention of certain records that are important for long-range epidemiological studies. The transfer of these records to NIOSH after the 5-year retention period is intended to relieve the employer of the burden of keeping the records beyond the 5-year period. However, if the employer has an adequate storage and retains the records beyond the 5-year period, no citation shall be issued, provided the records are available for inspection and copying by either OSHA or NIOSH. Such action by the employer shall be considered de minimis.

t. Relationship with the other Federal agencies/transportation to site.
(1) In general, OSHA Area Directors should coordinate inspection activities with local U.S. Coast Guard counterparts in a manner which seeks both to minimize the duplication of agency resources and maximize the protection of affected workers.

(2) Consistent with considerations of operational efficiency and the safety of agency personnel, transportation necessary to the conduct of off-shore inspections shall be secured in accordance with the following priority:
(a) Appropriate Federal agency, on an "as available" basis.
(b) Private contractor.
(c) Employer supplied.

(3) Consistent with existing rules and regulations, accident investigation reports, statistical data, and other pertinent enforcement related information should be freely exchanged between other agencies at the local level.
OSHA Instruction STD 1-23.2 (cont.)

5. Effective Date

This directive is effective immediately and will remain in effect until canceled or superseded.

Attachments

Appendix A


FOR TABLE 1-11 NO DECOMPRESSION LIMITS AND REPETITIVE GROUP DESIGNATION

TABLE FOR NO DECOMPRESSION AIR DIVES: SEE PRINTED COPY.
ABSTRACT

Unless evidence is available to support a conclusion that a dive computer is as safe as or safer than the U.S. Navy Standard Diving Tables, such devices will not be considered to be in compliance with 1910.422(e) and 1910.423(d).

INTERPRETATION

29 CFR 1910.422(e); 1910.423(d)

July 6, 1992

This is an interim response to your subject memorandum which was received in this office on June 12, 1992.

The basic issue that has to be resolved with respect to your memorandum is whether a diver-worn “dive computer” provides an acceptable means of establishing a dive profile (depth/time relationships) and maintaining diving records. Unless evidence is available to support a conclusion that a dive computer is as safe or safer than the U.S. Navy Standard Diving Tables, such devices will not be considered to be in compliance with 29 CFR 1910.422(e) and 1910.423(d). In a phone conversation between Mr. J. D. of the Diver's Alert Network (DAN) and Mr. S. B. of OCMCA, Mr. D. advised us that all dive computers allow for increased diver exposure levels. Therefore, dive computers are inherently less safe than the U.S. Navy Standard Diving Tables. This does not mean that such devices are unsafe, but they are not as safe as the standard diving tables so they cannot be considered as providing equivalent protection without further investigation.

We have requested available information and studies on dive computers from DAN and the U.S. Navy in order to evaluate this matter properly. Upon completion of our evaluation we will advise you further.
In person at excavation sites will vary with the specific responsibilities and conduct of a competent person while classifying soil at an excavation. The responsibilities and conduct of the competent person at excavation sites will vary with the specific requirements specified at 29 CFR 1926.652.

January 09, 1991

Your understanding of the responsibilities and conduct of a competent person while classifying soil at an excavation, as stated in your memorandum of September 25, is essentially correct. However, the responsibilities and conduct of the competent person at excavation sites will vary with the specific requirements specified at 29 CFR 1926.652.

29 CFR 1926.651(k) requires that an inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Daily inspections of the excavation, adjacent areas, and protective systems shall be made by a competent person. In situations where no competent person is determined to be available to conduct the daily inspections, 29 CFR 1926.651(k) must be cited.

Employers who elect to comply with the specifications of option 1, at 29 CFR 1926.652(b)(1), must all the necessary requirements of the standard, except that a competent person must perform daily inspections as required at .651(k). Such inspections can be anticipated to primarily address hazardous atmospheres, or localized problems related to rainstorms and/or changing weather conditions.

Employers who elect to comply with the requirements of option 2 through 4, at 29 CFR 1926.652(b)(2), (3) and (4), must conduct, with the services of a competent person, the initial and daily visual inspections together with appropriate manual tests of the soil along the excavation. The slope, shoring, or shield system used must reflect the results of such inspections and tests if any of the soil is determined to be type A or B or equivalent as designated by the registered professional engineer (R.P.E.). Visual observation and at least random manual testing is required if no visual changes are noted. Type C soil need not be manually tested once it is visually determined to be type C and an appropriate protective system is in place. On the other-hand, type A or B soil must be manually tested to verify their type. During the daily or other inspection, required at .651(k), the competent person must visually ascertain if soil changes are occurring which could lower the classification of the previously categorized soil type. If, in the competent person's opinion (which is based upon the visual criteria of the standard), deteriorating soil changes are occurring or have occurred, manual testing is mandatory and the soil classification must be ascertained. For instance, where type A soil has deteriorated to type B, based upon visual observation, manual testing is a must to confirm the condition of the soil. Whenever the soil is being downgraded to type C and a corrective protective system is put in place, no manual testing is required or necessary. It must be realized that once an excavation is opened, the soil type observed to exist at the time of opening will not improve with time; it can only deteriorate.

In further response to the concerns of the Regional SOL, we provide the following:

During initial opening of an excavation and where the job moves along through changing types of soil, the competent person must determine the respective types of soil as the job progresses. In order to correctly ascertain the soil types, the competent person must identify the locations and the
limits of each type of soil, and must conduct visual and all appropriate manual tests to classify the initial (opening) soil types observed.

Regarding the issuance of citations related to no competent person available at the site, we offer the following:

The specific standard related to excavations is subpart P of 29 CFR 1926. The general requirements of 29 CFR 1926.20(b)(2) and .21(b)(2) are not to be cited under the guidance of the FOM of chapter IV, A.1.a. (4)(a), when a vertical or specific standard addresses the issue/circumstances. The requirements for inspection by a competent person are mandated by subpart P and therefore the general requirements are inapplicable to excavation.

Protective systems for excavations which are in compliance with the requirements of 29 CFR 1926.652(c) must be inspected daily to verify that the support systems installed remain effective. The knowledge and experience of the competent person is therefore considerably greater than that required of a competent person under the requirements of 29 CFR 1926.652(b).

Protective systems constructed to the requirements of 29 CFR 1926.652(c), option 1, must be inspected against the requirements of appendices A, C or D. The competent person must be thoroughly knowledgeable of those requirements and must inspect daily to assure the continuing integrity of the system.

Protective systems constructed to option 2, of 29 CFR 1926.652(c), must be inspected against the manufacturer’s specifications, recommendations, and limitations for the system and must verify that any deviation, if one was issued, continues to meet the manufacturers specific written approval. The competent person must be thoroughly knowledgeable of the limitations of the manufactured system.

Protective systems constructed to the option 3 requirement, of 29 CFR 1926.652(c), must meet the stipulations of the tabulated data which must be approved by a registered professional engineer. The competent person who inspects the system, on a daily basis, must be able to verify that the system continues to maintain the integrity required by the tabulated data. In the event that local deviations are noted, the competent person should consult with a registered professional engineer who can recommend proper corrective measures.

Option 4, of 29 CFR 1926.652(c), requires that the protective system be designed by a registered professional engineer (R.P.E.). The competent person who inspects the system, on a daily basis, must be knowledgeable of the system design and its limitations. The competent person should report all deviations noted during inspections to the R.P.E. so that proper corrective measures can be taken.

In the event that the employer permitted employees to enter an excavation which was alleged to comply with CFR 1926.652(b) or (c), a violation of the standard exists if no competent person is determined to be available. In such an instance, both 29 CFR 1926.651(k) and .652(b) or (c) must be cited and may be grouped as appropriate.

Modification of the compliance directive OSHA Instruction CPL 2.87, dated February 20, 1990, is contemplated. The information of this memorandum, further clarification of the standard and relevant enforcement policy will be addressed by change A.
OSHA Instruction STD 1-4.2

October 30, 1978

MEMORANDUM FOR: REGIONAL ADMINISTRATORS

SUBJECT: Classification of Polychlorinated Biphenyls (PCB’s) Standards

OSHA does have specific standard for airborne levels for two isomers of PCB’s and they are listed in 29 CFR 1910.1000 table Z-1. These forms are chlorodiphenyl (42% and 54% chlorine). These above compounds are the more common compounds found as insulating liquids used in electrical capacitors, transformers, and nuclear reactors. Other chemical forms of PCB’s exist, such as chlorodiphenyl (16%, 21%, 71% chlorine), and are used in heat transfer enclosures and in investment casting waxes in foundries.

Repeated skin contact hazards with all PCB’s could be addressed by the standards 1910.132 and 1910.133.

The “General Duty Clause” section 5(a)(1) of the OSH Act would apply when serious hazards could be documented on a case by case basis and specific health standards do not apply. This may include the following:

A. Poor personal hygiene practices
B. Inadequate employee training programs
C. Compounds other than those covered by specific standards
OSHA Instruction CPL 2-2.7

October 30, 1972

OSHA PROGRAM DIRECTIVE #300-3

TO: Field and National Offices/OSH

SUBJECT: Crystalline Silica

1. PURPOSE:

This directive provides guidelines to be followed in inspections, and where necessary, the issuance of citations, regarding exposure to silica in the workplace.

2. DOCUMENTATION AFFECTED:

This directive cancels the Silica Sampling Data Sheet of January 3, 1972.

3. DOCUMENTATION REFERENCED:

a. Field operations Manual, Chapter XIII.


c. Guidelines for Control of Occupational Exposure to Crystalline Silica and Abrasive Blasting.

4. BACKGROUND:

a. Chemical Data. Crystalline silica, also called alpha silica or generally free silica, is silicon dioxide (SiO₂). In pure, natural form, SiO₂ crystals are minute, very hard, translucent, and colorless. The physical properties are: molecular weight, 60.09; melting point, 1710° C; boiling point, 2230° C; and vapor pressure, 10 mm Hg at 1732° C. Most mined minerals contain some SiO₂. "Crystalline" refers to the orientation of SiO₂ molecules in a fixed pattern as opposed to a non-periodic, random molecular arrangement defined as amorphous (such as diatomaceous earth). The three most common crystalline forms of silica encountered in industry are: quartz, tridymite, and cristobalite. Quartz is a silicon dioxide polymorph with a composition of 46.7% Si and 53.3% O crystallized in the hexagonal system. Tridymite is a silicon dioxide polymorph with a composition like quartz, but containing sodium aluminum silicate. It is crystallized in the orthorhombic system. Cristobalite is also similar to quartz but with various impurities. Structurally cristobalite is in the cubic or tetragonal system. Silicates, composed of the SiO₂ tetrahedron structural unit, are also sources of crystalline silica (usually less than 1%). The silicates include: mica, soapstone, talc (non-asbestos and fibrous) tremolite, and Portland Cement.

b. Fire, Explosion Potential, and Reactivity. Under extremely unusual circumstances. Fine airborne dust can propagate an explosion: usually a strong source of ignition is required (welders' torch, boiler furnace). In a closed container in the laboratory, dust explosion can be initiated with a spark due to static electricity. The lower explosive limit will depend on particle size, particle distribution in air, particle velocity, and the mixture of dust (organic content, presence of gases, etc.).

c. Other Relevant Information. This section is for information purposes only, not for compliance action. (1) Common Processes. Silica is present in almost every process where natural minerals are handled. It is prevalent in foundries where it has several uses, in the manufacture and use of abrasives, in the construction industry as an ingredient of materials or byproduct of activities, and in the manufacture of glass and Pottery. Some of the processes in which occupational exposures are to be expected are described below.

(a) Glass Manufacture. The four main divisions of the glass manufacturing industry are flat glass, container glass, specialty (or technical) glass, and fiber glass. The end products in fiber glassware silicates. Fibers should not be confused with crystalline silica as they represent a different health problem. The major portion of all glass batches is silica sand. Washed sand is
commonly used. The amount of fine particulates has been reduced by washing. The unloading of dry sand from boxcars, either by power scoop or by shovel and wheelbarrow, may produce large quantities of fine silica dust.

(i) Processes. The various types of glass manufactured in the modern glass industry are made by two processes: the older pot process and the more common tank method. Heat stress may be associated with both processes.

(A) Pot process. The pot process is used predominantly for the manufacture of high-quality glass and for small quantity specialty glass. The pots vary in size up to those capable of holding two tons of ingredients, for the silicosis cases reported in the glass industry. The pots are made of different types of clay combined with flint or silica flour. Pot glass is manufactured in furnaces. Waste heat causes considerable convective air currents, therefore, breathing zone silica levels may be high throughout the furnace areas. Pot melting of glass may necessitate hand shoveling and hand filling of the pots. Optical and specialty glasses also frequently contain heavy metals, such as lead, barium, etc. During the hand-filling process, multiple exposures to dust of other ingredients, such as heavy metals, may occur.

(B) Tank process. The tank method is used for high volume production requirements, such as window glass, television tubes, container glass, etc. Glass tanks of current design provide for enclosed continuous feeding of batch ingredients. This system reduces if functioning properly.

(ii) Repairs. The blocks and bricks used in the construction of the furnaces and tanks contain silica in significant amounts. Silica brick contains tridymite as its principal constituent. Dust concentrations may be a problem of maintenance employees working on tanks. The hazard is caused by cutting and chipping of blocks and bricks to be fitted into furnace structures. Introduction of prefabricated furnace blocks and parts has reduced the need to cut at the site of installation.

(b) Portland Cement. Another major use of silica is in the manufacture of Portland Cement. In this process, the raw materials used may be divided into four categories. These are: those supplying the lime component (calcaneous), the silica component (siliceous), the alumina component (argillaceous), and the iron component (ferriferous). The processing of the raw materials into cement involves four stages:

(i) Size reduction to obtain fineness and increased surface area to allow the chemical reactions to occur.

(ii) Blending, correction, and homogenization of raw mix to obtain desired composition and uniformity.

(iii) Burning to form new compounds, which liberates carbon dioxide.

(iv) Heat pulverization of kiln product with addition of gypsum.

The various components are usually moved from raw material storage by overhead crane and deposited in roughly the desired proportions which can be controlled. Some of the sources of dust are quarrying, crushing, grinding, therotary kiln. Screens, bagging operations, and the loading and unloading from transportation vehicles. Heat stress may be associated with these processes.

Almost identical exposures can occur in cement block and brick making, in brick kilns, and in kiln repair. The possibility of dual jurisdiction with MESA may exist.

(c) Pottery Industry. The silica in the pottery industry is present as flint. In the production of pottery there are six basic processes: preparation of the body ingredients, forming and shaping, biscuit firing, application of glaze, gloss firing, and decoration.
OSHA Instruction CPL 2-2.7 (cont.)

Dust exposure may be a hazard in the transfer of raw materials from boxcars to storage bins. The dust hazard may also exist in the preparatory stages that follow such as: calcining, crushing, and grinding of flint, stone, etc. These preparatory processes may be carried out in another plant. The possibility of dual jurisdiction with MESA may exist. In the slip house the body ingredients are blended in water, and:

(i) Plastic clay is produced by filtering and pugging.

(ii) Casting slip is produced by blunging.

(iii) Dust for pressing is produced by drying, grinding, and disintegrating.

Dust may arise from dry pressing, grinding, or evaporated blend. The plastic clay, dust or casting slip then enters the forming and shaping phases. Plastic clay shaping is now primarily a mechanical operation. Dust-pressed articles are produced by compacting pre-dried body-dust by hand or mechanical pressing.

After shaping, the ware may be dried and finished and is then ready for biscuit firing. Outside the slip house, flatware brushing is one of the dustiest occupations and requires control measures. The other finishing steps have less potential for dust hazard; however, multiple hazards should be expected in the glazing process. Rubber bands holding together drying forms are a source of fine dust when dry.

(d) Foundries. The foundry environment varies primarily with the kind of material poured. The exposure to silica dust in the foundry environment can be described by following the process from melting to cleaning.

(i) In the melting process the metals or alloys are melted in a furnace of the cupola, electric arc, electric induction, or open-hearth type. Silica exposure in the melting process, however, may be minimal. The primary hazard is exposure to metal fumes and dust.

The production of iron castings is accomplished by re-melting scrap along with pig iron in a furnace called an acupola. The cupola may be a source of carbon monoxide, metal fumes and dust.

In an electric arc furnace, melting is achieved by heat transfer from the arcs that are sprung from the electrodes to the metal charge. Electric furnaces may give rise to large amounts of iron oxide and various other fumes depending on the composition of the steel being formed.

In an electric induction furnace a high frequency current is passed through the primary coil, thus inducing a much heavier secondary current in the charge (metal), which results in heating it by resistance to the desired temperature. In this process, melting is quite rapid, so that there is only a slight loss of the easily oxidized elements.

In the open-hearth furnace, both the hearth and the charge resting on it are exposed to the direct action of the flame employed in converting the solid charge into the liquid state. If a large tonnage is continually required, the open-hearth furnace is used.

(ii) Mold and core making presents multiple hazards due to the use of silica and the great variety of binders and mold making processes. Molds may be coated with flint or silica flour. After the initial forming, molds may be preheated and cooled, and the surface may be retreated to prevent metal adhesion. Cooled molds may be called chills. Resin binders and solvents (primarily alcohols) may be used, therefore multiple exposures are possible.
(iii) Pouring operations generate gases and vapors from the destructive distillation of sea coal mixed into the molding sand and synthetic gates. When sea coal is used in mold making, evaluation for coal tar pitch volatiles may be indicated. Multiple air contaminants are generated in the pouring operation. CO₂ and CO may be generated when organic materials in the mold are heated. Numerous organic components have been identified in foundry fumes. The temperature of the metal to be cast in the mold. Where pouring is done on the floor, the general practice has been to minimize these hazards by providing high ceilings with air outlets as high as possible and inlets near floor level.

(iv) After pouring, the molds are allowed to cool, with time depending on size of the cast and the metal.

(v) After cooling, the external molds are opened or broken in an operation called shakeout. Dust concentrations are high during shakeout and cleanup operations. An effective control for the shakeout operation is the relatively complete enclosure with sufficient exhaust volume, removed at the top of the enclosure to maintain an inflow of at least 200 FPM at all openings.

(vi) Core knockout is a process in which the mold portion from the inside of the cast is removed resulting in the dispersion of silica dust. The use of compressed air jets to blow out the last of the core sand produces excessive airborne dust concentrations. A side hood arrangement may be effective in controlling exposures depending on the size of the cast. Vacuum may be used to control dust in the core knockout process.

Other operations generating dust are the transfer to return conveyer, transfer to elevator, transfer to and from belt conveyers, sand screens, tailing pipes, sand mixers and receiving points on sand bins. Since core sand is reused several times, it may become progressively finer. This may increase the number of respirable size particles in the air.

(vii) Grinding. After the cast has been shaken out and the core mold removed, the cast has to be rough ground to remove mold defects. The cast may still have a lot of fine particles embedded in or adhering to its surface, which become airborne upon grinding. Noise may be a major problem in this operation. Several engineering controls are proven and available, depending on the size of the cast, to control this problem.

(e) Abrasive Blasting. This process is used to clean, smooth, or prepare surfaces for additional treatment or appearance (such as buildings, bridges, ships, etc.). Abrasive blasting is the high velocity bombardment of a surface by an abrasive material (wet or dry) propelled by primarily pneumatic pressure. Three basic techniques may be encountered: dry, wet and airless (centrifugal). A vacuum can be used to control dust when a pneumatic blast nozzle is used. Noise is a major hazard in addition to dust. The dust generated in any blasting process is a combination of the fragmented blasting media and the material dislodged from the surface treated. Where a fragmentable abrasive, such as sand, shells, cobs, glass beads, metal shots or slag, is used, or where a fragmentable surface, such as a sand casting, a painted or scaly surface, or masonry, is blasted, the dust generated varies in particle size and chemical composition. The particle size of the blasting agent decreases upon rehandling or reuse: liberation of more silica sand in the respirable size is possible if silica is present in either the agent or surface. Due to the volume of sand used for some stationary operations, complete respiratory protection is necessary not only for the sand blaster, but also for the entire work area if the blasting is not done inside an effective enclosure (i.e., buildings, ships, etc.).
Where an employee is inside the enclosure, together with the production parts to be sand (or shot) blasted, full protective clothing must be considered. The contamination of the clothing with secondary contaminants and blasting agents may occur.

(2) Signs and Symptoms of Disease. Upon repeated exposure to dust containing crystalline silica, a fibrous lung condition called silicosis may develop. Signs such as labored breathing and early fatigue may indicate silicosis; however, they can arise from many other causes. Diagnosis of silicosis can be made by a physician only and is difficult to make without a work history. The progress of silicosis can only be stopped; the lung condition cannot be cured. The incidence of tuberculosis is high among silicosis patients.

5. INSPECTION PROCEDURES:

a. Pre-Inspection Preparation

(1) The inspection team or the assigned CSHO shall:

(a) Review any previous case files on the plant to be inspected, noting the size of the plant area, number of employees, and volume of expected activities.

(b) Search applicable standard industry classification code in the state directory of industries (usually a Chamber of Commerce publication) for similar plants. Review the case files of similar plants to become familiar with problems to be expected.

(c) Use other technical information or literature to increase the understanding of expected activities.

(d) Review all information obtained by the requesting officer if the plant inspection is a referral visit.

(2) The team or the assigned CSHO shall also:

(a) Estimate the time to be spent at the plant.

(b) Estimate the number and type of airborne contaminant samples to be taken. Review “OSHA Standard Method for Respirable Gravimetric Dust Sampling.” Determine weights of all filters to be used in sampling which will require gravimetric analysis.

(c) Establish availability of all supplies necessary before the planned sampling.

(d) A respirable dust (crystalline silica) sampling train shall consist of a nylon cyclone, cassette, tubing and a personal air sampling pump.

(e) Check air sampling pumps for calibration or calibrate for 1.7 liters per minute with sampling train. Log calibrations of sampling trains, including component numbers and calibration results.

(f) Obtain or prepare the necessary number of cassettes plus 10% spares.

(g) Prepare field log book and/or sampling work sheets to record the following information for each intended sample to substantiate entries required for OSHA Form 1 and others:

(i) Employer's name;

(ii) Substance sampled and sampling procedure used.

(iii) Work activity and location sampled.
OSHA Instruction CPL 2-2.7 (cont.)

(iv) work load in area (above, below, or at normal);
(v) Number of employees in area;
(vi) Information on employee sampled:
   (A) Name, address, and telephone number;
   (B) Social Security number, if possible
   (C) Time spent per day at that activity;
   (D) Type of respiratory protection and other protective equipment.
(vii) Instruments or pump used (and serial number);
(viii) Sample identification and cassette number (or numbers);
(ix) Sample starting time and ending time;
(x) Starting flow rate and ending flow rate, if applicable;
(xi) Weather conditions;
(xii) Other remarks.

(h) As other contaminants besides dust may be in the atmosphere, consider and prepare
   other sampling trains or capture media if combination of anticipated contaminants
   warrants it. Consult available OSHA standard methods.

(i) Check, calibrate and log calibration of direct reading instruments to be used in the
   survey (such as sound level meter, CO analyzer).

(j) Check camera and verify film and camera operation.

(k) Obtain and check personal protective equipment. When preparing for an inspection of
   a plant with dusty conditions, in addition to the normal protective equipment, obtain a
   respirator equipped with cartridges or filters appropriate for anticipated exposures. (l)
   Suggested list of sampling supplies should include strong tape, Tygon tubing,
   scissors, sampling pump belts, plastic bags (Whirl-pack), and a clipboard.

(m) Review other applicable sub-parts of OSHA Health and Safety Standards anticipated
   during the inspection.

(n) Obtain and become familiar with copies of reference documents.

(o) Discuss the preparation for the plant visit with appropriate supervisor.

b. Inspection

(1) Upon entering the workplace, the CSHO shall contact plant management, identify himself, and
   state the purpose of the visit.

(2) Opening Conference. The CSHO shall obtain a process flow chart and plant layout, and
   determine production volume and activity cycles. If the plant facilities layout chart is not
   available, the CSHO shall sketch a plant layout subsequently during the inspection,
   identifying major operation areas, distribution of major equipment, building identification,
   existing and planned engineering controls, and approximate dimensions of the plant
   property.
OSHA Instruction CPL 2-2.7 (cont.)

Determine if the plant production level is normal or unusual due to maintenance shutdowns, accelerated production, etc. If the production is down, proceed with inspection, but do not perform full scale sampling until normal production is resumed.

(a) The opening conference shall be continued with a discussion of specific health hazard-related information.

(i) Determine the form(s) in which silica arrives at the plant and the approximate sequence of the process in which it is used; request the Safety Data Sheets, if available.

(ii) Obtain plant management statement regarding safeguards, precautions, protective equipment, and routine procedures used for protection of employees in plant operations. Ask about any known experience of employee illness or symptoms exhibited or complaints with regard to health matters.

(iii) Obtain complete labeling and placarding information of chemicals used in the operation, if any.

(b) The CSHO shall obtain the following additional information either by direct interview, or partial interview, or record review. Plant management shall be requested to provide the information not readily available in a letter to the Area Director.

(i) Monitoring Program. If the plant has an air sampling program or spot samples have been taken at the plant, the CSHO shall note:

(A) Collection equipment used, and calibration record if any;

(B) Sampling and analytical methods employed;

(C) Frequency of sampling, if performed regularly;

(D) Specified locations of sampling in the plant, if used;

(E) Names of persons who have performed sampling, including names of outside consultants; and (F) Date of most recent sampling run. Obtain:

((1)) Time of sampling, with respect to work cycle;

((2)) Duration of individual sampling runs;

((3)) Specific sampling locations with respect to process and work stations; and

((4)) The sampling results.

(ii) Medical Program.

(A) What types of medical examination are provided (such as preplacement, annual or special tests for silica exposure) and by whom, in-house or contract physician?

(B) What are the medical protocols or reasons for providing other physical examinations?

(C) Where are the physical examinations conducted?

(iii) Record Keeping Program.

(A) What types of records are being maintained?
OSHA Instruction CPL 2-2.7 (cont.)

(B) When was the particular record keeping started?

(C) How and where records are kept (such as medical records with employee's personnel record, protective equipment records in the warehouse, training program record with the safety engineer, etc.)?

(D) Are health-related records reviewed and correlated with other available records (air monitoring, training, and maintenance records)?

(iv) Employee Training and Information Program (including new employees).

(A) Who informs the employee about the potential health hazards associated with silica exposure?

(B) How often does employee training take place, specifically on health hazards of silica?

(C) What written training materials are provided? Include a copy.

(D) Is the employee able to review his or her individual health-related records?

(E) Are emergency procedures taught and practiced in the plant? Include copies of procedures.

(F) Is the function and use of protective equipment and engineering controls taught? Written instructions for the selection and use of respirators shall be established according to 29 CFR 1910.134(b)(1). Obtain a copy.

(G) Obtain copies of minutes of recent safety meetings.

(v) Personal Hygiene Program.

(A) What type of locker and lunch facilities are provided?

(B) What type of shower facilities are provided?

(C) What procedures are used for encouraging good personal hygiene practices?

(vi) Personal Protective Equipment Program.

(A) Are respiratory protective devices provided? If so, what type?

(B) For abrasive blasting is the type C supplied air, positive pressure, demand type abrasive blasting respirator worn according to 29 CFR1910.94(a) and 30 CFR Part 11?

(C) What is the program for repair and maintenance of all respiratory protective devices?

(D) What are the policies and procedures for issuing personal protective equipment?

(E) How is dirty protective clothing or equipment cleaned, decontaminated and/or disposed?

(vii) Engineering Controls and Related Preventive Maintenance Program. Provide for each system.
OSHA Instruction CPL 2-2.7 (cont.)

(A) Control system identification and type;
(B) Design capacity;
(C) Approximate date installed;
(D) Collection system;
(E) Preventive maintenance plan;
(F) System performance measurement program.

(viii) Housekeeping Program.

(A) What is the method used for floor cleaning and the frequency of it?
(B) What is the method of removal of dust from work surfaces in the plant?
(C) What equipment is used in the housekeeping process, such as vacuum cleaners, mops, flooding, sweeping, etc.?
(D) Is refuse picked up regularly?
(E) Is there an in-plant disposal site of production wastes?

(3) Walk Through Inspection

(a) Prior to the start of the in-plant inspection, the CSHO shall have or wear appropriate protective equipment. The use of personal protective equipment shall not be less than that required in the plant area.

(b) Start at the production material receiving point and follow the production flow. Observe conditions, processes, physical and chemical agents used, worker activities, and existing engineering

(c) The CSHO shall identify and record on plant layout or on a separate sketch the following:

(i) Potential sources of health hazards.

(A) Note the temperature, noise, and dust conditions in each area.
(B) Note areas adjacent to the silica process.
(C) Record other materials used in the process. Their use rate, brand names, preferably the chemical names, and storage areas shall be noted.
(D) Observe all silica dust accumulations on ceiling, walls, floors and equipment. Note possible sources.

(ii) Location and number of exposed employees.

(A) Note number of employees in each area. Note the number of workers potentially exposed to silica or other health hazards and obtain their job titles and/or job descriptions.

(B) Provide opportunity for conversations with employees during inspection concerning knowledge of the hazards, reason for and methods of protective equipment and engineering controls.
OSH Instruction CPL 2-2.7 (cont.)

(C) Note permanent work stations with respect to plant processes.

(D) Note the use of protective devices.

(E) Note the appearance of work clothing (as an indication of potential exposure).

(iii) Types of engineering controls.

(A) Note openings (in tunnels or buildings) to external environment and the plant air flow patterns.

(B) Identify all ventilation systems.

(C) Note maintenance work practices on process equipment if there is an opportunity.

(iv) Housekeeping.

(A) Enter sanitary facilities and observe the conditions.

(B) Note adequacy of general housekeeping procedures.

(C) Note the availability of cleaning equipment and supplies.

(v) Other.

(A) Photograph potential health hazard areas, equipment, engineering controls and safety hazards and situations which should be a part of the inspection report.

(B) The CSHO shall arrive at conclusions and opinions deliberately and slowly. Appearances can be deceiving with respect to airborne concentrations of silica.

(4) Sampling. For sampling purposes, select employees who have apparent maximum potential exposure and also employees representative of other work operations. The CSHO shall:

(a) Attach sampling devices to the selected employees. Follow OSHA Standard Methods.

(b) Set the sampling rate at 1.7 liters per minute.

(c) Check flow meter setting and sample collection frequently throughout the sampling period.

(d) Minimum total sampling time is 7 hours, unless the operation time is shorter.

(e) Replace the cartridge with a new one as deemed necessary; do not overload!

(f) Perform area sampling to determine effectiveness of engineering controls (this result shall not be used for citation).

(g) Keep at least one cassette as a blank, per day of sampling, expose it to the plant environment and immediately reseal it. Air shall not be drawn through the blank.

(h) Dust concentrations shall be determined by gravimetric analysis in the area office and crystalline silica determinations shall be performed on the same samples by the laboratory.

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OSHA Instruction CPL 2-2.7 (cont.)

(i) In case of potential multiple contaminants (silica, lead, arsenic etc.), samples shall be collected for each suspected contaminant separately, according to appropriate OSHA Standard Method.

(j) Perform measurements and as many noise engineering control checks as feasible.

(k) Complete other engineering control survey before leaving plant.

(l) Interview employees, and observe for symptoms of health impairment.

(m) Arrive at conclusions and opinions slowly. Sampling results will not be returned instantaneously. Appearances can be deceiving with respect to airborne concentrations of silica.

(5) Closing Conference

(a) After completing the sampling, surveying all engineering control systems, and reviewing available plant records, the CSNO shall discuss the findings with management and labor representatives together or in separate meetings.

(b) Management and labor shall be advised of possible violations pending results of laboratory analysis of samples.

(c) CSHO shall be prepared to discuss the Crystalline Silica and Abrasive Blasting Guidelines with the employer. Guidelines shall be considered as good practice recommendations, not regulations.

6. REPORT:

a. The CSHO shall calculate the permissible exposure limit (PEL) of silica samples collected according to the following procedure:

(1) Obtain material identification and per cent silica analysis from the laboratory.

(2) Use the formula for gravimetric method provided for respirable quartz in Table Z-3, 1910.1000, to calculate the PEL. For cristobalite and tridymite, one half of the value calculated shall be used to determine PEL.

(3) Example: A respirable dust sample is weighed and the time-weighted average is calculated to be 3.6 mg/m3. The laboratory reports the composition of the dust to be 13% quartz, 8% tridymite and 10% cristobalite. Calculate the permissible exposure limit of each component.

\[
\begin{align*}
\text{Quartz:} & \quad 10 \text{ mg/m}^3 \\
& \quad \times 0.66 \text{ mg/m}^3 \quad \text{(PEL)} \\
& \quad \text{(13% + 2)} \\
\text{Tridymite:} & \quad 10 \text{ mg/m}^3 \\
& \quad \times 0.5 = 0.50 \text{ mg/m}^3 \quad \text{(PEL)} \\
& \quad \text{(8% + 2)} \\
\text{Cristobalite:} & \quad 10 \text{ mg/m}^3 \\
& \quad \times 0.5 = 0.42 \text{ mg/m}^3 \quad \text{(PEL)} \\
& \quad \text{(10% + 2)}
\end{align*}
\]

In this case, employee exposure to the individual components exceeds the permissible exposure limits.
b. A complete technical report shall be compiled using all information, observations, photographs, and other data collected in accordance with this program directive. The report shall be concluded with recommendations, if any, for citations under OSHA standards or general duty clause and for proposed penalties.

c. The report shall include descriptions of unusual sources or conditions of airborne contaminations.

d. The report shall also include descriptions of exceptional or well-designed engineering controls observed and surveyed.

7. CITATIONS:

Consult Chapter XIII, Section G, of the Field Operations Manual for specific instructions on the issuance of citations where violations involving exposure to silica are concerned.

8. EFFECTIVE DATE:

This directive is effective immediately and shall be retained until further notice.

Dear Sir:

The nature of work at your establishment in and Health Administration (OSHA) that crystalline silica may be used in your manufacturing process. As you know, the present permissible exposure limit to weighted average concentration for an 8-hour period. If the employee 1 exposure is found to be in excess of the permissible limits, you must implement feasible engineering or administrative controls or maintain an effective respiratory protection program should such controls be found infeasible. The National Institute for Occupational Safety and Health has recommended that the permissible exposure limit for silica be lowered to .05 mg/M3, as determined by a full-shift sample up to a 10-hour working day, 40-hour work week. This recommendation is currently being considered by OSHA.

As an interim measure until such time as a complete standard is promulgated we are forwarding herewith recommended guidelines for protection of your employees against the risk of disease resulting from exposure to silica. These recommendations involve preventive steps of good housekeeping, personal hygiene, medical surveillance, monitoring and measuring of exposure levels, employee training, respirator information and abrasive blasting work practices which should ensure a reduced health risk for those of your employees who are involved in such manufacturing processes. The issuance of these guidelines does not alter our intention to continue our compliance activities.

The wide use and multiple applications of silica in our nation's industries combine to make silica a major occupational health hazard. Therefore, voluntary compliance with the enclosed non-mandatory guidelines would further the overall objective of the Occupational Safety and Health Act to assure so far as possible, safe and healthful working conditions.

Guidelines for Control of Occupational Exposure to Crystalline Silica and Abrasive Blasting

In accordance with the Occupational Safety and Health Administration's (OSHA) standard for air contaminants (29 CFR 1910.1000), employee exposure to airborne crystalline silica shall not exceed an 8-hour time-weighted average limit (variable) as stated in 29 CFR 1910.1000, Table Z-3, or a limit set by a state agency whenever a state-administered Occupational Safety and Health Plan is in effect.

The first mandatory requirement is that employee exposure be eliminated through the implementation of feasible engineering controls. After all such controls are implemented and they do not control to the permissible exposure limit, each employer must rotate its employees to the extent possible in order to reduce exposure. Only when all engineering or administrative controls have been implemented, and the level of respirable silica still exceeds permissible exposure limits, may an employer rely on a respirator program pursuant to the mandatory requirements of 1910.134. Generally where working conditions or other practices constitute recognized hazards likely to cause death or serious physical harm, they must be corrected pursuant to Section 5(a)(1) of the Occupational Safety and Health Act.
OSHA Instruction CPL 2-2.7 (cont.)

In addition to these mandatory requirements, the National Institute of Occupational Safety and Health has recommended that the limit be lowered to 0.05 mg/M3, as determined by a full-shift sample up to a 10-hour working day, 40-hour work week. This recommendation is currently being considered by OSHA. Pending such consideration, the following recommendations are made to ensure that employee exposure to respirable silica is controlled to the permissible exposure limit. For these guidelines, silica means crystalline silica.

1. MONITORING:

a. Each employer who has a place of employment in which silica is occupationally produced, reacted, released, packaged, repackaged, transported, stored, handled, or used should inspect each workplace and work operation to determine if any employee may be exposed to silica at or above the permissible exposure limits. Indicators that an evaluation of employee exposure should be undertaken would include:

(i) Any information or observations which would indicate employee exposure to silica or other substances;

(ii) Any measurement of airborne silica:

(iii) Any employee complaints of symptoms which may be attributable to exposure to silica or other substances;

(iv) Any production, process, or control change which may result in an increase in the airborne concentrations of silica, or whenever the employer has any other reason to suspect an increase in the airborne concentrations of silica.

b. Air Monitoring

(i) Employee exposure measurements should represent the actual breathing zone exposure conditions for each employee. Any appropriate combination of long-term or short-term respirable samples would be acceptable, but total sampling time may not be less than 7 hours. In case of abrasive blasting operations, substances other than silica should be sampled and analyzed.

(ii) Accuracy of Measurement. The method of monitoring and analysis should have an accuracy of not less than plus or minus 25% for concentrations of airborne silica equal to or greater than the permissible exposure limit. (One method meeting this accuracy requirement is available in the “NIOSH Manual of Analytical Methods,” Government Printing Office Stock No. 1733-00041)

(iii) Frequency of Monitoring. Where the employer has determined that employees are exposed to silica or other substances in excess of the permissible exposure limit, monitoring should be repeated quarterly.

2. MEDICAL SURVEILLANCE:

Each employer should institute a medical surveillance program for all employees who are or will be exposed to airborne concentrations of silica or other substances above the permissible exposure limit. The employer should provide each employee with an opportunity for a medical examination performed by or under the supervision of a licensed physician and should be provided during the employee's normal working hours, without cost to the employee.

a. Medical Examination

(i) Each employer should provide a medical examination which includes a complete medical history and physical examination, an annual chest roentgenogram (x-ray) and pulmonary function tests to each employee exposed to silica in excess of the permissible exposure limits. In the abrasive blasting trade, attention should be paid to potential scarring of cornea.
OSHA Instruction CPL 2-2.7 (cont.)

(a) A chest roentgenogram (post-anterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev) Geneva, International Labor Office, 19721.

(b) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at one second (FEV 1) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It is recognized that providing such medical examination and record keeping of medical data may be difficult for those abrasive blasting establishments employing transient workers.

(ii) Medical examinations should also be made available:

(a) To employees prior to their assignment to areas in which airborne concentrations of silica are above the permissible exposure limit;

(b) At least annually for each employee exposed to airborne concentrations of silica above the permissible exposure limit at any time during the preceding six months;

(c) Immediately, upon notification by the employee that the employee has developed signs or symptoms commonly associated with chronic exposure to silica.

(iii) Where medical examinations are performed, the employer should provide the examining physician with the following information:

(a) The reason for the medical examination requested;

(b) A description of the affected employee's duties as they relate to the employee's exposure;

(c) A description of any personal protective equipment used or to be used;

(d) The results of the employee's exposure measurements, if available;

(e) The employee's anticipated or estimated exposure level;

(f) Upon request of the physician, information concerning previous medical examination of the affected employee.

b. Physician's Written Opinion

(i) The employer should obtain and furnish the employ with a written opinion from the examining physician containing the following:

(a) The signs or symptoms of silica exposure manifested by the employee, if any;

(b) A report on the findings of the chest roentgenogram and pulmonary function tests;

(c) The physician's opinion as to whether the employee has any detected medical condition which would place the employee at increased risk of material impairment to the employee's health from exposure to silica or other substances or would directly or indirectly aggravate any detected medical condition;
OSHA Instruction CPL 2-2.7 (cont.)

(d) Any recommended limitation upon the employee's exposure to silica or other substances or upon the use of personal protective equipment and respirators; and

(e) A statement that the employee has been informed by the physician of any medical condition which requires further examination or treatment.

(ii) The written opinion obtained by the employer should not reveal specific findings or diagnoses unrelated to occupational exposure to silica or other substances.

(iii) If the employer determines, on the basis of the physician's written opinion, that any employee's health would be materially impaired by maintaining the existing exposure to silica or other substances, the employer should place specific limitations, based on the physician's written opinion, on the employee's continued exposure to silica or other substances.

3. TRAINING:

a. Each employee who may be potentially exposed to silica or other substances should be apprised at the beginning of his or her employment or assignment to such an exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure.

b. Instruct affected employees to advise the employer of the development of the signs and symptoms of prolonged exposure to silica and other substances.

c. Inform employees of the specific nature of operations which could result in exposure to silica or other substances above the permissible exposure limits, as well as safe work practices for the handling, use, or release of the silica and the types and function of engineering controls.

d. Instruct employees in proper housekeeping practices.

e. Instruct employees as to the purpose, proper use, and limitations of respirators.

f. Provide employees with a description of, and explain the purposes for, the medical surveillance program.

g. Inform employees where written procedures and health information are available on the premises.

h. Advise employees of the increased risk of impaired health due to the combination of smoking and silica dust exposure.

4. PERSONAL PROTECTIVE DEVICES:

a. Personal Protective Devices Program. Engineering controls shall be used to maintain silica dust exposures below the prescribed limit. When the limits of exposure to silica cannot be met by limiting the concentrations of silica in the work environment by engineering and administrative controls, an employer must utilize a program of respiratory protection to protect every employee exposed.

b. Respirator Selection and Usage

(i) The employer should select and provide an appropriate respirator from the table on the next page. When abrasive blasting is done, the type C supplied-air, positive pressure, demand type abrasive blasting respirator shall be worn according to 29 CFR 1910.94(a) and 30 CFR Part 11.
OSHA Instruction CPL 2-2.7 (cont.)

(ii) Employees experiencing frequent and continuous breathing difficulty while using respirators should be evaluated by a physician to determine the ability of the worker to wear a respirator.

(iii) A respiratory protective program meeting the requirements of 29 CFR 1910.134 shall be established and enforced by the employer.

(iv) A respirator specified for use in higher concentrations of airborne silica may be used in atmospheres of lower concentrations.

Recommendations for Respirator Usage at Airborne Silica Concentrations Above the Permissible Exposure Limit

<table>
<thead>
<tr>
<th>Concentrations of Airborne Silica in Multiples of the Standard</th>
<th>Respirator Type*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than or Equal to 5 X</td>
<td>Single use (valveless type) dust respirator</td>
</tr>
<tr>
<td>Less than or equal to 10 X</td>
<td>Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator</td>
</tr>
<tr>
<td></td>
<td>Type C, demand type (negative pressure), with quarter or half-mask facepiece</td>
</tr>
<tr>
<td>Less than or equal to 100 X</td>
<td>Full faceplate respirator with replaceable dust filter</td>
</tr>
<tr>
<td></td>
<td>Type C, supplied-air respirator, demand type (negative pressure), with full facepiece</td>
</tr>
<tr>
<td>Less than or equal to 200 X</td>
<td>Powered air-purifying (positive pressure) respirator, with replaceable applicable filter.**</td>
</tr>
<tr>
<td>Greater than 200 X</td>
<td>Type C, supplied-air respirator, continuous flow type (positive pressure), with full facepiece, hood, or helmet</td>
</tr>
</tbody>
</table>

* Where a variance has been obtained for abrasive blasting with silica sand use only Type C continuous flow, supplied air respirator with hood or helmet.

** An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3 μm dioctyl phthalate (DOP).

(v) Employees shall be given instructions on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

(vi) When employees are exposed to other toxic substances in addition to silica, appropriate combinations of respiratory protection shall be provided.
OSHA Instruction CPL 2-2.7 (cont.)

c. Only those respiratory protection devices shall be used which have a "Tested and Certified" number issued by the National Institute of Occupational Safety and Health to the manufacturer of the device.

d. There should be an established in-plant procedure and means and facilities provided to issue respiratory protective equipment, to return used contaminated equipment, to decontaminate and disinfect the equipment, and to repair or exchange damaged equipment. Record keeping of these activities is mandatory.

5. PROTECTIVE CLOTHING:

Where exposure to airborne silica or other substances is above the permissible exposure limit, work clothing should be vacuumed before removal unless it is wet. Clothes should not be cleaned by blowing or shaking.

6. HOUSEKEEPING:

a. All exposed surfaces should be maintained free of accumulation of silica dust, which, if dispersed, would result in airborne concentrations in excess of the permissible exposure limit.

b. Dry sweeping and the use of compressed air for the cleaning of floors and other surfaces should be prohibited. If vacuuming is used the exhaust air should be properly filtered to prevent generation of airborne respirable silica concentrations. Gentle wash down of surfaces is preferable if practical.

c. Emphasis should be placed upon preventive maintenance and repair of equipment proper storage of dust producing materials, and collection of dusts containing silica. Sanitation shall meet the requirements of 29 CFR 1910.141.

7. PERSONAL HYGIENE FACILITIES AND PRACTICES:

a. All food, beverages, tobacco products, non-food chewing products and unapplied cosmetics should be discouraged in work areas.

b. Employers shall provide an adequate number of lavatories, maintained and provided with soap and towels.

c. Where employees wear protective clothing or equipment, or both, in-plant change rooms should be provided in accordance with 1910.141(e).

8. ENGINEERING CONTROLS:

a. Dust Suppression. Moisture, mists, logs, etc., should be added where such addition can substantially reduce the exposure to airborne respirable silica dust.

b. Ventilation. Where a local exhaust ventilation and collection system is used in a building, it should be designed and maintained to prevent the accumulation or recirculation of airborne silica dust into the workplace. The system should be inspected periodically. Adequate measures should be taken to ensure that any discharge will not produce health hazards to the outside environment.

c. Additional Control Measures. When mobile equipment is operated in areas of potential silica exposure, engineering controls should be provided to protect the operator from such exposure.
9. ITINERANT WORK:

a. When employees are exposed to airborne silica at temporary work sites away from the plant, emphasis should be placed on respiratory protection, protective clothing, portable engineering controls, and provisions for personal hygiene and sanitation. Training of employees should be provided to protect them as well as others from airborne silica dust exposure to the extent practical.

10. ABRASIVE BLASTING:

a. Introduction

(i) Consult standards listed in 29 CFR 1910.94(a).

(ii) The nature of dust generated in any abrasive blasting process is the combination of the fragmentation of blasting media and the material dislodged from the surface treated. Where fragmentable abrasives such as sand, shells, alumina, glass bead or metal shot is used, or where a fragmentable surface such as sand casting, a painted or scaly surface, or masonry is blasted, the airborne dust generated will vary in particle size and chemical composition. Noise associated with abrasive blasting operations is also a significant hazard. Heat stress may also be a potential hazard.

(iii) Engineering controls for noise and dust should be considered even if they cannot reduce the exposures to permissible exposure limits but will significantly reduce noise and dust exposure to the employees.

(iv) Maximum respiratory protection should be provided when silica sand is used as the abrasive agent, or sand castings are cleaned by blasting.

(v) All production and control systems used in a stationary abrasive blasting process should be designed or maintained to prevent escape of airborne dust or aerosols in the work environment and to assure control of the abrasive agents.

b. General

(i) Selection and maintenance of protective equipment.

(a) Refer to the table on page 5 to select appropriate respiratory protective equipment.

(b) Air-supplied helmets, ricochet hoods, dust respirators, ear muffs and safety glasses should be an individual issue item, identified with and used by one employee only. Such equipment should be reissued to another employee only after complete cleaning, repair and decontamination.

(c) Means should be provided to vacuum, clean and store air supplied respiratory equipment after each shift of use. Storage should be in a clean enclosure such as locker, footlocker, or plastic container. The employees should be trained to maintain the issued equipment in clean condition for his own protection.

(d) Replacement of prescription or plane safety glasses should be made if multiple pitting or etching is visible in the center of the lenses.

(e) Replacement of faceplates in air-supplied helmets, ricochet hoods, or full face masks should take place when a side-on light source produces obscuring visible reflections and glare from the etched spots and pit holes in the faceplate. Mylar coating, or similar transparent plastic material, is recommended to protect the glass or plastic faceplate.
OSHA Instruction CPL 2-2.7 (cont.)

(f) Length of air hose may not be altered from the manufacturer’s specifications.

(g) The condition of protective equipment should be checked daily by the employee. Rips, tears, and openings which expose skin to abrasive agents, should be mended. Functional tests for leaks, proper respiration, and good connections should be performed on the complete air supply system.

(ii) Air supply - portable.

(a) The breathable air supplied to the helmet or ricochet hood should be drawn from an oil and carbon monoxide free air compressor. In itinerant work, it should be located upwind from the main air compressor to prevent entry of combustion gases into breathable air.

(b) Breathable air supply system should be equipped, if possible, with audible alarm at the helmet or hood to warn the user of low air pressure.

(iii) Hearing protection. Suitable hearing protection, providing at least 20 dBA reduction in noise level that is experienced, should be worn inside the helmet or ricochet hood unless hearing protection is an integral part of such helmet or hood.

(iv) Heat stress. Cooling of breathable air, supplied to the blasting helmets or ricochet hoods, should be considered depending on season and exposure of the employee to heat sources.

c. Work Practices

(i) Indoors blasting cabinets and glove boxes.

(a) Negative pressure should be maintained inside during blasting.

(b) The enclosure should be as complete as practical.

(c) When the inside of the blasting cabinet is cleaned, respiratory protection should be utilized.

(d) If blasting creates excessive noise, a change of nozzle configuration or application of noise control materials to the enclosure should be considered.

(e) Cabinets should be maintained in good repair including the presence of gaskets.

(ii) In-plant blasting rooms.

(a) Negative pressure should be maintained inside capacity of one air change per minute.

(b) Minimum recommended protective equipment of an abrasive blaster working inside a blasting room, in the open, in enclosed space, or outdoors is: safety boots or toe guards; durable coveralls, closeable at exists, ankles and other openings to prevent entry of abrasive dust and rubbing of such; respiratory, eye, and hearing protection; and gauntlet gloves.

(c) If abrasive blasting is automated, the room should not be entered before at least six air changes have occurred, as respirable-size dust particles stay airborne for a considerable length of time.

(d) In the room, a cleanup method other than broom sweeping or compressed air blowing should be used to collect the abrasive agent after blasting (e.g. vacuum cleaning). If the blasting agent is removed manually, respiratory protection should be used.
OSHA Instruction CPL 2-2.7 (cont.)

(iii) In-plant work area.

(a) If occasional but regular abrasive blasting must be performed inside a building without enclosures, respiratory protection should be provided for all employees in the area. Portable engineering control devices should be used at the location to collect all of the used abrasive agent as it is applied.

(b) When airborne abrasive blasting dust becomes sufficiently heavy in an area to cause a temporary safety hazard by reduced visibility, or a marked discomfort to the unprotected employees not engaged in abrasive blasting, such operations in the affected area should be discontinued until the airborne dust is removed by exhaust ventilation and the settled dust has been removed from the horizontal surfaces in the area. If such operations have to continue, appropriate respiratory protection should be provided to those employees remaining in the area, provided visibility is adequate.

(c) If wet blasting is employed, airborne dust hazard may exist after evaporation of water.

(iv) Confined space. A confined space is a compartment or tank or similar enclosed space in which abrasive blasting, or a preexisting atmosphere, may cause the employee to be overcome by conditions hazardous to life and where egress may be difficult if normal body functions are impaired.

(a) Before starting work, open all access hatches, trap doors, etc., to aid natural ventilation. Mechanical ventilation should be used, picking up air at the furthest point away from the opening if natural ventilation will not cause a complete air change. Consider the other potentially hazardous materials present such as solvents, crusts of chemicals, or old paint, with regard to explosion or fire potential when blasted.

(b) A "buddy system" should be used - for each employee inside a confined space, another employee should be available to assist in a potential emergency.

(c) For respiratory protection, a self-contained breathing apparatus or air-supplied hood should be utilized.

(d) Adequate lighting that meets the requirements of the National Electrical Code, article 502, should be provided.

(e) If the space is mechanically ventilated, means should be provided to collect dust before release to the open atmosphere.

(v) Outdoors.

(a) Blaster should be protected in a manner equivalent to that mentioned in 29 CFR 1910.94(a)(5).

(b) The pot man should wear the same protective devices available to the blaster, depending on the distance and wind conditions relative to the blasting location.

(c) Prudent care should be taken to prevent the dust cloud from spreading to other work areas.

(d) Hearing protection and respiratory protection should be available to all other employees in the area if their presence is required.
OSHA Instruction CPL 2-2.7 CH-1

JUN 3, 1985

Subject: Removal of Obsolete Sections

A. Purpose. This notice transmits page changes which remove sections that contain policies and procedures superseded by guidelines set forth in the Field Operations Manual (FOM), OSHA Instruction CPL 2.45A.

B. Scope. This notice applies OSHA-wide.

C. Action. Replace existing pages with the attached CH-1 pages as listed below:

<table>
<thead>
<tr>
<th>Existing Pages</th>
<th>Replacement Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 through 14</td>
<td>7 through 14</td>
</tr>
</tbody>
</table>

D. Significant Changes. The instruction will be totally revised and reprinted at a later date. In the interim, the following sections are removed:


E. Background. A decision was made at the time the FOM was revised to incorporate all policies and procedures of a nontechnical nature into that manual. When the FOM was published, numerous changes were made to existing health policy. These changes made the procedural sections of the instruction obsolete. To avoid confusion for directives users, it has become necessary to remove inapplicable sections from the instruction. The remainder of the instruction is still in effect until the directive has been totally revised and reprinted at a later date.
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SUBJECT: 29 CFR 1910.1000, Table Z-2, Citation Policy for Chromates and Chronic Acids

A. Purpose. This instruction provides guidance for citing violations resulting from employee exposure to chromates, dichromates and chromic acid mist.

B. Scope. This instruction applies OSHA-wide.

C. Cancellation. OSHA Instruction CPL 2-2.26, December 10, 1979, is canceled.

D. Action. OSHA Regional Administrators and Area Directors shall assure that violations resulting from employee exposure to chromates be cited as follows:

1. Cite violations resulting from employee exposure to lead chromate and dichromate under the lead standard, 29 CFR 1910.1025.

2. Cite violations resulting from employee exposure to zinc chromate and dichromate as well as other chromates and dichromates under 29 CFR 1910.1000, Table Z-2 (PEL 0.1 mg/m³).

E. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State’s plan to implement the change or of the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

F. Background.

1. OSHA has been citing all violations resulting from employee exposure to chromic acid mist, or dust from chromates and dichromates under 29 CFR 1910.1000, Table Z-2.

2. Certain chromate compounds are suspected to be carcinogenic, and since no safe levels of exposure to carcinogenic substance have been demonstrated, it has been OSHA’s policy to attempt to minimize worker exposure to them to the greatest extent feasible.

3. The comprehensive standard for occupational exposure to lead is also applicable to lead chromate, and would provide greater protection to workers exposed to lead chromate than would be provided under the chromates standard. By instructing compliance officers to cite violations under the new lead standard, 29 CFR 1910.1025 (PEL 50 ug/m³), the permissible exposure to lead chromate is, in effect, lowered to less than 25 percent of what the chromates standard (29 CFR 1910.1000, PEL 0.1 mg/m³) would allow. Thus, it becomes unnecessary and administratively burdensome to cite for violations of the chromates standard as well. The lead standard contains many additional protective provisions not found in the provisions applicable to chromates, such as exposure monitoring, medical surveillance, medical removal protection, and worker training and education.

Vol. 2-255
OSHA Instruction PUB 8-1.4A

September 26, 1988

Directorate of Technical Support

Subject: Protective Measures for Controlling Exposure to Cadmium

A. Purpose. This instruction revises OSHA Instruction PUB 8-1.4, "Protective Measures for Controlling Exposure to Cadmium".

B. Scope. This instruction applies OSHA-wide.

C. Cancellation. OSHA Instruction PUB 8-1.4 is cancelled.

D. Action. Regional Administrators and Area Directors shall ensure that copies of Appendix A are mailed to the appropriate employers in their representative areas and that copies are available for distribution to the public upon request.

E. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee

2. Inform the State designee that they must adopt appendix A, Protective Measures for Controlling Exposure to Cadmium, or develop alternative procedures which are at least as effective as those in Appendix A. Appendix B, Draft Transmittal Letter, may be adapted for the State's use in transmitting the guidelines to employers.

3. Ensure that State designees acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include: (1) State's intention to adopt and distribute copies of the guidelines in appendix A to appropriate employers or, (2) to develop alternative "at least as effective" guidelines. Any alternative State guidelines must be submitted as a state plan supplement within 6 months. Any alternative State guidelines must be submitted with the differences from Federal guidelines identified and a comparison and justification made for those differences, to demonstrate that the State plan change is "at least as effective as the Federal."

4. Provide to the State designee, upon receipt from the National Office, the list of establishments' names and addresses in the State for the purpose of mailing the guidelines to facilities using cadmium along with sufficient copies of Appendix A.

5. After Regional review of the State plan supplement and resolution of any comments thereon, forward the State submission to the National Office in accordance with established procedures. The Regional Administrator shall provide a judgment on the relative effectiveness of each substantive difference in the state guidelines and an overall assessment thereon, with a recommendation for approval or disapproval by the Assistant Secretary. If the State adopts an identical Appendix A or develops alternative guideline, determine that the guidelines have been communicated to State personnel and distributed to affected employers.

F. Background. As described in the attached Appendix on page A-4, OSHA was asked by a public interest group and major international union to develop an Emergency Temporary Standard (ETS) based upon existing and newly available health effect studies. While OSHA has denied the ETS request, the Agency has placed cadmium on an expedited rulemaking track.

This document is to alert employees of the inadequacy of OSHA's current standard and to alert employers of the need to reduce exposure to levels significantly below the permissible exposure limit. Contained within this instruction is a description of cadmium's health effects and methods for controlling exposure in the workplace.
OSHA Instruction PUB 8-1.4A (cont.)

G. Mailing. The National Office will furnish lists of establishments' names and addresses for mailing this document to facilities using cadmium. Additional copies of Appendix A will be sent to the Regional Offices in approximately two weeks. Appendix B is a draft letter that is to be used in transmitting this document to employers. Regional Administrators shall immediately divide up their lists so that they can send the names of employers located in State-Plan States to the State Designees along with sufficient copies of Appendix A.

Appendix A

PROTECTIVE MEASURES FOR CONTROLLING EXPOSURE TO CADMIUM

U.S. Department of Labor
Occupational Safety and Health Administration
Washington, D.C.

August 1988

I. Background

On June 18, 1986, the Public Citizen Health Research Group (HRG) and the International Chemical Workers Union (ICWU) petitioned the Occupational Safety and Health Administration (OSHA) to take immediate action on worker exposure to cadmium. Their request was based upon the recommendation of the National Institute for Occupational Safety and Health (NIOSH) to lower occupational exposures significantly below OSHA's current standard and the quantitative risk assessment prepared by the Environmental Protection Agency (EPA). The HRG's and ICWU's petition stated the cadmium causes cancer, renal and lung damage at exposures below OSHA's permissible exposure level (PEL). HRG and ICWU requested the following actions:

- that the Assistant Secretary immediately adopt an Emergency Temporary Standard (ETS) providing for a maximum allowable cadmium exposure (tumor and dust) of 1 microgram per cubic meter of air as an 8-hour time weighted average (TWA) and a 5 microgram per cubic meter of air peak concentration;
- that the Assistant Secretary immediately schedule a hearing for the ETS;
- that HRG and ICWU have an opportunity to appear at the hearing.

After a thorough evaluation, OSHA denied the petition for an Emergency Temporary Standard. OSHA has, however, placed cadmium on an expedited rulemaking track. During 1987-88 the American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV) for cadmium dust and salts (as Cd) of 50 μg/m³ for an 8-hour TWA; for cadmium oxide (Cd O) fume, 50 μg/m³ (as Cd) as a ceiling; and for cadmium oxide production, an 8-Hour TWA of 50 μg/m³ (as Cd). This document is to alert employers and employees of the inadequacy of OSHA's current standard and of the need to reduce exposure to the ACGIH limit. OSHA regards the ACGIH limit as an interim protective measure. The document describes control measures that could be instituted in the workplace.

II. Introduction

Cadmium is a soft, blue-white, malleable metal or grayish-white powder (see Table 1) (1). Cadmium is a biologically non-essential metal which is obtained as a by-product from refining zinc and other metals. World production in 1985 was 18,660 metric tons.
OSHA Instruction PUB 8-1.4A (cont.)

The industrial setting is the environment where many serious cadmium exposures are now occurring. Cadmium has many industrial uses. It is electroplated onto iron to protect it from rusting. Cadmium sulfide and cadmium sulfoselenide are used in the paint and plastics industries as pigments and stabilizers. Cadmium is alloyed to copper to increase mechanical resistance at high temperatures. Cadmium is also used in welding electrodes and solders. Workers in lead, zinc, and cadmium smelters, those in cadmium plating operations, and electrical welders all have potentially high exposures to cadmium. Cadmium metal is produced by three basic processes. One process involves sintering coal or coke and sodium chloride with dust from roasting zinc ores. The volatilized metal is collected in an electrostatic precipitator or baghouses, leached, fractionally precipitated and distilled. The second process is by direct distillation from cadmium-bearing zinc. The third is by recovery from and electrolytic zinc process (14). In the United States, approximately 4,000 metric tons of cadmium are used yearly. NIOSH estimates that approximately 1,500,000 worker may be potentially exposed to cadmium (13).

III. Potential Sources of Exposure

Employee exposures can occur whenever cadmium is used. In general, employee exposure are likely to be the highest during:

- the smelting and refining of zinc, lead and copper ores;
- maintenance or repair work on process equipment or transfer systems containing cadmium compounds;
- the heating and melting (including welding and brazing) of various metals containing cadmium without exhaust ventilation systems or when these controls are inadequate, ineffective or improperly applied.

Environmental pollution by cadmium has been occurring since metal refining became common. Cadmium is known to exist in various foodstuffs, water supplies, soil, air, and tobacco products worldwide. The normal adult dietary intake ranges from 5 to 50 ug per day. Higher values have been found in some population groups in Japan (11).

Cigarette smoking is potentially significant source of cadmium exposure in the general population. One cigarette may contain from 0.9 to 2.3 ug of cadmium. About 10 percent of the cadmium is inhaled, approximately half of which is deposited in the respiratory tract. Therefore, smoking 20 cigarettes a day could increase absorption by 0.5 to 1.5 ug/day assuming a 60 percent absorption in the respiratory tract (1).

Non-occupational environmental exposures coupled with cigarette smoking account for a background accumulation of the metal in humans from essentially no measurable body burden in newborns to 15-50 mg/kg wet weight kidney concentrations in 50-year old Americans and Europeans. Exposures from the occupational setting added to existing non-workplace exposures increase the risk of exposed workers developing adverse health effects.

IV. Health Effects

A. Routes of Exposure

Environmental cadmium enters the human body by ingestion or inhalation; skin absorption is not significant. Ingestion is the most important non-industrial exposure to cadmium in the general population (4). Estimates of the fraction of ingested cadmium which is absorbed range from 4 percent to 7 percent. However, iron or calcium deficiency may increase the fraction up to four-fold. For the general population, the total amount of cadmium absorbed through the gastrointestinal tract ranges usually from 0.05 to 1.5 ug/day (1).
The amount of cadmium absorbed through the lung depends on the amount retained (amount deposited minus amount rapidly eliminated by the clearance mechanisms) and also on the chemical composition of the retained particles, which influences its solubility rate in biological media. Human data are not sufficient to determine precisely the quantity of cadmium which is absorbed from the amount deposited in the respiratory tract. Theoretical calculations based on the amount of cadmium found in tissues of smokers suggest that about 60 percent of the amount deposited in the alveoli as cadmium inhaled as large dust particles.

B. Metabolic Pathways/Pharmacokinetics

After absorption, cadmium is distributed throughout the body via the bloodstream. In all cells cadmium is bound to metallothionein. (1) In the blood, cadmium is found mostly inside red blood cells bound to metallothionein. Metallothionein is a low molecular weight protein which occurs in varying concentrations in most body tissues. Liver production of this protein is induced by cadmium exposure. Protein-bound cadmium can be transported in the serum and filtered at the glomerulus.(15). When such occurs, proximal tubule cells respond by reabsorbing essentially all of the protein-cadmium complex, where it remains as long as the cells continue normal function. Cadmium is highly cumulative. Because the renal excretion of cadmium is low under conditions of normal tubule function, and very little fecal excretion of cadmium is known to occur, only 0.005% - 0.01% of total body burden of cadmium is excreted daily. This minute excretion rate translates into a long half-life for this element, which is felt to be in excess of 10-30 years (1). Because of this long half-life, individuals with low level exposures will suffer an increasing body burden essentially throughout the duration of exposure. Most of the cadmium absorbed by humans will end up in either the liver or the kidneys.(15)

C. Toxicology Data

A number of adverse health effects are ascribed to cadmium exposure. They can be divided into categories of either acute or chronic disease, depending on the magnitude of exposure, as well as by route of exposure.

1. Acute Exposure-Ingestion

Ingestion of food or liquid containing excess cadmium (15 mg/liter in water is sufficient) result in nausea, vomiting, abdominal cramps and headache within minutes. Acute oral intoxication usually results from ingestion of acidic food beverages which have been contaminated with cadmium usually during storage in cadmium-plated containers. However, cadmium could also be ingested by worker exposed to cadmium dust who eat, smoke, or bite their fingernails at the workplace. A single oral administration exceeding 300 mg may be fatal.

2. Acute Exposure-Inhalation

Problems with inhalation of high concentrations of airborne cadmium (3-100 mg/m³) are generally associated with the processes of welding or smelting. Those so exposed generally develop symptoms three to four hours or more afterwards. Symptoms include rhinitis, sore throat, cough, metallic taste, and retrosternal discomfort followed by malaise, rigors, muscular pain, dyspnea, and hemoptysis. Physical signs include cyanosis, fever, and tachypnea. The chest film often reveals only vague infiltrates. However, in the worst cases, the findings may be consistent with life threatening pulmonary edema. Prevention of these acute pulmonary effects was the intention of the current Permissible Exposure Limit of the Occupational Safety and Health Administration.

3. Chronic Exposure

The principal long-term effects of cadmium exposure involve the lungs, the kidneys and the bones. The kidneys are the principal target of low dose exposure. When the exposure is to newly generated cadmium fume, the lungs may be a primary target organ. Cadmium has also been postulated to affect other organ systems adversely such as the liver and the cardiovascular system. In addition, there is mounting evidence that cadmium exposure increases rates of lung and prostatic carcinomas.(15)
4. Effect on the Kidney

Cadmium accumulates in the renal cortex, where it produces morphological and functional changes. The hypothesis which currently prevails postulates that cadmium entering the circulation via inhalation or ingestion is taken up from the blood into the liver, where it is incorporated into metallothionein. The cadmium-metallothionein complex is released into the blood, filters through the kidney glomerulus and is reabsorbed by the renal tubules, where it accumulates (4). Kidney cadmium increases progressively up to a critical level and then kidney dysfunction develops.

This is accomplished by a progressive loss of cadmium from the kidney. (2). Breakdown of the protein moiety of the cadmium metallothionein complex liberates cadmium in the directly toxic ionic form. Classically, the functional lesions involve the proximal tubule, giving rise to a tubular type proteinuria as in the Fanconi Syndrome (excretion of low molecular weight proteins like immunoglobulin light chains, beta-2-microglobulin, retinol binding protein, lysozyme). This proteinuria results from the impairment of the tubular reabsorption of low molecular weight proteins (M.W. 4,000) which are filtered through the glomeruli and are normally almost completely reabsorbed in the proximal tubules. Low molecular weight proteinuria is the classical pattern, but in some workers increased excretion of high molecular weight proteins (probably resulting from glomerular dysfunction) may accompany or even precede the low molecular weight proteinuria (8). In the early phase of the cadmium exposure, significant increased excretion of specific plasma proteins may be found while the total proteinuria may still be within the normal range. Increased Beta-2-microglobulin is not necessarily due to tubular impairment but may be the result of the increased presence of Beta-2-microglobulin in plasma (possibly induced by the presence of cadmium) which exceeds the renal threshold (11.5). Cadmium-metallothionein complexes are also incompletely reabsorbed (9). The mechanism by which cadmium impairs the glomerular filtration of proteins and their tubular reabsorption is still unknown.

The latent period before the occurrence of excessive cadmium in the urine and proteinuria depends, of course, on the intensity of exposure (6). Those exposed at the current OSHA PEL may develop proteinuria within a few years following initial exposure. Cadmium proteinuria has been associated with glucosuria, aminoaciduria, impaired acid excretion, decreased concentrating capacity of the kidney, increased excretion of calcium and phosphorus, and increased plasma creatinine. Calciuria may favor the development of renal stones. Tubular proteinuria is thought to be irreversible once established, even if further exposure is avoided (5). The risk for progression to renal failure is unknown, although some cases have been described.

5. Effect on the Lung

Various types of lung disturbances (emphysema, obstructive lung disease, pulmonary fibrosis) have been found in workers chronically exposed to cadmium dust and fume. Dyspnea and reduced lung function performance (FEV₁ below average) have been reported as have cases of lung fibrosis. A higher than expected mortality rate from respiratory disease has been found among Swedish battery workers (19) and U.K. Cadmium workers. It must be acknowledged, however, that such studies did not always account for the confounding effects of tobacco use among the workers. It must also be stated that increased urinary excretion of low molecular weight proteins will probably occur before any significant lung dysfunction (15). Despite the growing evidence of the extreme toxicity of cadmium, few investigations of respiratory tract morbidity and mortality among cadmium production workers have been conducted in the United States (24). Numerous health hazard evaluations NIOSH have been conducted; but, the main signs of health effects evaluated in these surveys focused on cadmium levels in biological fluids. However, one study of workers at a cadmium producing plant in Colorado indicated that decreased pulmonary function and mild to moderate interstitial fibrosis was found among workers who were exposed to airborne cadmium at levels of at least 2000 µg/m³ for 6 or more years (25).
OSHA Instruction PUB 8-1.4A (cont.)

6. Effect on the Bones

In workers, bone lesions, characterized by osteomalacia, osteoporosis, and spontaneous fractures, constitute a late manifestation of severe chronic cadmium intoxication. The patients complain of pain in the back and the extremities, difficulties on walking, and pain on bone pressure. Radiographic examination may disclose pseudo fractures in several bones. It is generally thought that the bone changes are secondary to the renal tubular dysfunction possibly associated with a disturbance of vitamin D metabolism and an increased urinary excretion of calcium. A direct effect of cadmium on bone metabolism has also been suggested.

D. Carcinogenesis

OSHA is in the process of developing a standard for controlling occupational exposures to cadmium. This standard will include OSHA's findings regarding the carcinogenicity of cadmium. Other agencies with established procedures for evaluating the carcinogenic potential of substances have already evaluated cadmium's carcinogenicity. NIOSH and EPA have classified cadmium as a potential human carcinogen. These agencies base their findings upon both animal and human exposure (20,21). Weaker data exist linking cadmium exposure with prostate carcinomas. While granting that the "excess risk of cancer in workers exposed to cadmium at specific airborne concentrations has not yet fully characterized," NIOSH accepts the new data as evidence that "cadmium and its compounds are potential carcinogens" (13).

In February 1981, the International Agency of Research on Cancer (IARC) reviewed the data on the carcinogenicity of cadmium and concluded there was sufficient evidence of cancer induction in experimental animals and limited evidence for prostate, respiratory, and genito-urinary cancer in humans. In August 1981, a Workshop/Conference on the Role of Metals in Carcinogenesis sponsored by NIOSH and NCI concluded that exposure to cadmium compounds had contributed to the development of prostate cancer in workers exposed to high concentrations.

In 1984, NIOSH issued a "Current Intelligence Bulletin" recommending that cadmium exposures be reduced to the lowest level possible. In 1987, IARC classified cadmium as a probable human carcinogen, based on limited human and sufficient animal data. The American Conference of Governmental Industrial Hygienists (ACGIH), in the Notice of Intended Changes for 1986-87, proposed to reduce the Threshold Limit Value (TLV) for cadmium and to classify cadmium as a suspected human carcinogen.

V. Exposure Limits and Classifications

A. American National Standards Institute.

Based on the 1970 recommended cadmium standard of the American National Standards Institute (16), the current OSHA standard cadmium (Cd) sets a permissible exposure limit for cadmium fume (as Cd) of 100 micrograms of cadmium per cubic meter of air determined as an 8-hour time weighted average (TWA) concentration and a ceiling concentration of 300 micrograms per cubic meter of air (300 ug/m³). OSHA's permissible exposure limit cadmium dust (as Cd) is 200 ug/m³ of cadmium as an 8-hour time weighted average with a ceiling concentration of 600 ug/m³.

B. National Institute for Occupational Safety and Health.

NIOSH recommended in 1976 that the permissible exposure limit be reduced to 40 ug/m³ of air as a time weighted average for a 10-hour workday, 40 hour week. NIOSH also recommended at that time that cadmium have a maximum ceiling concentration of 200 ug/m³ for any 15 minute period. These recommended levels were established to prevent critical health effects such as chronic renal damage and acute pulmonary toxicity. In 1984, NIOSH stated that cadmium and its compounds be regarded as potential occupational carcinogens and worker exposure be reduced to the fullest feasible extent. This action was based upon the results from a recent epidemiological study and a chronic inhalation exposure study with rats (13).
OSHA Instruction PUB 8-1.4A (cont.)

C. Environmental Protection Agency.

EPA classified cadmium as a Probable Human Carcinogen (Group B1). The EPA Probable Human Carcinogen classification (Group B) is used when there is sufficient evidence of carcinogenicity in animals and evidence of carcinogenicity from epidemiological studies that ranges from "almost sufficient to inadequate." To reflect this range, the category is divided into high (Group B1) and lower (Group B2) degrees of evidence. The B1 category is reserved for those agents which there is a least limited evidence of carcinogenicity to humans from epidemiological studies. In the absence of adequate data in humans, it is reasonable to regard agents for which there is sufficient evidence of carcinogenicity in animal as probable carcinogens in humans. Agents for which there is sufficient evidence from animal studies but insufficient evidence from human studies are classified as B2 (17).

D. American Conference of Governmental Industrial Hygienists.

The 1987-88 ACGIH Threshold Limit Value (TLV) for cadmium dust and salts (as Cd) is 50 ug/m³ for an 8-hour TWA; for cadmium oxide (CdO) fume, 50 ug/m³ (as Cd) as a ceiling; and for cadmium oxide production, an 8-hour TWA of 50 ug/m³ (as Cd). Recently, ACGIH published their "Notice of Intended Changes (for 1987-88)" of Threshold Limit Values (23). With this action, ACGIH proposes to reduce cadmium and its compounds TWA to 10 ug/m³ and classify the material as a suspected human carcinogen. OSHA will use the ACGIH limits as interim protective levels.

E. Occupational Safety and Health Administration.

OSHA conducted a preliminary risk assessment for exposure to cadmium (18). Using this risk assessment to compare estimates of risk for other substances OSHA has regulated (see Table 3) exposure to the substance at its original PEL was judged by OSHA to constitute a significant risk and in each case the PEL was reduced. Occupational exposure to cadmium for 45 years at 100 ug/m³ poses a risk similar to these other substances.

VI. Monitoring and Measurement Procedures

Personal and area monitoring need to be conducted periodically to determine the levels of employee exposure.

A. Eight-Hour Evaluations: Personal samples measured over an entire work shift should be collected at the workers' breathing zones to determine their TWA exposures. Air samples of cadmium can be collected on cassette filters. Sampling and analysis may be performed by collection of cadmium dust or fume on a filter, followed by treatment with nitric acid, solution in hydrochloric acid, and atomic absorption spectrophotometric analysis.

B. Ceiling Evaluation: Measurements to determine employee ceiling exposure are best taken during periods of maximum expected airborne concentrations of cadmium. Each measurement should consist of a fifteen (15) minute sample or series of consecutive samples totaling fifteen (15) minutes in the employee's breathing zone. A minimum of three (3) measurements should be taken on one work shift and the highest of all measurements taken is an estimate of the employee's exposure (22).

C. Source of Exposure: Task sampling should be conducted in order to determine where the employee is receiving the exposure. This can be accomplished by changing the filter media for each major task where cadmium could be expected. The purpose for this task sampling is to assist in determining what processes need engineering and/or work practice controls.
VII. Medical Surveillance

Given the potentially serious consequences of exposure to cadmium and the inability of current medical science to effectively treat these conditions, it is reasonable to consider options for preventing the occurrence of cadmium related disease. A medical surveillance program is essential to assess and monitor workers' health and fitness. Elements of the program include education of employers and workers about work-related hazards, placement of workers in jobs that do not jeopardize their safety and health, earliest possible detection of adverse health effects, and referral of worker for diagnostic confirmation and treatment. The occurrence of disease or other work-related adverse health effects should prompt immediate evaluation of principal preventive measures (e.g., industrial hygiene monitoring, engineering controls, and personal protective equipment).

A medical surveillance program is intended to supplement, not replace, such measures. Intrinsic to a surveillance program is the dissemination of summary data to employers, occupational health professionals, potentially exposed workers, and regulatory and public health agencies.

Effective medical surveillance begins with a pre-placement evaluation and documentation of the worker's baseline health status, including medical, environmental and occupational history (stressing previous exposures); a physical examination; and any physiologic or laboratory tests appropriate for the anticipated occupational risks. Routine laboratory testing is left to the discretion of the physician and should not be considered mandatory. This guideline discusses the organ systems most likely to be affected by exposure to cadmium dust. In addition, it notes any pre-existing conditions that are absolute contraindications to exposure and any conditions considered to be relative contraindications to exposure, which thus warrant the attention of an occupational health specialist before worker assignment.

Medical intervention can be separated into three logical divisions -- primary, secondary, and tertiary. Primary intervention is defined as any intervention that occurs before the onset of disease or an adverse change in function. An example of primary intervention in occupational medicine is biological monitoring, which is essentially dose estimation. If monitoring is to be useful, it must have some known correlation to a biologic effect or response. Secondary intervention is the detection of latent, asymptomatic disease through the use of a screening test of some kind. As opposed to primary intervention, which measures exposure, secondary intervention assesses biological effects. To be effective, screening programs assessing biological effects must be sensitive and specific, and acceptable to the target population. The biological effect or disease must be serious, treatable, and of sufficient prevalence to allow for a favorable positive predictive value; the target population must be able and willing to undergo the screening test, as well as any follow-up examinations and therapy. Tertiary intervention is defined as the treatment of established, symptomatic disease, which takes place primarily in traditional health care facilities.

A. Pre-placement Medical Evaluation:

1. Absolute contraindications: Congenital or acquired Fanconi's Syndrome.

2. Relative contraindications: The presence of chronic obstructive pulmonary disease; smokers are at high risk both because cadmium is a constituent of cigarette smoke and because of smoking-related lung cancer and chronic obstructive pulmonary disease.

B. Primary Intervention.

Various biological monitoring tests have been proposed as suitable estimates of cadmium exposure in humans. The most important of these are direct analysis of feces, hair, urine, and blood for the presence of cadmium and estimation of tissue cadmium levels by in-vivo neutron activation. Fecal cadmium has been used as an estimate of daily cadmium intake, but it has the limitation of correlating only with dietary exposure and thus is not useful in an occupational setting. Hair cadmium levels have been suggested as an indicator of body burden; however, significant amounts of airborne cadmium will adsorb to human hair, which limits the usefulness of this procedure. Although in-vivo neutron activation provides an accurate estimate of cadmium levels in critical organs (e.g., liver and kidneys), it has limited general applicability because of unavailability of equipment and the potential radiation hazards. The concentration of cadmium in the blood is not a good index of internal dose to the kidney. It equilibrates rather rapidly, where as the kidney continues to accumulate cadmium for many years.
OSHA Instruction PUB 8-1.4A (cont.)

The American Conference of Governmental Industrial Hygienists recommends that levels of cadmium not exceed 10 ug/g creatinine in urine and 10 ug/l in blood. Further information concerning these two indices, including methodology and interpretation of results, should be sought from this source (ACGIH: Documentation of the Threshold Limit Values and Biological Exposure Indices (5th Ed.), p. BEI-55, 1986).

C. Secondary Intervention.

Because of cadmium's potential to cause at least three different kinds of chronic disease (chronic obstructive pulmonary disease, malignancies of prostate and lung, and renal disease), several different schemes for early detection of these diseases have been proposed. Although surveillance of the pulmonary organ system for emphysematous change might be a useful addition to the routine medical care of the cadmium-exposed worker, the kidneys are the critical organs to monitor. Proximal tubular damage that is irreversible will occur in any worker exposed to enough cadmium. The early phase of this adverse effect is asymptomatic and must be detected by laboratory methods.

Among the methods that have been suggested for detecting tubular cell damage secondary to cadmium exposure are the following urine tests: Beta 2 microglobulin (B2M), N-acetyl-B-D-glucosaminidase (NAG) activity, metallothionein, retinol binding protein (RBP), lysozyme, amino acids, glucose, and cytology. Glucose, NAG, and amino acids in urine are thought to be less sensitive indicators of early tubular damage than B2M, metallothionein, and RBP. The latter three measures are non-specific tests; if results are elevated, reversible or irreversible tubular damage has occurred. In practice, the most widely used test for the early detection of tubular proteinuria is that of Beta-2-methallothionein. But RBP is equally sensitive and specific and is stable in acidic urine whereas B2M degrades below pH 5.5 (3). Most authors agree that use of a combination of tests for these low molecular weight proteins in urine is preferable to relying on one when screening for cadmium related tubular damage, although the best combination has yet to be identified (8, 7, 10).

VIII. General Methods of Control Methods for controlling occupational exposure to cadmium include engineering controls, work practice controls, and the use of personal protective clothing and equipment.

Appropriate worker education and training programs and medical surveillance programs are also major factors in the control of exposures to cadmium. Also, a compliance plan should be developed and implemented, and access to the area be restricted. Employees must not eat, drink, smoke, chew tobacco or gum or apply cosmetics in the regulated area.

A. Engineering and Work Practice Controls.

Engineering controls and work practices are to be the primary means to reduce cadmium to below the interim exposure limits stated in Section V, paragraph D. Respiratory protection is to be used wherever feasible engineering controls and work practices are not sufficient to reduce employee exposure below the recommended levels.

Operation Controls

Liberation during smelting and Process enclosure: local refining of ores where it is a exhaust ventilation; personal product of zinc, lead, and protective equipment. copper-bearing ores.

Liberation during recovery of Process enclosure: local metal by processing of scrap; exhaust ventilation; personal during melting and pouring of protective equipment. cadmium metal; during casting of alloys for cadmium metal; during casting of alloys for cadmium-copper, cadmium-lead, cadmium-bismuth, cadmium-silver, cadmium-lead-silver, cadmium- lead- silver- nickel, cadmium-lead-bismuth-tin, and cadmium-gold products used for coating telephone cables, trolley wires, welding electrodes, automatic sprinkling systems, steam boilers, fire alarms, high-pressure/temperature bearings, starting switches, aircraft relays, light-duty circuit breakers, low-temperature solder, and jewelry.

Liberation during fabrication of Process enclosure: local metal, alloys, or plated steel. exhaust ventilation; personal protective equipment.
Liberation during casting and use of Process enclosure; local solders; during melting of exhaust ventilation; personal cadmium ingots for paint and protective equipment. Pigment manufacture used for colorizing of plastics and ceramic glazes, electroplating, and in chemical synthesis.

Liberation during manufacture Process enclosure; local of nuclear reactor rods. exhaust ventilation.

Liberation during coating on Process enclosure; local metals by hot dipping or spraying. exhaust ventilation; personal protective equipment.

Liberation during manufacture of Process enclosure; local nickel-cadmium batteries for use exhaust ventilation; personal in radio-portable telephones, protective equipment. convenience appliances, and vented cells used in airplanes, helicopters, and standby power and lighting.

B. Maintenance, General Housekeeping and Hygiene Facilities

1. Maintenance: It is important that enclosures, exhaust hoods, and ductwork be kept in good repair so that design airflow is maintained. Airflow should be measured at each hood at least semiannually; and preferably monthly. Continuous airflow indicators are recommended, such as water or oil manometers properly mounted at the juncture of fume hood and duct throat (marked to indicate acceptable airflow). A log showing design airflow and results of semiannual inspections are to be kept.

The following list includes some common operations in which exposure to cadmium fume may occur and control methods which may be effective in each case (22).

<table>
<thead>
<tr>
<th>Operation Controls</th>
</tr>
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<tbody>
<tr>
<td>Liberation from fabrication of Local exhaust ventilation; cadmium-plated marine, aircraft, personal protective equipment, and motor vehicle equipment for corrosion-resistant coatings.</td>
</tr>
<tr>
<td>Liberation during processing of Process enclosure; local cadmium metal exhaust ventilation; personal protective equipment.</td>
</tr>
<tr>
<td>Liberation in synthesis of Process enclosure; local cadmium compounds exhaust ventilation.</td>
</tr>
<tr>
<td>Liberation in manufacture and Local exhaust ventilation; fabrication of cadmium alloys; personal protective equipment. recovery from flue dusts during smelting of lead and zinc operations.</td>
</tr>
</tbody>
</table>

2. Housekeeping: An important element in good housekeeping is to maintain all surfaces as free as practicable of accumulations of dust and waste containing cadmium. This should be accomplished, where possible, by means of vacuuming and not by compressed air, shoveling or dry sweeping. The vacuum should be a filtration system capable of collecting 99% of the particulate.

3. Hygiene Facilities and Practices
   (a) Change rooms: Clean change rooms equipped with two separate lockers or storage facilities prevent contamination of the employee's street clothes from previously worn protective work clothing and equipment.
   (b) Showers: Shower facilities provide a means for exposed employees to wash off any cadmium contamination prior to going home.
   (c) Lunchroom: Lunchroom facilities should be under positive pressure with filtered air supply. Vacuuming helps employees remove loose contamination from the work clothing prior to entering the lunch room. Vacuuming removes dust without causing cadmium to become airborne. Heavily cadmium-contaminated clothing should be removed. The employer shall ensure that employees wash their hands and faces prior to eating, drinking, smoking or applying cosmetics.
OSHA Instruction PUB 8-1.4A (cont.)

C. Protective Equipment and Procedures

If employees’ clothing has had any possibility of being contaminated with cadmium, it is important that employees change into uncontaminated clothing before leaving the work premises.

Place contaminated clothing in closed containers for storage until it can be discarded or until provision is made for the removal of cadmium from the clothing. If the clothing is to be laundered or otherwise cleaned to remove the cadmium, inform the person performing the cleaning of the hazardous properties of cadmium.

Provide and require the use of dust-resistant safety goggles where there is any possibility of cadmium chloride dust or other irritating cadmium compounds coming in contact with the eyes.

OSHA Instruction PUB 8-1.4A (cont.)

Where there is any possibility that employees’ eyes may be exposed to cadmium chloride dust or other irritating cadmium compounds, an eye-wash fountain must be provided within the immediate work area for emergency use.

D. Respiratory Protection

Table 2 lists the appropriate type of respiratory protection. As a minimum, 29 CFR 1910.134(b) must be followed when establishing the “Requirements for a Minimal Acceptable Program.” In addition, qualitative fit testing assures proper fitting of the respiratory protection.

IX. Education and Training:

An effective employee education and training program can also serve to reduce potential for exposure to cadmium and is required under OSHA’s hazard communication standard (29 CFR 1910.1200). Employers are also required to inform employees of the toxic effects of cadmium, safe use and handling procedures, and proper labeling. The program should contain at least the following elements:

- The hazards of cadmium exposure and methods which can be used to prevent inhalation or ingestion.
- Use, care and limitations of respirators and other personal protective equipment (see 29 CFR 1910.134).
- Safe handling of cadmium and other relevant work practices.
- Effective housekeeping procedures.
- Relevant personal hygiene aspects for controlling individual exposures.
TABLE 1

Physical and Chemical Properties

**Cadmium metal**

Formula: Cd

Identifiers: CAS 7440-43-9; RETCS EU980000O; EPA D006; DOT 2570 53

Appearance: Soft, blue-white, malleable metal

Molecular weight: 112.4

Boiling point (760 mmHg): 765 degrees C

Melting point: .306 degrees C

Specific gravity: 8.65 g/cc

Insoluble in water; soluble in acids

Combustible

**Cadmium oxide**

Formula: Cd O

Identifiers: CAS 1306-19-0, RTECS EV1925000

Appearance: Red or brown crystals

Molecular Weight: 128.4

Boiling point (760 mmHg): 900 degrees C decomposes

Melting point: 900 degrees C

Specific gravity: 7.0 g/cc

Insoluble in water; soluble in acids and alkalines
OSHA Instruction PUB 8-1.4A (cont.)

**Cadmium sulfide**

Formula: Cd S

Identifiers: CAS 1306-23-6; RTECS EV 3150000

Synonyms: Aurora Yellow, Cadmium Golden 366, Cadmium Lemon Yellow 527, Cadmium Orange, Cadmium Primrose 819, Cadmium Sulphide, Cadmium Yellow, Cadmium Yellow 000, Cadmium Yellow Conc. Deep, Cadmium Yellow Conc. Golden, Cadmium Yellow Conc. Lemon, Cadmium Yellow Conc. Primrose, Cadmium Yellow Oz Dark, Cadmium Yellow Primrose 47-4100, Cadmium Yellow 10G Conc., Cadmium Yellow 892, Cadmopur Golden Yellow N, Cadmopur Yellow, Capsebon, C.I. 77199, C.I. Pint Orange 20, C.I. pigment Yellow 37, Ferro Lemon Yellow, Ferro Orange Yellow, Ferro Yellow, Greenoelite, NCI-Co2711

Appearance: Yellow-orange crystals

Molecular weight: 144.5

Boiling point (760 mmHg): sublimes in N2 at 980 degrees C

Melting point: 1750 degrees C (100 atm)

Specific gravity: 4.82 g/cc

Slightly soluble in water; soluble in acids

**Cadmium chloride**

Formula: Cd Cl2

Synonyms: Cadmium dichloride, dichlorocadmium

Identifiers: CAS 10108-64-2; RTECS EV0175000

Appearance: Small white crystals

Molecular weight: 183.3

Boiling point (760 mmHg): 960 degrees C

Melting point: 568 degrees C

Specific gravity: 4.05 g/cc

Soluble in water (140g/100cc); soluble in acetone
TABLE 2
Respiratory Protection for Cadmium

<table>
<thead>
<tr>
<th>Maximum Airborne Concentration</th>
<th>Respirator Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 ug/m³</td>
<td>Half-mask air-purifying respirator, with high efficiency filter.</td>
</tr>
<tr>
<td>2500 ug/m³*</td>
<td>Full facepiece air-purifying respirator, with high efficiency filter.</td>
</tr>
<tr>
<td>1200 ug/m³</td>
<td>Powered air-purifying respirator, with high efficiency filter -- loose fitting.</td>
</tr>
<tr>
<td>2500 ug/m³</td>
<td>Powered air-purifying respirator, with high efficiency filter -- tight fitting half mask.</td>
</tr>
<tr>
<td></td>
<td>Continuous-flow supplied air respirator, tight fitting half mask.</td>
</tr>
<tr>
<td></td>
<td>Pressure demand supplied air respirator.</td>
</tr>
</tbody>
</table>

*2500 ug/m³ is permitted only when quantitative fit testing is performed; when qualitative fit testing is performed only 500 ug/m³ is permitted.

TABLE 3
Estimates of Excess Cancers Per 10,000 Workers with 45 Years Occupational Exposure to Various Substances at Their Original PELs (18)

<table>
<thead>
<tr>
<th>Substance</th>
<th>Exposure</th>
<th>Excess Cancers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium</td>
<td>100 ug/m³</td>
<td>2313.3</td>
</tr>
<tr>
<td>Arsenic</td>
<td>500 ug/m³</td>
<td>33750 - 7130</td>
</tr>
<tr>
<td>Ethylene Oxide</td>
<td>50 ppm</td>
<td>634 - 1093</td>
</tr>
<tr>
<td>Asbestos</td>
<td>2 f/ml</td>
<td>641.2</td>
</tr>
</tbody>
</table>

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References


18. OSHA Docket No. H-057 A Exhibit 1C -- Response to Dr. Sidney Wolfe's petition for ETS petition.


21. Takenaka, S; Oldiges H; Konig H; Hochrainer D; and Oberdorster G. Carcinogenicity of cadmium chloride aerosols in W rats. JNCI 70(2) 367-71 (February 1983).


OSHA Instruction PUB 8-1.4A (cont.)

Appendix B

Draft Transmittal Letter

Dear Employer:

Recent health effects studies indicate that the current Occupational Safety and Health Administration (OSHA) standard for exposure to cadmium and its compounds is not sufficiently protective. OSHA is concerned that some employers may believe that they are adequately protecting their workers by complying with OSHA's current limits of exposure. The Agency has therefore developed the enclosed document describing the hazards of exposure to cadmium and its compounds and is contacting establishments where employees may be exposed.

The Occupational Safety and Health Act of 1970 (OSH Act) requires each employer to "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees." The enclosed document notifies employers and employees that the current OSHA standard for cadmium exposure is not sufficiently protective, and that employers have a legal obligation under the OSH Act to reduce exposures to a more protective level.

Accordingly, OSHA expects affected employers:

1. to know what airborne concentrations of cadmium their employees are exposed to in the workplace;

2. to implement all protective provisions outlined in the document if airborne cadmium levels are above 50 micrograms per cubic meter of air as an eight-hour, time-weighted average.

The provisions of this document are intended to be temporary, and OSHA has initiated formal rulemaking to revise the standard for cadmium exposure in the workplace. Nevertheless, employers are expected to adhere to these protective measures until such time as a final revised standard is promulgated.

OSHA in the enclosed document has restated the Agency's long-held policy that implementation of engineering and work practice controls are the most effective ways to control employee exposures. However, as an interim measure and in the context of the forthcoming cadmium rulemaking, OSHA will allow the currently acceptable 50 µg/m³ limit to be achieved either by engineering and work practice controls or by the use of respirators and work practices. The use of respirators and work practices are permitted to achieve the acceptable limit at this time in order to avoid unnecessary costs to employers who may have to comply with different engineering provisions related to a revised final rule on cadmium.

Local OSHA offices have assumed wider responsibilities for serving as a safety and health resource center for the communities they serve. Therefore, as your local OSHA contact, I am providing this document to you so that you may take appropriate action and share the information with your employees. In addition, I offer assistance on any other safety and health topic of concern to you.

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ABSTRACT Carbon black is no longer listed as a suspect carcinogen. The present permissible exposure limit (PEL) remains. A serious violation may be based on poly aromatic hydrocarbon (PAH) content analysis.

(NOTE: In the 1990 Title 29 CFR 1910.1000Z table, the standard remains as noted in the interpretation letter -- 3.5 mg/m³ for the TWA.)

INTERPRETATION 29 CFR 1910.1000(a)

February 16, 1983

This is in response to your request for the conclusions of our re-evaluation of OSHA's enforcement classification of the health effects category for carbon black, in particular, whether occupational exposure to commercially-produced carbon black poses a carcinogenic risk.

Data on this subject in a November 1981 report indicates that commercially manufactured carbon blacks are noncrystalline, high purity carbons of colloidal dimensions, produced by partial combustion or thermal decomposition of hydrocarbons under carefully controlled conditions. Manufactured carbon blacks are chemically and physically distinguishable from other collections of carbonaceous particles such as soots, chars and cokes. The latter contain substantial amounts of loosely absorbed tarry matter including a high percentage of potentially carcinogenic PAH's. Certain soots and coke oven emissions have been associated with the induction of human cancer, particularly cancer of the lung and skin. Manufactured carbon blacks may also contain PAH's, but often in only trace or negligible quantities.

It is our opinion that the available evidence warrants changing the classification of carbon black as found under the "Health Effects" section of the OSHA Substance Toxicity Table in Chapter II of the Industrial Hygiene Field Operations Manual. The change will be to remove the current classification of "suspect carcinogen." A footnote will direct the reader to a specific instruction that will provide to the OSHA enforcement personnel procedures to be used for sampling and analyzing the extractable PAH content of amorphous carbon black particles collected in the workplace. The agency will then determine the PAH content of the "benzene soluble fraction of total particulate matter" based on the extraction techniques currently employed by OSHA laboratory personnel. From the results of the chemical analysis, OSHA will determine whether a serious violation should be issued because of the material's carcinogenic properties.

The agency will continue to use the PEL of 3.5mg/m³ for occupational exposure to airborne concentrations or carbon black. As in any compliance case, the burden of proof for establishing a serious hazard lies with the agency.

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ABSTRACT

The chromic acid and chromates standard is an 8-hour TWA, not a ceiling exposure. It applies to strontium chromate. Chromium is measured as \( \text{Cr}_2\text{O}_3 \). If there is cation for chromatic that has a lower PEL, it should be used.

INTERPRETATION

29 CFR 1910.1000(b)(1); 1910.1000(b)(2)

August 30, 1982

Thank you for your letter of July 30, 1982, in which you requested clarification and documentation of the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limit (PEL) for chromates.

The OSHA standard for chromic acid and chromates that is found in 29 CFR 1910.1000, Table Z-2, was adopted from the American National Standards Institute (ANSI) standard, Z-37.7 (1971). The ANSI standard limits the maximum allowable concentration of chromic acid mist and dust of chromates and dichromates of the alkaline earth metals to 1 milligram of chromic acid anhydride (\( \text{Cr}_2\text{O}_3 \)) in 10 cubic meters of air (0.1 mg/m\(^3\) as \( \text{Cr}_2\text{O}_3 \)) for exposures not exceeding a total of eight hours daily.

After recognizing the error of printing the PEL under the column for ceiling values rather than under the column for 8-hour time-weighted averages (TWA), OSHA issued an interpretation of Table Z-2 standards in the Industrial Hygiene Field Operations Manual. This interpretation states, "The last two entries in Table Z-2 'mercury' and 'chromic acid and chromates,' should be considered as 8-hour TWA standards and not ceiling standards."

Regarding the OSHA standard for strontium chromate, since strontium is an alkaline earth metal, the standard for chromic acid and chromates listed in 29 CFR 1910.1000, Table Z-2, is applicable to strontium chromate. As stated above, the standard for chromic acid and chromates is a TWA rather than a ceiling value.

Finally, regarding whether the standard is based on chromium measured as \( \text{Cr} \) or \( \text{Cr}_2\text{O}_3 \), the standard for chromic acid and chromates is based on chromium measured as \( \text{Cr}_2\text{O}_3 \) (chromic acid anhydride or chromium trioxide). It should be noted that in situations where the cation in a chromate compound has a lower PEL than the chromate radical, then the lower PEL would be the applicable limit (e.g., for lead chromate, one should use the PEL for Pb rather than \( \text{Cr}_2\text{O}_3 \)).
ABSTRACT Occupational exposures to pesticides, for which OSHA has no standards, may be cited under the general duty clause. If there is an established PEL, it will be enforced.

INTERPRETATION 29 CFR 1910.1000

May 31, 1983

This is in response to your letter of April 12, 1983, requesting an update on the OSHA compliance policy with regard to pesticides in grain elevators and mills. Please accept our apology for the delay in response. Occupational exposure to many of the toxic substances used as fumigants or pesticides in grain elevator operations is regulated by the OSHA standard for air contaminants, 29 CFR 1910.1000, which lists permissible exposure limits (PEL's). Citations may be issued when employee exposure to a listed substance exceeds the PEL, either the 8-hour, time-weighted average value or the ceiling value (for samples up to 15 minutes).

The industrial hygiene procedures applicable to pesticides are referred to in OSHA Instruction CPL 2.14A, Grain Handling Facilities: Inspection and Citation Policy, a directive issued February 22, 1983. If hazardous exposures are determined for pesticides for which OSHA has no present standards, citations could be issued for violations of Section 5(a)(1) of the Occupational Safety and Health Act (the general duty clause) if all other elements of a general duty violation can be established. The citation procedures for general duty violations are found in the enclosed copy of Chapter IV of OSHA's Field Operations Manual, OSHA Instruction CPL 2.45A; see paragraph A.2., pages IV-3 through IV-15.
OSHA regulates exposure to p-dichlorobenzene and benzene in the workplace. For information on public exposure, contact the Consumer Product Safety Commission (CPSC), the Environmental Protection Agency (EPA), and/or the Food and Drug Administration (FDA).

This is in response to your letter dated November 1985, in which you requested information on para-Dichlorobenzene (p-Dichlorobenzene) and benzene.

The Occupational Safety and Health Administration (OSHA) is the Federal agency which regulates and oversees safety and health conditions in the workplace. OSHA currently regulates occupational exposure to p-Dichlorobenzene at 75 ppm (i.e., 75 parts of p-Dichlorobenzene per million parts of uncontaminated air) as average over an 8-hour work shift (i.e., as an 8-hour time-weighted average or TWA). OSHA currently regulates occupational exposure to benzene at 10 ppm as an 8-hour TWA.

While benzene and p-Dichlorobenzene are chemically related substances, they are separate and distinct chemicals and the health effects associated with exposure to each differ. For your information, I have enclosed copies of the "Occupational Health Guidelines for p-Dichlorobenzene" published by the National Institute for Occupational Safety and Health (NIOSH) in cooperation with OSHA and the Hygienic Guide on Benzene from the Hygienic Guide Series published by the American industrial Hygiene Association (AIHA).

For information on public exposure to these and other chemical substances, I recommend that you contact the Consumer Product Safety Commission (CPSC), the Environmental Protection Agency (EPA) and/or the Food and Drug Administration (FDA). The addresses of these agencies are as follows:

CPSC
1111 18th Street, N.W.
Washington, D.C. 20207
Telephone: 800-638-2172

EPA
Office of Pesticides and Toxic Substances
401 M Street, S.W.
Washington, D.C. 20460
Telephone: (202) 382-2902

FDA
5600 Fishers Lane
Rockville, Maryland 20857
Telephone: (301) 443-3170
ABSTRACT  A fingerprint powder called (Company) Silk Black contains polynuclear aromatic hydrocarbons (PNA's) which are suspect human carcinogens. NIOSH recommends that (Company) Silk Black be substituted by a product that does not contain PNA's.

INTERPRETATION  29 CFR 1910.1000(a)

JUN 5, 1986

This is in response to your inquiry concerning a fingerprint powder called (Company) Silk Black.

(Company) Silk Black has been investigated by the National Institute for Occupational Safety and Health (NIOSH). According to NIOSH's finding, (Company) Silk Black contains polynuclear aromatic hydrocarbons (PNA's). PNA's are a group of organic compounds that are suspect human carcinogens. Because of this suspicion, NIOSH recommends that (Company) Silk Black be substituted by a product that does not contain PNA's.

The Occupational Safety and Health Administration (OSHA) does not have regulations that apply to the specific PNA's included in their product. However, OSHA does have a standard that regulates employee exposure to carbon black. The current OSHA standard for carbon black is 3.5 milligrams per cubic meter of air (mg/m³) averaged over an 8-hour workday. Please be aware that carbon black may contain PNA's. Since OSHA does not have standards that regulate specific PNA's nor an official policy concerning PNA's, I suggest that you are on the side of safety and follow NIOSH's recommendations i.e., substitute (Company) Silk Black with another powder without PNA's.
This interpretation addresses the method for exposure compliance determination for substances regulated under Subpart Z. Workplace conditions are considered to ensure that representative air samples are collected. Employer air sampling data is evaluated. OSHA sampling may be repeated when discrepancies arise.

This is in response to your letter of April 26, inquiring how the Occupational Safety and Health Administration (OSHA) makes exposure compliance determinations for substances regulated under Subpart Z of 1910.

Such determinations consider many factors. Careful attention to workplace conditions (e.g., production levels, control integrity, work practices, etc.) is paid to ensure that representative samples are collected. Employer sampling data, when available, is evaluated first for reliability and then for comparability with OSHA results.

OSHA sampling is repeated when major discrepancies arise between employer and OSHA results that cannot be accounted for. In addition, where feasible, the relative results of direct reading and other analytical results are considered. (For example, outlier results are discounted and sampling is repeated.)

Thus, when OSHA determine that employee exposure to a regulated substance exceeds the permissible limits prescribed by our standards, we then also assess employer compliance with all other applicable provisions of the standard that are dependent on employee exposure levels.

Recently, one of our clients contacted (Company) and inquired as to the procedures used by OSHA during inspections to determine compliance with Subpart Z - Toxic and Hazardous Substances of the General Industry Standards. In particular, the client stated that is was their impression that if a CSHO measured an employee exposure to a regulated material and found a Noncompliance Exposure, OSHA would conclude that such Noncompliance Exposures were the rule rather than the exception, and expect the employer to comply (in the case of exposures to materials such as asbestos, coke oven emissions and arsenic) with all applicable provisions of the relevant standard. As a result, assuming this scenario is accurate, our client has asked us to attempt to ascertain OSHA's rationale for this policy. Therefore, (Company) is respectfully submitting this request to OSHA.
Thank you again for your letter of December 21, 1986, in which you requested information on Polychlorinated Biphenyls (PCB). I hope you received the interim letter from Ms. F of my staff explaining the delay in our response. We have completed our data collection on PCB and are now able to address your specific questions.

1. First of all, not all fluorescent light ballasts contain PCB. The Environmental Protection Agency (EPA) banned the manufacture of PCB in 1978. Thus, all light ballasts manufactured thereafter should not contain PCB. Additionally, EPA requires that light ballasts manufactured after 1978 be labeled by the manufacturer indicating that the ballast does not contain PCB ("NO PCB" notation). Since the use of PCB in light ballasts was not regulated by EPA prior to 1978, any ballast without a label must be assumed to contain PCB. Therefore, you can check the light ballasts in the respective classroom to determine if you have a problem.

If it turns out that the ballasts are not labeled, suggesting that it contains PCB, do not be alarmed. The actual amount of PCB contained in the ballast is very small, approximately 1.5 ounces. Also, the fact that you may have a defective light ballast does not necessarily give rise to PCB release. The incidence of such, is minimal. Additionally, the amount of airborne concentrations in the classrooms will vary according to the type of air circulation and room size.

Mr. K, an industrial hygienist at the National Institute for Occupational Safety and Health (NIOSH) studied PCB contamination from defective fluorescent light ballasts. We have enclosed a copy of his draft report as well as two pertinent health hazard evaluation reports. He concluded that short term exposure to PCB after an electrical burnout does not pose a significant health risk. However, a burnout can result in an increase in airborne and surface concentrations depending upon size of room and ventilation. To prevent continued exposure, the rooms should be ventilated and tables and chairs should be wiped.

2. The Occupational Safety and Health Administration (OSHA) has an air contaminant standard for exposure to PCB of 1 milligram of PCB per cubic meter of air averaged over an eight hour workshift. There are no other requirements with regard to PCB. OSHA does not have a standard for PCB contamination on hard surfaces.

3. The information presented in your letter is not sufficient for response. We must know the exact size of the classroom to calculate the concentration of pollutant in the air.

4. The following recommendations are offered by EPA:
   a. Open all the windows to ventilate the room. Keep the room ventilated for up to 24 hours.
   b. Wipe hard surfaces such as table tops, desks, chairs and uncarpeted floors with a paper towel. Surfaces should then be thoroughly cleaned twice. Only certain solvents and detergents are effective in cleaning up spilled PCB’s. You may refer to the enclosed Fact Sheet for a detailed list.

5. Yes. The room should be evacuated.

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6. The EPA Fact Sheet indicates that the room could be reentered after it has been ventilated for 24 hours. However, in a telephone conversation with Ms. K of EPA, and Mr. Hof NIOSH, they contended that the children could return to the classroom after cleanup.

7. It is not necessary to have the room tested after burnout, but it may be a good idea to do so. You may contact the OSHA Long Island Area Office at the address listed below to discuss the situation with them. If the room is fully ventilated, the amount of PCB in the air should not pose any significant health risk.

8. There is no requirement to sample the room prior to reentering, but it may be prudent to do so. Again, you may contact the OSHA Long Island Area Office to discuss this with them.

9. Since sampling methods are updated frequently, to be assured the most recent sampling methods for PCB you should contact the OSHA Long Island Area Office at the address listed below.

10. Yes, but light ballasts should not fail that frequently. If you are having a problem with repeated leaking light ballasts, again contact the OSHA Long Island Area Office to discuss the situation with them.

11. Yes. Wear rubber gloves that will not absorb PCB and consider using goggles or a face shield and a rubber apron. Avoid personal contamination by not touching your face while wearing gloves.

   Also, turn off the light fixture at the switch, and disconnect electricity at the fuse or breaker box. Let the ballast cool for 20 to 30 minutes before trying to remove the ballasts. For more specific information see the attached Fact Sheet.

12. The EPA recommends the following procedure: Remove the metal over the wiring and ballast unit. Loosen the ballast by taking out the metal screws which hold it to the end of the fixture. Cut the electrical wires going to the ballast and remove the ballast.

13. There is no requirement to install new ballasts that do not contain PCB, but it is prudent to do so.

   The following are the addresses and telephone numbers referenced above:

   US Department of Labor - OSHA
   990 Westbury Road
   Westbury, New York 11590
   (Telephone: 516-334-3344)

   US EPA
   Chemical Regulation Branch
   401 M Street, S.W.
   TS 798, Room NE 117
   Washington, D.C. 20460
   (Telephone: 202-382-3935)

   NIOSH
   4676 Columbia Parkway
   Cincinnati, Ohio 45226
   (Telephone: 513-841-4374)
OSHA does not have a standard on worker exposure to cigarette smoke in the workplace. There are standards for components of cigarette smoke such as nicotine and carbon monoxide. OSHA is not aware of a commercially available monitoring device or kit for measuring cigarette smoke in buildings.

INTERPRETATION 29 CFR 1910.1000

MAR 3, 1988

Thank you for your letter of February 5, in which you inquired whether a kit or monitoring device is available to measure the concentration of cigarette smoke in buildings.

The Occupational Safety and Health Administration (OSHA) does not have a standard on worker exposure to cigarette smoke in the workplace. OSHA does have an air contaminant standard, 29 CFR 1910.1000, Table Z-1, for the components of cigarette smoke, such as nicotine and carbon monoxide (copy enclosed).

We are not aware of commercially available simple monitoring device or kit for measuring the concentration of cigarette smoke in buildings. However, samples of cigarette smoke can be collected by a trained industrial hygienist with an air sampling pump that has a filter and a sorbent. The sample is sent to a chemical laboratory for analysis. You may wish to contact the OSHA (City, State) Area Office at the address listed below to discuss your work situation. You may also wish to request an OSHA inspection. Please be assured that your name will be kept anonymous.

You also requested whether OSHA has information on employees' rights to work in a smoke-free environment. Again, you may wish to discuss this with the Area Director.
There is a difference between commercially produced carbon black and soots and chars. The Chemical Information Manual (OSHA Instruction CPL 2-2.43) will be modified to separate the different health effects for substances identified as soots and chars and those of commercial carbon black. Carbon black will not be reclassified as a nuisance dust. As noted in the interpretation letter, carbon black was not on the list of contaminants to be modified by the rule change.

This letter is in response to your January 12 letter to the Occupational Safety and Health Administration (OSHA). In your letter you ask that OSHA consider a regulatory clarification concerning commercial carbon black.

Staff members of several Agency directorates have read the report you supplied and your December 1, 1988, letter concerning the potential cardiopulmonary effects from exposure to airborne commercial carbon black. The report is well organized to summarize the previous human and animal studies that have been conducted for carbon black.

In your January 12 letter, you asked the Agency to distinguish between two different substances—harmful soots and chars and commercial carbon black. After a thorough review of the available health information, OSHA agrees that there is a difference between commercially produced carbon black within the United States and substances identified as soots and chars and not manufactured by the same process. Soots and chars may have could exposed workers to a carcinogenic hazard. Airborne exposure present a similar hazard. Your request to modify the entry in and a significant amount of resources. Carbon black is not on OSHA's list of priorities to conduct rulemaking. Therefore, OSHA will not at this time undertake an effort to modify the X list. We will, however, modify the current entry in an Agency publication to our compliance officer entitled the Chemical Information Manual (OSHA Instruction CPL 2-2.43) to separate out different health effects for substances identified as soots and chars and those of commercial carbon black. Agency acknowledgment of these differences should clarify any misunderstanding the health effects of the material may have with soots and chars and OSHA's hazard communication standard. Finally, your letter mentions that carbon black should be classified as a nuisance dust and that exposure to it does not produce serious health effects. OSHA believes that the seriousness of the exposure hazard is related to the airborne concentration and duration of worker exposure.

At this time OSHA is not convinced that the present classification of the health Manual is inappropriate. Therefore, the designation of "cumulative lung damage (HELO)" and "cumulative heart damage (HES)" must remain.
This interpretation letter provides clarification of the PEL for Mercury.

(NOTE: The mercury exposure limit as listed in Table Z-2 is 1mg/(10m3) and this PEL is still interpreted as equivalent to 0.1mg/m3).

INTERPRETATION 29 CFR 1910.1000(b)(1); 1910.1000(b)(2)

June 30, 1976

SUBJECT: Interpretation of Allowable Airborne Concentrations of Mercury

29 CFR 1910.1000, Table Z-2 contains the ceiling value for mercury. Historically the values in this table relate to the maximum allowable concentrations defined by ANSI as 8 hour time-weighted average.

Therefore, the allowable airborne concentration of mercury shall be interpreted as 0.1 mg/m³ as determined on the basis of the full shift time-weighted average.
NIOSH has shown that there are measurable emissions from dry photocopiers. The dusts (carbon black and paper) are within OSHA exposure limits. Ozone, a gaseous emission generated in the photocopying process, can cause health effects to persons exposed.

(NO): Some photocopier manufacturers recommend that photocopier areas should be mechanically ventilated at a rate of 4 air changes/hour. Also, heavily used copiers generate added heat load and air exchange considerations may need to be re-evaluated.

INTERPRETATION 1910.1000; Dry Photocopier Emissions

OCT 10, 1984

This is in response to your letter of September 25, 1984 wherein you requested information on hazards regarding dry photocopiers.

The National Institute for Occupational Safety and Health (NIOSH) performed a Health Hazard Evaluation (HHHE) at (Company), (City, State) in 1976 at the request of clerical employees who worked in proximity to office copiers. These workers reported symptoms such as respiratory and eye irritation, headache, sore throat, and fatigue.

A variety of copiers were in use at this facility, including models that operated on dry toner (Remington 530). NIOSH performed air sampling to determine the concentrations of ozone and toner dust in areas surrounding these machines.

The dry toner, in this case, was composed of 10 percent carbon black pigment and 90 percent resins-co-polymeric hydrocarbon. Exposure levels to carbon black were found to be well within the current OSHA exposure limit to 3.5 milligrams per cubic meter of air. It should be noted that evidence demonstrates that inhalation of carbon black dust does not result in the types of health effects exhibited by the affected workers.

Ozone concentrations were found to range from zero to 0.2 milligrams per cubic meter of air in areas around the Remington 530 copiers. The OSHA exposure limit for ozone is 0.2 milligrams per cubic meter (or 0.1 part per million parts of air). Although responses may vary between individuals, it is possible for exposed persons to experience headaches, irritation of the eyes, and dryness of the nose and throat at very low concentrations.

In the absence of more specific information concerning the conditions under which your patient may have been exposed, it is difficult to draw any conclusions. Furthermore, environmental testing would be necessary to document the presence of suspected air contaminants.

Enclosed is a copy of the NIOSH/OSHA health hazard guideline for ozone. A more extensive discussion of ozone and its effects is covered in Patty's Industrial Hygiene and Toxicology, 3rd revised edition, by Frank A. Patty, pp. 4067-4094, 1982.
ABSTRACT  This response provides legal interpretation of exposure limits for chromic acid and chromates and mercury under 1910.1000. Entries in Table Z-2, 29 CFR 1910.1000, set "acceptable ceiling concentration" limits for these contaminants.

(NOTE: In the revised Table Z-2, the value of 1mg/(10m³) provided is an acceptable ceiling concentration for chromic acid, chromates and mercury.)

INTERPRETATION  29 CFR 1910.1000(b)(2)

February 1, 1985

SUBJECT:  Chromic Acid and Chromates and Mercury - Legal Interpretation of 1910.1000.

Sometime ago, I raised the question of what appeared to be a conflict of interpretation between entries in 1910.1000 for chromic acid and chromates and for mercury. The Office of the Solicitor was asked to review the matter and provide an interpretation.

We received the interpretation, dated January 24, 1985, that entries for these substances in Table Z-2 should be interpreted as 8-hour time-weighted average levels and not as ceiling levels.

This interpretation will be added to the Standards Interpretation files in the near future, however, for your information the complete text is enclosed.

January 24, 1985

SUBJECT:  Interpretations of "Chromic Acid and Chromates" and "Mercury" Entries in Table Z-2, 29 CFR 1910.1000

This is in response to your request for an interpretation of the "chromic acid and chromates" and "mercury" entries in Table Z-2, 29 CFR 1910.1000, which set "acceptable ceiling concentration" limits for these materials. You have asked whether these permissible exposure limits, adopted from national consensus standards under section 6(a), 29 U.S.C. section 655(a), were correctly promulgated as ceiling concentrations or should instead have been eight-hour time weighted averages (TWA's). Based on the following analysis, we believe that the language and developmental history of the underlying national consensus standards better support an interpretation that the exposure limits for mercury and chromic acid and chromates should be TWA's.

Present Standard

Present exposure limits for mercury and chromic acid and chromates are set forth in Table Z-2, 29 CFR 1910.1000. Both substances are limited to an "acceptable ceiling concentration" of one milligram per ten cubic meters of air (1 mg/10m³ or 0.1 mg/m³). Although Table Z-2 provides eight-hour time weighted average exposure limits for most of the materials listed therein, including those that also have ceiling limits, no TWA is indicated for mercury or for chromic acid and chromates. Defining "acceptable ceiling concentration," section 1910.1000(b)(2) provides that:

"An employee's exposure to a material listed in Table Z-2 shall not exceed at any time during an 8 hour shift the acceptable ceiling concentration limit given for the material in the table, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed in the column under "acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift."

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No "acceptable maximum peak" is allowed for mercury or for chromic acid and chromates by Table Z-2. The present standards, therefore, provide that the ceiling limits for mercury and chromic acid and chromates may not be exceeded at any time during an eight-hour work shift.

Rulemaking Background

The standards listed in Table Z-2, were adopted in 1971, from standards developed by the Z37 Committee of the American National Standards Institute (ANSI). Section 6(a) of the OSH Act, had authorized the Agency to adopt, during the two years following the Act's effective date, "national consensus standards" and "established federal standards" without the necessity of rulemaking procedures. "National consensus standards" are defined in section 3(9), as those standards previously adopted by "nationallly recognized standards producing organizations." "Established federal standards" were those health and safety standards previously issued by federal agency or contained in a federal statute.

On the effective date of the Act, two standards, one a federal standard and the other a national consensus standard, existed for both mercury and for chromic acid and chromates. The Act provides unequivocal instructions from Congress that:

In the event of conflict among any such standards, the Secretary shall promulgate the standard which assures the greatest protection of the safety or health of the affected employees.

If a conflict between standards existed, therefore, only the more protective standard could be adopted.

The federal standards for mercury and for chromic acid and chromates were the "Threshold Limit Values of Airborne Contaminants for 1968" of the American Conference of Governmental Industrial Hygienists (ACGIH), which had been adopted by the Department of Labor under authority of the Walsh-Healey Public Contracts Act. The 1968 threshold limit values (TLV's), for mercury and for chromic acid and chromates were 0.1 mg/m³. These limits were TWA's, permitting exposures greater than 0.1 mg/m³ so long as an adequate fluctuation below the limit resulted in a time weighted average exposure during an eight-hour work shift that did not exceed 0.1 mg/m³.

The existing national consensus standards for mercury and chromic acid and chromates were 1971 ANSI standards: Z37.7 - 1971 for chromic acid and chromates and Z37.8 - 1971 for mercury. These 1971 ANSI standards, however, merely reaffirmed standards approved in 1943. The 1943 ANSI standards for

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3 29 U.S.C. section 655(a).
4 29 U.S.C. section 652(9).
5 Section 3(10), 29 U.S.C. section 652(10).
6 Section 6(a), 29 U.S.C. section 655(a).
9 These standards were originally approved by the American Standards Association, Inc. (ASA). In 1968, ASA was succeeded by the United States of America Standards Inc., Institute which changed its name in 1969 to the present American National Standards Institute (ANSI). The term "ANSI" will be used throughout this memorandum to indicate the present organization and all predecessors.
these substances established "maximum allowable concentrations" of 1 mg/10m³, equal to the concentration limits set by ACGIH.

Because exposure concentrations can briefly exceed a TWA limit but not a ceiling limit, ceiling limits are more restrictive than TWA's at the same value. Therefore, if the ANSI standards were ceiling limits, section 6(a) would have mandated that the Agency adopt them instead of the Walsh-Healey standards. Apparently, because the Agency believed the ANSI standards for mercury and for chromic acid and chromates were ceilings, providing greater protection to affected employees, the ANSI standards were promulgated. They were included, therefore, in Table Z-2 with other ANSI standards also thought to be more protective than their corresponding Walsh-Healey standards.¹⁰ Had the ANSI standards been interpreted as TWA limits, the Agency would have merely adopted the identical Walsh-Healey standards.

The Agency's interpretation of the underlying ANSI standards, however, is not determinative. It is the intent of the "drafter" of the standard that is controlling.¹¹ In this case, the standards for mercury and chromic acid and chromates were written and adopted by ANSI's Z-37 Committee. It is that committee's intent that determines the meaning.

It is important to note that had the mercury and chromic acid ANSI standards been TWA limits, ceiling concentrations could not have been promulgated by the Agency without compliance with rulemaking procedures contained in the Act.¹² Although section 6(a) did not require the Agency to adopt national consensus or established federal standards verbatim, the Agency was not empowered to make substantive changes in the source standards without rulemaking.¹³ Changing a TWA limit to a ceiling would have been a significant modification for which no "national consensus" could be shown.¹⁴

Previous Interpretations

As you have noted, over the past several years some differences of opinion have arisen concerning the proper application of the mercury and chromic acid and chromates standards. Table Z-2, 29 CFR 1910.1000, has always indicated that the permissible exposure limits (PEL's) for these substances were ceiling concentrations. Some individuals within the Agency, however, interpreted the standards to be TWA's.

¹⁰ All of the 21 Table Z-2 substances had conflicting ANSI and Walsh-Healey standards at the time of the effective date of the Act. Most of the underlying ANSI standards adopted for Table Z-2 were clearly more protective than their corresponding Walsh-Healey standards. They either had lower TWA or ceiling limits or had the same TWA limit but included, in addition, a ceiling limit.

¹¹ U.S. Steel Corp., 1977-78 CCH OSHD 21,795, at 26,224 & n. 8.

¹² Section 6(b), 29 U.S.C. section 655(b).

¹³ Deering Milliken, Inc. v. OSHRC, 630 F.2d 1094, 1100 (5th Cir. 1980); Senco Prod., Inc. 1982 CCH OSHD 26,304, at 33,269; George C. Christopher & Son, Inc., 1982 CCH OSHD 25,956, at 32,531. But see Usery v. Kennecott Copper Corp., 577 F. 2d 1113, 1117 (10th Cir. 1977) (requiring verbatim adoption).

¹⁴ See, e.g., Noblecraft Indus., Inc. v. Secretary of Labor 614 F.2d 199, 204 (9th Cir. 1980) (ANSI standard could not be expanded by OSHA, without rulemaking, to cover related manufacturing operations that the ANSI standard had expressly excluded from coverage).
In 1979, Assistant Secretary adopted the position that the mercury and chromic acid PEL's should be considered TWA's and the listings in Table Z-2 corrected. The Assistant Secretary believed, after a review of pertinent literature, that ANSI meant a TWA when it used the term "maximum allowable concentration." The Field Operations Manual was amended to indicate this interpretation. On September 5, 1980, the Office of Compliance Policy referred to the Table Z-2 chromate standard as merely a PEL. In August 1982, Dr. Stoking, Director, Health Standards Programs, stated that the placing of the mercury and chromic acid PEL's under the ceiling column, rather than the TWA column, was a printing error.

In December 1983, however, your office interpreted the chromic acid and chromates standard to be a ceiling limit. It seems you based your position on a 1982 article by Dr. Herbert E. Stoking. Writing on the definitions and interpretations of the industrial hygiene standards employed by various standards producing organizations at the time, Dr. Stoking noted that although ANSI originally used "maximal acceptable concentration" to mean a TWA, the term was redefined in 1957 to represent a ceiling concentration. It is the latter definition that you believed should apply.

Analysis of Underlying ANSI Standards

To analyze any statutory or regulatory provision for its meaning and intended effect, the rules of statutory construction first require an examination of the plain meaning of the provision. Table Z-2 adopted the 1971 ANSI standards for chromic acid and chromates and for mercury. These ANSI standards, however, merely reaffirmed, unchanged, standards approved in 1943. In a section entitled "Permissible Concentration," the 1943 standard for mercury provided that:

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15 Letter from Assistant Secretary to Dr. Stoking (May 10, 1979).
16 Id.
19 Letter from X to X, Company (Aug. 30, 1982).
21 Id.
23 Confusion over the proper application of the mercury and chromic acid and chromates standards is further evidenced by the instructions in the new Industrial Hygiene Technical Manual. It states:

The entries in Table Z-2 for "mercury" and "chromic acid and chromates" are 8-hour TWA limits, and ceiling limits.


24 2A Sutherland, Statutory Construction section 46.01 (4th ed. 1973). It should be kept in mind, however, that:

Analysis of grammatical construction may be helpful where a standard is "scientifically drawn and consistently expressed" but respect for common usage and understanding is a surer guide in construing the old ANSI codes, which were drafted by practical men for audiences familiar with the subject.

Keystone Consol. Indus., 1984 CCH OSHD 26,807, at 34,290 (citations omitted).
The maximum allowable concentration of mercury shall be 1 milligram per 10 cubic meters of air.25

No definition of "maximum allowable concentration" was given in the standard. The use of the word "maximum," however, might be evidence a ceiling limit was intended.

The "Permissible Concentration" section of the 1943 standard for chromic acid and chromates provided:

The maximum allowable concentration of chromium as chromate or dichromate dust, or as chromic acid mist, shall be 1 milligram of chromic acid anhydride (CrO₃) in 10 cubic meters of air, for exposures not exceeding a total of eight hours daily.26

Again, "maximum allowable concentration" was not defined. In addition, although the standard's limitation to "exposures not exceeding a total of eight hours daily," might suggest a TWA was intended, the phrase more likely indicates that the standard, as a TWA or a ceiling, should only be relied upon where daily exposures are eight hours or less. In any event, a plain reading of the 1943 standards "permissible concentration" provisions does not provide a clear answer to whether a TWA or ceiling was intended.

The sampling procedures mandated by the 1943 mercury and chromic acid standards, however, suggest an average daily exposure concentration was intended and not a ceiling. Both standards had identical sampling provisions. They required in relevant part:

The sampling procedure shall be in accordance with what experience shows is necessary to secure a sample which is truly representative of the actual working conditions at the location tested. This implies that the volume of the sample and the rate at which it is drawn into the sampling apparatus shall be such that the taking of the sample does not of itself change appreciably the atmospheric conditions at the location tested.27

The standards also required that:

Samples shall be taken in sufficient numbers to show up whatever differences in concentration...exist during the working period.28

The sampling provisions, therefore, did not mandate a sampling scheme that would merely demonstrate the highest exposure concentration. Samples should be taken to record "whatever differences" occur during the work day. It can reasonably be inferred from the language of the sampling provisions that all fluctuations, high and low, are important in calculating whether the standards have been compiled with.

Indeed, the particular analytical methods recommended by the 1943 ANSI standards to detect and measure mercury and chromic acid support the view that "maximum allowable concentration" meant a limitation on the average exposure during the work day. The 1943 mercury standard, for example, explicitly permitted B.W. Nordlander's selenium sulfide method to detect mercury vapor.29 The Nordlander instrument takes an air sample over a time period that could last up two hours.30

This time interval was known to at least one member of the 1943 ANSI Z-37 Committee, Dr. Stokinger, Chief of Research at the National Institute of Health and representing the U.S. Public Health Service on

25 Z37.8-1943, section 3.1
26 Z37.7-1943, section 3.1
27 Z37.7-1943, section 4.1(a); Z37.8-1943, section 4.1(a)
28 Z37.7-1943, section 4.1(d); Z37.8-1943, section 4.1(d).
29 See Z37.8-1943, section 4.2. See also Bibliography to Z37.8-1943 (citing Nordlander, Selenium Sulfide - A New Detector for Mercury, 19 Indus. & Eng. Chem. 518 (1927)).
30 See Neal, Mercurialism and Its Control in the Felt-Hat Industry, U.S. Public Health Service, Bulletin No. 263, at 11 (1941) (Nordlander instrument samples took on the average 112 minutes).
the Committee. Dr. Stokinger had previously used the Nordlander instrument in his study of the effects of mercury on workers in the felt-hat industry. Time periods over which the Nordlander samples were taken averaged 112 minutes.

With this knowledge, the ANSI Committee provided in the 1943 mercury standard, as well as in the chromic acid and chromates standard, that:

The volume of the sample shall be consistent with the sensitivity of the analytical method employed, but the time required for withdrawal of a single sample should not exceed one hour.

Therefore, air samples lasting up to one hour were permitted by the 1943 standards. Such samples are themselves averages of the exposure concentrations for the sampling period. Recommending methods other than instantaneous measurements suggests that ceiling limits, which exposures should never exceed, were not intended. It is certainly possible that an exposure may exceed the ceiling limit at any one particular time during such a long sample period, while the sample's average concentration would indicate less than the limit. Permitting this sampling method, therefore, implies that the 1943 ANSI Z-37 Committee only intended to place a limit on the average concentration of exposure in the workplace.

Examination of pertinent industrial hygiene literature also gives some insight into the intent behind the mercury and chromic acid standards. As you have noted, in 1962, Herbert E. Stokinger, Ph.D., then chairman of the Threshold Limits Committee of ACGIH and representative to the ANSI Z-37 Committee on Acceptable Concentrations of Toxic Dusts and Gases, wrote on the definitions and interpretations of the various standards approved by standards producing organizations. Dr. Stokinger stated that prior to 1957, the TLV's of ACGIH and the "maximal acceptable concentrations" (MAC's) used by the Z-37 Committee were "identical": both were TWA's. The intent of the 1943 Z-37 Committee, therefore, according to Dr. Stokinger, was that the mercury and chromic acid standards be used as TWA limits.

More contemporaneous evidence concerning the intent of the 1943 Z-37 Committee supports this view. One study, the 1943 Z-37 Committee relied upon in adopting the chromic acid and chromates standard, that also gives some insight into the use of "maximum allowable concentrations," was a 1928 article by J.J. Bloomfield and William Blum. That study documented health hazards in the chromium plating industry. Bloomfield and Blum expressed airborne concentrations of chromic acid in milligrams per 10

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31 See Foreword to Z37.8-1943. The U.S. Public Health Service had prepared the initial draft and subsequent revisions of the 1943 ANSI mercury standard. The Service also acted as Endorsing Sponsor for the standard and recommended its approval. Id.

32 Neal, supra note 30.

33 Id.

34 Z37.8-1943, section 4.1(a); Z37.7-1943, section 4.1(a).

35 An instrument that gave "instantaneous" readings of mercury vapor was available at the time the ANSI Committee wrote the mercury standard, Woodson, A New Mercury Vapor Detector, 10 Rev. Sci. Instruments 308 (1939), and was also recommended by ANSI for use, Z37.8-1943, section 4.2.

36 Dr. Stokinger later became vice-chairman of the ANSI Z-37 Committee.

37 Stokinger, Threshold Limits, supra note 22, at 115.

38 Id. at 115-116.

39 See Bibliography to Z37.7-1943 (citing Bloomfield & Blum, Health Hazards in Chromium Plating, 43 Pub. Health Rep. 2330 (1928)). J.J. Bloomfield, Chief of the State's Relations Section of the National Institute of Health, was also a member of the 1943 ANSI Z-37 Committee that adopted the chromic acid and chromates standard. Bloomfield represented the American Public Health Association, Hygiene Section on the Committee. See Forward to Z37.7-1943.

The Bloomfield and Blum study concluded that:

Continuous daily exposure to concentrations of chromic acid greater than 1 milligram in 10 cubic meters is likely to cause definite injury to the nasal tissues of the (workers).43

Bloomfield and Blum did not recommend that the exposure never exceed 1 mg/10m3. They concluded that exposures should not "continuously" exceed that value. The term "continuous" suggests an average day-long exposure.

Another article, published just seven months after ANSI adopted the 1943 mercury and chromic acid standards, also described ANSI’s "maximum allowable concentrations" and limits on "continuous" exposures to occupational air pollutants.44 Noting that industrial hygienists were beginning to document exposure concentrations regarded as unlikely to cause injury, the author wrote:

The values more generally used are those which apply to a continuous exposure. By the term "maximum allowable concentration" is meant the upper limit of concentration of an atmospheric contaminant which will not cause injury to an individual exposed continuously during his working day and for indefinite periods of time. For a limited number of substances, upper limit concentrations have been suggested for shorter, specified periods. Frequently, these latter values have the purpose of limiting the "peak" concentrations frequently found in industrial operations.45

Again, the "continuous" nature of the limit favors a definition mirroring a daily average exposure and not a ceiling. In addition, the author also acknowledged that the "maximum allowable concentration" is occasionally given as milligrams per 10 cubic meters:

The volume of air breathed by an average individual in eight hours at a moderate rate of work.46

ANSI expressed the 1943 mercury and chromic acid standards in such a fashion, implying the importance of the total quantity of contaminant breathed throughout the work day.

In 1955, Dr. Stokinger wrote another article on what was meant by "threshold limit" or "maximal allowable concentration."47 Dr. Stokinger noted that they were "brief terms used to express a rather complex and abstract concept."48 He stated:

Philosophically, the threshold limit represents a level to which a normal healthy worker may be exposed for 8 hours each workday without harm to his physical or mental well-being. Because, in practice, most situations involve intermittent or varying exposures, the concept of the limit is that the

41 Id. at 2338.
42 Id.
43 Id. at 2345.
45 Id. at 517.
46 Id.
48 Id. at 6.
summation of physiological effects of such exposures shall not be greater than the effect of exposure to a constant concentration at the level of the limit.

Operationally, the word limit refers to the highest permitted averaged values of an agent in the workroom air that have been obtained in a complete cycle of operations during the day. Proper averaging of concentrations should take into consideration the duration of exposure at each concentration; this is referred to as a "weighted average." 49

In 1957, however, the ANSI Z-37 Committee began designating its standards as "maximal acceptable concentration" instead of "maximum allowable concentrations." The new standards were:

to represent a limiting concentration, or ceiling, below which all values should fluctuate. 50

This new definition was stated in the preface accompanying subsequent standards. 51

In addition to the preface, the standards' wording was altered to indicate ceiling limits were intended. For example, the benzene standard Z37.4 - 1960 stated:

3.1 The maximal acceptable concentration of benzene (benzol) shall be 25 parts per 1,000,000 parts of air by volume...for exposures not exceeding a total of 8 hours per day, with the understanding that variations in concentration should fluctuate below this level.

Dr. Stokinger characterized the change as a "redefinition" of the older "MAC" standard 52. His 1957 article might be construed as suggesting that older ANSI standards were automatically converted to ceiling limits. Dr. Stokinger, however, neglects the fact that the term itself was reworded: from "maximum allowable" to "maximal acceptable." The word change suggests that the terms were not interchangeable. 53 It is more likely that the 1957 change was intended to apply only to new and revised ANSI standards.

The 1943 mercury and chromic acid ANSI standards were not amended during this period. Some ANSI standards, however, were rewritten. The 1943 ANSI standards for xylene and toluene had set "maximum allowable concentrations" of 200 ppm. 54 In 1960, the standards were revised, establishing "maximal acceptable concentration" of 200 ppm. 55 The latter limits were clearly intended to be ceilings. Although some updated information, research, and recommendations were included in the 1960 xylene and toluene ANSI standards, the permissible concentrations were the same values as the 1943 standards.

There would have been no substantive need to rewrite the standards had the 1943 versions automatically converted to ceilings when the 1957 Z-37 Committee changed the MAC standard. The 1960 revisions of

49 Id.
50 See Stokinger, Threshold Limits, supra note 22, at 115.
51 See Z37.4 - 1960 (benzene); Z37.10 - 1960 (xylene); Z37.12 - 1960 (toluene).
52 Stokinger, Threshold Limits, supra note 22, at 115.
53 It seems at least one industrial hygienist was concerned that confusion would result over the use of the similar terms. Dr. Henry Field Smyth, Jr. wrote:

The term maximum acceptable concentration being used in revisions of standards by the American Standards Association Z37 Committee is objectionable only because it will be abbreviated M.A.C. Many will interpret this abbreviation as maximum allowable concentration, and nothing will have been gained by the change from allowable to acceptable.

54 Z37.10 - 1943 (xylene); Z37.12 - 1943 (toluene).
55 Z37.10 - 1960 (xylene); Z37.12 - 1960 (toluene).
the xylene and toluene standards, therefore, were probably intended to affirmatively change the 1943 TWA limits to ceilings based on new considerations.

Accordingly, to convert the 1943 mercury and chromic acid ANSI standards to ceiling limits, it seems it would have been necessary to re-issue the standards as "maximal acceptable concentrations" as was done for xylene and toluene. As a practical consideration, it is unknown whether the documented scientific evidence that convinced the 1943 Z-37 Committee of the necessity of 1 mg/10m3 TWA limits could also convince a Committee panel during the late 1950's or early 1960's of the necessity of ceiling limits at that same exposure concentration.56

Nevertheless, ANSI's perception that acceptable concentrations should be designated ceiling limits changed again soon after 1957. By at least the late 1960's ANSI developed a broader definition of "acceptable concentration."57

The term, acceptable concentration, is not defined as a single concept but is related to the duration and pattern of the exposure as set forth in the (American National) Standard for the individual substance.58

Several different "acceptable concentrations," were being included in each of the standards: 8-hour TWA's, ceiling values; and maximum "peaks" above the ceiling concentrations. Therefore, even though ANSI redefined MAC's in 1957, it is far from clear that the redefinition reached back to the 1943 mercury and chromic acid standards or survived subsequent philosophical revisions.

Moreover, at least one document published during the time ANSI reaffirmed the mercury and chromic acid standards considered ANSI standards as TWA's. In 1971, an ACGIH publication, documenting the basis for their TLV's, cited ANSI's Z-37 Committee standards as recommending acceptable time-weighted average concentrations.59

In addition, subsequent revisions of the mercury and chromic acid ANSI standards were written in such a way that also suggests that the 1943 version, and 1971 reaffirmation, were intended to be TWA's. ANSI revised the chromic acid standard in 1973. A TWA was set at 0.1 mg/m3, the same value as the MAC in 1943. The 1973 standard specified that:

A review of the documentation of the threshold limit value (TLV) (0.1 mg CrO3/m3) by members of a TLV subcommittee and representatives of the chromate industry indicated that this limit was satisfactory in preventing nasal irritation, and that no new cases of lung cancer appeared after ten years of exposure in plants where this limit was used.60

The "satisfactory" rating of the prior standard would have supported maintaining the standard at the same concentration. Indeed, it was kept at the same 0.1 mg/m3 limit.

56 Cf. Stokinger, Threshold Limits, supra note 22, at 116 (claiming that a TWA of 100 ppm for a substance, which permits reasonable fluctuation above the limit for short periods, is in practice about the same as a ceiling of 200 ppm).

57 It should be noted that in 1959, the first International Symposium on Maximum Allowable Concentrations of Toxic Substances in Industry defined MAC values as TWA's, not ceilings. Resolutions of the International Symposium on Maximum Allowable Concentrations of Toxic Substances in Industry, 3 Pure Appl. Chem. 8 (1961). There had been testimony at the symposium that, in the Americas, MAC's were considered to be TWA's. Ball, The Investigation of Present-Day Definitions and Concepts of Maximum Allowable Concentrations in North America, 3 Pure Appl. Chem. 25 (1961).

58 Z37.16 - 1967 (formaldehyde) (revising Z37.16 - 1944). See also, e.g., Z37.5 - 1970 (cadmium fume and cadmium dusts).

59 American Conference of Governmental Industrial Hygienists, Documentation of the Threshold Limit Values, at iv (3d ed. 1971).

60 Z37.7 - 1973, section 2.4.2.
A ceiling limit was also established by the 1973 revision. The acceptable ceiling concentration was set at 0.3 mg/m³, provided the time-weighted average concentration in the workplace is at or below the TWA limit. Setting this ceiling at 0.3 mg/m³ supports the view that the earlier standard was a TWA.

ANSI had observed that no new cases of lung cancer attributable to chromic acid or chromates had developed over the last ten years.

ANSI realized, however, that because:

The fact that the latent period for development of lung cancer may be as great as thirty years, or even more, the value of this observation is limited.

It follows that the earlier ANSI standard was not a ceiling limit. It is unlikely ANSI would have raised the limit, thereby weakening the standard, if ANSI believed the standard had been satisfactory to date but its ultimate success still uncertain. It is more likely that ANSI intended to maintain the TWA limit and merely add further protection by putting a ceiling on the brief exposures that might exceed the TWA limit.

As for the mercury standard, ANSI revised it in 1972. Although the 1972 Z-37 Committee clearly considered different types of acceptable concentrations, that is, a TWA, ceiling limit and peak limit, ANSI only approved a TWA. ANSI stated that there was "insufficient data upon which to base an acceptable ceiling value." The lack of a ceiling limit in the 1972 mercury standard, clearly considered by ANSI yet, in its belief not supported by documented evidence, suggests the 1943 ANSI standard, and 1971 reaffirmation, were not ceiling limits. The 1972 ANSI mercury standard established a TWA limit at 0.05 mg/m³. ACGIH had already lowered its TLV from 0.1 mg/m³ to 0.05 mg/m³. In 1968, an international symposium convening to discuss maximum allowable concentration values for mercury also recommended that the TWA limit for mercury be lowered to 0.05 mg/m³. ANSI's 1972 mercury standard revision, therefore, would mirror the actions taken by other standards producing organizations if viewed as a lowering of an existing TWA limit. If ANSI merely changed a 0.1 mg/m³ ceiling limit to a 0.05 mg/m³ TWA, not much benefit, if any, would accrue to workers exposed to mercury vapors.

In conclusion, based upon an analysis of the language and background of the 1943 mercury and chromic acid ANSI standards, and a review of subsequent ANSI standards and of pertinent industrial hygiene literature, the 1971 ANSI standards for mercury and chromic acid and chromates, and the Table Z-2 OSHA standards based on them, should be interpreted as eight-hour time-weighted averages and not ceilings.

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61 Id.

62 Z37.8 - 1972, section 3.2. ANSI also declined setting an "acceptable maximum for peaks above the acceptable ceiling concentration." Id. at section 3.1.


65 See supra note 56.
ABSTRACT This interpretation letter discusses the removal of petroleum asphalt from coverage under the Coal Tar Pitch Volatiles (CTPV) Standard.

(NOTE: The standard has not been amended since 1983.)

INTERPRETATION 29 CFR 1910.1000

(Letter undated)

This is in response to your letter dated April 8, 1983 in which you ask that the Occupational Safety and Health Administration (OSHA) undertake rulemaking to develop a new standard for petroleum asphalt.

OSHA believes that removal of petroleum asphalt from coverage under the Coal Tar Pitch Volatiles (CTPV) Standard was appropriate based on both scientific and technical considerations. Data indicate that there are qualitative and quantitative chemical differences between the volatiles arising from coal tar and asphalt. For example, a 1962 study by Niemeier et al., comparing the skin carcinogenicity of "roofing asphalt" and "coal tar pitch" fumes reported that the asphalt fume material contains less than one percent aromatic hydrocarbons (the hydrocarbons listed in 1910.1000 as CTPV's) while the coal tar pitch fume contains more than 90 percent aromatic hydrocarbons. The National Institute for Occupational Safety and Health (NIOSH) criteria documents for asphalt (1977) and coal tar products (1977) support this distinction. In addition, the American Conference of Governmental Industrial Hygienists' 1966 Documentation of Threshold Limit Values leaves little doubt that the recommended limit of 0.2 mg/m3 for CTPV's was not intended to apply to volatiles arising from asphalt because of this quantitative difference.

OSHA does recognize, however, that asphalt fumes can present a health hazard to employees. This Agency is presently reviewing the degree of this hazard with NIOSH in order to determine the urgency of undertaking rulemaking on asphalt. Your letter will be considered as a petition for OSHA to develop a new standard for asphalt and will be responded to upon conclusion of our deliberations with NIOSH.
The OSHA Standard for cobalt in 29 CFR 1910.1000 Table Z-1-A was promulgated to cover all cobalt compounds, in addition to cobalt metal, dust, and fume.

(NOTE: Table Z-1-A was revised in 1989. There are two standards that deal with cobalt: (1) cobalt metal, dust, and fumes (as cobalt) and (2) cobalt carbonyl (as cobalt).)

As you know, the PEL for cobalt was one of the Walsh-Healey standards which was adopted by OSHA in 1971 and is listed at 29 CFR 1910.1000 Table Z-1. These PEL's were originally adopted from the 1968 ACGIH TLV List. Section 6(a) of the Occupational Safety and Health Act of 1970 (the Act) authorized OSHA to adopt, during the two years following the Act's effective date, "National Consensus Standards" and "established Federal standards" without the necessity of rulemaking procedures.

We have reviewed both the 1983 ACGIH Supplemental Documentation for cobalt that you enclosed in your letter and several earlier editions of the Documentation of Threshold Limit Values. The 1971 and earlier editions, while citing documentation primarily from the tungsten carbide industry, contain no explicit statement about the cobalt compounds to be covered. It was to these earlier editions of the Documentation of Threshold Limit Values that OSHA referred when considering and adopting the various PEL's listed in 29 CFR 1910.1000, Table Z-1. In addition, the Act provided OSHA with unequivocal instruction from Congress that it promulgate such standards as assure "the greatest protection of the safety and health of the affected employees." Thus it is clear that OSHA promulgated this particular standard with the intent that it cover all cobalt compounds.

Later editions of the Documentation of Threshold Limit Values, such as the 1983 supplemental edition to which you refer, do provide a revised interpretation of the TLV for cobalt. OSHA cannot, however, simply revise or amend the application of a particular standard based on such changes. When a standard has been promulgated by the Agency, any changes or amendments must come about according to the rulemaking procedures contained in the Act. In addition, OSHA cannot use a memorandum of interpretation to amend or substantially modify the scope and coverage of an existing standard. Substantially modifying a standard, as would be the case were OSHA to follow your suggestion, would require that rulemaking proceedings be initiated and a separate determination made on the health effects of the various cobalt compounds.

SOURCE LETTER

JAN 2, 1985

Re: Cobalt Exposure Level

We are writing to respectfully request that you review the procedure by which the permissible exposure level for cobalt was originally developed and incorporated into 29 CFR 1910.1000 Subpart 2. We believe that the exposure limit was intended to cover only cobalt metal, fume and dust. The current OSHA interpretation, as stated in (the) Occupational Safety and Health Administration (OSHA) Deputy Director's
August 24, 1981 letter, (which) broadly applies the exposure level to cover all cobalt compounds.

Specifically, the enclosed report of the American Conference of Governmental Industrial Hygienists Inc. (ACGIH) 1984-85 on page 14, refers to cobalt, as cobalt metal, dust and fume. It is our understanding from talking with several people at the National Institute for Occupational Safety and Health (NIOSH) and OSHA that the OSHA permissible exposure limit for cobalt was taken directly from the ACGIH Threshold Limit Value for cobalt, as cobalt metal, dust and fume, and was not intended to cover other cobalt compounds.

ACGIH Supplemental Documentation 1983 states on page 103, that the cobalt TLV does not apply generally to cobalt compounds. Further, this same document which is enclosed, also states that most countries have adopted a TLV for dust and fume of metallic cobalt only.

All of the people with whom I spoke at NIOSH and OSHA agreed that an error had been made in applying the permissible exposure limit for cobalt broadly to all cobalt compounds since the ACGIH TLV was intended only for cobalt metal, fume and dust. It does not seem appropriate that an entire class of compounds should be regulated under a mistakenly established exposure limit, particularly where available scientific evidence has not demonstrated a need for this exposure limit.

AUG 24, 1981

This is in response to your recent inquiry concerning the applicability of OSHA's exposure limits for several metals as specified in 29 CFR 1910.1000.

1. Chromium...Metal and insoluble salts .1 mg/m³.

   This limit applies to metallic chromium (as Cr) and to all insoluble compounds of chromium (as Cr), with the exception of chromic acid, chromates, and C-tet-butyl chromate which have an assigned exposure limit of 0.1 mg/m³ as CrO₃.

2. Exposure limits for cobalt, copper, manganese, cadmium and mercury.

   The exposure limits for each of these substances applies to any compounds containing these elements. As with the insoluble chromium compounds, the limit applies only to the measured elemental metal fraction of the compound.

3. Nickel, metal and soluble compounds, as Ni.

   This limit does not apply to insoluble nickel compounds.
Man-made mineral fibers (MMMF) are generally non-respirable and prolonged exposure to such fibers poses significantly lower health risks than those for asbestos fibers. There are no proposed changes to the current TLV or OSHA PEL for MMMF.

(Note: Table Z-1-A was revised in 1989. "Particles Not Otherwise Regulated" covers manmade mineral fibers. It sets the total allowable dust concentration at 15 mg/m³ and the respirable fiber concentration at 5mg/m³ for the 8 hour TWA. There are no current OSHA initiatives on MMMF. This interpretation letter serves as historical information.)

Aug 2, 1985

Thank you for your letter of July 12 to the former Assistant Secretary concerning the occupational exposure standard on man-made mineral fiber (MMMF). Your letter has been referred to this office for response.

Following are answers to your seven questions:

1. What is the current TLV for MMMF in your country?

   The current Threshold Limit Value (TLV) as adopted by the American Conference of Governmental Industrial Hygienists (ACGIH) for MMMF is 10 milligrams per cubic meter of air (10 mg/m³). However, TLV's are not enforced by legislation. The Occupational Safety and Health Administration (OSHA) does regulate MMMF as an inert or nuisance dust. The OSHA permissible exposure limit (PEL) for mineral fibers is 15 mg/m³.

2. Are the current TLV's specified by legislation?

   OSHA does not enforce TLV's for MMMF. However, OSHA does enforce the PEL for MMMF.

3. Are there any changes being considered to TLV?

4. What are the details of the proposed changes?

5. What are the main reasons for the proposed changes?

6. When will the new TLV be likely to be implemented?

   In reply to each of the above, there are no proposed changes to the current TLV or to the OSHA PEL for MMMF.

7. Has the risk associated with the use of MMMF been quantified?

   It has been suggested that the inhalation of very fine mineral fibers such as asbestos or glass fiber could increase the incidence of cancer because the particle size of these fibers are essentially respirable. However, the particle size of the majority of mineral fibers products such as glass fibers for industrial use and consumer goods such as appliance and building insulation materials, furnace filters, and reinforced glass fiber plastics are generally non-respirable. The health risk associated with prolonged exposure for these fibers are significantly lower than those for asbestos fibers.)

Vol. 2-298
The National Institute for Occupational Safety and Health (NIOSH) is the Federal agency which conducts research in occupational safety and health for OSHA.

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SOURCE LETTER

July 12, 1985

RE: Man Made Mineral Fibre (MMMF)

Although our main manufacturing activities are related to forest products (pulp, paper, lumber and wood-based panels) we are also manufacturing mineral fibre (rock wool from basalt rock).

The situation with regard to the manufacture and use of MMMF in (Country) has, until recently, been relatively quiet. However, the repeated publicity given to asbestos has generated a sentiment that MMMF and related products may also be implicated and present, on a long term basis, a hazard to health.

In spite of the fact that there appears to be no conclusive evidence, some groups and their medical advisers are exerting pressure on the (Country) regulatory authorities (Department of Health) to admit that MMMF is not only a nuisance dust, but it also represents a significant occupational health risk.

Because of these concerns, the Department of Health and the Occupational Health Advisory Committee of (Country) are at present considering the occupational health aspects of manufacturing and using MMMF and there is currently a proposal to introduce more stringent and a dual threshold limit value (TLV) of:

1. 5 mg/m³ total dust and
2. 1 fibre/ml of air respirable fibre concentration.

It is proposed that the above TLV are to apply simultaneously.

As manufacturers of MMMF we are concerned that these TLV values now proposed for MMMF are unduly stringent and in fact, are to be similar to those applicable to asbestos (except crocidolite), which would suggest and/or imply that the risk associated with the use of MMMF was also similar.

We believe that scientific evidence currently available does indicate that the risk (if any) associated with MMMF does not approach the hazards of asbestos.

This brings me to the main purpose of my letter which is to obtain up-to-date information on the occupational health related regulatory requirements in your country concerning the manufacture and use of MMMF.

More specifically, we would appreciate it if you could provide us information on the following:

(1) What are the current TLV for MMMF in your country?
(2) Are the current TLV specified by legislation?
(3) Are there any changes being considered to TLV?
(4) What are the details of the proposed changes?
(5) What are the main reasons for the proposed change?
(6) When will the new TLV be likely to be implemented?
(7) Has the risk associated with the use of MMMF been quantified?
ABSTRACT

OSHA does not have a standard covering the use of 3,3'-diaminobenzidine. The lack of a specific standard does not relieve an employer of the obligation to provide a workplace which is free of recognized hazards. Excerpts from "Cancer Causing Chemicals" by Irving Sax consider this chemical to be a "suggestive" carcinogen. Therefore, it would be prudent for employers to minimize employee exposure through the use of proper engineering and work practice controls.

INTERPRETATION

This is in response to your letter of March 20, 1985 wherein you requested information on 3,3'-diaminobenzidine. As you correctly stated, OSHA does not have a standard covering the use of this substance. The lack of a specific standard does not, however, relieve an employer of the obligation to provide a workplace which is free from recognized hazards. This obligation is clearly specified in the Occupational Safety and Health Act of 1970.

The enclosed excerpts from Cancer Causing Chemicals by Irving Sax and the Registry of Toxic Effects of Chemical Substances by the National Institute for Occupational Safety and Health (NIOSH) provide toxicological data on 3,3'-diaminobenzidine, also known as 3,3',4,4'-biphenyltetramine. As you will note, Sax considers this chemical to be a "suggestive" carcinogen. Therefore, it would be prudent for employers to minimize employee exposures through the use of proper engineering and work practice controls. The book by Sax contains an extensive discussion on the types of controls to use when working with cancer causing substances. The book is available for use in our Regional Technical Library.

Vol. 2-300
No OSHA standards provide surface contamination criteria or quantifications for skin absorption. Chapter VII of the OSHA Industrial Hygiene Technical Manual (IHTM) treats the subject of sampling for surface contamination. The PEL for PCB's based on % chlorine in the product are discussed.

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**ABSTRACT**

No OSHA standards provide surface contamination criteria or quantifications for skin absorption. Chapter VII of the OSHA Industrial Hygiene Technical Manual (IHTM) treats the subject of sampling for surface contamination. The PEL for PCB's based on % chlorine in the product are discussed.

**INTERPRETATION**

29 CFR 1910.1000(a)(2); 1910.1000(a)(4)

Jun 21, 1985

I have been asked by Assistant Secretary to reply to your letter of May 10, in which you requested information on allowable levels of hazardous chemicals on workplace surfaces and on the guidelines by which compliance with surface contaminant levels is enforced.

The Occupational Safety and Health Administration (OSHA) publishes its General Industry standards under Title 29 of the Code of Federal Regulations Part 1910 (29 CFR 1910). Permissible exposure levels (PEL's) for hazardous chemicals can be found in 29 CFR 1910, Subpart Z - Toxic and Hazardous Substances. A copy of the OSHA General Industry standards is enclosed for your information and use. Although some OSHA standards contain housekeeping provisions which address the issue of surface contamination, there are currently no surface contamination criteria or quantifications for skin absorption included in OSHA standards. The "skin" notation which appears with some of the chemical hazards listed in Table Z-1 of 29 CFR 1910.1000 merely indicates that on the basis of the best information available from industrial experience and from human and animal experimental data, certain substances have the potential to cause skin irritation and/or may contribute to overall exposure by the cutaneous route. This includes the mucous membranes and the eye, and may occur either by airborne exposure or by direct contact with the substance. The "skin" notation serves as a warning that skin contact with the substance can cause irritation and/or that cutaneous absorption should be prevented to avoid exceeding the PEL. Biological monitoring can be utilized for some substances to determine the relative contribution of dermal exposure to the total dose.

OSHA's Office of Health Compliance Assistance publishes an Industrial Hygiene Technical Manual (IHTM) as a part of OSHA's internal Instruction Directives System. The IHTM provides OSHA compliance officers with guidance on OSHA enforcement. It reflects current OSHA industrial hygiene practices and procedures. Chapter VIII of the IHTM treats the subject of sampling for surface contamination. Appendix A contains the Chemical Information Table, a compilation of information relevant to compliance with OSHA regulations for specified chemicals. Copies of those sections of the IHTM are enclosed for your information.

OSHA currently regulates airborne concentrations of chlorodiphenyls or polychlorinated biphenyls (PCB's) at PEL's of 1 milligram per cubic meter of air (1 mg/m3) for chlorodiphenyls containing 42% chlorine and 0.5 mg/m3 for those containing 54% chlorine. While these PEL's refer to airborne concentrations averaged over an 8-hour work shift (i.e., a time-weighted average concentration or TWA), and although there is no specific regulation of the levels of these contaminants on workplace surfaces, surface contamination will certainly contribute to airborne levels of these substances. Control of such surface contamination is one way to reduce their airborne concentrations.

In cooperation with OSHA, the National Institute for Occupational Safety and Health (NIOSH) publishes "Occupational Health Guidelines for Chemical Hazards" which contain a variety of industrial hygiene recommendations, toxicity data and other useful information on Federally-regulated chemicals. I have enclosed copies of the NIOSH/OSHA Occupational Health Guidelines for the PCB's mentioned above.
I am writing to request a list of the allowable levels of hazardous chemicals on workplace surfaces, such as floors.

Table 2-1 of 29 CFR 1910.1000 lists many chemicals, such as phenol, with a "skin" notation. These P.E.L. T.L.V.'s are, however, quantified for air and not for skin absorption.

In the interests of the safety and health of our employees in the hazardous waste clean-up and disposal business, it is essential that we know the criteria that establishes "surface P.E.L.'s (to coin a phrase)".

Although I am requesting your complete listing, my most urgent need is for the surface contamination criteria for polychlorinated biphenyls (P.C.B's).

Additionally, I need to know the specific standards, laws, regulations, ordinances, guidelines, etc. by which compliance with these surface contaminant levels is enforced.
OSHA does not have specific health and safety guidelines for the repair and cleaning of machines containing copper acetoarsenate. The PEL for organic arsenic is 0.5 mg/m$^3$. A general overview is given for safe handling of arsenic containing compounds.

(NOTE: Subsequent to this 1985 letter, the Z-1-A table in 1910.1000 has been revised. The PEL for organic arsenic remains at 0.5 mg/m$^3$ for the 8 hour TWA.)

**INTERPRETATION**

29 CFR 1910.1000

Jun 3, 1985

Your letter dated April 4, to Mr. X, has been referred to the Occupational Safety and Health Administration (OSHA) for reply to your constituents' requests for information about copper acetoarsenate.

Organic arsenic compounds such as copper acetoarsenate are regulated as a group under Subpart Z-Toxic and Hazardous Substances of 29 CFR 1910. The OSHA permissible exposure limit (PEL) for the organic arsenic is listed in Table Z-1 of 1910.1000 as 0.5 milligrams of arsenic per cubic meter of air averaged over an eight hour work shift (see enclosed material).

OSHA does not have specific health and safety guidelines for the repair and cleaning of machines containing the copper acetoarsenate. However, the following rules should be followed when handling any arsenic compounds:

1. Do not eat, drink, smoke or apply cosmetics in the workplace.
2. Wear appropriate protective clothing such as coveralls, gloves, impervious boots, hat, goggles or a face shield whenever there is a likelihood of skin contact with arsenicals.
3. Wear a respirator if the airborne concentration of arsenic compounds exceeds the OSHA PEL.
4. Take a shower at the end of the work shift. Do not wear or carry any work clothing home.

We are enclosing information on the toxicity as well as the safe handling of organic copper arsenite for your information.

May 2, 1985

This is in response to your letter of April 4, 1985, concerning your constituents' requests for information. One request is for information on incinerator regulations for burning boxes, paper containers and like material. I believe the applicable regulation for new incinerators are the new source performance standards for incinerators (copy enclosed). Your constituent should know that implementation of these standards and any permitting requirements are conducted by state and local authorities. Thus, your constituent should contact state or local air pollution officials for more specific permitting requirements.

The second constituent request is for OSHA regulations or guidelines on copper acetoarsenate. A copy of your letter has been forwarded to the Occupational Safety and Health Administration for information on their regulations and guidelines.
ABSTRACT
An interpretation letter regarding benzo(a)pyrene regulated with coal pitch tar volatiles. The International Agency for Research on Cancer (IARC) classified benzo(a)pyrene as a probable human carcinogen. OSHA does not ban carcinogens or toxic substances from the workplace, but has stringent requirements for regulating their exposure levels. OSHA regulates benzo(a)pyrene with coal tar pitch volatiles which has a PEL of 0.2 milligrams per cubic meter.

INTERPRETATION
29 CFR 1910.1000; 1910.1002

APR 7, 1986

This is in response to your recent request for information on benzo(a)pyrene (BaP). The answers to your questions are as follows:

(1) Is it a known carcinogen in man?

Although it is considered as such, the X Agency has classified BaP as a "probable" rather than a "confirmed" human carcinogen. The assessment of the risk of cancer due to exposure to this substance cannot be determined independently since the exposure of human populations to BaP always occurs simultaneously with exposure to mixtures of other compounds of known or possible carcinogenicity (attached are the IARC reports on this subject from their "Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans," Volume 29 and Supplement 4).

2. Are known carcinogens banned from the air in the workplace?

The Occupational Safety and Health Administration (OSHA) does not "ban" carcinogens or toxic substances from the workplace. OSHA regulates the levels of these materials to which employees may be exposed in the workplace. Some stringent requirements are stipulated for those substances which are either known or suspect carcinogens. As an example, I have enclosed a copy of the OSHA standard for occupational exposure to the carcinogen acrylonitrile for your information.

(3) Is this chemical so banned?

Not by OSHA.

(4) What rules, laws, regulations, etc., cover this topic?

OSHA regulates BaP along with a class of substances known as "coal tar pitch volatiles." Occupational exposure is limited to two tenths of a milligram of coal tar pitch volatiles (benzene soluble fraction) anthracene, BaP, phenanthrene, acridine, chrysene, pyrene per cubic millimeter of air (0.2 mg/m³) (see the enclosed section of the OSHA General Industry standards, 29 CFR 1910.1000, Table Z-1 and 29 CFR 1910.1002).
ABSTRACT

This interpretation letter provides clarification that the final rule limit for occupational exposure to nitrogen dioxide does not specify the number of 15-minute exposures allowable during an 8-hour work shift, nor does it set a ceiling limit. An employee could be exposed up to thirty-two, (32) 15-minute periods during an 8-hour work day. As long as the employee's 15-minute TWA exposure for each of these periods doesn't exceed 1 ppm, the employer is in compliance with the standard.

INTERPRETATION

29 CFR 1910.1000(a)(3)

JAN 29, 1990

This is in response to your letter dated January 15, requesting clarification of the Occupational Safety and Health Administration's (OSHA) Final Rule Limits for occupational exposure to nitrogen dioxide (NO(2)).

The Final Rule Limits for NO(2) which went into effect September 1, 1989, specify a short term exposure limit (STEL) of 1 ppm for any 15-minute period during the day. An employee's exposure during this 15-minute period is a time weighted average exposure which shall not be exceeded at any time.

Contrary to your interpretation, the standard does not specify the number of 15-minute exposures allowable during an eight-hour work shift, nor does it set a ceiling limit. From a practical standpoint an employee could be exposed up to thirty-two (32), 15-minute periods during an 8-hour work day. As long as the employee's 15-minute TWA exposure for each of these periods doesn't exceed 1 ppm, the employer is in compliance with the standard.

The permissible exposure limit specified in the Final Rule Limits column of Table Z-1-A for NO(2) is:

STEL (15-minute TWA) - 1 ppm
8-hour TWA - no standard
ceiling - no standard

SOURCE LETTER

January 15, 1990

This letter is to request either confirmation of the interpretation below - or a corrected interpretation of - the OSHA Final Rule on PEL (Permissible Exposure Limits) Limits for occupational exposure to nitrogen dioxide (NO(2)) in air.

As background to this request we are referencing OSHA publication 3112, "Air Contaminants-Permissible Exposure Limits" (Title 29, Code of Federal Regulations, Part 1910-1000) which presents the Final Rule Limits for occupational exposure to air contaminants. These are the limits scheduled to go into effect in March of 1990.

Table Z-1-A in OSHA 3112 shows only a final rule Short Term Exposure Limit (STEL) of 1 ppm by volume for exposure to nitrogen dioxide. We understand this to mean:

A short term exposure to nitrogen dioxide is allowable, at a TWA (Time Weighted Average as defined in OSHA 3112) of not more than 1 ppm, for not longer than 15 minutes. Up to four such 15 minute exposures are allowable during an eight hour work shift.
The meaning of the STEL seems clear. However there is no listed TWA or ceiling limit listed for nitrogen dioxide for the balance of a work shift. From the implication of other blanks in the table, and from a consideration of the mechanisms of air contamination by nitrogen dioxide, it appears that a blank does not imply zero allowable exposure. Thus our question concerns the allowable exposure for the balance of the work shift when the STEL is not in effect. I now understand from my discussion with you that a ceiling of 1 ppm applies to the balance of the work shift, when the STEL does not apply. Concentrations of NO(2) up to but not exceeding this 1 ppm ceiling are permissible.
RECORD ID 3060

STANDARD NUMBER 1910.1000(a)
INFORMATION DATE 890214

ABSTRACT
This interpretation provides support for OSHA's policy of requiring air sampling inside the welding helmet for all welding fume measurements. On January 19, 1989, OSHA adopted the ACGIH 8 hour TWA limit of 5 mg/m³ for welding fumes, measured as total particulate in the welder's breathing zone. As a result of this new more protective rule, sampling for welding fumes shall be conducted with the filter cassette located inside the welding helmet. This policy will be adopted into the Field Operations Manual and Technical Manual as appropriate at the next change.

INTERPRETATION 29 CFR 1910.1000(a)

FEB 4, 1989

SUBJECT: Sampling for Welding Fumes

On January 19, 1989, OSHA published in the Federal Register changes and additions to a large number of permissible exposure limits (PEL's) of its 1910.1000 air contaminants (the PEL project). Among new PEL's added is a limit for welding fumes, which are defined as fumes that are generated by the manual metal arc or oxy-acetylene welding of iron, mild steel, or aluminum. OSHA adopted the ACGIH 8 hour TWA limit of 5 mg/m³ for these welding fumes, measured as total particulate in the welder's breathing zone. The PEL Federal Register also specifically addresses the issue of positioning of the filter cassette and states that the cassette should be "in the breathing zone of the welder...consistent with OSH Review Commission decision (8 OSHRC 1043)." This decision stated that clipping of the filter cassette inside the welder's helmet produced "a better and more representative breathing zone sample...." As a result of this new more protective rule, sampling for welding fumes shall be conducted with the filter cassette located inside the welding helmet. The Assistant Regional Administrator for Technical Support should be contacted for advice if it appears that it is physically impossible to place the filter cassette inside the welding helmet.

The following technical/professional groups also provide support for this position, as well as Review Commission precedent. ANSI/AWS F1. 1-1985 Standard entitled, Method for Sampling Airborne Particulates Generated by Welding and Allied Processes, prescribes that sampling for welding fumes be conducted in the welder's breathing zone. Section 2.1 states that the breathing zone test is designed to measure the exposure of an individual welder to the welding fume generated by welding processes. The breathing zone is defined by ANSI/AWS as the area immediately adjacent to the welder's nose and mouth, inside the welder's helmet when worn. Section 7.1.1 provides that samples shall be taken within the welder's helmet. The ARA/TS should be contacted for advice if it appears that is is physically impossible to place the filter cassette inside the welding helmet.

"The NIOSH Criteria for a Recommended Standard:

Welding Brazing, and Thermal Cutting, DHHS (NIOSH) Publication No. 88-110, also advocates that samples for workers performing welding must be collected in the welding helmet. Chapter VS, A.1.b.(1) on sampling strategy states in part:

"The sampling location is important in achieving an accurate characterization of the suspected exposure. The preferred sampling location is within the breathing zone of the worker and is referred to as a personal sample...."

"...If personal samples are collected on a worker wearing a welding helmet, the inlet to the sampling device should be correctly positioned within the helmet."

A number of Occupational Safety and Health Review Commission decisions have concluded that the Secretary failed to prove that welders were exposed to dangerous concentrations of welding fumes because the sampling cassette had not been placed inside the welding helmet. Commission cases that
concluded that air sampling must be conducted inside welders' helmets in order to obtain more representative breathing zone samples are:

11 OSHC 1206 - General Motors Corporation, General Motors Assembly Division
12 OSHC 1623 - Southern Ohio Fabricators
13 OSHC 1023 - Bechtel National
13 OSHC 1177 - Equitable Shipyards Inc.

In sum, the above information provides strong support for OSHA's policy to require air sampling inside the welding helmet for all welding fume measurements. This policy will be adopted into the Field Operations Manual and Technical Manual as appropriate at the next change.
ABSTRACT  This interpretation letter clarifies that for crystalline silica exposures under circumstances in which the new PEL is less stringent that the old PEL, OSHA shall enforce the final rule limit rather than the transitional limit and engineering controls shall be required to meet the final rule limit.

INTERPRETATION  29 CFR 1910.1000(e); (f)(1); (f)(3)

MAR 14, 1990

SUBJECT: Clarification of Engineering Controls Required by CFR 1910.1000 for Crystalline Silica

This is in response to your memo of January 25, addressed to the former director of Compliance Programs. In your memo you requested an interpretation of the engineering controls that can be required currently for overexposure to silica under circumstances in which the new permissible Exposure Level (PEL) is greater than the old PEL.

The former OSHA limit for silica containing dusts is a respirable dust limit expressed as (10 mg/m³)/percent respirable quartz + 2. If this formula is used to calculate a limit for dust containing 100 percent quartz, the limit would be 0.098 mg/m³, a value that is not appreciably different from OSHA's new PEL of 0.1 mg/m³. However, for quartz dusts containing less than 100 percent free silica, the former OSHA formula would yield a limit of for example, 0.83 mg/m³ for respirable dust containing 10 percent quartz (actual permissible exposure of 83 µg/m³ of silica). This result is somewhat more stringent than the new limit of 0.1 mg/m³ (actual permissible exposure of 100 µg/m³ of silica).

We therefore agree with you that for silica exposures under circumstances in which the new PEL is less stringent that the old PEL, OSHA shall enforce the Final Rule Limit rather than the Transitional Limit and engineering controls shall be required to meet the Final Rule Limit.

SOURCE LETTER

January 25, 1990


Attached is a request for an interpretation of the engineering controls that can be required currently for overexposure to silica under circumstances in which the new PEL is greater than the old PEL.

December 22, 1989

SUBJECT: ENGINEERING CONTROLS REQUIRED BY 1910.1000 TRANSITIONAL PROVISIONS: PERMISSON TO ENFORCE THE NEW PEL

BACKGROUND:

The transitional provisions specified by 29 CFR 1910.1000(f)(3) states that PEL's specified in the Transitional Limits column of Table Z-1-A shall continue to be achieved by the methods of compliance specified in paragraph (e), i.e administrative or engineering controls. In the case of at least two substances in Table Z-1-A, carbon dioxide and silica exposures of less than about 10%, the Transitional Limit is higher than the Final Rule Limit. It would seem that in such cases, engineering controls should be required to meet the Final Rule Limit rather than the Transitional Limit.
PROBLEM:

We currently have an inspection in which an employee was exposed to respirable dust containing 2% silica. Under the new PEL of 0.1mg/M³, the TWA was 0.064 mg/M³ which results in a severity of 64. Using the old PEL calculation from Table Z-3, the PEL is 2.49 mg/M³ and the TWA is 3.18 mg/M³ which results in a severity of 1.28. The SAE is 0.22 which means the LCL for the old PEL is greater than 1 and the UCL for the new PEL is less than 1.

Mr. X of the X Lab was consulted concerning this discrepancy. He stated that down to about 10% silica there is little difference between the old and new PELs. Below that point, however, the old PEL is more restrictive. With the new PEL of 0.1 mg/M³, an employee can be exposed to 100 micrograms of silica (per cubic meter). At 10% silica, the old PEL would be 0.833 mg/M³ of respirable dust which is equivalent to an exposure of 83 micrograms of silica (.833 mg times 10% to obtain the actual weight of silica).

With a 5% silica exposure, the old PEL is 1.429 mg/M³ of respirable dust which is equivalent to an exposure to 71 micrograms of silica (5% of 1.429 mg). With a 2% silica exposure, the old PEL is 2.5 mg/M³ which is equivalent to 50 micrograms of silica or half of the new PEL (hence the severity is double--1.28 vs .64). With 1% silica, the allowed exposure under the old PEL is only 33 micrograms.
ABSTRACT: According to the preamble to 1910.1000, manual spray-up/lay-up operations in the boat-building industry are exempted from complying with the PEL by incorporating engineering controls. OSHA concludes that the use of respirators as well as engineering controls may be necessary to control exposures to styrene below the PEL in these operations. Exposures during gel-coating are an easier problem to control than are exposures which occur during spray-up/lay-up operations.

INTERPRETATION: 29 CFR 1910.1000

JUN 8, 1990

SUBJECT: PEL Standard Interpretation of Spray-up/Lay-up Operations

This is in response to your memo of January 23, requesting clarification of whether gel-coating operations are considered part of the manual spray-up and lay-up operations in the boat-building industry. We apologize for the delay in this response.

According to the preamble to 29 CFR 1910.1000, manual spray-up/lay-up operations are exempted from the requirement to comply with the PEL by engineering controls. On page 2808 of the January 19, 1989, Federal Register, OSHA states that "the record evidence demonstrates considerable uncertainty about the technical feasibility of achieving the 50 ppm TWA and 100 ppm STEL exclusively by means of engineering controls and work practices during manual spray-up/lay-up operations in the boat-building sector." Accordingly, OSHA concluded that the use of respirators as well as engineering controls may be necessary to achieve the PEL in these operations.

On the same page, OSHA discusses the site visits conducted at boat-making facilities which demonstrated the infeasibility of engineering controls for spray-up/lay-up operations. However, these same site visits found that the exposures of the gel-coat operators were below the proposed level.

The record for 1910.1000 does not appear to support the inclusion of the gel-coating operation in the manual spray-up/lay-up operations. Rather, gel-coating is a separate operation which is either performed in a spray booth or at a greater distance than spray-up operations. Exposures during gel-coating are therefore less of a problem to control than are exposures which occur during spray-up/lay-up operations. OSHA therefore believes that while exposure to styrene may be controlled by any combination of engineering controls, work practices, and respiratory protection during manual spray-up/lay-up operations in the boat-building industry, exposure to styrene during gel-coating operations must be controlled to the final limit of 50 ppm by means of engineering controls and work practices by December 1992 unless infeasibility is specifically demonstrated.

SOURCE LETTER

DATE: January 23, 1990

SUBJECT: PEL Standard Interpretation - Styrene; Spray-up/Lay-up Definitions

We are forwarding this request for an interpretation of the PEL Air Contaminant Standard to your office for a response. The (City) Area Office has requested an interpretation of the styrene standard in reference to manual spray-up/lay-up operations in the boat-building industry. In essence the question concerns gel-coating operations and whether or not this operation is considered part of spray-up/lay-up; and therefore must comply by any combination of engineering controls, work practices, and respiratory protection to achieve 50 ppm exposure levels.
DATE: December 11, 1989

SUBJECT: Styrene: Fiberglass Spray-up/Lay-up Boats

As a result of the PEL Project, the 8 hour TWA for styrene is reduced from 100 ppm to 50 ppm. However, as outlined on page 2431 of the Federal Register dated Thursday, January 19, 1989, in two operations (manual lay-up and spray-up) in the boat-building industry, employees may use any combination of engineering controls, work practices and respiratory protection to achieve 50 ppm. Page 2808 also makes a similar reference. It is not clear from reading the preamble (appropriate pages enclosed) if gel-coat operations are included as a manual spray-up/lay-up operation. Boat manufacturers appear to consider them as such.

Please inform me if boat-builders can use any combination of engineering controls, work practices, and respiratory protection, to achieve 50 ppm styrene in gel-coating operations.
ABSTRACT  Multiple interpretation letters regarding updated changes to Air Contaminants Standards. This memo serves to reiterate and update previous memos of September 27, 1989, and June 1, 1990 on Air Contaminants Standards. As a result of continuing legal challenges presented to the Directorate of Health Standards regarding the PEL project, a number of legal decisions and settlements have been made which have an effect on the Agency's enforcement activities on perchloroethylene, beryllium, ethylene dichloride, styrene, acetone, nitroglycerin and ethylene glycol dinitrate, carbon monoxide, calcium oxide, calcium hydroxide, subtilisins, mercury, iron oxide, ammonia, sulfur dioxide, nitrogen dioxide, hydrogen sulfide, phosphoric acid, fluorides, diethanolamine, carbon disulfide, sodium chloride. There have been two additional settlements since the June 1, 1990 memo, involving grain dust and nitroglycerin for military use. The attached Appendices include only Federal Register notices published since the June 1, 1990 memo.

INTERPRETATION  29 CFR 1910.1000

MAR 6, 1991

SUBJECT: Updated Changes to 29 CFR 1910.1000, Air Contaminants Standard

This memo serves to reiterate and update my previous memos of September 27, 1989, and June 1, 1990 on the same subject. As a result of continuing legal challenges presented to the Directorate of Health Standards regarding the PEL project, a number of legal decisions and settlements have been made which have an effect on the Agency's enforcement activities. There have been two additional settlements since the June 1, 1990 memo, involving grain dust and nitroglycerin for military use. The attached Appendices include only Federal Register notices published since my June 1, 1990 memo.

Perchloroethylene:

The PEL for perchloroethylene is now in effect in all industries. In all industries, including dry cleaning, the use of negative pressure air-purifying respirators is permitted when the following criteria are met (see Appendix A: August 23, 1989, letter to X Institute):

1. The employer must develop or adopt and follow a schedule of automatic cartridge changes when the cartridge reaches 80% of its expected capacity.

2. Airborne exposure levels do not exceed ten times the PEL when using the half mask respirator.

Beryllium:

Two suits have now been settled and the PEL's are unchanged from their original levels; therefore, enforce according to Table Z-2 levels.

Ethylene Dichloride:

According to the settlement agreement, air purifying respirators are acceptable in all industries under the following conditions:

1. Half mask respirators up to 10 ppm.

2. Full-mask respirators up to 50 ppm.

3. The filter in each respirator is changed at the end of each day in which the total cumulative service life of the filter is one hour or more.
Styrene:

The new PEL is now in effect (see Appendix B: settlement agreement and November 20, 1989, letter to the (Company A) and the (Company B). The definition of "big" as used in the preamble of the final rule is as follows:

1. Greater than 30 feet long, or
2. Greater than 250 square feet, or
3. Greater than 150 cubic feet.

Acetone:

The settlement agreement as described in Appendix C: September 5, 1989, Federal Register notice provides:

1. The TWA of 750 ppm is now in effect in all industries, with the exception of one operation (doffers) in the cellulose acetate fiber industry.
2. The STEL has been stayed permanently for the cellulose acetate fiber industry only.

Nitroglycerin and Ethylene Glycol Dinitrate:

Manufacture for civilian use. OSHA has withdrawn the final rule limits for nitroglycerin (NG) and ethylene glycol dinitrate (EGDN) for reconsideration in the civilian manufacture and distribution of explosives for civilian use. This leaves in effect the final rule skin designation and the transitional limits of 2 mg/m3 for NG and 1 mg/m3 for EGDN.

The new limits remain in effect for other civilian uses (e.g. medical and scientific).

Approximately 5% of the explosives used in the civilian sector are NG/EGDN based and four companies manufacture these explosives for civilian use. These four companies must install engineering controls and monitor exposures according to a scheduled timetable.

Explosives distributors must ventilate storage bunkers before employees enter them. All NG-EGDN explosives must be labelled according to the Hazard Communication Standard with the additional warning regarding ventilation.

See Appendix D: Settlement Agreement and May 9, 1990 Federal Register notice for further details.

Manufacture for Military Use. The earlier stay for the manufacture of NG and NG-based explosives and propellants for military and space use has been extended to June 30. After that date respirator use is to be phased-in to achieve the new 0.1 mg/m3 STEL between July 1, 1991, and March 1, 1992, and engineering controls are to be phased-in between December 31, 1992, and December 31, 1998.

Specifically for employees now exposed between 0.1 and 2.0 mg/m3:

Compliance with 0.1 mg/m3 with any reasonable combination of controls including respirators shall be achieved for one quarter of such employees per facility by July 1, 1991, for one half by October 1, 1991, for three quarters by January 1, 1992 and for all employees by March 1, 1992.

Compliance with 0.1 mg/m3 with feasible engineering controls shall be achieved for one quarter of such employees per facility by December 31, 1992, for one half by December 31, 1994, for three quarters by December 31, 1996 and for all employees by December 31, 1998.

Appropriate air filtration respirators may be used if there is a program to change filters before exhaustion (see cartridge change schedule detailed in August 23, 1989 letter to the International Fabricare Institute, Appendix A of June 1, 1990 memo). There may be rare circumstances confirmed in writing by a certified industrial hygienist or safety professional where use of respirators is unsafe. Respirators need not be used then, but engineering controls and work practices should be developed promptly for compliance.
See the attached Federal Register notice of November 8, 1990 at 55 FR 46948. The purpose of the phase-in period is to maintain safety while improving health protection. The 2 mg/m3 level must continue to be maintained with feasible engineering controls.

Note that this phase-in covers civilian contractors in civilian facilities for military use (COCO), civilian contractors on military facilities (GOCO), and military production for military use pursuant to Federal Programs. See the FR notice where one line produces both for military and civilian use. Also note that the description of the phase-in period in this memorandum adds to the identical result as the more complex language of the FR notice.

Carbon Monoxide:
The ceiling limit is stayed only for the following three operations in the steel industry, SIC 33:

1. Blast furnaces.
2. Vessel blowing at basic oxygen furnaces.
3. Sinter plants.

Although the ceiling limit of 200 ppm is now in effect for all other operations, the duration of exposure for the ceiling has been changed to five minutes exposure rather than an instantaneous reading.

Calcium Oxide:
See Appendix C: September 5, 1990, Federal Register notice stating that the final rule limit of 5 mg/m3 is in effect.

Calcium Hydroxide:
See Appendix C: September 5, 1990, Federal Register notice stating that calcium hydroxide will be regulated as a Particulate Not Otherwise Regulated (PNOR), i.e., nuisance dust.

Substisins:
For monitoring purposes, a one hour high volume sample rather than a 15 minute sample is to be used for enforcement of the STEL.

Mercury: For those establishments engaged in the manufacture of clinical and laboratory thermometers and other scientific apparatus and which have a biological monitoring program (at least quarterly urinary mercury monitoring) the following applies:

1. From February 1, 1990 to December 31, 1992, citations shall not be issued on initial visit if sample results are between 0.05 mg/m3 and 0.1 mg/m3 TWA and mercury urine levels are below 100 micrograms per liter.
2. At any reasonable time after the first inspection in which levels met the above conditions, a second inspection may be conducted. If air levels exceed 0.05 mg/m3, citations may be issued regardless of urine levels.
3. Until December 31, 1992, certified half-mask air purifying respirators are an acceptable means of achieving compliance.

Iron Oxide:
The limit has been clarified as being iron oxide fume as a 10 mg/m3 TWA. (See Appendix E: November 15, 1989, Federal Register correction notice.)

Ammonia, Sulfur Dioxide, Nitrogen Dioxide, Hydrogen Sulfide, Carbon Monoxide, Phosphoric Acid, Fluorides, and Diethanolamine:
Personal protective equipment may be used to supplement engineering controls to achieve compliance with the PEL's for these chemicals during certain specified maintenance and intermittent operations in the following processes:

1. Supplying raw materials for fertilizer production.
2. Fertilizer production.
3. Fertilizer distribution and retailing.

The attached settlement agreement with the Fertilizer Institute (Appendix F) provides details.

Carbon Disulfide:

Settlement agreement (Appendix G) covers industries that regenerate cellulose from viscose to form commercial products such as rayon staple, rayon yarn, cellulose, sponges, and casings. It defines the following specific operations as maintenance tasks where exposures may be controlled by means of respiratory protection:

1. Maintenance-type tasks such as tank washing; opening and redressing filters, cleaning process liquor screens, and handling unwashed unpurified viscose and viscose products.
2. Opening of production lines.
3. Handling of fibers and filament bundles removed from process equipment.
4. Effecting product-line changes.
5. Loading alkali cellulose, and unloading, washing, and dissolving xanthate, viscose and viscose products.

Respirators may also be used to supplement existing engineering controls to achieve the STEL during process upsets, breakdowns, maintenance, entering process areas not regularly occupied, and similar situations.

Sodium Chloride:

Salt is regulated as a Particle Not Otherwise Regulated. The settlement agreement with the (Y) INSTITUTE (Appendix H) allows respiratory protection for intermittent exposures occurring during maintenance, operations such as the repair of dust collectors and occasional clean-up.

OSHA will also allow respirator use for workers who occasionally work at crushing, conveying and bulk transfer operations provided employees who generally work in these operations are protected by engineering controls where feasible.

Grain dust, starch, sucrose, vegetable oil and particulates not otherwise regulated (PNOR) for the grain handling industry.

The Federal Register notice of December 24, 1990, at 55 FR 52840, attached, issues an interpretation covering methods of compliance only for the exposure limits for grain dust, starch, sucrose, vegetable oil, and PNOR, and only for the grain handling industry defined as SIC Codes 0723, 2041, 2046, 2047, 2048, 2075, 4221, and 5153.

For all facilities in the grain handling industries compliance with paragraphs (a) through (d) of 29 CFR 1910.1000 may be achieved by the use of personal protective equipment for the following work tasks:

1. When employees take grain samples for the purpose of weighing or grading during truck or railcar unloading;
2. During load-out procedures when employees must direct grain flow and adjust spouting mechanisms and/or load-out devices.
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(3) Unloading bins and tanks where employees must physically enter the storage area to clean out any residual product:

(4) During blow down operations; or

(5) During other intermittent tasks in which there is exposure to regulated dusts (totaling less than one hour per worker per shift) such as maintenance of dust exhaust systems, maintenance of conveyor systems, preventive maintenance, operational inspections, and adjusting grain flow.

Small grain handling facilities indefinitely and medium size grain handling facilities until December 31, 1994, are not required to use "pneumatic dust control systems" as feasible engineering controls to come into compliance with the grain dust, starch, sucrose, vegetable oil, and PNOR PEL's. Other feasible engineering controls maybe required pursuant to 29 CFR 1910.1000(e) such as use of edible oil additives and filter air booths. Feasible engineering controls are not required to achieve new limits until December 31, 1992, pursuant to 1910.1000(f).

Small grain handling facilities are defined as:

(1) Feed mill facilities that produce less than 25,000 tons of feed per year;

(2) Elevator facilities that have less than 500,000 bushels of permanent storage capacity and are not attached to a mill or processor, other than a feed mill that produces less than 25,000 tons of feed per year;

(3) Elevator facilities that have less than 750,000 bushels of permanent storage capacity and actively handled grain for six months (1,040 hours) or less annually, on average during the most recent five years, and are not attached to a mill or processor, other than a feed mill that produces less than 25,000 tons of feed per year.

Medium size grain handling facilities are defined as:

(1) Feed mill facilities that produce less than 50,000 tons of feed per year; or

(2) Elevator facilities that have less than 1,500,000 bushels permanent storage capacity.

The above interpretation is not intended to affect the grain handling facilities standard, 29 CFR 1910.272, or other standards and PEL's. Existing pneumatic dust control systems must be maintained if necessary to achieve the stated PEL's.

Please note the July 5, 1989 Federal Register contained a lengthy correction notice to the standard and preamble. OSHA will be republishing OSHA booklet #3112 to incorporate these corrections.
OSHA enforces the minimum maintained velocities in Table G-10 of Parts 1910.94(c)(6)(i) and 1910.107(b)(5)(i) for spray booths when spray painting with isocyanate containing paints. OSHA recommends supplied-air full-facepiece respirators when using isocyanate paints. The interpretation letter discusses paint spray velocities in spray paint booths, especially when isocyanate paints are used, and recommends respiratory protection for spray paint booth operations.

INTERPRETATION 29 CFR 1910.1000(a); 1910.94(c)(6)(i); 1910.107(b)(5)(i); 1910.134(c)

JAN 7, 1986

Thank you for your letter of November 18, 1985, concerning isocyanate spray paints. I am happy to reply to your questions about safety and health practice in the case of isocyanate containing paints. Although my experience with the oligomers of isocyanates is very limited, I was fortunate to find two articles that should be some interest with regard to your first question. These I have enclosed along with a newspaper article.

With regard to the second, OSHA enforces the minimum maintained velocities in Table G-10 of Parts 1910.94(c)(6)(i) and 1910.107(b)(5)(i) for spray booths and also requires that "the total air volume exhausted through a spray booth shall be such as to dilute solvent vapor to at least 25 percent of the lower explosive limit of the solvent being sprayed" (1910.94(c)(6)(ii) and to below the Permissible Exposure Limit (29 CFR 1910.1000 Table Z-1, as enclosed) of any toxic material being sprayed.

The scope of the Standards does not apply to "small portable spraying apparatus not used repeatedly in the same location." In answer to your third question, I do not think the Standard (Part 1910.94) would apply to the conditions you describe.

As far as respirators are concerned, OSHA recommends supplied-air full-face respirators with isocyanate paints in addition to the general ventilation prescribed in the Standards (Part 1910.94 and Part 1910.107).

The answer to your last question awaits further discussion with safety professionals in the painter's union. Within the upcoming month, I hope also to find more materials that could clarify the OSHA position on spray booths and isocyanate paints.
RECORD ID 2307

STANDARD NUMBER 1910.1000(e)
INFORMATION DATE 860117

ABSTRACT With respect to tetrahydrofuran, OSHA standards require employers to maintain employee exposures to toxic air contaminants at or below permissible exposure limits feasible with engineering or administrative controls. If these are not fully effective then personal protective equipment must be provided.

(NOTE: Since the 1986 interpretation letter, OSHA has issued updated permissible exposure limits. Although the PEL for tetrahydrofuran has not changed, there is now a short term exposure limit (STEL) of 250 ppm.)

INTERPRETATION 29 CFR 1910.1000(e)
Jan 17, 1986

This is in response to your correspondence of December 11, 1985, on behalf of Mr. X, President of (Company), (City, State). It is our understanding that Mr. X's company has a contract to manufacture products for the (Government Agency), that coatings are applied to the products, and that according to XXXX specifications, the coating formula must include tetrahydrofuran.

Mr. X stated that he and his employees are experiencing harmful health effects from preparing and applying the coating formula. For this reason, Mr. X is trying to get the (Government Agency) to change its specification to permit the use of a substitute solvent for tetrahydrofuran.

The Occupational Safety and Health Administration (OSHA) has regulations limiting employee exposure to tetrahydrofuran, but while the substitution of a less toxic chemical for tetrahydrofuran is one possible solution to a problem of employee over-exposure, this agency has no authority to intercede in a contract dispute and require that this be done. We also wish to point out that while xylene, methyl isobutyl ketone, Cellosolve acetate, methyl ethyl ketone, and Moca may not have as highly irritating properties as tetrahydrofuran, they nonetheless are also toxic and must be handled under properly controlled conditions.

OSHA standards require employers to maintain employee exposures to toxic air contaminants at or below permissible exposure limits with engineering or administrative controls, whenever feasible. If feasible engineering or administrative controls are not fully effective, then the remainder of the required protection must be obtained by providing employees with and requiring that they use personal respiratory protection devices.

The OSHA permissible exposure limit for tetrahydrofuran is 200 parts per million as an 8-hour, time-weighted average concentration. The limit appears in Table Z-1 of standard 29 CFR 1910.1000. We have enclosed a copy of this standard and also a copy of OSHA standard 29 CFR 1910.134 covering respiratory protection.

The (State) administers its own occupational safety and health program under a provision of the Occupational Safety and Health Act of 1970, subject to close monitoring by Federal OSHA.

Since our (City) Regional Office has direct supervision over Federal OSHA activities in the Commonwealth of (State), we are forwarding your correspondence to that office for appropriate attention.
SOURCE LETTER

November 14, 1985

REFERENCE: Tetrahydrofuran Solvent (T.H.F.)

SUBJECT: Forced Government Use of Same against our will.

This letter is a plea for your help in the form of advice or experience with the use of Tetrahydrofuran solvent chemical in the factory work place.

(Company) holds patents to two synthetic rope held slings, called "(Product)", for external cargo loads. We make these for U.S., Canadian and other nations.

Originally (1964-72) we used solvent based P.V.C. coatings, most of which used M.I.B.K. and Xylene as solvents. We cured the rope with explosion proof vent blowers and exhaust fans.

To upgrade the coating service and protection of the surface fibers, we changed to polyurethane elastomers (ether grade). Most were of the moxa type 95% solids -- 2 part system 85-92 Shore A.

We received approval from OSHA and NIOSH to use and handle these products. Surveys were run on our shops by these agencies and we were approved in 1980. In addition we use moisture cure, solvent base and water base urethanes for rope coatings.

A Navy engineering group in Washington, D.C. and New Jersey (who have cognizance over our drawings) have changed all rope coatings to require:

1) Estane - Part #5417-F1 polyurethane thermoplastic granuals mfg. by (Company), (City, State).

2) with Tetrahydrofuran mfg. by (Company,) (City, State), as a solvent (The only solvent allowable).

The % ratio is 15% pellets, 85% T.H.F. by weight to be mixed in suspension and applied by dipping and stripping by hand to a desired thickness or pick up.

Using the above, two or three men must work in a closed spaced, 65 - 75 degrees Fahrenheit, summer or winter, for periods of 2 - 4 hours at a run. The current contract in question will require approx. 200 gal. of solution to be applied and tended approx. 168 man hours for the job. Our batches or pots would be 768 oz. (6 gal.), open exposed material (652 oz. T.H.F.) at 85% solvent.

We received this contract in early 1984, the first contract we had ever received requiring the use of T.H.F. as a solvent.

Our first prototype evaluations using the T.H.F. resulted in two becoming sick, the coating technician and myself. We reported the problem to the proper contract people who arranged a meeting. It was decided to then try to do this job outside (under a roof but open on the sides). We added fans, however found that the presence of vapor, using less than 128 oz. of mixed material was too heavy plus we had severe moisture pick up problems. As a result of using this small amount, one man was unable to breath properly and I became sick. In addition I developed a sore throat and a skin rash in both ear canals, which I still have.

Nothing we can say will or has caused the contracting officer to change the specs or believe us. They say another company is certifying the specs and so should we since we quoted on the contract. We have learned that M.E.K. may work as a solvent, but the government inspector is required to see that we use T.H.F. only.

We are now threatened with "default" and costly fines for refusing to use this material. Our employees have also refused to work with the material.

We are used to such solvents as Xylene, M.I.B.K., Cellosolve Acetate and M.E.K., but we cannot tolerate the T.H.F.

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The government has now asked for our last "show cause" as to why we cannot proceed with the contract, with documentations. The contracting officer needs outside expert opinion to evaluate the default.

We ask that you please give us your experience or views on the problem and allow us to submit a copy of your letter with our final rebuttal. To do so may help us and others who may be forced to use this product. Your credentials on the letter will help.

When we quoted we did not realize the effects of the fumes, nor had we ever used T.H.F. before.

NOTE: In 22 years of serving the military, we have never defaulted. We have only been late on two occasions, each of which we gave the government their requested consideration for being late. Approximately 75% of our volume is with defense or defense related contracts. A file of correspondence between us and the contracting officer/engineering group is available immediately upon request.
Various questions are answered regarding exposures to chemical and physical agents and associated regulatory requirements for a quarry operation.

(NOTES: (1) Since the 1986 interpretation letter, the 1910.1000 Tables Z.1A through Z.3 have been revised. There is now a marble dust exposure limit of 15 mg/m³ for the total dust 8 hour TWA and 5 mg/m³ for the respirable fraction. There is still no exposure limit for MEKP. (2) There is an addendum attached to the original inquiry that asks if styrene is a carcinogen. In the 1990-91 ACGIH TLV booklet, it is listed as a confirmed or suspect human carcinogen. In accordance with the requirements of 1910.1200, if this information is available it must appear on an MSDS. (3) The accompanying copy of the original inquiry precipitating this interpretation letter does not include questions 6 and 7 to which the corresponding numbered responses apply.)

INTERPRETATION

29 CFR 1910.1000; 1910.132(a)

This is an update of our March 26 response to your letter of March 10, addressed to the Assistant Secretary. Your letter transmitted correspondence on behalf of your constituent, Mr. X, regarding the Occupational Safety and Health Administration's (OSHA) standards on chemicals and marble powder.

I will respond to the questions in the order presented:

1. OSHA's standards for marble powder, styrene, methyl methacrylic (MM), methylene chloride and acetone are listed in Tables X1 through X3 of 29 CFR 1910.1000 (enclosed). Please note that marble powder is considered an inert or nuisance dust. OSHA does not currently have a standard for methyl ethyl ketone peroxide (MEKP).

Both guidelines and material safety sheets (MSDS) provide information on health and safety for employees. Both are advisory and neither supersedes the other. The guidelines on acetone, styrene, methylene chloride and methyl methacrylate are enclosed for information.

2. OSHA's General Industry standards, Title 25 Part 1910, cover all types of manufacturing including marble processing. We are not aware that there is a firm research study underway on the synergistic effects of styrene, MM and MEKP on the upper respiratory tract.

3. We can only answer this question regarding OSHA's standards. If respiratory, eye, and skin protection for toxic substances are prescribed in OSHA's standards, these requirements are mandatory.

4. OSHA does not require the employer to use a specific control method to reduce the employee's exposure to toxic substances within the OSHA standard. The "Arrester Pads" may be used to control volatile organic compounds if they are found to be effective.

5. Employee training and the conducting of exposure monitoring are the responsibilities of the employer. OSHA has a New Directions Training Grant available for trade unions.

6. Sampling and analytical methods for toxic substances may be subject to interferences. Unless the interfering substances are identified, the accuracy of a method cannot be determined.

7. At the present time, none of the chemicals mentioned in Mr. N's letter is regulated by OSHA as carcinogens.
SOURCE LETTER
February 27, 1986

I work with Mr. X on the Environmental Study Committee. We want to be scrupulously fair to the
(Company) but our charge relates to Public Health which we interpret to mean all the people both inside as
well as outside a plant. If you could forward as soon as possible reliable materials and requested
documents it would help us in making up a report to select men on a recent state Inspection of the facility.

1. Do you have copies of current OSHA Standards on the following chemicals and Marble Powder:
   (1) Styrene (2) Methyl Methacrylate (3) Methyl Ethyl Ketone Peroxide (4) Methylene Chloride (5)
   Acetone? Have Material Safety Data Sheets superseded Occupational Health Guidelines at
   OSHA? If they are different documents and still being used I am requesting copies of Current
   Guidelines for Marble and the chemicals already listed. Are Guidelines advisory or mandatory with
   respect to worker health and safety?

2. The company uses pre-mixes from suppliers and about 10% are pre-mixed at the plant on a
   custom basis. Are there regulations that exist or planned with respect to specific industries like
   processed marble? Different formulations have small amounts of other chemicals and one
   concern is that additive or synergistic effects of a mix of different chemicals could result
   particularly in the spraying-pouring and opening of molds. Has there been any firm research on
   this specific problem? Styrene, Methyl Methacrylate and MEKP all affect the throat-pharyngeal
   area, the reason that prompted my question. The State says their concern is for levels of
   Styrene, Methyl Methacrylate and MEKP only. As one example my understanding that Lead
   Chromate is a known carcinogen. Even in small quantities couldn't a chemical like it have an
   additive or synergistic effect with a suspected carcinogen like styrene? I don't know the answers
   to these questions but if you can relay the question to the individuals that have the best
   information and thinking it would help.

3. Another question relates to OSHA or other Federal Standards that relate to worker health and
   safety: Respirators-Eye Protection-Skin Protection etc. Are standards advisory or mandatory for
   a facility?

4. The issue of the best available technology for taking volatile air emission out of the air as well as
   particulates is murky and confused, but very important. The term "Arrester Pads" is mentioned in
   the original Land-Use Permit as a mandated installation for the removal of 96% of volatile
   organics. In the State inspection one of the statements was made in their summing up is that
   they have not been installed and the District Commission should be notified. On top of all this is a
   letter Mr. X sent to the Commission stating that "Arrester Pads" don't exist and the Permit be amended
   to reflect this fact. In the future, if I shall shortly be contacting Dr. Y of NIOSH being referred to him by Mr. X the
   latter having been contacted by Mrs. Z, while he might be giving some definitive information on
   this term it would be most helpful from your vantage point if there is backup information or
   "Arrester Pads" or the best available technology for taking out volatile organic emissions as well
   as particulates in a processed marble facility. Full order want to do a good report.

5. Subpart 2 of Part 1910 of Title 29 of the CFR amended with a new part 1910.1200 p 31 states that
   by May 25, 1986 training for employees should begin. Are there Federal funds available for
   personnel and equipment for an in plant monitoring function or does this funding come solely
   from the Employer? Generalizing with respect to Education and Training would it be a feasible
   idea to train Air-Water and Hazardous Waste Monitors to be employed regionally? I'm envisioning
   possibly a Federal-State program for men and women to be trained thru a State College like
   Community College where you could get an Associate Degree in Air-Water or Hazardous Waste
   and take a Minor in one of the other areas. Funding for employment could come thru
   contributions from towns serviced and the State. Senator M's idea for giving courses thru a video
   hookup for technical training in a rural state using Vocational Centers to bring students together
   and listen to taped lectures might be a suitable alternative. Anyway I wanted to share this thought
   with you as it would relieve a big crunch on folks in (Company) in (City). If practical could even with
   a money crunch the Government help to get it going.

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Addendum: I forgot to mention that the (Company) has initiated an internal monitoring program of its own. Indicator Buttons for Styrene detection made by a (Company) are used. Also (equipment) for rapid on-site analysis of emissions and reducing response times to other complaints are used.

How specific is such equipment, how do they work and do they have to meet any Federal standards? Our big concern is styrene because of its prevalence. Is it a carcinogen?

Mr. X's letter of 1/16/85 to yourself states with exception of some animal data on MEKP there is no evidence linking exposure of the chemicals of concern to the State (styrene-methyl methacrylate and MEKP to cancer in humans).

On the other hand, Mr. X in a letter to yourself (relating to an inquiry from Mrs. Z) states that styrene is a suspected carcinogen. In the amended CFR document previously mentioned on page 33, it mentions it is a carcinogen if evaluated by the International Agency for Research on Cancer (IARC) and found to be so or a potential one. Listed as carcinogenic or potentially so by the Annual Report on Carcinogens published by the National Toxicology Program or registered by OSHA as a carcinogen. If you could find out from these definitive groups there judgment on Styrene it would be appreciated.
ABSTRACT

(Company) should confirm that the dust levels of particulates (not otherwise regulated) are in compliance with OSHA's revised Air Contaminant Standard, 1910.1000: Table Z-1-A. If the dust levels are below the PEL, no respiratory program is needed but certain individuals who are allergic to non-specific dusts should be allowed to wear protective dust masks. OSHA policy provides that an employer not be cited for lack of a respiratory protection program unless there is a potential for employee over-exposure or an adverse health condition occurs due to the respirator. Therefore, the use of disposable dust masks to limit exposure to low levels of nuisance dusts would not, in itself, necessitate the need for a respiratory protection program.

INTERPRETATION 29 CFR 1910.1000; 1910.134(a)(1)

SEP 25, 1990

SUBJECT: Dust exposure: Employees.

This confirms the content and substance of the letter from Mr. X, OSHA Acting Area Director, (City, State) to Mr. X, Safety Specialist, (Company) (City, State) March 22, 1989. "OSHA policy is not to cite an employer for lack of a respiratory protection program unless there is a potential for employee over-exposure or an adverse health condition occurs due to the respirator. Therefore, the use of disposable dust masks to limit exposure to low levels of nuisance dusts would not, in itself, necessitate the need for a respiratory protection program."

Furthermore, in the internal memo from Mr. X, Acting Manager Safety and Health Services to Mr. X, Director, City Operations (2/22/89), Wiley is correct in suggesting "an employee should have his/her private physician prescribe a dust mask and a letter from the physician explaining the individual's susceptibility should be placed on file in the Health Unit."

In order to comply with the respirator program the (Company) should confirm that the dust levels of particulates (not otherwise regulated) are in compliance with OSHA's revised Air contaminant Standard CFR 29: 1910.1000: Table Z 1-A. If the dust levels are below the PEL, then no respiratory program is needed but certain individuals who are allergic to non specific dusts should be allowed to wear protective dust masks.
The employer is responsible for implementation of engineering controls to achieve compliance with the PEL. Respirators shall not be worn when a good face seal is prevented by conditions such as beard growth, sideburns, a skull cap that projects under the face piece, or temple pieces of glasses.

29 CFR 1910.1000(e); 1910.134(e)(5)(i); 1910.1043(c)(1); 1910.1043(f)(4)(i)

JUN 17, 1986

Thank you for your letter dated May 15, transmitting correspondence from your constituent, Mr. X, concerning the Occupational Safety and Health Administration's (OSHA) regulations on respirators and beards.

OSHA's standards on toxic and hazardous substances require the employer to implement engineering and/or administrative controls to reduce the employees' exposure to within the permissible exposure limit (PEL) as prescribed in 29 CFR 1910.1000 (copy enclosed). When such controls are not feasible to achieve full compliance protective equipment such as respirators shall be used to keep employees' exposure to air contaminants within the PEL.

In order for Mr. X's employer to require him to wear a respirator, the employer must conduct air monitoring to determine whether employees are over exposed to cotton dust. If overexposure is determined, the employer must demonstrate why it is infeasible to implement engineering or administrative controls, before issuing respirators. In accordance with OSHA's standard or respiratory protection, 29 CFR 1910.134, minimum requirements for a respirator program include respiration selection, employee training, fitting, and maintenance. These elements shall be established before the respirator is worn (copy enclosed).

Since the density, texture and growth of beards vary among individuals, a consistently satisfactory seal between the respirator facepiece and the wearer's face cannot be maintained on a day-to-day basis with a tight fitting respirator. This is the type of respirator which is commonly used for protection against cotton dust. However, there are many loose-fitting type respirators such as the helmet type powered air-purifying respirator or the positive-pressure supplied air respirator which may be worn by a bearded person. With these units, the protection provided does not depend upon a tight facepiece to face seal. Mr. X's employer may solve the problem by providing these loose-fitting respirators to employees with beards.

May 15, 1986

We are writing in response to a new law that was passed by the Occupational Safety and Health Administration concerning dust protection. We work at a textile plant that produces cotton products. The cotton dust level usually stays near the standard level at our plant. But, when it does not we are required to wear a dust mask which has a wired lining that enables it to fit tightly to the face. The OSHA has just informed us that all men that might have to wear a respirator at all must shave their beards off by May 15 or else. We feel that this is discrimination and we want to ask for your help in checking into this new law. We have been wearing our mask in the past without any problems and feel that this law is not necessary. We would be willing to even sign an agreement if we have to saying that we understand the danger and that we understand the danger and that we were warned, but feel that it is not necessary to shave. This may not seem like a very big problem but we feel that it is a type of discrimination against the male workers since it has not been proven to interfere with wearing our mask before.

Vol. 2-326
An interpretation letter regarding the provisions for covering a combination of substance exposures contained in Chapter IV of the OSHA Field Operations Manual and discussed with an example in Section 1910.1000(d)(2).

March 22, 1985

This is in response to your letter of February 19, inquiring how the Occupational Safety and Health Administration (OSHA) interprets and enforces 29 CFR 1910.1000(d)(2), a provision covering limits of exposure when an employee is exposed to a combination of substances at the same time.

The answer to your inquiry is contained in Chapter IV of the OSHA Field Operations Manual. A copy of the page providing the answer is enclosed.

**COMPUND TABLE**

1. Xylene
2. Methylene Chloride
3. Toluene
4. Ethyl Benzene
5. Butyl Alcohol
6. Ethyl Ether
7. Acetone
9. Methanol
10. Isopropanol
11. Benzene
12. Methyl Ethyl Ketone
13. Trichloroethylene
14. 1,1,1-Trichloroethane
15. n-Butyl Acetate
16. 1,1,2,2-Tetrachloroethylene
17. Stoddard Solvent
18. Cellosolve
19. Butyl Cellosolve
20. Carbon Tetrachloride
21. Vinyl Chloride
22. Phenol
23. Hexane
24. Phthalate Esters

**SOURCE LETTER**

February 19, 1985

I am writing this letter to get a clarification of a part of the OSHA regulation - specifically 1910.1000 (d)(2)(i) & (d)(2)(ii). The computational formula given relates to calculation of mixed exposure PELS. The ACGIH TLV booklet in Appendix C.1A addressing mixed exposure TLVS states "The following formulae apply only when the components in a mixture have similar toxicological effects; they SHOULD NOT be used for mixtures with widely different reactivities." (Emphasis added)
Our concern arises because there is no such qualifying language in the OSHA regulations, nor is any guidance given in the Field Operation Manual.

Referring to the list of chemicals in the attached Table, I would like to propose the following scenario. During a compliance inspection an OSHA Compliance Officer collected an 8 hour personal sample that contained these chemicals. How would OSHA apply the mixed exposure formula?

As part of your answer, I would appreciate a general clarification as to how OSHA interpret and enforces sections 1910.1000 (d)(2)(i) & (d)(2)(ii).
OSHA will enforce the Permissible Exposure Limit (PEL) as a ceiling limit and not as a time-weighted average for chromates and chromic acid. This reflects a recent memorandum from the Directorate of Health Standards Program, stating its reasons for retaining the PEL for chromates and chromic acid as a ceiling limit. Accordingly, OSHA is retracting a statement in a June 6, 1989, letter to the (DC) Manufacturers' Association that a correction to the Air Contaminants Final Rule would be published in the Federal Register.

Attached, for your information, is a recent memorandum from the Directorate of Health Standards Programs stating the Agency's reasoning for retaining the current permissible exposure limit (PEL) of 0.1 mg/m3 for chromates and chromic acid as a ceiling limit.

We are retracting our June 6, 1989, letter to the (DC) Manufacturers' Association (attached) which stated that a correction to the Air Contaminants Final Rule would be published in the Federal Register. Based on the current promulgation of the chromate and chromic acid PEL as a ceiling limit and not as a time-weighted average (TWA), OSHA will accordingly enforce the PEL as a ceiling limit.

Attachments:

Dear Mr. R:

This letter is to inform you that the Occupational Safety and Health (OSHA) is retracting its previous letter to you of June 6, 1989. That letter stated that a correction would be published in the Federal Register clarifying the issue of the chromic acid and chromate Permissible Exposure Limit (PEL) and that, in the interim, OSHA would be enforcing the 0.1 mg/m3 limit as a time-weighted average (TWA) and not as a ceiling limit as listed in 29 CFR 1910.1000 (Air Contaminants Standard).

A correction document has never been issued by OSHA. Based on a recent reevaluation of this enforcement issue and the current promulgation of the chromate and chromic acid PEL as a ceiling limit and not as a TWA, the Agency will accordingly enforce the PEL as a ceiling limit.

February 14, 1991

MEMORANDUM

SUBJECT: Permissible Exposure Limit for Chromic Acid and Chromates

Last August you requested Health Standards to clarify the issue of whether the 0.1 mg/M3 ceiling level for chromic acid and chromate should be interpreted as an 8-hour TWA. OSHA made an interpretation in the Industrial Hygiene Technical Manual to enforce the 0.1 mg/M3 limit as a TWA and not as a Ceiling Limit. However, a correction document has never been issued.

The current OSHA PEL for these compounds was adopted from a 1943 ANSI Standard. The justification for the ANSI Standard is based on 1924 and 1928 reports on the non-malignant effects (dermatitis and
skin ulceration and perforations of the nasal septum) of chromium compounds. Thus, our current PEL is based on observations reported more than 60 years ago. It has now been established by the International Agency for Research on Cancer (IARC) that Chromium VI compounds are carcinogenic to humans.

In the Final Air Contaminant rule, the Agency concluded that because of the complexities of scientific issues regarding the carcinogenicity of various forms (valencies) of chromates it would evaluate the need for a comprehensive 6(b) rule-making and not change the Permissible Exposures Limits (PELs) during the Air Contaminants rulemaking. Thus, the 0.1 mg/M3 ceiling limit appears to be the legal limit.

Health Standards is concerned that the current PEL is inadequate. Therefore, it seems inadvisable to raise the current limit in the Z Table through interpretation in light of evidence that the more stringent ceiling limit is too high and needs to be revised downward.

Accordingly, it is our recommendation to retain the ceiling limit value for chromic acid and chromates.
When sampling for welding fumes or any other air contaminant generated during a welding operation, a filter cassette must be placed inside the welding helmet. This policy of sampling inside the welding helmet applies to all air contaminants to which the welder is exposed while welding regardless of the source. It may be necessary to use a second sampling device to measure the exposure from a grinding operation when the welder switches back and forth between welding and grinding.

AUG 5 1992

This is in response to your memoranda of May 23 and 24, 1991 concerning the sampling of exposures of welders to air contaminants. We are sorry for the delay in this response.

The OSHA Technical Manual specifies that the filter cassette must be placed inside the welding helmet when sampling for welding fumes or any other air contaminant generated during the welding operation. The rationale for this policy can be found in the memorandum "Sampling for Welding Fumes," from L. C. to all Regional Administrators, dated February 14, 1990 (copy enclosed). This policy of sampling inside the welding helmet applies to all air contaminants to which the welder is exposed while welding regardless of the source.

The Cincinnati Area Office memorandum raised the issue of the welder who switches back and forth between welding and grinding operations. Under these circumstances it may be necessary to use a second sampling device so as to obtain the contribution from the grinding operation. For example, if a welder is engaged in welding and grinding a copper-based material, proper industrial hygiene practice mandates that copper fume not be collected along with copper particulate, as the two forms of copper have different PEL's and the laboratory cannot differentiate between the two when collected on the same filter.

The PEL for welding fume was established by the promulgation of Air Contaminants final rule published January 19, 1990 (FR54 2332). The preamble of the standard specifically discusses the position of the filter cassette (FR 54 2567, attached). OSHA concludes that the TWA of 5 mg/m3 is to be measured as a total particulate inside the welders breathing zone and indicates that this is determined on the basis of the guidance in the FOM, i.e. inside the helmet.

The Cincinnati Area Office's observation that "the hood does not provide any guaranteed, reproducible, or reliable protection from any hazard" has merit, however, the degree of respiratory protection afforded by the welding hood is not the sole basis for this determination.
ABSTRACT The U.S. Court of Appeals, Eleventh Circuit issued a decision vacating the "Final Rules" of the Air Contaminants Standard (29 CFR 1910.1000) on July 7, 1992. The Court's decision struck down the entire standard. Effective immediately the Agency will begin enforcement of the permissible exposure limits specified in the "Transitional Limits" columns, of Table Z-1-A, Table Z-2 and Table Z-3. These limits represent the PELs of the pre-1989 Air Contaminants Standard. OSHA requests that the guidelines included in Supplement III of the NIOSH/OSHA OCCUPATIONAL SAFETY AND HEALTH GUIDELINES FOR CHEMICAL HAZARDS and which contain the 1989 PELs, or any other modifications of the 1971 exposure limits, not be used or disseminated unless a label is affixed on each guideline stating "OSHA Exposure Limits Indicated in This Document are Not Enforceable."

INTERPRETATION 29 CFR 1910.1000

April 1, 1993

We request that the guidelines included in Supplement III of the NIOSH/OSHA OCCUPATIONAL SAFETY AND HEALTH GUIDELINES FOR CHEMICAL HAZARDS and which contain the 1989 PELs, or any other modifications of the 1971 exposure limits, not be used or disseminated unless a label is affixed on each guideline stating "OSHA Exposure Limits Indicated in This Document are Not Enforceable." These guidelines are marked with an asterisk on the attachment.

Subsequent to the 1989 revision of OSHA Air Contaminants standard, the Directorate of Technical Support jointly with NIOSH began the process of revising the 1981 NIOSH/OSHA guidelines. The joint project included preparing new guidelines on substances that were regulated for the first time in 1989. The new and revised guidelines contain information that is consistent with the 1989 Air Contaminants rulemaking.

On July 7, 1992 the Eleventh Circuit Court of Appeals in Atlanta vacated the entire Air Contaminants rule. Consequently, these PELs are no longer legally enforceable and can not be presented in the OSHA/NIOSH guidelines as the Agency's established exposure limits.

NIOSH has begun publishing many of the draft final guidelines and has already published and disseminated 50 finals. According to NIOSH, the 50 guidelines were sent to all OSHA area and regional offices for use or distribution. Of these 50, 33 are revised guidelines and 17 are new ones (see attachment). Of the 33 revised guidelines, 16 were not affected by the 1989 rulemaking and the rest include the new values established in 1989.

Therefore, to avoid confusion and possibly misleading information, the guidelines marked on the attachment with an asterisk should not be used or disseminated unless a label is affixed.

If you have any questions regarding this matter please feel free to contact me at (202) 219-7031.
Attachment

sec-Butyl Acetate
* Acetaldehyde
Acetic Acid
* Acetic Anhydride
* Acetonitrile
Acetylene Tetrabromide
* Acrolein
Acrylamide
* Allyl Alcohol
* Allyl Chloride
2-Aminopyridine
* Ammonia
* Ammonium Sulfamate
n-Amyl Acetate
sec-Amyl Acetate
* Aniline
Anisidine (o-, p-isomers)
ANTU
Azinphos-methyl
Benzoyl Peroxide
* Boron Oxide
Boron Trifluoride
* Bromine
Bromoform
Butadiene (1,3-Butadiene)
* 2-Butoxyethanol
* n-Butyl Acetate

REVISED GUIDELINES

tert-Butyl Acetate
* n-Butyl Alcohol
* sec-Butyl Alcohol
* tert-Butyl Alcohol
Butylamine
* p-tert-Butyltoluene

NEW GUIDELINES

Acetylsalicylic Acid
Acrylic Acid
Allyl Propyl Disulfide
Amitrole
Ammonium Chloride Fume
Atrazine
Barium Sulfate
Benormyl
Bismuth Telluride Doped with Selenium Sulfide
Bismuth Telluride, Undoped
Boron Tribromide
Bromacil
Bro...ine Pentafluoride
n-Butane
Butyl Acrylate
n-Butyl Lactate
o-sec-Butylphenol

Vol. 2-330.3
March 22, 1993

The U.S. Court of Appeals, Eleventh Circuit issued a decision vacating the "Final Rules" of the Air Contaminants Standard (29 CFR 1910.1000) on July 7, 1992. The Court's decision struck down the entire standard. Since that time, a stay of the Court's mandate implementing this decision has allowed OSHA to continue to enforce the 1989 PELs while a petition of writ of certiorari was considered.

As a decision has now been made not to file such a petition with the Supreme Court, the Court is expected to issue the mandate in the immediate future. Effective immediately the Agency will begin enforcement of the permissible exposure limits specified in the "Transitional Limits" columns, of Table Z-1-A, Table Z-2 and Table Z-3. These limits represent the PELs of the pre-1989 Air Contaminants Standard. The Directorate of Compliance Programs is organizing a task force to review the practical implications on enforcement and compliance procedures, and will be providing further instruction in the near future.

Should you have any questions, please contact the Office of Health Compliance Assistance.

October 29, 1992

The Eleventh Circuit Court of Appeals denied the Department of Labor's request for a rehearing concerning the court's decision that OSHA's standards for 428 toxic substances, 29 CFR 1910.1000, were invalid.

The Solicitor of Labor will file a motion for a 30-day delay in issuing the mandate of the court's July 7, 1992 decision. This delay will enable the Department to review its options and respond accordingly.

In the interim, and until a mandate is issued, the standard remains in effect, and OSHA enforcement of the standard is to continue.

We request the state designees be notified accordingly.
OSHA Instruction CPL 2-2.40

SEP 1, 1987


A. Purpose. This instruction establishes policies and provides clarification to ensure uniform enforcement of the above stated standards.

B. Scope. This instruction applies OSHA-wide.

C. References.

1. General Industry Standards, 29 CFR 1910.1001; 1910.134(b), (d), (e) and (f); 1910.141(d)(3) and (e); 1910.1101 and 1910.20.


E. Action. OSHA Regional Administrators and area Directors shall ensure that the guidelines presented in this instruction are followed. The Directorate of Field Operations shall provide whatever support is necessary to assist the Regional Administrators and Area Directors to enforce the asbestos, tremolite, anthophyllite, and actinolite standard.

F. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Provide a copy of the Federal Register notice to the State designee upon request.

3. Explain the technical content of the Federal Register notice to the State designee upon request.

4. Ensure that State designees acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include the State's intention to follow the enforcement policies described in this instruction, or a description of the State's alternative policy which is "at least as effective" as the Federal policy.

5. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State personnel. Routine monitoring activities shall also be used to determine if this change has been implemented by actual performance.

G. Background. The organization of the new asbestos standards are similar to many other OSHA expanded health standards. Published on June 20, 1986, these standards replace the existing standard recodified as 29 CFR 1910.1101 and add a separate standard for construction, 29 CFR 1926.58.

1. The new asbestos standards incorporate a much improved set of criteria against which employers can be evaluated on compliance inspections. Every attempt has been made to develop a clear standard that will result in uniform application. The purpose of this instruction is to supplement the guidance that is already present in the two standards.

2. Compliance Safety and Health Officers (CSHOs) must look to the standards for much of the guidance necessary for the implementation of these standards. The standards are generally written in specification language providing clear goals.

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OSHA Instruction CPL 2-2.40 (cont.)

H. Inspection Guidelines. The following guidance provides a general framework that is designed to assist the CSHO with inspections:

1. CSHO Personal Protective Equipment (PPE) and Decontamination Procedures.
   a. Respiratory Protection.
      (1) Respirators will be selected in accordance with Table D-4 of 29 CFR 1926.58 and Table 1 of 29 CFR 1910.1001, or in accordance with any regional guidance which requires a more protective respirator.
      (2) If the CSHO uses negative-pressure respirators to perform asbestos inspections, the Regional Administrator must ensure that semiannual fit tests are provided in accordance with 29 CFR 1926.58(h)(4)(ii) and 1910.1001(g)(4)(ii)
   b. Protective Clothing.
      (1) For inspections conducted under either standard requiring the CSHO to enter into a regulated area or negative-pressure enclosure, disposable coveralls, head coverings, foot coverings, and gloves shall be worn.
      (2) Clothing such as bathing suits may be worn beneath the disposable garments, for circumstances where the CSHO has obtained the employer's permission to use his or her decontamination facilities, and the decontamination area complies with 29 CFR 1926.58(j) or 1910.1001(i)
   c. Decontamination Procedures.
      (1) For any investigation where the presence of airborne asbestos fibers in concentrations above the action level is suspected, only experienced and properly trained CSHOs shall perform the site evaluation. Inexperienced or untrained CSHOs shall submit a referral to his or her supervisor in the event that the presence of asbestos is discovered during the course of an inspection.
      (2) If the site evaluation indicates that personal protective equipment is required to conduct the inspection, then the CSHO shall determine if two CSHOs will be necessary to conduct the inspection and to perform the requisite decontamination procedures.
      (3) For OSHA inspections of removal, demolition, and renovation operations, the CSHO shall not enter into the negative-pressure enclosure unless it is absolutely necessary to document a violation of an OSHA standard.
      (4) If it is determined to be necessary to enter into the negative-pressure enclosure, the CSHO shall enter through the employer's decontamination areas clean room. If the employer denies the CSHO entry through the decontamination unit, then the CSHO shall consider this to be a denial of entry and the requisite warrants shall be obtained.
      (5) Prior to entering into the negative-pressure enclosure or regulated area, the CSHO shall determine if the employer has' a decontamination area which complies with 29 CFR 1926.58(j) or 1910.1001(i) , and obtain the employer's permission to use the decontamination unit. Upon exiting from the negative-pressure enclosure or regulated area, the CSHO shall follow the exiting procedures required by 29 CFR 1926.58(j)(2)(vi) or 1910.1001(j)(2)(i),to avoid contaminating the employer's clean room.
      (6) The Area Director shall be consulted if the CSHOs have difficulty complying with the required decontamination procedures.
      (7) For construction activities not requiring hygiene facilities (viz.: small-scale, short-duration operations) or where the employer's hygiene facilities are inadequate, or where the
OSHA Instruction CPL 2-2.40 (cont.)

employer refuses to allow the CSHO to use their hygiene facilities; CSHOs shall first use a HEPA-equipped vacuum to remove gross contamination from their protective clothing and equipment. Further suppression of the contaminants may be achieved by applying a water mist to the entire outer surface of the protective clothing. The disposable items of PPE shall then be removed and placed in 6-mil polyethylene bags, sealed, labeled, and disposed of following the applicable Federal, State or local guidelines. Nondisposable equipment (e.g., respirators, pumps, etc.) where feasible, shall be wiped off with premoistened towelettes, or sprayed with water and placed in polyethylene bags, for transport, if further washing is required. Any exposed skin areas shall be wiped clean with premoistened towelettes. Upon the removal of contaminated PPE, fresh disposable coveralls shall be donned by the CSHO prior to travel to a remote location for showering.

2. Scope and Application. The construction standard applies to all operations specified in 29 CFR 1926.58(a), which includes but is not limited to demolition, renovation, and maintenance of structures, as well as, removal of asbestos, tremolite, actinolite or anthophyllite containing materials. The application of the standard is not restricted by the SIC code of the employer. Therefore, if a manufacturer uses his employees to remove asbestos from a building, piping system, boiler system or the like, those employees are covered under the asbestos standard for construction. The general industry standard applies to the manufacturers of products which contain asbestos, tremolite, actinolite, or anthophyllite, automotive repair, ship repair and other general exposures.

3. Regulated Areas. Paragraph 29 CFR 1926.58(e)(1) requires employers to establish regulated areas where airborne concentrations of asbestos, tremolite, anthophyllite, actinolite or a combination of these minerals exceed or can be expected to exceed the PEL. Paragraph 29 CFR 1910.1001(e) of the General Industry Standard requires the same.

a. The construction standard describes two distinctly different types of regulated areas which must be established based on the type of work being performed. Employers performing general construction operations, such as the cutting of asbestos-cement sheaths, the lathing of asbestos-cement pipes or the removal of asbestos-containing floor tiles, are required to establish regulated areas in accordance with 29 CFR 1926.58(e)(1) and demarcated in accordance with 29 CFR 1926.58(e)(2).

b. 29 CFR 1926.58(e)(6) requires employers performing asbestos removal, demolition, and renovation operations to establish negative-pressure enclosures before starting their work, wherever feasible. Negative-pressure enclosures are considered to be feasible in all situations, except where space limitations prohibit the construction of the enclosure, or where the erection of a negative-pressure enclosure would create a greater hazard (e.g., toxic gases present in area). The enclosure must be established and managed by a competent person as defined in 29 CFR 1926.58(b) and (e)(6)(iii).

c. 29 CFR 1926.58(e)(6)(iv) grants exceptions from the requirements of establishing negative-pressure enclosures and designating a competent person, if the operation is small-scale and of short duration. For the purposes of this standard a "small-scale, short-duration" operation is defined as:

(1) Maintenance or renovation tasks, where the removal of asbestos-containing materials is not the primary goal of the job (e.g., repairing a valve which entails the removal of asbestos, installing electrical conduit which must be fastened to asbestos-cement siding, etc.).

(2) Activities where employees exposures to asbestos can be kept below the action level via worker isolation techniques, such as glove bags or other methods described in Appendix G.
OSH A Instruction CP L 2.40 (cont.)

(3) An operation which has been included in the employer's asbestos maintenance program (as required in Appendix G) of all employers who are claiming an exemption from the requirements of 29 CFR 1926.58(e)(6).

(4) Nonrepetitive operations (viz.: not a series of small-scale jobs, which if performed at one time would have resulted in a large-scale removal).

d. The CSHO shall evaluate the employer's program for establishing the requisite regulated areas under both standards by examining the following:

(1) If the employer has designated a competent person to setup and manage the regulated areas in accordance with 29 CFR 1926.58(e)(6)(ii) (A-H) (for construction only).

(2) If the employer's initial monitoring data, or objective data was obtained in accordance with the prescribed sampling and analytical methods.

(3) If monitoring data from a similar work situation is used in lieu of monitoring the current worksite, the CSHO must evaluate and compare the reported conditions and data and conclude whether or not it is acceptable.

(4) If the employer has failed to establish a negative-pressure enclosure, the CSHO must document that such an enclosure is in fact feasible, and that the project is not a small-scale, short-duration operation. If the employer asserts that the activities are small-scale, short-duration, then the CSHO shall review the employer's asbestos maintenance program required by Appendix C of the standard (construction only).

4. Pre-entry Appraisal. In situations where the work activities apparently involve asbestos and the employer has not done the initial monitoring or followed any of the requirements of 29 CFR 1926.58, or 29 CFR 1910.1001, the CSHO shall obtain a bulk sample of the material(s) that are suspected of being asbestos and obtain an expedited analysis of the material(s). An expedited analysis may be achieved by:

a. K-2 tests.

b. Contracting with a local laboratory.

c. Requesting an expedited analysis from the Salt Lake City Analytical Laboratory.

d. If the results are positive, the CSHO shall consider this to be an imminent danger situation and follow the procedures established in OSHA Instruction CPL 2.45A, Chapter VII.

5. Establishing the Presence of Asbestos. In cases where there is a delay in obtaining bulk samples or in having them analyzed alternate methods shall be used to verify the presence of asbestos.

a. Alternate methods for identifying the presence of asbestos include:

   (1) The review of building plans.

   (2) Previous inspection files by OSHA and other State, local and Federal agencies.

   (3) Age of building.

b. The methods discussed above shall be used only when basis for an imminent danger notice is being investigated.

6. Hygiene Facilities and Practices. Shower facilities erected in accordance with the construction asbestos standard shall be considered to be feasible except:

a. Where space limitations prohibit locating the shower facilities adjacent to the equipment room.

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b. Where water is not available at the job-site.

c. In these situations, however, the use of mobile decontamination units (trailers) equipped with an equipment room, a shower room, and a change room may be appropriate.

7. Stays. Enforcement of 29 CFR 1910.1001, and 29 CFR 1926.58 as they apply to nonasbestiform tremolite, anthophyllite, and actinolite has been administratively stayed until July 21, 1988. In the interim, the nonasbestiform varieties of tremolite, anthophyllite, and actinolite are covered under the old asbestos standard which has been recodified as 29 CFR 1910.1101. There have been no judicial stays issued regarding this standard.
ABSTRACT  Compliance with OSHA analytical requirements for asbestos is based on
the OSHA Reference Method, Appendix A in 1910.1001 & 1926.58. This reference method requires
10% blanks with a minimum of 2 blanks for any set of air samples.

INTERPRETATION  29 CFR 1910.1001(d)(ii); 1926.58(f)(5)(ii)

OCT 20, 1988

I have received your request for interpretation of the requirement for laboratory blanks. It is necessary to
understand that compliance to OSHA analytical requirements for asbestos is based in the OSHA
Reference Method (ORM) which is Appendix A in either the General Industry standard 29 CFR 1910.1001
or the Construction Industry standard 29 CFR 1926.58. The ORM gives a set of instructions and
procedures that must be included in any asbestos method for determination of fibers in air. The NIOSH
method 7400 is one method which complies with the ORM. I have included the OSHA method ID160
which is the method used here at the Salt Lake City Analytical Laboratory (SLCAL is the OSHA national
laboratory).

The ORM requires 10% blanks with a minimum of 2 blanks for any set. These are interpreted to be field
blanks. Field blanks are cassettes which are taken to allow an estimation of any contamination that may
occur as a result of handling apart from actual air flow through the filter. They are to be opened and held
open for about 30 seconds face down at the same place where the personal samples are mounted on the
sampled employees. They are then closed, stored and sent to the analysis laboratory with the rest of the
sampling set. There is no provision in the ORM for laboratory blanks. Point 1 of Appendix A requires that
the filters that are used for this analysis are designated by the manufacturer as suitable for asbestos. This
would of necessity require that manufacturers prescreen the cassettes for fibers. At this level we accept
this prescreening as adequate for laboratory blanks.

Point 11 of the ORM requires that any set represented by a blank concentration in excess 7 fibers per 100
fields be rejected. Thus, any samples taken on filters with an excess of fibers would be eliminated from
determinations of personal exposure. It is therefore unnecessary to analyze laboratory blanks when
properly assembled and checked filter cassettes are used.

In conclusion, since the filters are prescreened by the manufacturer and since the blank is subtracted out
of the result and since there is a cap on how much fiber may be on a filter, it is unnecessary for the user to
submit laboratory blanks on a regular basis. Further, the only blanks referred to in the ORM are field blanks
and as a result, only field blanks are required.
This response provides an interpretation on interlaboratory quality control requirements as detailed in Appendix A of both general industry 1910.1001 and construction 1926.58 asbestos standards.

APR 3, 1987

This is in response to your letter of February 25 concerning interlaboratory testing as detailed in mandatory Appendix A of both the general industry and construction industry asbestos standards (29 CFR 1910.1001 and 29 CFR 1926.58, respectively).

The Occupational Safety and Health Administration’s (OSHA) rationale for relying on interlaboratory quality control is discussed in the preamble to the asbestos standards. Specifically, on page 22685, column 3, line 50 of the June 20, 1986, Federal Register.

"Dr. X testified at the hearing that the NIOSH method 7400 is an improvement over the existing NIOSH method in its provisions for standardization of counts between counters and laboratories."

and on page 22685, column 1, line 11:

"...OSHA has used the major features of the NIOSH 7400 method as the basis for developing a required standardized sampling and analytical method measuring airborne asbestos concentrations."

It is clear that the Agency intended to model the OSHA Reference Method (ORM) after the NIOSH 7400 to take advantage of its more precise measurement and improved methodology. Outright adoption of the NIOSH 7400 method in OSHA’s regulatory text, however, would have had the effect of stifling innovation and further would not have been workable in all applicable cases. Therefore, the quality control features of NIOSH Method 7400 were extracted and entered as part of the ORM. Originally this included blind recounts, participation in the NIOSH PAT Program, and participation in round robins with other laboratories. This was clearly the intent of NIOSH in Method 7400 (Ex. 84-444, page 7400-5, Item 16. NOTE):

"To ensure good reproducibility, all laboratories engaged in asbestos counting should participate in an asbestos proficiency program such as the NIOSH Proficiency Analytical Testing (PAT) Program and routinely participate with other asbestos fiber counting laboratories in the exchange of field samples to compare performance of counters."

The working details of how this should be carried out were discussed with NIOSH. The “round-robin concept” was developed from talks with NIOSH personnel based on the docket (Ex. 84-444). NIOSH indicated that this dual program was essential in establishing a lower interlaboratory coefficient of variation.

As the development of the current asbestos standards progressed, a change took place in the way the PAT program was administered. OSHA’s position with respect to the PAT program in this reference was documented in the preamble at page 22689, column 1, line 5:

"The NIOSH PAT program has been in existence for 13 years. Recently, however, NIOSH has transferred the administration of the program to the American Industrial Hygiene Association, which will provide PAT samples to private laboratories. Since the direction and administration of the PAT program is undergoing changes, OSHA has not at this time required employers to utilize laboratories that are participating in the PAT program."

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As this portion of the quality control program had to be dropped from the ORM, it left the round-robin portion intact. We still recommend that laboratories participate in the PAT program. But it is clear from the chain of events that the intent of both OSHA and NIOSH through the entire proceeding was that the round-robin and the PAT program were separate and dissimilar entities. It is also clear that participation in both was originally intended, but, because of changes made in the administration of PAT, provision for requiring PAT could no longer be included in the ORM. This left the requirement for laboratories to cooperate in round-robins at least every six months and to post the results for all counters to examine.

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SOURCE LETTER
FEB 25, 1987

We would like to bring a matter of great concern to your attention regarding the recently revised OSHA Asbestos Standard. Unfortunately, we did not have an opportunity to provide public comment as allowed by legislative enactment procedures.

Mandatory Appendices A of both the General and Construction Industry Standards require laboratories performing fiber count analyses to participate in an interlaboratory round robin QC program with at least two other independent laboratories. It had been our opinion, upon careful review of the final standard, that participation in the AIHA/NIOSH PAT program was inferred by the minimum interlaboratory quality control requirement outlined in Appendix A. However, during a recent telephone conversation with Mr. X, Supervisory Physical Scientist at the OSHA Salt Lake City Analytical Laboratory, it was indicated that mere PAT Program participation and performing 10% blind recounts would be insufficient to comply with the asbestos standard. While we certainly applaud OSHA's intent to assure analytical quality, we have very strong objections to being forced to cooperate with, enhance qualifications, and promote the success of competing laboratories.

Mr. X voiced several technical objections to sole reliance on PAT Program participation for interlaboratory quality control. For example, he stated that exchange of field samples would provide an opportunity for analysts to determine the cause of disagreement between counts on the same filter. However, should an outlier occur on a PAT sample could not that sample be recounted in-house under the supervision of a laboratory director to determine the cause? Mr. X further stated that PAT samples, being artificially generated, did not represent actual field samples with variations in loading, background particulate interferences, etc. We would not disagree with this position, however, accuracy is the degree of conformity of a measure to a standard or true value. It would seem reasonable to say that given the variability of the method, the "reference values" assigned to individual PAT samples as determined by approximately 70-80 "reference laboratories" is the closest anyone has come to generating a "known" fiber density on a filter. Reporting a PAT sample fiber density within the acceptable range, in our opinion, indicates an analyst's ability to discern and count a "fiber" as currently defined. Couple this with 10% duplicate analysis and both accuracy and precision are controlled.

The point of our letter is that some laboratories may wish to voluntarily participate in an interlaboratory quality control program beyond the PAT program. However, we can envision a situation where competing laboratories within our round robin group may elect for whatever reason, to disallow our continued participation in their program. This would immediately put us in non-compliance with OSHA regulations as they currently are interpreted by Mr. X. We cannot accept being placed in this position by any competitor, and we certainly question upon what legal basis has any agency of the federal government the authority to require us to do so. The federal government may wish to encourage but cannot legislate and assume the availability of professional cooperation.

Vol. 2-338
The B counting rules for asbestos analysis of NIOSH method 7400 are not acceptable for personal samples taken to satisfy OSHA requirements.

This is in response to your inquiry of October 28, regarding the counting rules for asbestos analysis. The short answer to the question whether the B rules of NIOSH method 7400 would be acceptable or not is: no, they are not acceptable for personal samples taken to satisfy OSHA requirements.

The standards are quite clear on this issue. Appendix A of both asbestos standards establish the counting rules to be used for asbestos analysis. Essentially, these are the A rules of NIOSH method 7400. Both sets of counting rules were considered in rulemaking. In the preamble to the asbestos standard OSHA indicated that a change to counting 5:1 particles would adversely affect the quantitative risk assessment (QRA) 51 FR 22681. The QRA was the basis for the new standard. OSHA opined that use of a longer aspect ratio would lower the number of counts in a given atmosphere. Because of the long standing of the 3:1 ratio, the body of data available from counts made with the A rules and the engineering controls based on those data, OSHA concluded that worker health would be best preserved by requiring the 3:1 fiber definition to be used. This definition is consistent with the A rules of NIOSH 7400.

You might further be interested to know that Dr. X, a NIOSH representative, wrote in the November 1987 issue of Applied Industrial Hygiene: "Therefore to eliminate concerns that the two methods are not equivalent when comparing results with the OSHA Permissible Exposure Limit (PEL), it is recommended here that the A rules be used." NIOSH has supported the OSHA use of 3:1 in its policy statements.
ABSTRACT A disposable respirator is defined as a unit with a filter element which is an inseparable part of the respirator. The North 10030 series respirators are classified as disposable and are prohibited for protection against asbestos dust.

INTERPRETATION 29 CFR 1910.1001(g)(2)(i); 1926.58(h)(2)(i)

AUG 6, 1987

This is in response to you letter of July 15, concerning "disposable" respirators.

You indicated in your letter that your understanding is that we would accept the North Model 10030 "disposable" respirator equipped with a high-efficiency filter element for protection against asbestos dust if you were to discontinue all reference to the respirator as "disposable". You previously wrote to us on this issue on October 10, 1986 and we provided you with a response dated November 6, 1986. Since we did not hear from you again on this issue, we felt that you understood the Occupational Safety and Health Administration's (OSHA) position on the prohibition of the use of any "disposable" respirator for protection against asbestos dust.

OSHA standards on asbestos, 29 CFR 1910.1001 and 29 CFR 1926.58, do not allow the use of "disposable" respirators for protection against asbestos dust. This prohibition received considerable support during OSHA's public hearing on the asbestos standards (see 51 FR 22717-22718). Although OSHA did not define the term "disposable respirator" in the asbestos standards, it has been defined as a unit with a filter element which is an inseparable part of the respirator. This definition was published in the cotton dust standard, Table 1 of 29 CFR 1910.1043(f)(2) (copy enclosed). Since the high-efficiency particulate filter element of the North 10030 "disposable" respirator is inseparable from the respirator, OSHA must classify the North 10030 series respirators as "disposable". A recertification of this respirator by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) will not affect OSHA's classification.
OSH is asked to review and determine whether there is a discrepancy between EPA and OSHA's recommendations on the use of wet methods to clean brake parts containing asbestos. The EPA video tape entitled "Don't Blow It" is not in serious disparity with the OSHA standard.

This is in response to your memorandum of January 29, requesting us to view the subject video tape prepared by the Environmental Protection Agency (EPA) entitled "Don't Blow It." You asked us to determine whether there is a discrepancy between EPA and OSHA's recommendations on the use of wet methods to clean brake parts containing asbestos.

Appendix F of the OSHA asbestos standard, 29 CFR 1910.1001 lists two non-mandatory methods for the cleaning of brake parts. One is an enclosed cylinder/HEPA vacuum system and the other is a compressed air/solvent system. Since OSHA emphasizes performance standards, the employer may select any method in conformity with the requirement prescribed in the standard concerning the control of asbestos fiber releases.

After viewing the video tape, we do not believe that a serious disparity exists between the recommendations of the tape and those found in the OSHA standard.
RECORD ID 1619

STANDARD NUMBER 1910.1001(g)(2)(i); 1926.58(h)(2)(i)
INFORMATION DATE 880119

ABSTRACT This interpretation provides a clarification of the asbestos air sampling program to comply with requirements for a respiratory protection program. The number of air samples and who the air samples should be collected from are discussed for respiratory selection.

INTERPRETATION 29 CFR 1910.1001(g)(2)(i); 1926.58(h)(2)(i)
Jan 19 1988

Your letter to the Assistant Secretary dated December 9, 1987, concerning air monitoring has been referred to the Directorate of Technical Support for response.

As indicated in your letter, your main interest is to use the monitoring results to implement a respiratory protection program as required in the Occupational Safety and Health Administration's (OSHA) Asbestos Standards for General and Construction Industry, 29 CFR 1910.1001 and 1926.58. Our reply will be limited to this issue.

There are many factors which could affect worker exposure to asbestos such as types of operations and environmental conditions. Your sampling program should take these factors into consideration. The standards prescribe a time-weighted average exposure of 0.2 fiber of asbestos per cubic centimeter of air. For Respirator selection, monitoring should be performed on the employees with the highest potential for exposure to asbestos in each job classification. Sufficient samples should be collected throughout the shift or for each type of operation if the time of operation is less than the whole shift to categorize the exposure. Appendices A and B for these two asbestos standards give detailed procedures for monitoring.

Since the health standards promulgated by OSHA are for the performance desired, a specific number of samples collected to determine the employee's exposure is not specified. However, a statistically significant number of samples should be collected for exposure determination. A National Institute for Occupational Safety and Health (NIOSH) publication, NIOSH-75-159, titled "Statistical Methods for the Determination of Noncompliance with Occupational Health Standards," could provide you with guidance on this subject. This publication is available at the Government Printing Office at the following address:

Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

Vol. 2-342
RECORD ID 1759

STANDARD NUMBER 1910.1001(a)(1); 1926.58(a)(3)
INFORMATION DATE 870629

ABSTRACT This interpretation provides clarification of who is covered under the asbestos Construction Standard, 1926.58. Custodial and janitorial workers who are performing asbestos emergency or routine clean-up and who are employed by private firms, are covered under the asbestos construction standard, 1926.58. However, public school and hospital employees are covered by the EPA.

INTERPRETATION 29 CFR 1910.1001(a)(1); 1926.58(a)(3)

JUN 29, 1987

This is in response to your letter of February 10, 1987 concerning the Occupational Safety and Health Administration's (OSHA) Asbestos standard. Please accept my apology for the delay in response.

More specifically you asked the following question:

Would custodial/janitorial workers who are employed by a company such as a hospital, university, school or manufacturing firm by regulated under 29 CFR 1910.1001 or 29 CFR 1926.58?

Custodial and janitorial workers performing asbestos emergency or routine clean-up, who are employed by private firms, as described in your letter would be covered under the asbestos construction standard 29 CFR 1926.58. However, public schools or hospital employees are covered by the Environmental Protection Agency (EPA).
This interpretation clarifies initial, daily and periodic air monitoring requirements; the label and warning sign requirements of 1910.1001 and 1926.58, and their applicability to raw materials, regulated areas, and products.  

JAN 9, 1987

This is in response to your letter of November 25 regarding the Occupational Safety and Health Administration's (OSHA) standards for asbestos, tremolite, actinolite, and anthophyllite (29 CFR 1910.1001, and 29 CFR 1926.58).

Your first question is when and where is air monitoring required?

The general industry standard 29 CFR 1910.1001(d)(2) requires initial monitoring of employees who are or who may reasonably be expected to be exposed to airborne concentrations at or above the action level, except where the employer has historical or objective data, which demonstrates that the employees would not be exposed at or above the action level.

Initial monitoring was required to have been completed by October 20, 1986, the need for subsequent air monitoring is dependent upon the levels found during initial monitoring results are 0.1 fiber/cubic centimeter (f/cc) of air or greater, than exposure monitoring must be performed at least every six months.

The construction standard 29 CFR 1926.58(f)(2) requires initial monitoring at the beginning of each job involving asbestos, tremolite, actinolite and anthophyllite, except where the employer has historical or objective data which shows that the initial monitoring for construction must be performed by January 16, 1987. Under the construction standard, daily air monitoring must be performed which is representative of the exposure of each employee assigned to work in the regulated area.

Your second question is when and where are labels and warning signs required?

Both the general industry and construction standards (29 CFR 1910.1001(j)(1) and 29 CFR 1926.58(k)(1) respectively) require that warning signs be posted to demarcate regulated areas. A regulated area is an area where employee exposures exceed or can reasonably be expected to exceed the permissible exposure level (PEL) of 0.2 f/cc. The signs must be posted in such a way that the employees can read the signs and take the necessary precautions prior to entering into the regulated area.

Similarly, both standards require warning labels on all raw materials, mixtures, scrap, waste, debris and other products which contain asbestos, tremolite, anthophyllite or actinolite fibers or to their containers. Labels are not required, however, if the manufacturers of the product can demonstrate that the asbestos, tremolite, anthophyllite or actinolite fibers have been bound or coated in such a way that the fibers will not be released in excess of the action level under any foreseeable conditions of use, handling, storage, disposal, processing or transportation, or if asbestos, tremolite, actinolite or anthophyllite or a combination of these minerals is present in the product in concentrations less than 0.1% by weight.

Vol. 2-344
SOURCE LETTER

NOV 25, 1986

This letter is in regard to the new final standards regulating occupational exposure to asbestos 29 CFR Parts 1910 and 1926. There seems to be a great deal of confusion regarding air monitoring and the posting of labels and warning signs as per the new standards.

Several of our clients disagree on the exact meaning of the regulations as they pertain to them. They know that they fall under the heading Construction and Industry, and therefore they come under these new final standards. So the questions are:

1. When and where is air monitoring required?, and

2. When and where are labels and warning signs required? Is it always a judgment call. Is there a set procedure for when and where to air monitor, label and post warnings signs? Is it required that every room which contains asbestos have labels and signs acknowledging this fact? Must every room which contains asbestos be air monitored? Is the rule intended only for construction sites?
ABSTRACT

Due to possible problems with asbestos counting efficiency resulting from overloading and from obscuring dust, the following is recommended for asbestos sampling: use 37 mm cassettes only when written justification is granted; use 25 mm dia. 0.8 μm pore size MCEF; do not sample higher than 1.0 Lpm, except for very clean environments; and use sampling times per sample of 2-4 hours.

INTERPRETATION


APR 26, 1989

SUBJECT: Asbestos Monitoring

The difference in collection efficiency for the asbestos collection devices has been thrown into the spotlight recently due to a set of paired samples taken in Region (X). We are aware of sampling differences between the 37 mm cassette and the 25 mm cassette. Most of the disparity between the two cassettes was eliminated by requiring electrically conductive cassettes. We are also aware that there are differences that have not been fully evaluated.

In the case of these paired samples, the reason for the difference in results may be attributed to a loss of counting efficiency due to obscuring dust. In a note to AIHJ Vol. 47, April 1986, we reported a reduction of counting efficiency traceable to the load of non-asbestos dust on the filter. The samples taken by the Area Office were paired at the same flow rate for the same sampling times. This will lead to a 2.26x heavier loading on the 25 mm filters. Since the loss of efficiency appears exponential, this has a dramatic effect on the apparent count of the filters. Nearly all the difference between the paired sets can be traced back to this effect.

This fiber obscuration effect is not limited to the 25 mm cassette. It has been present on the 37 mm cassette as well. We have reopened an investigation of the cassette to determine a permanent course of action. In the meantime the following recommendations should be followed for occupational samples:

1. The 37 mm cassette may only be used with written justification. This is limited to situations which cannot be replicated by some use of the 25 mm cassette. The only situation currently accepted is where a long sampling time is required and the available pumps will not reliably sample lower than 1 Lpm.

2. With the exception above, use only new 25 mm dia. 0.8 μm pore size MCEF loaded cassettes.

3. Except in atmospheres expected to be very clean such as in office environments, do not sample higher than 1.0 Lpm as the suggested rate.

4. Sample for no longer than 2 to 4 hours per cassette to avoid overloading.
An interpretation letter regarding requirements for medical questionnaires and medical examinations under the asbestos standards. Questionnaires found in 1910.1001 Appendix D and 1926.58, Appendix D are mandatory standardized medical questionnaires which must be administered to all employees covered by these standards, and may not be replaced by substitutes. A screening procedure where technicians are used to administer tests and only those individuals with abnormal findings are referred to a physician for examination does not meet the medical examination requirements of the asbestos standards.

This is response to your letter of December 8, 1986 regarding the medical surveillance provisions of the Occupational Safety and Health Administration's (OSHA) standards for asbestos 29 CFR 1910.1001 and 29 CFR 1926.58.

Your first question is whether or not Health Evaluation Programs, Inc.'s "Medical History and Health Questionnaire" can be substituted for the medical questionnaires contained in the asbestos standards. The questionnaires found in 29 CFR 1910.1001 Appendix D and 29 CFR 1926.58, Appendix D are mandatory standardized medical questionnaires which must be administered to all employees covered by these standards, and may not be replaced by substitutes.

You second question concerns the acceptability of a screening procedure where technicians are used to administer tests and only those individuals with abnormal findings are referred to a physician for examination.

Sections 29 CFR 1910.1001(1)(1)(ii) and 29 CFR 1926.58(m)(1)(ii) require that... "all medical examinations and procedures are performed by or under the supervision of a licensed physician..." Furthermore 29 CFR 1910.1001(1)(7) and 29 CFR 1926.58(m)(4) require the examining physician to furnish the employee with a written opinion of his or her findings. Therefore, the procedure which you describe does not meet the intent of the standards, since the physician could hardly supervise an examination from a remote location, or issue a written opinion of finding without first seeing the employee.
This response addresses whether a TEM Laboratory can modify the OSHA-NIOSH 7402 analytical method for asbestos. OSHA does not grant approval to modify NIOSH methods. OSHA is only concerned with personal monitoring that must be done within the employee's breathing zone. Stationary pumps cannot be used for compliance with regulations.

SEP 7, 1989

I have been asked to respond to your letter of 16 August 1989 to Mr. X of our (City, State) office. OSHA does not grant approval to modify NIOSH methods. However, I will respond to some concerns that OSHA has. The first point to consider is that OSHA is only concerned with personal monitoring that must be done within the employee's breathing zone. The flow rate is limited to 0.5 to 2.5 liters per minute. Stationary pumps cannot be used for compliance with OSHA regulations. Second, although the use of TEM is not currently allowed for primary analysis to meet the OSHA monitoring requirements under Appendix A of either 29 CFR 1910.1001 or 29 CFR 1926.58, it can be used to modify a phase contrast count. Third, from a technical standpoint, the method itself would not be materially affected by using high volume pumps so long as the flow remained under 10 liters per minute. Of course, area samples and high flow rates as described are not within the requirements of the OSHA regulations.

SOURCE LETTER

AUG 29, 1989

SUBJECT: Change to Analytical Procedure for Asbestos

Attached is a request for a written determination as to whether TEM Laboratory can modify the OSHA-NIOSH 7402 analytical method for asbestos.

Since this request is beyond our expertise or authority, I would appreciate it if the Laboratory would address Dr. X's request directly.

AUG 16, 1989

RE: telephone conversation of July 24, 1989

(Company) is requesting written confirmation of OSHA's approval to modify the OSHA-NIOSH 7402 Method for airborne asbestos analysis by transmission electron microscopy. The modification would incorporate the substitution of high volume stationary air pumps for personal sampling pumps. All other requirements of the method will be strictly adhered to.
The NIOSH 582 asbestos analysis course should be used as a guideline for proper training of asbestos analysts. Other materials could be added to the course. Qualifications for course instructors are discussed. An article on asbestos sampling and analysis by Rockette and Wadsworth is reviewed. The "A" Rules for asbestos counting contained in the NIOSH 7400 method are the legal standard.

Your letter was referred to my office by the Assistant Secretary for a response. We are always happy to respond to requests for information and clarifications on standards. As I read your letter, there were two main questions to which I would like to respond. The first dealt with the issue of training while the second dealt with equivalency of alternate methods.

OSHA feels that proper training of asbestos analysts is essential to establishing reliable measurements of asbestos exposure. Because of the wide divergence of experience presented by the set of asbestos counters, the question of proper training becomes a difficult issue. It is apparent that counters with very little experience should have the most extensive training available while there are those who have a professional and acceptable level of proficiency gained from many years of experience. These, more experienced, people would benefit most from a short course covering the latest innovations in asbestos monitoring and analysis including a review of the basics. Neither OSHA nor NIOSH is charged with the mission of accrediting training for asbestos analysis. OSHA would accept as adequate, training required for accreditation by the American Industrial Hygiene Association Asbestos Registry Program. Absenting that, I can give some guidance on proper training.

The yardstick against which we must gauge all courses is the the NIOSH 582 asbestos analysis course. This is the most widely recognized training available. It consists of 4.5 days of various act meant to bring an analyst from wherever he is up to speed. As you mentioned, there are certain essential elements in the course. We would expect that any equivalent course have at least equivalent content. Of the elements, laboratory technique and statistics are most germane to the current asbestos standard. Adequate time must be provided for the course participants to cover each essential area. The length of the course must be determined by the background of the analysts in attendance. It is expected that in no case would such a class consist of less than 30 contact hours (the length of a course required by AIHA for registry in the Asbestos Registration program). There must be adequate time to establish a model quality control program as outlined in Appendix A of 29 CFR 1910.1001 or 1926.58. This could be accomplished by dividing the participants into several work groups, "labs." Interlaboratory as well as intralaboratory statistics could then be derived from the results obtained from the exercise samples done by the participants. Emphasis must be placed on the impact of systematic errors and other variations on the overall precision of the analysis. Because the standard requires a change in the size of the sampling device, there must be a section outlining proper collection times and flow rates.

The materials to teach the course are available from NIOSH for virtually anyone to use in teaching the course. However, as you indicated, those materials are an incomplete picture of asbestos analysis. Other materials are often justifiably added. Again, neither OSHA nor NIOSH is in a position to review the credentials of instructors. I can only voice a suggested guideline on the qualifications of the instructor of any equivalent course. We feel that he should have taken the NIOSH 582 from a recognized expert or received equivalent training from a recognized expert. Further, he should have some extensive experience in analysis. This will give him a background to approach novel questions and problems encountered in training situations. We further agree with you that the instructor should have a working knowledge of the statistics involved with asbestos analysis.
As to your second comment, I reviewed the article by Rockette and Wadsworth. For the current asbestos standard, a test such as specified by them was adopted. Namely, that we require that we be 95% certain that 90% of the observations are within 25% of the value measured by ORM. Using the statistics of the article, I have developed a thumbnail sketch of equivalence of asbestos analysis techniques. There are at least two different arenas to investigate. The first is to compare a totally dissimilar technique as was done with the vertical elutriator in the article. This would always require side-by-side measurement. That is one sample, one measurement. Bear in mind that we are dealing with the OSHA standard so that all measurements must be made as personal samples (from the breathing zone of the employee). In this case, two replicates would give a CV of 8.8, three would give a CV of 7.2 based on a base of 12.5 CV. This is a reasonable value to use since it corresponds to the 25% SAE used by OSHA for asbestos counting. Our own laboratory results show that for some ranges of fiber density within the required range by the standard, the CV is approximately 10.7% For personal samples it is assumed that the sampling devices must be worn by the employee. Then two or three devices would be the most one could reasonably expect to take. On the other hand, a stationary pump as in area sampling could collect many more time than that. The upshot is that for asbestos sampling we are not as limited by the size constraints imposed by the sheer size of the vertical elutriator used for cotton dust evaluations. From table II of Rockette and Wadsworth it is clear that for a CV of 7 (easily obtainable by multiple side-by-side) that the false rejection rate is less than 10% and can be lowered even farther under the given constraints.

If two methods are to be compared which use the sample collection technique, it may be acceptable to make multiple analyses per sample lessening the number of devices attached to a worker. In this case, it is obvious that if six wedges were counted from a filter (the maximum recommended) the CV is 5%. From Table I in Rockette and Wadsworth it is apparent that even for the more stringent constraints of 95% certainty that 95% of the samples are within 25% of ORM, that the percentage of false rejections would be 0% with 100 replications. For the more relaxed 90% requirement of the Asbestos standard this should be also true. We would conclude then that the standards set forth for testing equivalence are valid.

As to the issue of whether or not the "B" rules of NIOSH method 7400 are equivalent to those specified in Appendix A, the preamble to the standard said on page 22686: "The ORM requires that filter samples...be counted in accordance with the "A" rules contained in NIOSH 7400 method." Although the "B" rules afford a better precision as stated in method 7400, the question of whether to use them is more than a matter of numerical equivalence. Two main considerations were in mind when making the determination that the "B" rules would be unacceptable. First, it was determined that acceptance of the "B" rules would constitute a measurement of different epidemiology since they measure a different population of fibers. Secondly, the "A" rules have been upheld in a number of legal cases and the definition of a fiber as stated in the "A" rules has become therefore, the legal standard. It was determined that it would not be in the best interest of the agency to go through the process to reestablish such a definition.
This interpretation clarifies respirator fit testing requirements in the revised asbestos standard, 29 CFR 1910.1001. Qualitative fit testing of full-face-piece respirators is considered in accord with the asbestos standard if the respirators are only used for lower airborne concentrations in which half-face-piece respirators may be worn.

(NOTE: The qualitative fit testing of full face air purifying respirators, is permitted for use in environments with lower airborne fiber concentrations (less than ten times the PEL) is considered in accord with the asbestos standard.)

My understanding of the respirator fit testing requirements of the revised asbestos regulations is that a worker may not use a full-face respirator, even for exposure levels less than ten times the PEL, unless the he has passed a quantitative fit test. However, only qualitative fit testing is required in order to use a half-face respirator for such exposures.

The justification for this appears to be that adequate data verifying the capability of qualitative fit testing for a protection factor of ten were available for half-face but not for full-face respirators. Apparently OSHA did not deem it desirable to extrapolate the capability of qualitative fit testing for a protection factor of ten to full-face respirators, even though they have been shown by countless quantitative measurements to offer protection factors at least five-to-ten times greater than half-face respirators.

In addition to increased respiratory protection, full-face respirators provide protection of the head, eyes, and eyebrows. It always strikes me as ludicrous when I see workers cover their entire bodies with Tyvek suits, but leave the most vulnerable portion of their bodies exposed to falling debris. Apparently in deciding that protective clothing should be required for asbestos workers. OSHA did not consider the face to be part of a worker’s body.

If my understanding is correct, the restriction on the use of qualitatively tested full-face respirators will prevent workers from obtaining the much greater protection these respirators afford, because many employers will not offer quantitative fit testing. It has been a struggle over the past few years to try to get contractors to offer full-face respirators to their workers, and to perform even rudimentary fit testing. I train hundreds of workers each year, stressing the benefits of full-face respirators? Are these benefits now to be out of their reach?
The smoking ban amendment to the asbestos standards, published in the February 5, 1990 Federal Register states that "the employer shall ensure that employees do not smoke in work areas where they are occupationally exposed to asbestos because of activities in that work area." One must exercise professional judgment as to what constitutes asbestos-related work that would expose employees nearby. No air monitoring is required and professional judgment on the part of the CSHO is necessary to identify areas where employees may be exposed to asbestos. Therefore, an employer should be cited for not enforcing the smoking ban in these areas.

Interpretation

29 CFR 1910.1001(i)(4); 1926.58(j)(3)

JUN 25, 1990

SUBJECT: Amendments to the Asbestos Standards - the Smoking Ban

This is in response to your memorandum of April 9, regarding the smoking ban amendment to the asbestos standards, published in the February 5 Federal Register. The provision states that "the employer shall ensure that employees do not smoke in work areas where they are occupationally exposed to asbestos because of activities in that work area".

Occupational exposure is defined as an exposure due to a work activity. No exposure level is specified as a trigger level because air monitoring is not required as part of this provision. One must exercise professional judgment as to what constitutes asbestos-related work that would expose employees nearby. Enforcement of this provision should place emphasis on the aspect of training and education of the employees on the synergistically harmful effects of smoking and working with asbestos.

Because no air monitoring is required and professional judgment on the part of the CSHO is necessary to determine if employees may be exposed to asbestos in a particular area, an employer should be cited for not enforcing the smoking ban in areas where work activity may create a source of asbestos exposure and the level of airborne asbestos is detectable by OSHA's Reference Method.

Source Letter

APR 9, 1990

SUBJECT: Amendments to the Asbestos Standards

On February 5, 1990, OSHA published an amendment to the asbestos standards which included provisions concerning smoking. One of the provisions states that "the employer shall ensure that employees do not smoke in work areas where they are occupationally exposed to asbestos because of activities in that work area."

Occupational exposure is undefined in the standard which causes this provision to be unclear concerning the extent that smoking should be prohibited. Guidance is requested concerning enforcement of this provision since even barely detectable levels of asbestos fibers could cause this provision to be invoked.
ABSTRACT
This interpretation addresses the use of "cold" dioctyl or the di-2-ethylhexyl phthalate (DOP) aerosol, generated at ambient temperature, in the application of OSHA Asbestos Standards 29 CFR 1910.1001 and 29 CFR 1926.58. "Cold" DOP aerosol is not acceptable for use in testing and certifying the efficiency of HEPA filters. The decision is based on thermally generated monodispersed versus polydispersed DOP. There is a difference in the result and thereafter monodispersed, thermally generated, DOP is used.

INTERPRETATION
29 CFR 910.1001(f)(1)(iv); 1926.58(g)(1)(i)(A); (Appendix F)
SEP 6, 1990
SUBJECT: High-Efficiency Particulate Air (HEPA) Filters For Vacuum Cleaning Equipment

We have recently received inquiries regarding "cold" dioctyl or di-2-ethylhexyl phthalate (DOP) aerosol, generated at ambient temperature, and whether it can be used to test vacuum cleaner HEPA filters to meet the requirements as specified in the OSHA asbestos standards 29 CFR 1910.1001 and 29 CFR 1926.58.

The HEPA filter test method, commonly employed by the nuclear industry and the military, uses a thermally generated monodispersed DOP aerosol as the challenge agent. The mass median particle size for the monodispersed aerosol is 0.3 micrometer, since this size is considered to be the most difficult to remove by the filter media.

The significant difference between "cold" DOP aerosol which is polydispersed and thermally generated DOP aerosol which is monodispersed is not widely understood. Many distributors and operators of filtration equipment, when specifying filters, do not differentiate between monodisperse and polydisperse DOP testing, believing the reference to "DOP" is all that is needed. The main difference between the "monodisperse" and "polydisperse" aerosol, is the particle size distribution. The geometric standard deviation of a monodispersed aerosol is less than 1.4, while the standard deviation for a polydispersed aerosol usually exceeds 2.0. Consequently, since polydispersed DOP aerosol has a size distribution outside the range of thermally generated monodispersed aerosol, "cold" DOP aerosol is not acceptable for use in testing and certifying the efficiency of HEPA filters.
ABSTRACT

This response provides an interpretation of the medical surveillance provisions of the new asbestos standard, 29 CFR 1910.1001(i). Medical surveillance may be discontinued when employees are removed from exposure at or above the action level, if the individual will not be exposed above the action level at a future time. A follow-up exam must, however, be performed one year after the last exposure above the action level. Employees exposed to levels at or above the action level must be provided with a termination exam when employment ends.

INTERPRETATION

29 CFR 1910.1001(b); 1910.1001(f)(1)(i); (l)(2); (l)(3); (l)(4); 1926.58(b); 1926.58(m)(1)(i); (m)(2)(i); (m)(2)(i)(A)

DEC 31, 1986

This is in response to your letter dated September 3, requesting interpretations under the Medical surveillance provisions of the new asbestos standard, reference 29 CFR 1910.1001(i).

More specifically your letter asks whether medical surveillance may be discontinued for employees who are no longer exposed above the action level.

Medical surveillance may be discontinued when employees are removed from exposure at or above the action level with the following provisions:

1) Medical surveillance shall not be discontinued for a particular employee, if the individual may be exposed above the action level at any future time.

2) Where exposure is discontinued a periodic exam must be performed approximately 1 year after the last exposure above the action level; and

3) These employees must be provided with a termination exam when employment ends.


The revised standard which addresses occupational exposure to asbestos, published in the Federal Register on June 20, 1986 (pp. 22611 - 22790), establishes a Permissible Exposure Limit (PEL) of 0.2 fibers/cc and an "Action Level" of 0.1 fiber/cc, 8-hr. time-weighted average. If the action level is reached or exceeded, it triggers monitoring, medical, and employee information and training requirements. As is pointed out in the Supplementary Information section (Page 22679), this does not represent a change in the previous standard regarding the medical surveillance provision, but is rather a clarification of OSHA's policy.

SOURCE LETTER

(no date)

We would appreciate OSHA’s further clarification of the medical surveillance requirements. Assume that a medical surveillance program has been instituted at a given worksite because of accidence of the action level for identified employees or occupations. The standard then requires that:

(a) periodic medical examinations shall be made available 29 CFR 1910.1001(e)(3)(i), and
(b) a termination of employment examination shall be made available to employees exposed previously at or above the action level 29 CFR 1910.1001(e)(4).
The question we have is, who must be offered the annual examinations under the standard? It seems clear that if an employee continues working in an occupation exposed to asbestos (even though wearing personal protection), ongoing annual medical examinations must be provided. What is not clearly defined is the employer's obligation to those employees who subsequently cease working with asbestos (eg., transfer to another plant or worksite), or whose asbestos exposure is reduced below the action level through engineering controls or substitution of other materials. Must these employees be followed as long as employed by the company? If so, why is a termination of employment examination specified (not required if offered in previous 12 months)? If an ongoing obligation is incurred from past exposures, the termination examination would always be redundant.

The discussion on "action level" in column one, Page 22680, of the Supplementary Information section indicates that medical surveillance and other activities may be discontinued:

"... The action level concept thus provides an objective test for OSHA and employers to permit the discontinuance of certain activities, such as medical surveillance, training, and periodic monitoring when exposures are low."
The prohibitions on the use of compressed air contained in the standards at 29 CFR 1910.1001(f)(1)(ix) and 29 CFR 1926.58(g)(2)(ii) concern blowing asbestos containing materials off of surfaces without the use of a ventilation system to capture the dust plume.

The use of a pneumatic drill inside of a glove bag with the exhaust piped outside of the bag, and the drill sprayed with amended water, as described in your letter, is not included in the prohibition on the use of compressed air.
This interpretation provides a clarification to 1910.1001(i)(4) and 1926.58(j)(3). OSHA prohibits smoking in areas where occupational exposure to asbestos takes place. Employees who work in or near areas where asbestos abatement and renovation activity are ongoing are prohibited from smoking even though they do not disturb or handle asbestos. Employees are prohibited from smoking when small amounts of airborne fibers are being created by employees activities or are drawn from an adjacent area into the work zone.

INTERPRETATION 29 CFR 1910.1001(i)(4); 1926.58(j)(3)

JUL 16, 1990

This is in response to your letter of April 9, requesting guidance concerning the implementation of the new Occupational Safety and Health Administrator (OSHA) regulation on smoking and occupational exposure to asbestos. The regulations in question are 29 CFR 1910.1001(i)(4) and 29 CFR 1926.58(j)(3). OSHA is prohibiting workplace smoking in areas where occupational exposure to asbestos takes place. The answers to your three questions are as follows:

Question 1:

In a large machinery compartment on a ship undergoing repair there are approximately 30 employees working in the compartment. Only 2 of them are assigned work involving asbestos containing materials. They are conducting a small asbestos removal through the use of a glove bag. Air sample data shows the typical employee in the compartment has 8 hour time weighted average exposure of 0.05 fibers per cubic centimeter. Who in this group of 30 employees must be prohibited from smoking?

Answer:

Under the requirements of 29 CFR 1910.1001(i)(4), all 30 employees must be prohibited from smoking. “Occupational exposure” means asbestos exposure which has its source in the workplace. Thus, employees who work in or near areas where asbestos abatement and renovation activity are ongoing may be occupationally exposed even though they do not disturb or handle asbestos.

Question 2:

A group of employees are assigned work in an area where no asbestos work is being performed. The area does have asbestos insulated piping in it. The employees will work in the area for their full 8 hour shift. Air sample data shows that the typical employee exposure is 0.05 fibers per cubic centimeter. It is determined that the small amount of airborne dust is being created by the employees activities. Are they prohibited from smoking?

Answer:

All employees must be prohibited from smoking since it is determined that the small amount of airborne dust is being created by employees' activities.

Question 3:

A group of employees are assigned work in an area that is free from asbestos materials. However, air sample data shows that asbestos fibers are being drawn into the area from an adjacent area. The data shows that the typical exposure is 0.05 fibers per cubic centimeter averaged over an 8 hour period. Are these employees considered occupationally exposed and therefore prohibited from smoking?
Answer:

These employees are considered occupationally exposed and therefore must be prohibited from smoking.

All three examples involve occupational exposure to asbestos; therefore, these employees must be prohibited from smoking in these areas. We hope we have addressed your concerns adequately. If you need further assistance, please do not hesitate to contact us.

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SOURCE LETTER

APR 27, 1990

SUBJECT: Amendments to the Asbestos Standards.

On February 5, 1990, OSHA published an amendment to the asbestos standards which included provisions concerning smoking. One of the provisions states that "the employer shall ensure that employees do not smoke in work areas where they are occupationally exposed to asbestos because of activities in that work area."

This letter is being forwarded to your office for reply due to the potential significance of the response. This office has requested an interpretation concerning this issue in a memorandum to your office dated April 9, 1990. Clarification of "occupational exposure" is needed in the field due to the great variations in interpreting this phrase.
ABSTRACT This response provides an interpretation of recent changes to 1910.1001(i)(4) and 1926.58(j)(3). "Occupationally exposed" means asbestos exposure which has its source in the workplace. Smoking must be prohibited in areas where there is a known source of asbestos exposure. An affected work area is a location where workers are occupationally exposed to asbestos because of activities in the area. "Affected area" is not defined in terms of an airborne concentration; if asbestos materials are present, deteriorating, and disturbed, an occupational exposure can be assumed. The occupational exposure to asbestos does not have to be enclosed by walls or complete barriers. OSHA cannot issue a citation when the presence of asbestos is merely assumed. Measurement of the airborne fiber concentrations in the work area is required. For example, if a brake shop that works on asbestos brakes is sectioned off by barriers, smoking is prohibited in that one particular area where asbestos work is being performed. The intent of these smoking ban provisions is to educate employees on the synergistically harmful effects of smoking and asbestos exposure.

INTERPRETATION

AUG 13, 1990

SUBJECT: Request for Interpretation of Recent Changes to OSHA Asbestos Standards

This is in response to your memorandum of June 20, requesting interpretation of recent changes to the asbestos standard, specifically 1910.1001(i)(4) and 1926.58(j)(3). We are providing answers to your questions as follows:

1. "Occupationally exposed"
   a) What constitutes occupational exposure here? Is it any exposure greater than the normal outdoor background concentration of asbestos, or is some other concentration intended?

   "Occupational exposure" means asbestos exposure which has its source in the workplace. No exposure level is specified.

   b) How is a compliance officer or employer to determine such occupational exposure? Will it be necessary to determine the background air concentration via air sampling?

   c) Or is an occupational exposure merely assumed because of the presence of certain activities?

If there is a source of asbestos exposure in the workplace, such as an abatement activity or deteriorating asbestos-containing pipe insulation, an occupational exposure may be assumed; smoking must be prohibited until the source no longer exists.

However, for the purpose of issuing a citation, a compliance officer must conduct air sampling to document an exposure to asbestos that can be attributed to the workplace and not an ambient background level of asbestos.

2. "Activities"

What sorts of activities are intended to be covered? Are only activities that deliberately disturb or manipulate asbestos-containing materials included? What about work situations where friable asbestos is present as insulation or other building material, and HVAC air currents are sufficient to raise the air concentration above outdoor background levels although not above the PEL or action level?

Any activity at the work place that would cause a disturbance of asbestos, either deliberately or passively, would be covered. All the examples you mentioned are considered as activities that would be sources of
asbestos exposure in the workplace. The preamble discussions to the asbestos regulations (pages 22677-8 of the June 20, 1986 Federal Register) provide further insight on this topic.

3. "Work Area"

   a) How does an employer or compliance officer define an affected work area? Must a work area be enclosed either by walls with doors that can be shut or by some artificially constructed but essentially complete barrier such as the negative-pressure enclosures mandated in 1926.58(e)(6)? Or will a "work area" be defined in terms of an air concentration similar to the definition of "regulated area" in 1910.1001(e)(1) and 1926.58(e)(1)?

An affected work area is where workers are occupationally exposed to asbestos because of activities in the area. It is not defined in terms of an air concentration. It does not have to be enclosed by walls or complete barriers. For example, the work area can be a motor vehicle maintenance shop with open bays. If asbestos brake work is being performed, smoking is prohibited in all areas where employees may be exposed to asbestos. If the shop is sectioned off by barriers, smoking is prohibited in that one particular area where asbestos work is being done.

The intent of these smoking ban provisions is to educate the employees on the synergistically harmful health effects of smoking and asbestos exposure. The emphasis is on education and training. A compliance officer would only issue a citation in cases where asbestos exposure is measurable and documented through the OSHA Reference Method.

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SOURCE LETTER
JUN 20, 1990

SUBJECT: Request for Interpretation of Recent Changes to OSHA Asbestos Standards

Students in our courses as well as members of the public are asking our staff for interpretations of recent changes to the asbestos standards, specifically 1910.1001(i)(4) and 1926.58(j)(3). Both of these paragraphs read:

Smoking in Work Areas. The employer shall ensure that employees do not smoke in work areas where they are occupationally exposed to asbestos because of activities in that work area.

Clarification is requested regarding the meaning of "occupationally exposed," "activities," and work area."

1. "Occupationally exposed"

What constitutes occupational exposure here? Is it any exposure greater than the normal outdoor background concentration of asbestos, or is some other concentration intended?

How is a compliance officer or employer to determine such occupational exposure? Will air sampling be required? Will it be necessary to determine the background air concentration via air sampling?

Or is an occupational exposure merely assumed because of the presence of certain activities? See questions under "activities" and "work area" below.

2. "Activities."

What sorts of activities are intended to be covered? Are only activities that deliberately disturb or manipulate asbestos-containing materials included? What about work situations where friable asbestos is present as insulation or other building material, and HVAC air currents are sufficient to raise the air concentration above outdoor background levels although not above the PEL or action level?
3. "Work Area."

How does an employer or compliance officer define an affected work area? Must a work area be enclosed either by walls with doors that can be shut or by some artificially constructed but essentially complete barrier such as the negative-pressure enclosures mandated in 1926.58(e)(6)?

Or will a "work area" be defined in terms of an air concentration similar to the definition of "regulated area" in 1910.1001(e)(1) and 1926.58(e)(1)? See our questions regarding the meaning of "occupationally exposed" above.

In summary, we request guidance to be able to help compliance officers as well as our private sector students to be able to more objectively determine compliance with this new provision of the asbestos standards.
This interpretation provides policy guidance concerning enforcement of 1910.1001 and 1926.58 in light of EPA's NESHAP revision published in the November 20, 1990, Federal Register (FR). The NESHAP revision may have some impact on those portions of OSHA's asbestos standards which require special bags or other impermeable containers for disposal of asbestos-containing materials. OSHA is proposing revisions to its current asbestos regulations. To assure that application of the OSHA standards 1910.1001(k)(6) and 1926.58(l)(2) is consistent with EPA disposal policies, the compliance officer will not require special disposal actions for disposal of Category I nonfibrous ACM if these wastes remain nonfibrous.

**INTERPRETATION**

29 CFR 1910.1001(k)(6); 1926.58(l)(2)

FEB 20, 1991

SUBJECT: EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Revision

This interpretation of 29 CFR 1910.1001 and 1926.58 is provided in response to Region (X)'s inquiry for policy guidance concerning enforcement of provisions of the asbestos standards in light of EPA's NESHAP revision published in the November 20, 1990, Federal Register (FR). The revision to the NESHAP rule defines Category I nonfibrous asbestos-containing material to mean asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1. Polarized Light Microscopy. Among other issues, the rule states:

"These ACM are not expected to release significant amounts of asbestos fibers to the outside air during demolition and consistent with the intent of the existing standards, are not being regulated. However, if these materials are in poor condition and are friable or they are subjected to sanding, grinding, cutting, or abrading, they are to be treated as friable asbestos material. Category I nonfibrous ACM that is in poor condition, but is not friable and will not be subjected to sanding grinding, cutting, or abrading, is not subject to the NESHAP. "In poor condition" has been defined to mean that the binding of the material is losing its integrity as indicated by peeling, cracking, or crumbling of the material." (Page 48409 of 11/20/90 FR)

OSHA's requirements for waste disposal are designed to protect employees from exposure to asbestos fibers that may be released if asbestos-containing wastes are temporarily stored or transported on the construction worksite. As stated in the preamble to OSHA's asbestos regulations (page 22726 of June 20, 1986, Federal Register), the requirements contained in the OSHA's asbestos regulations do not address the ultimate disposal of asbestos wastes, since these wastes and their disposal are regulated by EPA. In light of this NESHAP revision there may be some impact on those portions of OSHA's asbestos standards which require special bags or other impermeable containers for disposal of asbestos-containing materials. OSHA is proposing revisions to its current asbestos regulations and is advised of the NESHAP changes.

To assure application of the OSHA standard 29CFR 1910.1001(k)(6) and 1926.58(l)(2) is consistent with EPA disposal policies, the compliance officer must carefully evaluate asbestos-containing wastes and will not require special disposal actions for disposal of Category I nonfibrous ACM if indeed these wastes remained nonfibrous - that is, they were not subjected to sanding, grinding, cutting, or abrading during asbestos abatement.
SUBJECT: EPA's NESHAP Revision

In response to your inquiry on December 20, 1990, concerning enforcement of provisions of OSHA's asbestos standards in light of recent EPA's NESHAP revision, we have issued a memorandum to all regions on the subject.

DEC 20, 1990

SUBJECT: EPA NESHAP Revision

This is to request policy guidance concerning enforcement of provisions of the asbestos standards, 29 CFR 1910.1001 and 29 CFR 1926.58, in light of EPA's NESHAP revision published in the Federal Register on November 20, 1990. The revision to the NESHAP rule includes non-friable resilient floor coverings, roofing products, gaskets, and packings under category I nonfriable asbestos containing materials. This revision would not require any special action to be taken to dispose of these materials in a manner different than any other material from a demolition operation. In light of this NESHAP revision there will be some impact on those portions of OSHA's asbestos standards which require special bags or other impermeable containers for disposal of asbestos containing materials.

It would appear that the provisions of OSHA's standards requiring special disposal actions should not be enforced where EPA does not require any special action. This is based on the presumption that the disposal requirements of the OSHA standards are intended to complement EPA NESHAP requirements.

A copy of the November 20, 1990 Federal Register discussing the NESHAP revision is enclosed for your reference. Your comments on this issue would be appreciated.
In reporting asbestos air concentrations, the analytical laboratory should report what it sees within the constraints of the method used. Concentrations below the detection limit are reported as "none detected." Values above the detection limit are reported as analyzed. There is no special requirement for results between the detection limit and any quantitation limit. The OSHA Salt Lake Technical Center reports "0.0" for results below the detection limit and the actual result for values greater than the detection limit.

For your information, a copy of the OSHA method ID 160 has been included. Should you have further question, do not hesitate to call.

SOURCE LETTER

July 15, 1991

Dear Mr. C:

Reporting Limits for Asbestos Air Concentrations

Per our recent telephone conversation, I am writing to request written guidance from the Occupational Safety and Health Administration regarding reporting limits for asbestos air concentrations. There seems to be some discrepancy about which reporting limit should be used: (1) limit of detection, or (2) limit of quantitation. Guidance from your agency on this issue would be greatly appreciated.
ABSTRACT

Persons who prepare slides for asbestos analysis need not be trained in the NIOSH 582 course, so long as proper preparation procedures are followed. People who read the slides must be 582-trained.

INTERPRETATION

28 August 1991

Dear Mr. Y:

My apologies for the long response time for your letter of November 7, 1990. You asked if a person preparing slides for asbestos analysis need be 582 trained. This is not strictly required, so long as the proper preparation procedures are followed. It is required that the people reading the slides be 582 trained. Should you have any further questions, they will be handled much more expeditiously.

SOURCE LETTER

November 7, 1990

Dear Mr. C:

This is in reference to your telephone conversation with Ms. K of my staff on October 17, 1990. To facilitate the asbestos analyses in our laboratory we are considering having one of our laboratory technicians prepare asbestos slides for fiber counting. Our intention, at the present time, is to train a technician in house solely to prepare slides. This technician, while a qualified laboratory technician for other analyses, will not have taken the NIOSH 582 course and therefore will not perform the actual counting. Since the purpose of our monitoring and analyses is for OSHA compliance, we are requesting guidance covering our scheme for preparing and reading the air filters. We believe it to be an efficient and cost effective alternative to meeting temporary increases in our asbestos workload. During normal load periods our NIOSH trained technician will prepare and read his own slides.

We also have scheduled another technician to take the NIOSH 582 course in December of this year. However, we are looking for alternate cost effective solutions to an increasing asbestos workload and/or peak demands.
The intent of the requirement that the Phase Contrast Microscopy (P.C.M.) cassette cowl be conductive is to eliminate electric fields in the interior and give charges a path out of the cassette. OSHA requires that the resistivity of the cowl be sufficient that the material be considered a conductor. Both 1910.1001 and 1926.58 require that the cowl be "conductive," but the standards do not specify a particular resistivity, nor do they require the cowl to be black.

Therefore, we require that the resistivity of the cowl be sufficient that the material be considered a conductor. The standards do not specify a particular resistivity, nor do they require the cowl to be black. Both 29 CFR 1910.1001 and 29 CFR 1926.58 simply require that the cowl be "conductive." This is the aspect of the standard that is enforceable.

July 9, 1990

Dear Dr. C:

I appreciated your time on the phone the other day. We at (Company A) have spared no expense and exerted as best an effort as we could manage in order to comply with O.S.H.A. specifications and to provide our customers with as high a quality cassette as possible.

The single most critical factor in our determinations of product performance, general guidelines for manufacture, for quality control, and the physical design of our product, has been your published materials such as the ID 160 guidelines. Also of great importance has been the information provided us through phone consultation with you as O.S.H.A. representative.

We are now in the process of having all of our competitors cassettes tested by an independent testing laboratory for their carbon content and also for their conductivity readings. (Company B) cassettes will be quite adequate as per your guidelines I am sure, some others are questionable.

Pricing in the P.C.M. Cassette market has become highly competitive in this last year and a number of new companies have entered the market. All the better for a free market as long as the same rules apply to all of the players. Regrettably for ourselves and for our innocent customers I am afraid that some of our competitors have made no efforts to comply with O.S.H.A. By their disregard of your guidelines I am afraid that the principle of using a representative sampling by use of standard cassettes and procedures such that comparability of results can be achieved has also been seriously undermined by them.
We at (Company A) make use of the Highest conductivity carbon impregnated polypropylene available. It is not feasible to include a higher percentage of carbon without seriously degrading the structural and physical properties of the plastic. The DIFFERENCE in cost between this highly conductive polypropylene and a regular polypropylene with dark coloring easily amounts to as much as 15% of the total cost of the cassettes. A 15% additional margin is very significant now that some of these competitors are offering cassettes in the $40.00 price range.

It would be of great help to us to know more precisely what the requirements are for conductivity and charge dissipation for these P.C.M. Cassettes. We would like to continue our present high standards of manufacturing but cannot continue to do so as long as our competition feels no similar obligation to meet O.S.H.A. guidelines. They obviously feel no moral or business need to comply with your obvious intent, even if precise numbers have not yet been provided. It is for this reason that we find we must request this additional information from you either on the volume resistivity or on the carbon content.

Polypropylene with carbon powder filler has a volume resistivity (ASTM test method D-257) of 10 to 10 ohms squared. Two suppliers who can provide this material are:

- Akzo 1-800-457-3764; and
- LNP 1-215-644-5200

We have quite a few employees and also investors whom depend on us to perform in the marketplace and to provide employment. We therefore consider this to be a very serious matter. The summer period is a peak period for cassette usage and can account for up to 70% of the years total sales. We would therefore be quite appreciative of any efforts on your part that would provide this information to us as soon as is reasonably possible.
RECORD ID 2115

STANDARD NUMBER 1910.1002
INFORMATION DATE 830526

ABSTRACT This response provides interpretations of the Coal Tar Pitch (CTPV) Standard with respect to "natural asphaltums," including "Gilsonite," being specifically exempted. The coal tar pitch standard only applies to emissions from products that are residues of distilled processes.

INTERPRETATION 29 CFR 1910.1002
MAY 26, 1983

This is in response to your letter of March 23, 1983, in which you requested that "natural asphaltums," including "Gilsonite," be specifically exempted from the Occupational Safety and Health Administration's (OSHA) Coal Tar Pitch Violatiles (CTPV) Standard.

The Agency believes that the letter to Mr. X of the X Institute, which you enclosed with your letter, clearly establishes that natural or mined asphalts do not fall within the scope of the CTPV standard. Again, the CTPV standard, as stated in 29 CFR 1910.1002, applies to emissions only from products that are residues of distillation processes. Thus, "natural" or mined asphalts, which are not distillation residues, do not fall under the CTPV standard.

SOURCE LETTERS
SEP 7, 1979

This is in response to your letters to Secretary of Labor concerning OSHA standards for employee exposure to asphalt.

You have raised objections to material contained in the booklet "Health Hazards of Roofing Materials: Coal-Tar-Pitch and Asphalt," which is part of OSHA's Cancer Alert Series published in 1978. Specifically, you objected to the booklet's implication that asphalt and coal-tar-pitch are equally hazardous. The booklet outlines the health dangers of exposure to coal tar, and its implication is that asphalt exposure should be treated with caution and similar safeguards because asphalt often contains many of the same chemical carcinogens found in coal-tar-pitch. As I informed you in our phone conversations, this booklet is now being revised. While this revision is undertaken further distribution of the booklet has been halted. OSHA's Regional and Area Offices have been advised of the revision, and have been told to stop distribution of the booklet. A copy of the memorandum initiating this action is enclosed for your information.

Additionally each Regional Office of OSHA was called on June 11, 1979, to advise them that the booklet "Health Hazards of Roofing Materials: Coal-Tar-Pitch and Asphalt" was being withdrawn and was not to be distributed. (See the enclosed memo from Mr. X to Mr. X.) A notice was also made in our "OE Topics" of June 1979 (copy enclosed). In your letter of August 2, 1979, you stated that your field engineers were able to obtain copies of two of the Cancer Alert Series booklets from five of our Regional Offices. In order to make sure that this situation is corrected, I have called Ms. X, Director of Training, Education, Consultation and Federal Agency Programs, and have suggested that a memo be sent to all Regional Administrators directing that remaining copies of "Health Hazards of Roofing Materials: Coal-Tar-Pitch and Asphalt" be destroyed in order they will not be inadvertently sent out. A copy of my memo to Ms. X is enclosed.

You also expressed interest in a pamphlet entitled "More Than a Paycheck: An Introduction to Occupational Cancer" which contains a table listing asphalt as a carcinogen related to the roofing trades. The pamphlet is also a part of OSHA's Cancer Alert Series, and it is intended to be used in conjunction with a documentary half-hour film by the same name. I have been advised by the OSHA Office of Training...
The standard for employee exposure to coal-tar-pitch volatiles was adopted by OSHA in 1971. This standard was based on the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit values (TLV's) of airborne contaminants published in 1968, and adopted under the Walsh-Healey Act in 1969. The standard is found at 29 CFR 1910.1000, Table Z-1, and establishes a permissible exposure limit of 0.2 milligrams per cubic meter of air, averaged over an eight-hour day. Additionally, the term "Coal-Tar-Pitch Volatiles" is explained in 29 CFR 1910.1002, which states "as used in 29 CFR 1910.1000, Table Z-1, coal-tar-pitch volatiles include the fused polycyclic hydrocarbons which volatilize from the distillation residues of coal, petroleum, wood, and other organic matter."

Although asphalt is produced differently than coal-tar-pitch and may have different uses and physical properties, like coal-tar-pitch it is a complex mixture of materials including polycyclic aromatic hydrocarbons such as anthracene, acridine, pyrene, chrysene, phenanthrene and benzo(a)pyrene. Many of these same polycyclic hydrocarbons may be detected in the volatile emissions from both asphalt and coal-tar-pitch. The coal-tar-pitch volatiles standard, as stated in 29 CFR 1910.1002, applies to volatile emissions from the distillation residues of coal, petroleum, wood, and other organic matter. Therefore, the coal-tar-pitch volatiles standard applies to volatile emissions from asphalt which is a distillation residue of coal, petroleum, wood, and other organic matter. On the other hand, the coal-tar-pitch volatiles standard does not apply to "natural" or mined asphalt such as "Trinidad" since these forms of asphalt are not distillation residues of coal, petroleum, wood, and other organic matters.

Air sampling techniques for determining employee exposure to asphalt volatiles and coal-tar-pitch volatiles are the same. Air is drawn through a pre-filter pad, a silver membrane filter and a back-up pad, all in an open face filter cassette. After sampling, the cassette is capped, sealed, labeled, and sent to the Salt Lake City OSHA Laboratory for analysis.

At the Salt Lake City OSHA Laboratory, the sample is dissolved in benzene in an ultrasonic extraction method and the benzene soluble fraction is determined. In this fraction, the OSHA laboratory has for several years looked for the presence of benzo(a)pyrene and may also look for one or more of the following: anthracene, acridine, pyrene, chrysene, and phenanthrene.

Finally, citations will be issued for violations of the coal-tar-pitch volatiles standard only if the following conditions are met.

1. At the time of inspection employees are found to be exposed to volatile emissions from distillation residues of coal, petroleum, wood, or other organic matter, and

2. Samples obtained to determine employee exposure to the volatile emissions are found to contain more than 0.2 mg. of benzene-soluble material per cubic meter of air, and

3. Laboratory analysis of the benzene-soluble fraction described in (2) confirms the presence of benzo(a)pyrene and/or one or more of the five additionally named fused polycyclic hydrocarbons to which the standard refers: anthracene, acridine, pyrene, chrysene, and phenanthrene.
OSHA Instruction STD 1-23.4

AUG 22, 1980

SUBJECT: OSHA Medical Surveillance Regulations--Genetic Testing

A. Purpose. This instruction provides an interpretation of OSHA health standards that require medical surveillance programs specifying a medical history with family and occupational background, including genetic and environmental factors.

B. Scope. This instruction applies OSHA-wide.

C. Action. OSHA Regional Administrators and Area Directors shall assure that the interpretation provided in G. of this instruction is followed in all OSHA compliance activity.

D. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include a description either of the State's plan to implement the change or the reasons why the change should not apply to that State.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel. Routine monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

E. Standards Affected. This interpretation applies to all OSHA standards that require a medical surveillance program in which the medical examination shall include a person's health status. These standards are:


F. Background. In February 1980, the New York Times published a series of articles on genetic testing. The fourth and final installment of the series did not accurately describe OSHA policies on this issue. An OSHA press release, USDL 80-107 dated February 20, 1980, clarified OSHA’s policy. This instruction provides official guidance to OSHA Field Offices on this policy.

G. Interpretation. The provisions of the standards named in E. of this instruction shall be interpreted as follows:

1. These provisions do not require genetic testing of any employee.

2. The taking of an employee's medical history, including past medical history, a family history, (e.g., inheritable disorders) and an occupational history, shall be considered as a routine part of standard medical practice, and is designed to identify factors important to the employee's general health status.

3. These provisions do not require the exclusion of otherwise qualified employees from jobs on the basis of genetic testing.
ABSTRACT

The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003-1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

INTERPRETATION

29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 (or 0.1) percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine." The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry. 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

You inquired specifically about the emission of beta-Naphthylamine (BNA) as dust and vapor from exempt mixtures in the production of tobias acid by your client, (Company). We believe such emissions to be exempt from the standard because there is no available evidence that they will present a carcinogenic hazard to employees (even though BNA is a known carcinogen), because tobias acid is essential to the production of printing ink, and because tobias acid cannot be produced without such emissions. However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to
allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.

In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003 - 1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

Some examples of other standards that can be cited, regardless of whether or not the inspected facility is a carcinogen research laboratory, are the following: 29 CFR 1910.141 (Sanitation), 29 CFR 1910.134 (Respiratory Protection); 29 CFR 1910.133 (Eye and Face Protection); 29 CFR 1910.106 (Flammable and Combustible Liquids).

Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
This is in response to your September 20, 1983, inquiry on behalf of Dr. X of the University of X concerning the Occupational Safety and Health Administration's (OSHA) current face velocity specifications for laboratory fume hoods.

We understand Dr. X's concerns, however, the only current standards which specify fume hood face velocities (13 carcinogen standards in 29 CFR 1910.1003 - 1910.1016) do not apply to laboratories. These standards are not applicable to laboratories by virtue of the decision by the United States Court of Appeals for the Third Circuit in Synthetex Organic Chemical Manufacturer's Association v. Brennan, 506 F. 2nd 385 (3d Cir. 1974), cert. denied 422 U.S. 830.

You might, however, advise Dr. X that OSHA is currently reviewing a proposal for a laboratory standard which takes his general concerns into account. Many scientists who, like Dr. X, have an interest in laboratory safety, have repeatedly pointed out that OSHA's health standards written primarily for the typical industrial workplace are in most respects inappropriate for the laboratory setting, including university laboratories.

The proposal that we are considering is designed to respond to the inherent differences between laboratory and industrial workplaces. It is aimed at maintaining the same level of employee protection for laboratory workers that would be achieved under the General Industry Standards while allowing more flexibility.

ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to the first instance of OSHA Standard 1910.1004.
This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine." The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry. 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

You inquired specifically about the emission of beta-Naphthylamine (BNA) as dust and vapor from exempt mixtures in the production of tobias acid by your client, American Cyanamid. We believe such emissions to be exempt from the standard because there is no available evidence that they will present a carcinogenic hazard to employees (even though BNA is a known carcinogen), because tobias acid is essential to the production of printing ink, and because tobias acid cannot be produced without such emissions. However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogens standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.
ABSTRACT

Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003-1910.1016 have been vacated.

(NOTE: The new OSHA Standard (1910.1450) pertains to laboratories. Guidance for handling carcinogens is addressed.)

INTERPRETATION

29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

JAN 13, 1982


In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

Some examples of other standards that can be cited, regardless of whether or not the inspected facility is a carcinogen research laboratory, are the following: 29 CFR 1910.141 (Sanitation), 29 CFR 1910.134 (Respiratory Protection), 29 CFR 1910.133 (Eye and Face Protection), 29 CFR 1910.106 (Flammable and Combustible liquids).

Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
OSHA Instruction PUB 8-1.2A

August 11, 1986
Office of Science and Technology Assessment

Subject: Guideline for Controlling Exposure to Methylene Chloride

A. Purpose. This instruction provides guidelines to employers and employees for controlling exposure to methylene chloride in the workplace.

B. Scope. This instruction applies OSHA-wide.

C. Cancellation. OSHA Instruction PUB 8-1.2, March 10, 1986, is canceled.

D. Action. Regional Administrators and Area Directors shall provide copies of Appendix A to the appropriate employers and ensure that copies are available for distribution to the public upon request.

E. Federal Program Change. This instruction describes a change in the Federal program for which a State response is not required. Each Regional Administrator, however, shall:

1. Ensure that this change is promptly forwarded to each State designee.

2. Explain the technical content of this change to the State as requested.

3. Inform the State designees that they are encouraged to adopt Appendix A or similar guidelines and provide copies to the appropriate employers.

F. Background. As described in the attached Appendix on page A-4, OSHA was asked by a major international union to develop and publish a health hazard alert describing newly available health effect studies and recommending exposure control measures that could be instituted by employers. Appendix A was developed in response to this request.
Appendix A

GUIDELINE FOR CONTROLLING EXPOSURE TO METHYLENE CHLORIDE

U.S. Department of Labor
Occupational Safety and Health Administration
Washington, D.C. January 1986
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Table 1

Table 2
I. Background

On July 19, 1985, the International Union, United Automobile, Aerospace and Agriculture Implement Workers of America (UAW) petitioned the Occupational Safety and Health Administration (OSHA) to take immediate action on worker exposure to methylene chloride. Their request was based on an animal inhalation study conducted by the National Toxicology Program (NTP). UAW stated that methylene chloride caused cancer in laboratory animals at levels close to the OSHA permissible exposure limit of 500 parts methylene chloride per million parts of air (ppm). UAW asked OSHA to take the following actions:

A. Publish a health hazard alert describing the new information and recommending control measures to be instituted by employers.

B. Issue an Emergency Temporary Standard to require that protective measures be instituted immediately.

C. Begin work on a new permanent standard for control of exposure to methylene chloride on an expedited basis.

The following labor unions have also petitioned OSHA to take immediate action to control worker exposure to methylene chloride:

A. International Union Allied Industrial Workers of America.
B. Glass, Pottery, Plastics and Allied Workers International Union.
C. United Furniture Workers of America
D. The Newspaper Guild.
E. Communication Workers of America
F. United Steelworkers of America.

This guideline describes the new health hazard information and methods to control methylene chloride exposure.

II. Introduction

Methylene chloride (DCM, dichloromethane, methylene di- or bi-chloride CAS registry number 75-09-2) is a colorless, nonflammable, volatile liquid (See Table 1). Because of its ability to dissolve a wide range of industrial coatings, its chemical compatibility with many formulations and its rapid rate of evaporation, methylene chloride is a commonly used solvent for paint removal, metal degreasing, and pharmaceutical and aerosol products. It is also used as a blowing agent for making polyurethane foams, for the production of printed circuit boards, the extrusion of triacetate fibers, and in a wide variety of other important industrial processes (49).

Methylene chloride is produced by one of two basic processes. One process involves the direct reaction of methane with chlorine and the other involves the chlorination of methyl chloride. There are six known manufacturing facilities which currently produce methylene chloride in this country. About 265,000 metric tons of methylene chloride were produced in 1983 (49). Table 2 lists the use distribution of methylene chloride.
III. Potential Sources of Exposure:

While employee exposures can occur wherever methylene chloride is used, in general, employee exposures are likely to be highest when there is:

-- an open transfer of the liquid;
-- leakage from process equipment;
-- maintenance or repair work done on process equipment or transfer systems containing methylene chloride;
-- a failure of temperature controls and/or of exhaust ventilation systems or when these controls are inadequate, ineffective or improperly applied.

IV. Health Effects

A. Routes of Exposure

Methylene chloride can affect the body if it is inhaled or if it comes in contact with the eyes or skin. It can also affect the body if it is swallowed (45).

B. Metabolic Pathways/Pharmacokinetics

Analysis of the capability of various tissues to metabolize methylene chloride indicates the liver as the primary site, with some metabolic action in the lung and kidney. Data from both in vitro and in vivo studies indicate that methylene chloride is metabolized via two pathways. The P-450 mixed function oxidase pathway is located in the microsomal fraction of the cell and yields carbon monoxide as an end product. The glutathione-dependent enzyme pathway found in the cytosolic fraction of the cell yields carbon dioxide as an end product with formaldehyde and formic acid as metabolic intermediates. Both pathways generate metabolically active intermediates; formyl chloride, formaldehyde or S-chloromethyl glutathione, which are theoretically capable of irreversibly binding to cellular macromolecules such as DNA (11).

In vivo data suggest that during exposure to low concentrations of methylene chloride the two pathways appear to be utilized equally. At high concentrations experimental animals exhale more carbon dioxide than carbon monoxide. This suggests the cytosolic pathway producing carbon dioxide may metabolize significantly more methylene chloride than the microsomal pathway yielding carbon monoxide (9).

At present there are no data to prove that humans utilize the cytosolic pathway. Some investigators have speculated that this pathway is functional in humans based on uptake data (9). Human utilization of the microsomal pathway has been confirmed by monitoring the carboxyhemoglobin (carbon monoxide attached to the usual oxygen site on the hemoglobin molecule) level following exposure (54).

The carbon monoxide generated as an end product of methylene chloride metabolism impairs the ability of the blood to transport oxygen to the tissues. Hemoglobin has a strong affinity for carbon monoxide, approximately 210 times greater than for oxygen. This results in carbon monoxide being readily attached to hemoglobin and slowly dissociated. Once the carboxyhemoglobin is formed the hemoglobin is unavailable to transport oxygen and the release of oxygen from oxygenated hemoglobin is affected.
C. Toxicology Data

1. Animal Studies

Experiments have been conducted to determine the carcinogenicity of methylene chloride. Some of these studies and the investigator's conclusions are summarized below.

The 1984 publication by Burek, et al. (3) reports the findings of a Dow Chemical Company 1980 study of chronic inhalation in rats and hamsters. Inhalation exposures of 0, 500, 1500, or 3500 parts of methylene chloride per million parts of air (ppm) for 6 hours per day, 5 days a week for 2 years were used. Burek's results showed an increase in benign tumors in female rats at all doses and in male rats at the highest doses. Burek also reported a significant increase in salivary gland sarcomas at the high dose only in rats. Hamsters showed no tumors, even at the highest dose levels.

In 1982 Dow Chemical Company performed a second inhalation study to explore the toxicity of methylene chloride at concentrations below those that cause saturation of the metabolic processes (0, 50, 200, and 500 ppm). No compound-related increased incidence of any other tumor type was observed by Dow researchers.

The NTP (19) inhalation bioassay of methylene chloride was conducted on F344/N rats and B6C3F1 mice. Both sexes were exposed at concentrations of 0, 1000, 2000 and 4000 ppm for rats and 0, 2000, and 4000 ppm for mice, 6 hours/day, 5 days/week, for 102 weeks. In both male and female rats there was an increased incidence of benign mammary gland neoplasms, primarily fibroadenomas. According to the NTP study there was a significant increase in hepatocellular neoplastic nodules and hepatocellular carcinomas (combined) by the trend test only in the female rats. NTP also noted a significant increase in mesotheliomas in male rats. In addition there was a statistically significant increase of mononuclear cell leukemias in female rats by age adjustment. A marginally significant increase was noted in adrenal pheochromocytomas and interstitial cell tumors in male rats and pituitary gland adenomas and carcinomas combined in male and female rats by the trend test only.

In the NTP mouse study, there was a highly significant increase in alveolar/bronchiolar adenoma and/or carcinoma in both sexes. The incidence of hepatocellular adenoma and hepatocellular carcinoma combined was increased in the high-dose groups for both sexes and in the lower dose female group. NTP reported a dose-related increase in the number of mice bearing multiple lung and liver tumors. While the control mice had no more than one lung tumor per mouse, 40 percent of all dosed animals had multiple lung tumors. Likewise, 2 percent of the controls were found to have multiple hepatocellular tumors and 30 percent of the exposed animals exhibited multiple liver tumors.

The NTP concluded that "there was some evidence of carcinogenicity of methylene chloride for male F344/N rats as shown by increased incidence of benign neoplasms of the mammary gland. There was clear evidence of carcinogenicity of dichloromethane for female F344/N rats as shown by increased incidence of benign neoplasms of the mammary gland. There was clear evidence of carcinogenicity of methylene chloride for male and female B6C3F1 mice, as shown by increased incidences of alveolar/bronchiolar neoplasms and of hepatocellular neoplasms."

2. Epidemiological Studies

Friedlander, et al. (13) and the follow-up study by Hearne and Friedlander (17) performed mortality analyses of male Eastman-Kodak employees exposed to low levels of methylene chloride for up to 30 years. Proportionate and cohort mortality studies were used to assess whether adverse health effects could be shown to occur as a result of exposure to methylene chloride.
The proportionate mortality study was used to examine 334 deaths of methylene chloride exposed workers during 1956 to 1976. The control group consisted of Eastman Kodak workers who had not been exposed to methylene chloride. Eastman Kodak reported 71 neoplasms found while 73 were expected based on other Eastman Kodak employee mortality ratios. No single neoplasm site was over-represented.

In the Hearne cohort mortality study (17), 751 methylene chloride exposed workers were compared to two control groups: Eastman Kodak employees not exposed to methylene chloride and New York State males. The exposed group had a slightly elevated but not statistically significant rate of death from circulatory and respiratory diseases, a slightly higher but not statistically significant incidence of brain or nervous tissue cancers, and a significant excess of hypertensive heart disease compared to other Eastman Kodak employees.

Another facet of the cohort mortality study centered on 252 males with 20 years or more of exposure. Friedlander reported that this group did not demonstrate a statistically significant increase in neoplasms or in circulatory diseases when compared to the control groups.

The study by Ott, et al. (47) reported the results of a health evaluation of employees of a fiber production plant where a solvent mixture of methylene chloride, acetone and methanol was used. The control population was chosen from a plant where only acetone was used. The investigation focused primarily on health effects occurring to the cardiovascular system associated with the increased carboxyhemoglobin levels resulting from metabolized methylene chloride. The Ott, et al. study reported no statistically significant differences between observed and expected deaths.

EPA has criticized both of these studies stating that although neither showed excessive risk, both showed sufficient deficiencies to prevent them from being judged negative studies. EPA noted that the Friedlander et al. study (13) lacked the statistical power to enable it to detect a potential carcinogenic effect and the Ott, et al. (47) study, among other deficiencies, lacked a sufficient latency period for site-specific cancer.

D. Adverse Human Health Effects

Methylene chloride has a narcotic action and acts as a central nervous system depressant. The symptoms of exposure may be dizziness, nausea, tingling, numbness of the extremities, sense of fullness in the head, sense of heat, stupor, dullness, lethargy, and headache. Inhaling methylene chloride may cause a sensation of drunkenness with mental confusion and light-headedness. Exposure to very high concentrations may lead to staggering, rapid unconsciousness and death.

Skin contact with methylene chloride may cause irritation, dryness of the skin or dermatitis. The problem may be accentuated if the chemical is confined to the skin by contaminated gloves, shoes or tight fitting clothing.

Vapor concentrations of methylene chloride above 2,000 ppm may cause irritation of the eyes and respiratory tract (4).

Since exposure to methylene chloride increases the carboxyhemoglobin level in the blood, ambient carbon monoxide levels would have an additive effect on that carboxyhemoglobin level. Under normal conditions blood contains about 0.5 percent carboxyhemoglobin while a one-pack-a-day smoker will have a carboxyhemoglobin level of approximately 5.9 percent (14). At high exposure levels (500 ppm and above), the carboxyhemoglobin level would be expected to reach a maximum between 12 and 15 percent. This level is below that considered hazardous for any normally healthy individual but could place additional stress on compromised individuals, e.g. persons with cardiovascular diseases (11).

OSHA has initiated a program to evaluate all of the existing research in order to decide the validity of each. At the conclusion of this thorough investigation a more meaningful extrapolation of the data from experimental animal studies to human occupational exposure will be performed.
OSHA Instruction PUB 8-1.2A (cont.) A-8

E. Classification

EPA classified methylene chloride as a Probable Human Carcinogen (Group B2). The EPA Probable Human Carcinogen classification (Group B) is used when there is sufficient evidence of carcinogenicity in animals and evidence of carcinogenicity from epidemiological studies that ranges from "almost sufficient to inadequate." To reflect this range, the category is divided into higher (Group B1) and lower (Group B2) degrees of evidence. The B1 category is reserved for those agents for which there is at least limited evidence carcinogenicity to humans from epidemiological studies. In the absence of adequate data in humans, it is reasonable to regard agents for which there is sufficient evidence of carcinogenicity in animals as probable carcinogens in humans. Agents for which there is sufficient evidence from animal studies but insufficient evidence from human studies are classified as B2 (12).

V. Permissible Exposure Limit (PEL)

The current OSHA standard for methylene chloride is 500 parts of methylene chloride per million parts of air (ppm) averaged over an eight-hour work shift, with an acceptable ceiling level of 1000 ppm and a maximum peak concentration of 2000 ppm for five minutes in any two-hour period. The National Institute for Occupational Safety and Health (NIOSH) has recommended that the permissible exposure limit be reduced to 75 ppm averaged over a work shift of up to 10 hours per day, 40 hours per week, with a ceiling level of 500 ppm averaged over a 15-minute period (21). NIOSH further recommends that permissible levels of methylene chloride be reduced where carbon monoxide is present. The NIOSH Criteria Document for Methylene Chloride should be consulted for more detailed information (21). In 1986, the American Conference of Governmental Industrial Hygienists (ACGIH) published a Notice of Intended Changes for 1986-87 to lower the Threshold Limit Value-Time Weighted Average (TLV-TWA) for an 8-hour workday from 100 ppm to 50 ppm and deleted the Short Term Exposure Limit (STEL) of 500 ppm. ACGIH further classified methylene chloride in this notice as A2 (Industrial substance suspect of carcinogenic potential for man. Chemical substances or substances associated with industrial processes, which are suspect of inducing cancer, based on either (1) limited epidemiologic evidence, exclusive of clinical reports of single cases, or (2) demonstration of carcinogenesis in one or more animal species by appropriate methods) (2).

VI. Monitoring

Personal and area monitoring should be conducted periodically to determine the levels of employee exposure. Personal samples measured over an entire workshift should be collected at the workers' breathing zones to determine their time-weighted average (TWA) exposures. Air samples of methylene chloride can be collected by charcoal tubes, the analyte desorbed with carbon disulfide and analyzed by gaschromatograph equipped with a flame ionization detector (22,23).

Because methylene chloride is a solvent with a high vapor pressure there is a high probability of its migration once adsorbed on charcoal. For this reason, and since the amount of sample which can be collected is limited by the quantity each tube will hold before overloading, OSHA recommends that sampling be done with two charcoal tubes in series, each containing 100 mg front and 50 mg backup sections of charcoal at a maximum flow rate of 50 ml/min and not to exceed a sample volume of two liters of air (46).

VII. General Methods of Control:

Commonly used methods for controlling occupational exposure to methylene chloride include product substitution, engineering controls, work practice controls, and the use of personal protective clothing and equipment. Appropriate worker education and training programs are also major factors in the control of exposures to methylene chloride.

A. Substitution:

The best method for controlling exposure to any extremely toxic material is to use a less toxic material wherever possible. Methylene chloride has been described by industry as a very strong
and effective solvent for a variety of industrial compounds, combining several important technical qualities in one solvent (e.g., it is a flammability suppressant, a vapor pressure depressant, a viscosity thinner, can be readily atomized, has a high evaporation rate and readily dissolves a wide variety of substances) (10,15).

Industry has suggested the use of ethyl alcohol as a substitute solvent for use in hair sprays, room fresheners, degreasers and other household aerosol formulations. Possible alternative solvents for household aerosol spray paint formulations are acetone, methyl ethyl ketone or toluene. Care must be exercised in selection of these substitute solvents since they are highly flammable. For cold cleaning or vapor degreasing, 1,1,2trichloro-1,2,2-trifluoroethane (Fluorocarbon 113) or other less toxic halogenated hydrocarbons may be used (10,15).

Trichlorofluoromethane (Fluorocarbon 11) has been used as an alternative solvent to methylene chloride for use as a blowing agent in the manufacture of urethane foam products (5).

For many other important industrial processes, there may not be any viable alternatives to methylene chloride at this time.

B. Equipment or Process Design:

Open equipment which discharges methylene chloride to the ambient air should be avoided unless mechanical ventilation or solvent recovery units are available. Occupational exposure to methylene chloride can be minimized by the effective installation, use and proper maintenance of such items as full or partial process enclosures, including the use of baffles and covers. For example, an enclosed pressure filter press may release less methylene chloride than an open vacuum filter. Methylene chloride emissions from an enclosed centrifuge are much lower than from an open type (49).

A continuous process could reduce methylene chloride exposures over processes which utilize frequent charging and discharging operations. A process operated at low temperatures could also reduce the potential for overexposure to the solvent (7,16,24,49).

Solvent recovery systems should be installed wherever practicable to prevent the release of methylene chloride to the process area.

C. Exhaust Ventilation:

The use of exhaust ventilation systems is the most effective method for removing excessive quantities of methylene chloride vapor from the workroom air. Exhaust ventilation should be installed to minimize employee exposure to methylene chloride whenever feasible and should be designed, installed and maintained to prevent the accumulation or recirculation of methylene chloride into the workroom air (7,24).

Local exhaust ventilation should be placed in such location as to achieve the effective capture and removal of vapors without drawing them past the workers' breathing zone. Local exhaust ventilation is commonly installed at cold cleaner degreasing tanks, vapor degreasers, foam blowing units, and triacetate fiber drying cabinets.

Exhaust systems should be periodically monitored for proper operation and should also be routinely serviced to maintain their peak efficiency. Adequate make-up air should be supplied to assure an effective system.

D. Work Practice Controls, Maintenance, General Housekeeping and Personal Hygiene:

Particularly in jobs which involve the tending of large pieces of equipment, work should be performed as quickly and efficiently as possible so as to minimize the duration of exposure (with frequent breaks in a methylene chloride-free area). Workers should always stay as far from the sources of solvent emissions as possible.
Under OSHA's Hazard Communication standard (29 CFR 1910.1200), information on hazardous chemicals such as methylene chloride must be transmitted by manufacturers and distributors of such products to employers within the manufacturing sector. Those employers must then inform their employees of the hazardous nature of those chemicals by means of labels on containers, material safety data sheets and training programs. It is important to remind workers that all solvent containers which are used secondarily to hold methylene chloride dispensed from larger supply containers should also be properly labelled and kept tightly sealed when not in use.

Methylene chloride transfer pumps should be routinely inspected and maintained to prevent the release of the solvent. Standard operating procedures should be established for vessel entry. Vessels or storage tanks should be thoroughly purged, ventilated, and tested before entry. Continuous ventilation should be provided when working inside a vessel or storage tank. Standby personnel with proper equipment should be available for rescue.

Workers should promptly tend to the cleanup of spills and the containment of leaks that may occur. Adsorbents such as chemical sorbent, vermiculite, or perlite could be used to remove small spills. Large spills should be handled by a specially trained and equipped emergency response team. All materials used in spill cleanup operations, large or small, should be promptly and appropriately disposed of so as to prevent new sources of vapor emissions.

Nearby washing facilities must be provided for employees who handle liquid methylene chloride (29 CFR 1910.151). Good medical practice indicates that, as with other non-water-reactive chemicals, eye contact with methylene chloride should be treated immediately with a constant cold water flush for at least 15 minutes and medical attention provided immediately. Contaminated clothing should be removed immediately and affected areas of the body (other than eyes) washed thoroughly with soap and water.

Food, drink, chewing products, tobacco products, medicine and cosmetics storage, preparation, consumption and/or use should be limited to areas where no possible contamination of these materials with liquid methylene chloride may occur.

Methylene chloride is metabolized by the liver to form carbon monoxide. Methylene chloride and carbon monoxide therefore have an additive effect on the body. The body handles these chemicals similarly, producing carboxyhemoglobin which reduces the oxygen-carrying capacity of red blood cells. Since smokers have higher levels of carbon monoxide in their blood, employees should be advised of this additional hazard and smoking should be discouraged (5,36).

When methylene chloride and other chlorinated hydrocarbons such as trichloroethylene, perchloroethylene and hexachloroethane come into contact with an open flame or hot metal, as in welding operations, chlorine containing gases are formed. Care must be taken to prevent accidental generation of these gases from this source (7).

E. Personal Protective Clothing and Equipment

Since liquid methylene chloride is irritating to the skin and can also be absorbed through the skin, in operations where splashing, spilling, spraying or skin or eye contact with methylene chloride may occur, employees should wear protective solvent-impermeable coveralls and other protective gear such as gloves (long enough to cover the forearms), aprons, shoe coverings and safety glasses and goggles and face shields when appropriate. Viton (a fluorocarbon elastomer) and polyvinyl alcohol (PVA) materials used for some protective gear provide very good permeation resistance to methylene chloride. However, since Viton has relatively low mechanical strength and is very expensive, and polyvinyl alcohol is water soluble, these have limited application as protective clothing materials (1).

Other commonly used materials such as neoprene, butyl rubber nitrile rubber or polyvinyl chloride (PVC) may provide limited protection against methylene chloride and may be used with caution for short-term contact with this solvent (1).
F. Respirators:

Positive-pressure supplied air respirators or self-contained breathing apparatus are recommended whenever respirators are required.

Where employees must wear respirators, an appropriate respiratory protection program in accordance with 29 CFR 1910.134 must be instituted.

A study conducted at the Lawrence Livermore National Laboratory has demonstrated that full shift use of chemical cartridges or canisters are not efficient for removing methylene chloride, since cartridge breakthrough times are 30.0, 22.6 and 17.3 minutes for methylene chloride concentration challenges of 500, 1,000, and 2,000 ppm, respectively (20). Furthermore, because methylene chloride does not have adequate odor warning properties, use of air-purifying respirators does not provide an adequate margin of safety (4). For these reasons, the use of air-purifying respirators such as chemical cartridge respirators or gas masks equipped with organic vapor cartridges or canisters is not generally recommended, however, these may be used for short-term exposure to low levels of methylene chloride, provided the service life of the cartridges and/or canisters has been determined for the intended use. In addition, if they are used, cartridges and/or canisters should be replaced at the beginning of the work shift or before the end of their service life. Quantitative fit testing should be performed for face piece selection whenever negative-pressure respirators are used.

VIII. Education and Training:

An effective employee education and training program can also serve to reduce potential for exposure to methylene chloride and is required under OSHA’s hazard communication standard (29 CFR 1910.1200). The program should contain at least the following elements:

-- The hazards of methylene chloride exposure and methods which can be used to prevent inhalation or skin or eye contact.

-- Use, care and limitations of respirators and other personal protective equipment (see 29 CFR 1910.134).

-- Safe handling of methylene chloride and other relevant work practices.

-- Effective housekeeping procedures.


-- Relevant personal hygiene aspects for controlling individual exposures.

IX. Industry-Specific Methods of Control:

The information presented thus far has been very general in nature. Exposure to methylene chloride as it is used in many industrial processes can readily be controlled by a combination of these generalized control measures with more specific process-related designs and procedures.

This section discusses individual industrial processes, associated sources of potential exposure, and some process-related methods for minimizing exposures in some of the more important industrial uses of methylene chloride.

A. Degreasing Operations

Methylene chloride is used by the degreasing industry, and as an incidental (though crucial) part of many other industries, as a solvent cleaner in cold cleaning, vapor and conveyor type degreasers. Annually, approximately 16,400 metric tons of methylene chloride are used in the U.S. by the degreasing industry alone (49,50). It is used as a 100% commercial grade solvent or
as the primary ingredient of the degreasing solvent. Methylene chloride is a preferred solvent for this use because of its ability to dissolve a wide range of industrial chemicals, its rapid rate of evaporation, chemical compatibility with most metals and its non-flammability (10,15,49,50).

Process Description:

1. Cold Degreasing: Most cold degreasers are open-top stainless steel tanks. The cleaning operations used in cold degreasing include spraying, flushing, brushing and immersion in the solvent. Typical maintenance cleaning is accomplished by manually spraying the dirty parts and then soaking them in the degreasing tank. When cleaning is completed, the parts are typically suspended over the tank to drain or are placed on a rack outside the tank with the solvent drippings directed back into the tank or otherwise collected for subsequent reclamation. Some degreasers are equipped with agitators that operate while the parts are immersed in the solvent. This enhances the cleaning efficiency of the solvent (24,27,31,40).

2. Vapor Degreasing: Open top vapor degreasers operate by condensing hot solvent vapor on colder metal parts. The typical open top vapor degreaser consists basically of two sections: a lower section with a reservoir containing liquid solvent and a heat source which boils the solvent to create a vapor and an upper section containing only the vapor and emission control items (16,21).

Metal parts soiled with grease, oil, metal fines, etc., are lowered, usually in a basket, into the solvent vapor-zone of the tank with the aid of a manually-operated or automated crane. The hot vapor condenses onto the cooler metal parts and the condensate dissolves the soil, carrying it along as it drains back into the boiling liquid reservoir below. When the metal parts reach vapor temperature, the condensation stops. The vapor degreasing process takes advantage of the fact that the solvent boils at a much lower temperature than the oil and grease. If the temperature of the liquid reservoir is maintained at the boiling point of the solvent, only pure solvent vapor is found in the vapor zone of the degreaser. As water can interfere with the degreasing activity, degreasers are also equipped with a water drain-off valve. The cleaning efficiency of this process can be increased by spraying immersed parts with solvent or by dipping them into the liquid phase (5,16,21,24).

3. Conveyorized Degreasing: Conveyorized degreasers are operated with either cold or vaporized solvent. Parts are placed on a conveyor which carries them into the liquid solvent or through the vapor zone and out the other end for drying and/or subsequent handling. Conveyorized degreasers are generally continuously loaded and are almost always hooded or enclosed (5,16,21,24).

Potential Exposures:

PEI Associates, Inc., under contract to NIOSH, has calculated TWA exposures to methylene chloride in degreasing operations to range from 2 ppm to 224 ppm (49).

Worker exposures can be high during the preparatory manual spraying of dirty parts with solvent before their insertion in the degreasing tank. Also cross drafts of air can disrupt both the emission control system and the local exhaust ventilation system and result in worker exposure.

During cold cleaning, workers may be required to lean over the edge of the tank to scrub parts that have not been adequately cleaned. Concentrations of methylene chloride in the breathing zone of one worker involved in such an operation were measured at 5,000 ppm (49,50).

Degreasing equipment must be cleaned periodically to maintain its efficiency. The potential for high exposures is great during this process since it is frequently done by the worker simply emptying the tank of solvent, rinsing it with water from a high-pressure hose and then climbing inside the tank to scrub it down with brushes (7,24).
Methods for Control Specific to this Industry

1. Engineering Controls:

The proper design and operation of degreasing equipment are the most important aspects of exposure control in this industry. Occupational exposures to the solvent can be minimized by the use of a vapor zone freeboard height of 60% of the machine width and by the temperature control of vapor emissions through the use of condensation coils or a freeboard refrigeration device (the "freeboard chiller") (5,16,24,32,38,43).

Exhaust ventilation should be designed, installed and maintained in such a way as to prevent cross drafts over the degreasing equipment (such drafts could result in solvent vapors being brought into the workers' breathing zone). Baffles on windows near degreasers can help control high velocity drafts and baffles and shields around degreasers can keep air currents from disturbing the vapor layer (32). The location of degreasing equipment in large rooms with good general ventilation but no cross drafts, and away from sources of high temperature can contribute substantially to the control of airborne exposures to methylene chloride (38,43).

2. Work Practices, Housekeeping and Personal Hygiene:

The benefits of many degreasing equipment design features and exhaust ventilation controls which are readily available, can be largely, if not entirely negated by improper operating procedures and/or negligence of equipment maintenance and repair needs (16,24).

Many exposure problems associated with degreasing operations can be substantially reduced by simple equipment maintenance and by proper use of the equipment and solvent by the operator. Freeboard ducts must be cleaned frequently to prevent their becoming clogged and their exhaust efficiency diminished. In some cases, heat exchange coils on the compressors of freeboard chillers need to be cleaned to keep the unit operating effectively in condensing the vapor and containing it within the degreasing unit. Degreaser covers should be used whenever possible and always when the equipment is idling (5,7,16).

Disturbances of the vapor layer and resultant solvent "dragout" is directly related to too rapid entrance/removal speeds for parts being cleaned and to excessive amounts of moisture in the solvent (i.e., the water layer is improperly or insufficiently drained from the system).

Parts should be removed only when degreasing action is over and must be given adequate time to drain prior to their removal from the degreasing unit. Neglect of the recommended drainage time frequently results in increased concentrations of solvent vapor in operators' breathing zones.

Overloading the degreaser can also result in excessive airborne vapor concentrations. Keeping the cross-sectional area of the workload to less than 50% of the available machine area can help reduce exposures (16,21).

The manual spraying of parts in areas above the vapor zone of the equipment can result in unnecessary exposures. Operators can alleviate this problem by taking special care to spray parts only while the parts are in the vapor zone and to carefully direct the spray so as to keep the solvent from splashing above or outside of the vapor zone (32,36,38,43).

B. Paint Removal

Methylene chloride is also used extensively as a paint remover. In their draft report on methylene chloride use, SRI International, Inc., estimates that almost 25% of the 265,000 metric tons of methylene chloride produced each year are used for this purpose (49).
The ability of methylene chloride to penetrate, blister and lift paint and other coatings far exceeds that of any other solvent currently available. For this reason, commonly used paint removers that are not 100% methylene chloride, frequently contain 50-90% methylene chloride in combination with alcohol and hydrocarbon co-solvents.

Process Description:

Paint remover is either sprayed or brushed onto the surface being stripped and, after a short "setting" period, the stripper and loosened paint (or other coating) is brushed, scraped or wiped off into collection troughs with scrapers or brushes for disposal. The surface being stripped is then washed and brushed down with a water or solvent rinse and brushes to remove the remaining stripper solvent and old paint.

Stripper solvent that is applied by sprayer is frequently delivered to the handle of the sprayer by pneumatically operated pumps which, when placed in the solvent containers, force the stripping compound through hoses to the spray handle. The stripper is sprayed onto the painted surfaces in the form of a fine mist and, in most instances is sprayed from above the object being cleaned, with the spray directed downward. Application of stripping compound to small hard-to-reach areas or to "stubborn" areas is generally accomplished manually by dipping a bristle brush or other scraping tool into an open container of stripping solvent.

Potential Exposures:

Exposure to methylene chloride during paint-stripping operations can occur from inhalation and/or dermal contact with the spray mist, with vapor from open containers of solvent or from contact with the liquid, from solvent-saturated coatings which have been removed from treated surfaces and collected in open troughs, and from residual solvent remaining on brushes and scrapers.

Airborne exposures of employees involved in paint-stripping operations have been measured and TWA's calculated to range from 7 to 3.897 mg/m³ or about 2 to 11.13 ppm. Employee exposures to methylene chloride in paint-stripping operations are generally sporadic and highly variable, and are greatly influenced by the effective use of exhaust ventilation and personal protective clothing and equipment.

Methods for Control Specific to this Industry:

1. Engineering controls: The use of methylene chloride in paint-stripping operations and its high vapor pressure result in its ready release into the workplace air. Adequate exhaust ventilation should be utilized as a primary control. Close-fitting exhaust ventilation or vacuum systems used on or with spray hoses to control overspray at the point of mist generation should be utilized. Collection troughs used for paint scraps and solvent residues should be fitted with appropriate exhaust ventilation.

2. Work Practice Controls: Solvent-soaked brushes, scraping tools, rags and clothing should be placed in closed containers or in ventilates hoods. Collection troughs used for paint scrapings and solvent residues should be kept covered when not in use and emptied and rinsed free of residual solvent and paint scrapings as frequently as practicable.

C. Extrusion of Triacetate Fibers

Methylene chloride is used to dissolve triacetate polymer flake into a liquid for extrusion of the triacetate into fibers.

Process Description:

The triacetate flake and other dry ingredients are added automatically to a batch mixer through a...
weigh hopper. A solution of methylene chloride and methanol is slowly fed to the dry solids in the mixer through a closed system until the solids are completely dissolved. The liquid form of the polymer, called dope, is filtered so that it is absolutely free of materials that could block the holes in the spinnerettes, through which the liquid polymer will subsequently be extruded (49, 50, 52).

Following filtration of the triacetate dope, it is pumped to the extrusion area where it is preheated, filtered through a candle filter, and forced through an extrusion head (the spinnerette or jet). The extruded fibers travel down through a drying cabinet in which air removes the solvent and dries the fibers. The fibers are gathered at the base of the drying cabinet, and the resulting triacetate yarn is spun onto a carrier package or "bobbin." Several of these drying cabinets are grouped together in a long row called a "metier." The bobbins are put into a storage area until the yarn is ready to be processed further. This additional processing includes operations known as twisting (a mechanically performed twisting of the yarn which strengthens it), coning (the transfer of filament from several hundred bobbins onto a large spool known as a weaving or section beam) (49, 50, 52).

Potential Exposures

Throughout the mixing and filtering processes, the solution is kept in a closed system which, under normal operating conditions, will preclude exposures. Periodically, the filter presses require stripping and replacement of the filter elements. Approximately 10 to 12 filter presses are stripped each week and the elements replaced with fresh cloth filters. The old filters are partially dried and are then processed to recover the solvent and polymer (49, 50, 52).

Ambient levels of airborne methylene chloride present in the work areas where the triacetate fiber is prepared, extruded and packaged have been determined by SRI International, Inc. in their survey report of a plant in Rock Hill, South Carolina, to range from approximately 49 ppm to 685 ppm in the areas sampled. Eight-hour time-weighted average (TWA) concentrations of area samples taken at the operating level between several of the metiers ranged from 410 ppm to 975 ppm. Levels measured at one extrusion spinning area of the plant ranged from 394 to 685 ppm, and levels of the catwalk jet (spinnerette) areas measured in one filter press area and one bobbin storage area were 285 and 343 ppm, respectively. Levels measured at the yarn twisting operation were 49 ppm and at the coning operation were 31 ppm (49, 51, 52).

All of the job classifications involved in triacetate production show some degree of variability in the exposure levels from shift to shift despite the continuous nature of the operations. Week to week variations have also been noted due to changes in the production rate and in the size of the yarn being produced — smaller denier yarn giving off less vapor than the larger denier yarn. Variability in exposure levels has also been attributed to such factors as start-up and shut-down of the metiers. In addition, different operators do the same task in different ways (e.g., some will get closer to the equipment, some take longer or shorter times to get their work done) (49, 51, 52).

Exposures for the different job classifications involved in triacetate fiber production were reported by SRI International, Inc. Almost all of the samples taken from the patrolers, dofters, jetwipers and filter pressmen exceeded 200 ppm (measurements ranged from 69 to 561 ppm approximate 8-hour TWA concentrations).

Some of the samples collected for the bobbin store operator, lacer and beaming operator were also above 200 ppm (range: 67 to 278 ppm approximate 8-hour TWA concentrations). The creeler and coning operator classifications were comparatively low, with levels ranging from 31 to 162 ppm (49, 51, 52).

Methods for Control Specific to this Industry:

The sources of methylene chloride exposures during triacetate fiber production include leaks, mixer vents, filter vents, extruder/dryer vents, storage cabinet vents and exposures that occur during the further processing of yarn containing residual methylene chloride. Local exhaust ventilation should be used at each of the sources of vapor emissions (49, 51, 52).
D. Pharmaceutical industries

Methylene chloride is used extensively as a solvent in the purification of pharmaceutical products and pill coatings. Most drugs are made in a batch process (48).

Process Description:

Chemical reaction: Raw material solids and solvents (usually not methylene chloride) are mixed in a reactor vessel in which the chemical reaction is carried out, sometimes under elevated temperature or pressure. The stainless steel or glass-lined cart on steel reactor is either an open tank or an enclosed vessel and is equipped with an agitator. Various peripheral equipment such as condensers, a refrigeration unit, or a vacuum system can be added to allow the reaction to take place at very high or low temperatures and/or pressures. Some reactors are equipped with a condenser for recirculation of the solvent (48,49).

Product separation: The effluent is pumped from the reactor to a holding tank where the reaction products are washed to remove unreacted raw materials and byproducts. The washed reaction products are then piped to various separation process tanks. An extraction process in which a solvent preferentially combines with one of the reaction products is commonly used for product separation. The extraction takes place in the reactor where a solvent is added to dissolve the reaction product to be extracted. Methylene chloride is a commonly used extractant in the production of some pharmaceuticals. Distillation, crystallization and filtration are also used in product separation (48,49).

Purification: The crude product is purified by crystallization of the desired compound from a supersaturated solution. A filter press is usually used to separate the concentrate from the solvent. The purified product and remaining solvent are then separated in a centrifuge. The cake may be further washed by water or another solvent to remove impurities before drying (48,49).

Drying: Various types of dryers such as tray, rotary or fluidized bed dryers use hot air circulation or are operated under a vacuum to remove the remaining solvents or water from the centrifuged or filtered product. The dried material is then packaged as the finished product (48,49).

Potential Exposures:

Methylene chloride is released during storage and transfer operations, and during reactor charging, separation, and drying processes (49). The areas or operations where employees may be exposed to methylene chloride are:

1. Storage area: From the displacement of air containing methylene chloride during storage tank charging.

2. Reactor: From the displacement of air containing methylene chloride during reactor tank charging, while the tank is being purged and/or cleaned after extraction, during the purging of vaporized methylene chloride from a solvent wash, and during the collection of reaction cycle samples for quality control analyses.

3. Distillation condensers: When uncondensed methylene chloride is released during refluxing in a distillation condenser.

4. Crystallizer: When the crystallization is accomplished by the evaporation of solvent containing methylene chloride.

5. Filters: When filters are opened to remove collected solids and when they are cleaned.

6. Centrifuge: When methylene chloride is separated from the solid product in an open-type centrifuge which permits large amounts of air to contact and evaporate residual solvents. Exposures can also occur when solids which are still wet with solvent are unloaded from centrifuges.
7. Dryer: When heat and/or a vacuum is applied to the solvent-laden product or warm air is blown around or through it to remove the remaining methylene chloride in the final product.

8. Equipment maintenance: When process vessels, storage tanks and transfer pumps are opened for inspection, cleaning or repair.

Worker exposures, as estimated from a survey of three plants in the pharmaceutical industry, range from 7 to 3,716 mg/m³ (2 to 1,062 ppm) as calculated personal TWA exposures (49).

Methods for Control Specific to this Industry:

1. Engineering Controls

   Local exhaust ventilation should be installed at operations where significant exposure to methylene chloride is expected such as at dryers, distillation columns and condensers, vacuum drum filters, and at column extractors (48,49).

   If open-type centrifuges are used, an inert gas blanket can reduce solvent emissions to the workroom atmosphere. The use of bottom unloaders for the transfer of centrifuged solids can also minimize worker exposure (48).

E. Electronics Products

Methylene chloride is used in the electronics industry in the production of circuit boards.

Process Description:

A polymer-based photosensitive resist material is applied to the blank copper-clad laminated circuit board and the circuit design is applied over it. The board is then exposed to a light source, the photo resist is developed and the unwanted resist is removed. The exposed copper is passed through an etching bath and the remaining photo resist chemical is removed by stripping with methylene chloride (5,6).

Another use of methylene chloride in the electronics industry is as a vapor degreaser to remove the flux from the printed circuit boards after soldering (41).

Methylene chloride is also used in the manufacture of semiconductors where it is used in the diffusion process to introduce dopant impurities which modify the electrical properties of a semiconductor (40,41).

Potential Exposures:

Employees who most likely will be exposed to methylene chloride are those whose work stations are at or near the photo resist chemical stripping operation, the vapor degreaser tank or at the diffusion process. Those who handle drums or storage vessels of methylenechloride and those who provide maintenance of the equipment where methylene chloride is handled may also be at risk (40,41).

According to PEI Associates, Inc., estimates, worker exposures to methylene chloride from use in the electronics industry range from 5 to 74 mg/m³ (1 to 21 ppm) for assemblers, and from 1 to 550 mg/m³ (0.28 to 157 ppm) for related workers (49).

Methods for Control Specific to this Industry

Local exhaust ventilation should be installed at operations where high exposure to methylene chloride is expected, such as at the photo resist stripper or the degreaser.
F. Foam Blowing

Methylene chloride is used in the foam blowing industry as an auxiliary blowing agent in the production of flexible urethane foam slabstock.

Process Description:

Methylene chloride and other ingredients are pumped to a traversing mixing head and discharge nozzle which is positioned at the beginning of the operations line tunnel. The mixed liquids are discharged onto a conveyor belt which travels through the tunnel. The reaction is exothermic and the blowing agent is vaporized. This vaporization forms cells in the foam and causes the mixture to rise. The foam cures as it passes through the tunnel and is ready to be sawed into slabs and packaged for shipment upon exiting the tunnel.

Potential Exposures:

Methylene chloride emissions result from storage vents, leaks, and primarily from the foam tunnel. Methylene chloride is released from the foam as it proceeds through the tunnel. When the foam finally leaves the tunnel, essentially all the methylene chloride has been emitted.

Calculated Time Weighted Average exposure concentrations (TWA's) range from 7 to 249 mg/m³ (2 to 71 ppm) for foam operators and 55 to 174 mg/m³ (16 to 50 ppm) for related workers.

Methods for Control Specific to this Industry:

Local exhaust ventilation should be utilized along the entire operation line, wherever leaks may occur, especially the operation line foam tunnel and where storage vents are present. Special care should be taken to avoid exposures and direct contact with liquid methylene chloride during foam head cleaning operations.

Methylene chloride is sometimes reclaimed by a distillation process and reused. The still should be properly sealed or ventilated.

G. Aerosols Packaging

Methylene chloride is utilized as a solvent in the aerosol industry for a variety of aerosol products including finishes and coatings, paint removers, hair sprays, cleaners, room deodorants, herbicides, and insecticides.

Process Description:

Methylene chloride is used as an aerosol solvent since it is compatible with many types of formulations, depresses the vapor pressure of high pressure propellants, reduces flammability, enhances the dispersion of the aerosol spray and speeds up drying of the dispersed product. The solvent and product are mixed before being sent to the packing line, where aerosol cans are charged with product and propellant and crimped closed. The cans are then placed in a hot water bath to test the integrity of the cans up to a specified temperature. They are then packaged for shipment.

Potential Exposures:

Methylene chloride emissions result from spills and from evaporation during product-solvent mixing operations and during aerosol can charging. Methylene chloride emissions will also result from volatilization of suspended droplets or by evaporation from sprayed surfaces. Exposures will vary with the type of equipment in use and the type of product packed.
OSHA Instruction PUB 8-1.2A (cont.) A-18

Only limited information is available for occupational exposures in this industry. Personal exposures to methylene chloride during aerosol packing operations have been measured at 52 mg/m³ (15 ppm) for batch mixers, 101 mg/m³ (29 ppm) for aerosol, line filters and line operators, 171 to 2,223 mg/m³ (49 to 635 ppm) for valve droppers and 529 mg/m³ (151 ppm) for tub cleaners (29,49). PEI Associates, Inc., has calculated TWA exposures to range from 101 to 1890 mg/m³ (29 to 540 ppm) during aerosol packing operations (29,49).

Methods for Control Specific to this Industry:

Local exhaust ventilation should be utilized along the entire operation line, particularly at the mixing tanks, aerosol filling line and methylene chloride transfer operations.

H. Production of Polycarbonate Resins

Methylene chloride is used as a solvent in the polymerization reaction during polycarbonate resin manufacture.

Process Description:

Polycarbonate is formed by reacting bisphenol A with phosgene in the presence of an excess of pyridine. Methylene chloride is used as a solvent in the polymerization reaction. A jacketed reaction vessel equipped with an agitator is charged with the reactants and solvent. Phosgene gas is bubbled through the reactor contents. The reaction takes approximately 1-3 hours and is carried out at temperatures below 40 degrees (104 degrees F). Pyridine and methylene chloride are recycled during the process (29,49).

The reactor contents are then fed to wash tanks for removal of residual pyridine with hydrochloric acid and water washes. Methylene chloride is removed by steam stripping. The polycarbonate polymer is precipitated from the polymer-methylene chloride stream with an organic compound, such as an aliphatic hydrocarbon, and is separated by filtration. The filtered polymer is transferred to a drying process, while the solvent is recovered in a distillation column (49).

Potential Exposures:

The polymer is dried by direct contact with hot air. Although solvent recycling from the drying process is indicated from reference information reviewed, it is likely that some methylene chloride is emitted and is a possible source of exposure. Methylene chloride is present in all process steps, although it is not clear which processes emit methylene chloride to the ambient air (29,49).

Worker exposure to methylene chloride could result from any leaks throughout the process and particularly during the filtrate removal and drying operations.

Methods for Control Specific to this Industry:

Local exhaust ventilation should be utilized at operations at which high exposures to methylene chloride might be expected, e.g., at the filtration operation, the drying areas and during any maintenance cleaning or repair operations at sites in the process line where methylene chloride has been used (29,49).
OSHA Instruction PUB 8-1.2A (cont.) A-19

References:


2. Applied Industrial Hygiene, American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, 1:F-18, 1986.


OSHA Instruction PUB 8-1.2A (cont.) A-20


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44. NIOSH, Whirlpool Corporation, Fort Smith, AK; Health Hazard Evaluation Toxicity Determination Report #72-100-121; March 1974.

45. NIOSH/OSHA: Occupational Health Guidelines for Chemical Hazards. DHHS (NIOSH) pub No. 81-123


Table 1: Physical and Chemical Properties of Methylene Chloride (4)

Physical state: Colorless liquid

Molecular weight: 84.94

Specific gravity: 1.325 (20/4 degrees C)

Melting point: -96.7 degrees C

Boiling point: 40.1 degrees C

Vapor pressure: 350 mm Hg (20 degrees C) 440 mm Hg (25 degrees C)

Vapor density: 2.93 (air = 1)

Solubility: 2 g/mL water at 20 degrees C; soluble in ethanol, ethyl ether, and acetone

Explosive limit: no flash point or fire point by standard test in air. The flammability in oxygen is 15.5 to 66% in oxygen.

Percent in saturated "air": 55 (25 degrees C)

Odor threshold: 300 ppm (sweetish, aromatic)

Table 2: Use Distribution of Methylene Chloride (49)

<table>
<thead>
<tr>
<th>Use</th>
<th>Tons/yr</th>
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</thead>
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<tr>
<td>Aerosols</td>
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<td>Paint removers</td>
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<td>Urethane foam blowing</td>
<td>22,700</td>
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<td>Degreasing</td>
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<td>Electronics</td>
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<td>Other uses</td>
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DOE Interpretations Guide to OSH Standards
July 1, 1992
This is in response to your memorandum on this subject of January 28, 1986. We understand from a reading of your memorandum and telephone conversations with your staff, that (Company) is conducting some processes involving bis-chloromethyl ether and methyl chloromethyl ether in what they designed to be closed systems. According to 29 CFR 1910.1006(b)(4) and 1910.1008(b)(4), a closed system is one that prevents the release of either of the two above mentioned ethers into regulated areas (nonregulated areas, or the external environment. We can see no way to improve upon this definition.

From telephone conversations held since receiving your memorandum, we understand that there are releases of the ethers due to deteriorating seals and packings. Moreover, releases would be greatly reduced by correcting the condition. Given these facts, it must be concluded that the systems, although designed as closed systems, have developed openings and become open-vessel systems. (Company) is thus allegedly violating 29 CFR 1910.1006(c)(3) and 1910.1008(c)(3) which prohibit the operation of open vessel systems.

These releases of the ethers that are occurring due to the deteriorating seals and packings are incidents that must be reported by (Company) in accordance with 29 CFR 1910.1006(f)(2) and .1008(f)(2).

ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1006.

The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003 - 1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.
MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 (or 0.1) percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine." The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry, 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

You inquired specifically about the emission of beta-Naphthylamine (BNA) as dust and vapor from exempt mixtures in the production of tobias acid by your client. (Company). We believe such emissions to be exempt from the standard because there is no available evidence that they will present a carcinogenic hazard to employees (even though BNA is a known carcinogen), because tobias acid is essential to the production of printing ink, and because tobias acid cannot be produced without such emissions.

However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.
JAN 13, 1982


In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003 - 1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

Some examples of other standards that can be cited, regardless of whether or not the inspected facility is a carcinogen research laboratory, are the following: 29 CFR 1910.141 (Sanitation), 29 CFR 1910.134 (Respiratory Protection); 29 CFR 1910.133 (Eye and Face Protection); 29 CFR 1910.106 (Flammable and Combustible liquids).

Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1007.

RECORD ID 1330

STANDARD NUMBER 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

INFORMATION DATE 760521

ABSTRACT
The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003 - 1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

INTERPRETATION
29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard. 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 or 0.1 percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine." The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry, 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

You inquired specifically about the emission of beta-Naphthylamine (BNA) as dust and vapor from exempt mixtures in the production of tobias acid by your client, [Company]. We believe such emissions to be exempt from the standard because there is no available evidence that they will present a carcinogenic hazard to employees (even though BNA is a known carcinogen), because tobias acid is essential to the production of printing ink, and because tobias acid cannot be produced without such emissions. However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be
necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.

RECORD ID 1355

STANDARD NUMBER 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1);
1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1);
1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

INFORMATION DATE 82u113

ABSTRACT Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003 -1910.1016 have been vacated.

(NOTE: The new OSHA Standard (1910.1450) pertains to laboratories. Guidance for handling carcinogens is addressed.)

INTERPRETATION 29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1);
1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1);
1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

JAN 13, 1982

SUBJECT: Applicability of 29 CFR 1910.1003 -.1016 to Research Laboratories

In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

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Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1008.

<table>
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| STANDARD NUMBER | 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2) |
| INFORMATION DATE | 760521 |

**ABSTRACT**
The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003 - 1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

**INTERPRETATION**

| 29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2) |

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

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The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

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However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be
necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.
ABSTRACT

The OSHA standard for beta-Naphthylamine, 29 CFR 1910.1009 contains regulations covering medical surveillance, examinations, and medical records. These requirements, however, do not apply to former employees, and medical surveillance or treatment of former employees is not regulated by OSHA.

(NOTE: This standard has not been amended since 1984.)

INTERPRETATION

29 CFR 1910.1009(g)(2)(i)

MAR 28 1985

This is in response to your letter of March 4, on behalf of several constituents, regarding medical screening for employees previously exposed to beta-Naphthylamine.

The Occupational Safety and Health Administration (OSHA) standard for beta-Naphthylamine, 29 CFR 1910.1009, contains regulations covering medical surveillance, examinations and medical records. These requirements, however, do not apply to former employees and any medical surveillance or treatment of former employees is not regulated or required by OSHA. In addition, OSHA does not have a provision whereby employees may select a private physician to conduct the medical screening required by our standards. While OSHA regulations apply to the provision of certain medical tests by the employer in situations involving occupational health hazards, they do not govern the selection of a physician by the employer.

The (State) administers its own program of workplace safety and health standards, under the authority of section 18(b) of the Occupational Safety and Health Act. While the regulations promulgated under such a State program must be at least as effective as Federal OSHA standards, they may differ in some respects. For information on specific workplace standards, you may wish to contact your State representative.

SOURCE LETTER

MAR 4, 1985

The letters are from former employees of a company in (City, State), which used the chemical Beta Naphthylamine in its operations in the late 60's and early 70's. When the substance was determined to be a possible carcinogen, the company discontinued its use immediately. Although the company currently conducts a screening program of its own, these former employees believe that the company should provide a more extensive program. I have also enclosed a newspaper clipping which explains the situation in more detail.

I would appreciate having your comments on the Federal government's role, if any, in requiring such a screening program.
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1009.

RECORD ID 1330

STANDARD NUMBER 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

INFORMATION DATE 760521

ABSTRACT The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003 - 1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

INTERPRETATION 29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 (or 0.1) percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine." The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry, 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

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BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to 
allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction 
of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen 
standards to set specific exposure or contamination limits for each carcinogenic substance. These 
amended standards would possibly not contain any exemptions such as presently stated and would most 
likely require monitoring of employee exposure, medical surveillance and other provisions which 
characterize other health standards, such as the one regulating vinyl chloride exposure.

RECORD ID 1355

STANDARD NUMBER 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

INFORMATION DATE 82011 3

ABSTRACT Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003 -1910.1016 have been vacated


INTERPRETATION 29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

JAN 13, 1982


In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

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Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
This interpretation provides answers to various questions concerning sampling for benzidine congener dyes. Topics addressed include recommendations on the preferred method for air sampling of benzidine based dyes, air sampling to determine simultaneous exposure to various benzidine based dyes, analysis considerations for different types of benzidine based dyes on the same filter, and sampling procedures for bulk, wipe, and urine samples for benzidine based dyes.

**INTERPRETATION**

29 CFR 1910.1010

JAN 18, 1991

In regards to your January 2, 1991 letter concerning sampling for benzidine congener dyes, we give the following responses.

**Question 1:**

Is there one preferred method for air sampling of benzidine based dyes? If so, what is it?

**Answer:**

For the Benzidine Based Dyes which we have received so far the preferred method has been:

- Sample Media: Glass Fiber Filter
- Air Volume: 100 Liters
- Flow Rate: 1.0 L/min.

To date, we have not found any benzidine based dyes which can not be collected by the above way. Azo dyes have a tendency to be light and heat sensitive. So far we have only found a problem with Direct Black 38 being light and heat sensitive and therefore we recommend protecting Direct Black 38 samples from light and heat and shipping them on blue ice.

**Question 2:**

Can we air sample to determine worker exposure to various benzidine based dyes, that may be present at the same time, on one filter?

**Answer:**

We have not had a problem with analysis when several benzidine based dyes are present on the same filter. If many were present on the same filter then we might have problems in obtaining analytical separation and therefore problems in accurate quantitation due to interferences.

**Question 3:**

What analysis should be requested?

**Answer:**

Wherever possible the specific benzidine based dye should be requested, one gram (approximately 1 teaspoon equivalent - not more than this - of the dye submitted as a bulk which we may use as an analytical standard if necessary, the approximate % of dye present in the bulk noted on the paperwork, if known) and any material safety data sheets submitted at the same time. If a specific dye is not requested then a modified NIOSH method 5013 which is non specific will be used for analysis.
Question 4:
Can the lab analyze for free benzidine and benzidine based dyes on the same filter?

Answer:
Yes. It is best to request the analysis that way or to call and specify what is needed. If "free benzidine" and "benzidine based dyes" are requested the analysis will be performed to show any free benzidine present as a contaminant in addition to the analysis of the intact dyes.

Question 5:
Can the lab analyze for both benzidine based dyes and o-tolidine based dyes and/or o-dianisidine based dyes on the same filter?

Answer:
Yes. It is best to specify which dyes are requested for analysis and follow the procedure listed under # 3 above. Otherwise a modified NIOSH method 5013 will be used for a non specific analysis.

Question 6:
What is the minimum amount of time needed to sample (or minimum volume needed to be collected) to just show the presence of benzidine based dyes? How about for o-tolidine and o-dianisidine?

Answer:
Guideline: 60 Liters. This may vary depending upon detector sensitivity to specific dye and presence or absence of interferences.

Question 7:
Do air sampling filters need to be protected from light when sampling for benzidine congener dyes?

Answer:
Guideline: No, except for Direct Black 38. Although azo compounds can be light and heat sensitive, so far we have only had a problem with Direct Black 38. There may be problems with dyes we have not received yet for analysis. The ones we have analyzed and found no problems with light sensitivity are listed in the Chemical Information File. Only Direct Black 38 has a note on it regarding collection, storage, and shipping to protect from light and heat.

Question 8:
What is the preferred method of taking wipe samples for benzidine based dyes, o-tolidine based dyes, and o-dianisidine based dyes?

Answer:
Glass Fiber Filter. Wipe may be taken dry or moistened with deionized water or methanol.

Question 9:
Are bulk samples needed to be taken if we request an analysis, for example, of just the percentage of benzidine in benzidine based dyes that we sampled for?

Answer:
Usually yes. When you say the percentage of benzidine in benzidine based dyes we need you to specify whether you mean "free benzidine" present as a contaminant or if you are requesting a non-specific analysis such as a modified NIOSH 5013. The answer is usually yes because if you request a specific dye we may not have a bulk we can even use as a standard and if we do have a bulk it may not...
be identical to your bulk. If you want the dyes of interest to be individually identified and quantitated, then we need your bulks. Please also send in any material safety data sheets you may have.

Question 10:
Once wipe and/or bulk samples are taken, do they need to be protected from light?

Answer:
So far, only Direct Black 38 has been a problem.

Question 11:
After sampling has been completed for air monitoring, wipes and/or bulks, what should be done with the samples as far as storage is concerned?

Answer:
No special handling except for Direct Black 38 for the ones that we have analyzed and that are listed in the Chemical Information File. Others may also be all right.

Question 12:
If it is necessary to use dry ice, is it necessary that samples taken that day be packed in dry ice at the company (on-site)?

Answer:
So far only Direct Black 38 has needed this. Do not use dry ice if shipping by airplane. See # 15.

Question 13:
Should benzidine based dye samples, o-tolidine based dye samples and o-dianisidine all be separated from one another when shipping to the lab?

Answer:
No special precautions need to be taken.

Question 14:
How should the samples be shipped? Should they be sent "overnight delivery"?

Answer:
Normal sample shipment (except for Direct Black 38). Overnight shipment recommended for Urine Samples. See # 15 for more information.

Question 15:
In regards to urine samples how should we proceed in as far as collection, storage, and shipping?

Answer:
Collection: Contact Mr. L at the OSHA lab for bottles containing the citric acid stabilizer. You need to tell us how large a bottle you want. Are you taking total urine output for 24 hours? Are you taking only one sample at the beginning or end of the workday? You may want to talk to others who have collected urine samples on the best strategy for this. If you need names we can generate a list from our computer files. Take precautions in handling any biological samples to prevent exposure to diseases.
Storage: Leave at least 15% space in bottle and freeze contents as soon as possible and store that way (water and therefore urine) expands when it freezes. Urine does not keep well and needs to be frozen. It is also best to have samples frozen before actual shipment. No spillage will occur during shipment and usually arrive still frozen if they start frozen.

Shipping: Call the lab and speak to an Organic Service Branch Chief and tell him/her when you are shipping urine samples, how you are shipping them (airplane, etc. flight # when they are due to arrive, etc., or other means, so we will watch for them and we will get them to lab as soon as possible). Ship the urine samples in an insulated container (many air lines will not take dry ice because animals may be in the same cargo area and the dry ice gives off CO2 and can cause a problem for the animals). Blue ice works well if frozen first.

Question 16:

Can the lab analyze for all metabolites in urine (i.e. benzidine monoacetyl benzidine, n-acetyl benzidine) in the same sample?

Answer:

We have analytical standards and the capability to do the individual metabolites. Our recommendation is that instead of asking for the individual metabolites that you request "free benzidine" and "metabolized" benzidine. We do a twofold analysis in this case. First, we analyze for the "free" benzidine. Then we hydrolyze the sample so that all benzidine "metabolites" are converted back to the "free" amine (benzidine). We reanalyze the sample for the total of original "free" benzidine and free benzidine that was originally "metabolized". The difference in the two answers is the original "metabolized" benzidine. This makes the analysis simpler and gives a meaningful answer. If you do not request "metabolized" and "free" benzidine, then the sample will be hydrolyzed and "total" benzidine reported rather than a twofold analysis.

Question 17:

If an employee is exposed to either benzidine based dyes and/or o-tolidine based dyes and/or o-dianisidine based dyes can the lab analyze for metabolites of all three in the same urine sample?

Answer:

Yes. However, our recommendation is the same as in # 16.

ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1010.

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**RECORD ID**

1330

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**STANDARD NUMBER**

1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

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**INFORMATION DATE**

760521

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**ABSTRACT**

The interpretation end intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003 -1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gaces, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

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**INTERPRETATION**

29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

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Vol. 2-414
MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 (or 0.1) percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine." The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry; 39 Fed. Reg. 3756-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

You inquired specifically about the emission of beta-Naphthylamine (BNA) as dust and vapor from exempt mixtures in the production of tobias acid by your client, (Company). We believe such emissions to be exempt from the standard because there is no available evidence that they will present a carcinogenic hazard to employees (even though BNA is a known carcinogen), because tobias acid is essential to the production of printing ink, and because tobias acid cannot be produced without such emissions. However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.

RECORD ID 1355
STANDARD NUMBER 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(ii)
INFORMATION DATE 820113
ABSTRACT Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003 -1910.1016 have been vacated.

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INTERPRETATION

29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1);
1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1);
1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

JAN 13, 1982


In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

Some examples of other standards that can be cited, regardless of whether or not the inspected facility is a carcinogen research laboratory, are the following: 29 CFR 1910.141 (Sanitation); 29 CFR 1910.134 (Respiratory Protection); 29 CFR 1910.133 (Eye and Face Protection); 29 CFR 1910.106 (Flammable and Combustible liquids).

Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1011.

RECORD ID 1330

STANDARD NUMBER 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

INFORMATION DATE 760521

ABSTRACT The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003 -1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

INTERPRETATION 29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 -1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 (or 0.1) percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine." The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry, 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

You inquired specifically about the emission of beta-Naphthylamine (BNA) as dust and vapor from exempt mixtures in the production of tobias acid by your client, (Company). We believe such emissions to be exempt from the standard because there is no available evidence that they will present a carcinogenic hazard to employees (even though BNA is a known carcinogen), because tobias acid is essential to the production of printing ink, and because tobias acid cannot be produced without such emissions. However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be
necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.

RECORD ID 1355

STANDARD NUMBER 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

INFORMATION DATE 820113

ABSTRACT

Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003 -1910.1016 have been vacated.

(NOTE: The new OSHA Standard (1910.1450) pertains to laboratories. Guidance for handling carcinogens is addressed.)

INTERPRETATION

29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

JAN 13, 1982


In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

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Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1012.

RECORD ID 1330

STANDARD NUMBER 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2);
1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2);
1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2);
1910.1016(a)(2)

INFORMATION DATE 760521

ABSTRACT
The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003-1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

INTERPRETATION
29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2);
1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2);
1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2);
1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003-1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 (or 0.1) percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: “This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine.” The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry, 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

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necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.

RECORD ID 1355

STANDARD NUMBER 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1);
1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1);
1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

INFORMATION DATE 820113

ABSTRACT

Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003 -1910.1016 have been vacated.

(NOTE: The new OSHA Standard (1910.1450) pertains to laboratories. Guidance for handling carcinogens is addressed.)

INTERPRETATION 29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1);
1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1);
1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

JAN 13, 1982

SUBJECT: Applicability of 29 CFR 1910.1003 -.1016 to Research Laboratories

In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

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Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1013.

RECORD ID 1330

STANDARD NUMBER
1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2);
1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2);
1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2);
1910.1016(a)(2)

INFORMATION DATE 760521

ABSTRACT
The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003-1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

INTERPRETATION
29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2);
1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2);
1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2);
1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

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necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.

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RECORD ID 1355

STANDARD NUMBER 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

INFORMATION DATE 820113

ABSTRACT Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003 -1910.1016 have been vacated.

(NOTE: The new OSHA Standard (1910.1450) pertains to laboratories. Guidance for handling carcinogens is addressed.)

INTERPRETATION 29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

JAN 13, 1982

SUBJECT: Applicability of 29 CFR 1910.1003 -.1016 to Research Laboratories

In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

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Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1014.

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**RECORD ID**

1330

**STANDARD NUMBER**

1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

**INFORMATION DATE**

760521

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**ABSTRACT**

The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003-1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

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**INTERPRETATION**

29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 - 1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 (or 0.1) percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine." The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry, 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

You inquired specifically about the emission of beta-Naphthylamine (BNA) as dust and vapor from exempt mixtures in the production of tobias acid by your client, (Company). We believe such emissions to be exempt from the standard because there is no available evidence that they will present a carcinogenic hazard to employees (even though BNA is a known carcinogen), because tobias acid is essential to the production of printing ink, and because tobias acid cannot be produced without such emissions. However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be
necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.

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**RECORD ID** 1355

**STANDARD NUMBER** 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

**INFORMATION DATE** 820113

**ABSTRACT** Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003 - 1910.1016 have been vacated.

(Note: The new OSHA Standard (1910.1450) pertains to laboratories. Guidance for handling carcinogens is addressed.)

**INTERPRETATION**

29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

**JAN 13, 1982**

**SUBJECT:** Applicability of 29 CFR 1910.1003 - 1910.1016 to Research Laboratories

In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

It also does not cover the other 1910 (General Industry) standards, nor the paragraphs not related to research (in 29 CFR 1910.1003 through 1910.1016) even when not doing research in the same facility. These other unrelated paragraphs could be cited, but the activities must not be involved with research -- such as in the preparation of reagents, manufacturing, storage, handling, packaging or other use not dealing with research activities -- and can be in the same facility.

Some examples of other standards that can be cited, regardless of whether or not the inspected facility is a carcinogen research laboratory, are the following: 29 CFR 1910.141 (Sanitation), 29 CFR 1910.134 (Respiratory Protection); 29 CFR 1910.133 (Eye and Face Protection); 29 CFR 1910.106 (Flammable and Combustible Liquids).

Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.

Vol. 2-424
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1015.

RECORD ID

STANDARD NUMBER  
1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2);
1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2);
1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2);
1910.1016(a)(2)

INFORMATION DATE 760220

ABSTRACT The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003 -1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

INTERPRETATION 29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2);
1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2);
1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2);
1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003 -1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

Each section of the carcinogens standard provides that solid or liquid mixtures containing less than 1.0 (or 0.1) percent by weight or volume of a specified carcinogen are exempt from the standard. For instance, 29 CFR 1910.1009(a)(2) provides: "This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine. " The purpose of the exemptions, as stated in the preamble to the standard, is to allow the use of mixtures containing minute amounts of known or suspected carcinogenic substances because insufficient evidence exists that these mixtures present a risk to employee health and that they are ingredients essential to the production of necessary materials used by large segments of industry. 39 Fed. Reg. 3758-3759.

The exemption, read narrowly, applies only to solid or liquid mixtures containing less than 0.1 or 1.0 percent by weight or volume of a specified carcinogen. However, it is our understanding that many of these mixtures cannot be used without the emission of liquid particles, vapors or dust and therefore, we believe that the exemption must be read in light of its purpose to include minute unavoidable emissions in order to avoid substantial obstruction of many processes essential to American industry. Thus, unavoidable emissions from exempt mixtures, in the form of dust, vapors and liquid particles would be exempt so long as there is insufficient evidence available to conclude that such emissions present a carcinogenic hazard to employees and so long as use of exempt mixtures resulting in such emissions must continue to prevent closing down large segments of industry.

You inquired specifically about the emission of beta-Naphthylamine (BNA) as dust and vapor from exempt mixtures in the production of tobias acid by your client, (Company). We believe such emissions to be exempt from the standard because there is no available evidence that they will present a carcinogenic hazard to employees (even though BNA is a known carcinogen), because tobias acid is essential to the production of printing ink, and because tobias acid cannot be produced without such emissions. However, if evidence does become available in the future suggesting a link between cancer and such small quantities of BNA, or changes in technology render employee exposure to emissions containing BNA unnecessary, we would have to reconsider our position. Reconsideration would be
necessary because the exemption is extrapolated to allow employee exposure to liquid particles, dusts and vapors emitted from exempt mixtures is not meant to allow such exposure if evidence becomes available that BNA in these emissions exposes employees to the risk of developing cancer. Also, it is not intended to allow employee exposure to BNA in the emissions if such exposure could be avoided without obstruction of an essential industrial process.

Finally, you should be aware of the fact that we are considering proposing amendments to the carcinogen standards to set specific exposure or contamination limits for each carcinogenic substance. These amended standards would possibly not contain any exemptions such as presently stated and would most likely require monitoring of employee exposure, medical surveillance and other provisions which characterize other health standards, such as the one regulating vinyl chloride exposure.

RECORD ID 1355

STANDARD NUMBER 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1); 1910.1010(a)(1);
1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1); 1910.1014(a)(1);
1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

INFORMATION DATE 8/20/13

ABSTRACT Only the MOCA standard and the laboratory provisions of the carcinogen standards 1910.1003 -1910.1016 have been vacated.

(INOTE: The new OSHA Standard (1910.1450) pertains to laboratories. Guidance for handling carcinogens is addressed.)

INTERPRETATION 29 CFR 1910.1003(a)(1); 1910.1008(a)(1); 1910.1009(a)(1);
1910.1010(a)(1); 1910.1011(a)(1); 1910.1012(a)(1); 1910.1013(a)(1);
1910.1014(a)(1); 1910.1015(a)(1); 1910.1016(a)(1); 1910.1450(a)(2)(i)

JAN 13, 1982


In response to your memorandum of October 23, 1981, this will further clarify our policy regarding the above-noted subject.

As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

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Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.
ATTACHMENT: The following interpretations (Record ID 1330 & 1355) are included as supplemental information to this first instance of OSHA Standard 1910.1016.

RECORD ID 1330

STANDARD NUMBER 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

INFORMATION DATE 760521

ABSTRACT
The interpretation and intent of the regulations at Section (a)(2) for release or discharge of a chemical listed in 1910.1003-1910.1016 into an area where employees may be exposed are addressed in the recent standards. Unavoidable emissions of liquid particles, gases, or vapors from solid or liquid mixtures which are exempt from the carcinogens standard are themselves exempt if there is no evidence of a hazard.

INTERPRETATION
29 CFR 1910.1003(a)(2); 1910.1004(a)(2); 1910.1006(a)(2); 1910.1007(a)(2); 1910.1008(a)(2); 1910.1009(a)(2); 1910.1010(a)(2); 1910.1011(a)(2); 1910.1012(a)(2); 1910.1013(a)(2); 1910.1014(a)(2); 1910.1015(a)(2); 1910.1016(a)(2)

MAY 21, 1976

This is in response to your November 5, 1975 and March 3, 1976 letters requesting an interpretation of the scope of the carcinogens standard, 29 CFR 1910.1003-1910.1016. Specifically, you inquired as to whether liquid particles and gases or vapors which are emitted from solid or liquid mixtures which are exempt from the standard because they contain less than 1.0 or 0.1 percent of a specified carcinogen, are themselves exempt from the standard. You pointed out that by letter dated July 22, 1975 we advised you that dusts emitted from such substances were exempt.

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| JAN 13, 1982 |


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As stated in our letter a 1974 decision by the U.S. Court of Appeals for the Third Circuit vacated the entire MOCA standard and the laboratory provisions (research and quality control laboratories) of the carcinogen standards 29 CFR 1910.1003-1910.1016 only. This decision does not include other carcinogenic materials and their relationship to research and quality control laboratories.

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Please note that, in your memorandum, sentence six erroneously states that the other paragraphs in 29 CFR 1910.1003 through 1910.1016 can be cited for research activity in laboratories. As shown in paragraphs two and three above, this is incorrect.

Vol. 2-428
**ABSTRACT**

Under the vinyl chloride standard an employee is not required to enroll in a medical surveillance program. The employer provides the opportunity for tests and exams. An emergency release of vinyl chloride shall be reported to the OSHA Area Director within 24 hours of the incident. An emergency release is defined as massive.

(NOTE: The regulation was revised in 1989.)

**INTERPRETATION**

29 CFR 1910.1017(n); 1910.1017(b)(5); 1910.1017(k)

OCT 14, 1975

This is in response to your June 30, 1975 letter to Area Director of the (City, State) Office of the Occupational Safety and Health Administration (OSHA) concerning OSHA's recently promulgated standard, 29 CFR 1910.1017, regulating employee exposure to vinyl chloride.

The answer to your first question is that it is not mandatory that an employee take the tests set forth in the standard. An employer must provide to each employee, who is exposed to vinyl chloride in excess of the action level, the opportunity to take these tests and examinations. The employer must make it convenient for such employees to take the tests, must actively encourage employees to take the tests and must warn employees of the dangers inherent in refusing to take them. The instances in which employees will refuse to take the tests should be very rare. If abnormalities are found in the initial examination, the employer has an obligation to provide the opportunity for follow-up examinations if necessary to diagnosis the employee's condition or to determine whether further exposure to vinyl chloride would be detrimental to his health. Note that Appendix A of the standard provides that follow-up exams be administered as soon as practicable, preferably within 3 or 4 weeks of the initial exam.

The answer to your second question is contained in answer to Question #1.

As regards your third question, an emergency situation under the standard is one in which an employee is exposed to massive release of vinyl chloride, not necessarily exposure to concentrations of 100 ppm or greater. The medical surveillance offered to employees exposed to emergency conditions will be left to the discretion of the employer's physician. We will not cite employers for violation of the standard if their physician makes a professional judgment that no examination is warranted.

In answer to question 4, the employer need only provide the opportunity for examination as set forth in answers #1 and #3.

Question 5: An emergency situation is one in which employees are exposed to a massive dose of vinyl chloride. In the absence of exposure, a release of vinyl chloride need not be reported to OSHA. The employer, must, however, assure that employees do not enter the area in which the emergency occurred until the emergency has abated.

Question 6: If an employee refuses medical examination, no suitability statement need be issued.

Question 7: It is an employer's responsibility to retain the services of a physician who is willing to issue statements of suitability. Questions relating to possible civil liability should be referred to your private counsel.
ABSTRACT  OSHA regulates coal tar pitch volatile materials, whether in the form of fumes or dusts, under the coal tar pitch volatiles standard.

(Note: The standard has not been amended since 21 Jan 1983. The following materials are regulated under the term coal tar pitch volatiles: the benzene soluble fraction of coal tar pitch volatiles, anthocene, BaP, phenanthrene, acridine, chrysene and pyrene. These materials are formed when polycyclic hydrocarbons fuse together during the distillation of coal, petroleum, wood and other organic material. Asphalt is not regulated under this standard.)

INTERPRETATION  29 CFR 1910.1017(l)(2); 1910.1017(h)(1); 1910.1017(b)(7)

MAY 17, 1982

SUBJECT:  Applicability of the Coal Tar Pitch Volatiles Standard to Dust of Coal Tar Pitch

In response to your written inquiry of March 16, 1982, this memorandum reasserts the applicability of the coal tar pitch volatiles standard to coal tar pitch dust.

The constituents of coal tar pitch are chemical substances that are collected as they volatilize during the destructive distillation of coal to produce coke, which is the distillation residue of coal. This fact places the constituents under the coal tar pitch volatiles standard. It is irrelevant whether the constituents are in solid, liquid, or gaseous form.
This interpretation addresses medical surveillance requirements in the vinyl chloride standard. Employers must offer medical surveillance to any employee who is exposed in excess of the action level for vinyl chloride. Employers need not offer medical surveillance to employees who once were but are not now exposed above the action level for vinyl chloride. The frequency of the medical exams is based on years of exposure to vinyl chloride.

JUN 30, 1987

This is in response to your letter of May 1, 1987, to Mr. X, concerning medical surveillance requirements in the vinyl chloride standard, 29 CFR 1910.1017.

There is no indication in the vinyl chloride standard or its preamble that an employee must be exposed above the action level for at least some certain minimum number of days per year before the employer becomes obligated to afford the employee medical surveillance. Accordingly, employers must offer medical surveillance to any employee who is exposed at least one day per year above the action level for vinyl chloride.

As to the question of whether employers must afford medical surveillance to employees who once were but are not now exposed above the action level for vinyl chloride, the only insight is contained in the preamble to the vinyl chloride standard, which appeared in the Federal Register, Volume 39, Number 194, October 4, 1974, pages 35890-35896. On page 35895 the the following statement is made: "In these instances, medical surveillance of affected employees will provide baseline data for future evaluation of their health, even if both monitoring and medical surveillance are discounted because improved controls reduce concentrations below the action level." We deduce from the statement that employers need not offer medical surveillance to employees who once were but are not now exposed above the action level for vinyl chloride.

Provision 29 CFR 1910.1017(k)(2)(i) requires scheduling of medical surveillance examinations at least every 6 months for each employee who has been employed in vinyl chloride or polyvinyl chloride manufacturing for 10 years or longer. The provision is directed at employees who started working in vinyl chloride or polyvinyl chloride manufacturing plants 10 or more years prior to January 1, 1975, which is the effective date of the permanent vinyl chloride standard.

Prior to 1975 vinyl chloride contaminated much of the air in many vinyl chloride and polyvinyl chloride manufacturing plants and many of these plants did not do extensive employee exposure monitoring and recordkeeping. Hence the applicability of 29 CFR 1910.1017(k)(2)(i) hinges on whether or not the employee's first date of employment in vinyl chloride or polyvinyl chloride plants preceded January 2, 1965, and not on an accounting of whether or not the employee's number of days of actual exposure totaled 10 or more years.

Presently, 29 CFR 1910.1017(k)(2)(i) applies when the following conditions exist: (1) An employee is currently exposed above the action level for vinyl chloride and (2) the employee’s first employment in vinyl chloride and/or polyvinyl chloride manufacturing plants preceded January 2, 1965.
AN interpretation is provided for terms in the vinyl chloride standard 29 CFR 1910.1017(b)(5) and (n)(2). A "massive release" implies the existence of an uncontrolled and potentially uncontrollable situation requiring immediate action to control overexposure. "Equipment failure" refers to continuous and uncontrolled release of large quantities of vinyl chloride. An "emergency" refers to a release of an uncontrolled and potentially uncontrollable nature and is reportable under 29 CFR 1910.1017(n)(2).

Your letter of January 31, requesting an interpretation of section (b)(5) and (n)(2) of the Occupational Safety and Health Administration's (OSHA) vinyl chloride standard (29 CFR 1910.1017) has been referred to us for reply.

Your stated concern is over the definitions of the terms "emergency", "equipment failure", and "massive release" as used in 1910.1017. The use of those terms in sections (b)(5) and (n)(2) is not intended to apply to ordinary leaks or operations resulting in small, controllable amounts of vinyl chloride being released into the workplace environment. These are not emergencies. These terms, as used in the standard, refer to situations in which there is a potential for loss of control and a need for immediate action to contain a sudden, unexpected and relatively large release of vinyl chloride much beyond any quantity that would be involved in a small leak.

The term "massive release" cannot be quantified, since the circumstances surrounding the release of any toxic substance vary. Such factors as the amount released (relative to the space into which it is released), as well as the average amount which may be released under normal conditions, will determine the degree of "massiveness" of the release. The term "massive release", used in conjunction with the concept of an emergency situation refers to something more than a small leak of a highly toxic material. In this context it implies the existence of an uncontrolled and potentially uncontrollable situation requiring immediate action to prevent overexposure (i.e., exposures in excess of the permissible exposure limits).

Continuing with this line of reasoning, "equipment failure" would not refer to minor flange leaks, unless those leaks involved a sudden and/or continuous and uncontrolled release of large quantities of vinyl chloride to the extent that an immediate danger of human overexposure and the potential for evacuation of the area were involved. A break in a pipe or tank containing vinyl chloride might be considered such an equipment failure. The controlled purging of a pump with appropriate protective measures taken is not.

The purpose of the reporting requirement is to assure that steps are taken to prevent employee overexposure which might result from any sudden, and unexpected release of vinyl chloride in excess of those amounts normally anticipated and prepared for (i.e., by the use of engineering, work practice and/or administrative controls of the use of personal protective clothing and equipment).

The operation of a relief device in a situation in which the release of vinyl chloride is (or could be) such that there is the potential for human overexposure due to the uncontrolled and potentially uncontrollable nature of the release, is considered an emergency and is reportable under 19 CFR 1910.1017(n)(2).

Apart from the question of emergencies, whether your employees are repairing flange leaks, doing preventive maintenance on pumps, or doing any other job in your establishment, their exposures to vinyl chloride must not exceed the limits required by the standard.
SOURCE LETTER

JAN 31, 1986

We are requesting an interpretation of CFR 1910.1017 (b) (5) and CFR 1910.1017 (n) (2). In particular please address the following questions in detail:

A. 1910.1017 (b) (5) "Emergency means any occurrence such as, but not limited to, equipment failure, or operation of a relief device which is likely to, or does result in a massive release of vinyl Chloride."

1. Please define "massive relief" in terms of parts per million and/or duration of exposure. (NOTE: we were given a verbal interpretation that this means exposure to one ppm or more over an eight hour period or five ppm or more in fifteen minutes.)

2. Please define "Equipment Failure". Does this mean, for example, a flange leak or maintenance on a pump? We see this as a real problem if we have:

   (a) A flange leak of six (6) ppm (as measured from a distance of three inches from the flange with a portable organic analyzer) might require that a maintenance man merely tighten the bolts to stop the leak while wearing an air-pac. In your mind, does this describe (1) An "Equipment failure" and (2) a "massive release?"

   (b) To repair a pump on a preventative maintenance basis. The pumps in question are purged with both steam and nitrogen prior to being disassembled but always have residual VCM in water in the base of the pump that average 20 to 30 ppm. The pump has to be disassembled (and there by exposing maintenance personnel wearing air-pacs) before this last small amount of water can be cleaned out. In your mind, does this constitute an "Equipment Failure" and a "Massive Release?"

   (c) An operation of relief valve ninety (90) feet in the air due to over pressurization of, for example, a reactor with no one in the area. The OSHA definition of emergency states "...or operation on a relief device which is likely to or does result in a massive release of Vinyl Chloride." The closest an employee could be to the relief device would be at the fifty-seven (57) foot level of the reactor building. Depending on wind direction and speed, if an employee were in the area at the 57 foot level he might be exposed to 6 ppm or more. If no employees were in the area of a relief valve actuation do we consider this as falling under the definition of an "Emergency".

B. CFR 1910.1017 (n) (2) "Emergencies, and the facts obtainable at that time shall be reported within 24 hours to the OSHA Area Director. Upon request of the Area Director, the employer shall submit additional information in writing relevant to the nature and extent of employee exposures and measures taken to prevent future emergencies of a similar nature."

1. Are we to report to the Area Director incidents such as the examples of given previously of tightening a leaking flange or repairing a pump?

2. How are we to prevent "Emergencies...and measures taken to prevent future emergencies of similar nature" when we have to do routine maintenance of pumps? Short of permanently shutting down the plant we see no solution. Is this OSHA's aim?

Please interpret your definitions and/or answer our questions in detail at your earliest convenience since our Administration, Production Dept. and Maintenance Dept. are in an uproar over how CFR 1910.1017 (b) (5) and (n) (2) are to be handled.

Vol. 2-433
In an area where a vinyl chloride "hazardous operation" is occasionally present signs and protective equipment are required only when the vinyl chloride concentration is above the permissible exposure level.

29 CFR 1910.1017(l)(2); 1910.1017(h)(1); 1910.1017(b)(7)

This is in response to your inquiry of February 23, 1981, concerning the requirements for respiratory protection in the regulated areas which you have established on the basis of a hazard presented by vinyl chloride.

You indicated in your letter that you have designated certain areas as regulated areas, but that airborne concentrations of vinyl chloride are above the permissible exposure limits in these areas only when specific operations are being performed. It would appear that you are describing the type of operations that are defined as hazardous in the vinyl chloride standard. Specifically, in accordance with 29 CFR 1910.1017(b)(7), "Hazardous operation' means any operation, procedure, or activity where a release of either vinyl chloride liquid or gas might be expected as a consequence of the operation or because of an accident in the operation, which would result in an employee exposure in excess of the permissible exposure limit."

29 CFR 1910.1017(l)(2) establishes that, "Areas containing hazardous operations or where an emergency currently exists shall be posted with legible signs bearing the legend: 'Cancer-Suspect Agent In This Area/Protective Equipment Required/Authorized Personnel Only.'"

The protective equipment required for hazardous operations is presented in 29 CFR 1910.1017(h), which reads:

(1) Employees engaged in hazardous operations, including entry of vessels to clean polyvinyl chloride residue from vessel walls, shall be provided and required to wear and use;

   (i) Respiratory protection in accordance with paragraphs (c) and (g) of this section; and

   (ii) Protective garments to prevent skin contact with liquid vinyl chloride or with polyvinyl chloride residue from vessel walls. The protective garments shall be selected for the operation and its possible exposure conditions.

(2) Protective garments shall be provided clean and dry for each use.

Signs would have to be posted and the protective clothing used only when "hazardous operations" are in progress. If you have instituted permanent signs where "hazardous operations" frequently recur, then you might want to consider providing covers which could be placed over and removed from the signs as the situation warrants.
The Vinyl Chloride (hazardous operations) standard requires the use of protective clothing and does not specify the type other than that they should be selected for the operation and its possible exposure conditions. It should also prevent skin contact with Poly Vinyl Chloride (PVC) or PVC residue.

The standard does not specify the type of protective clothing, simply stating that it shall be selected for the operation and its possible exposure conditions. For your low-exposure conditions an appropriate selection might be a disposable suit with gloves and head and neck covering and, of course, an appropriate respirator. Other types of garments would also be appropriate such as laundered coveralls. Whatever is selected should completely cover the employee's own clothing and should include gloves and head and neck covering to prevent the residue from getting in the hair. The employee should wash any dust from his face after working in the vessel.

No further action will be taken on your request for a variance.
ABSTRACT
29 CFR 1910.1017(I)(4) requires that containers of polyvinyl chloride shall be labeled as containing vinyl chloride and that the label state that polyvinyl chloride is a cancer-suspect agent. Such labeling is not required for polyvinyl chloride "fabricated products" as defined in 29 CFR 1910.1017(b)(6).

NOTE: 1910.1017 pertains to fabricated polyvinyl chloride products. However, the labeling requirements of the Hazard Communication Standard, 1910.1200 also apply.

INTERPRETATION
29 CFR 1910.1017(I)(4); 1910.1017(b)(6); 1910.1200(f)(4)
APR 30, 1986

This is in response to your letter of February 26, regarding the hazard of polyvinyl chloride.

We have contacted members of the editorial review board of the Registry of Toxic Effects of Chemical Substances (RTECS) published by the National Institute for Occupational Safety and Health (NIOSH) in regard to your suggestion that RTECS may contain an error where it includes in the data record some carcinogenic determinations for polyvinyl chloride that are ascribed to the International Agency for Research on Cancer (IARC). We have been informed that entries, "Carcinogenic Determination: Animal Positive" and "Carcinogenic Determination: Human Indefinite", were not made in error. Rather, they are the interpretation by the contractor used by NIOSH of statements made in IARC 19, 1979.

The vinyl chloride standard controls the labeling that polyvinyl chloride must bear with respect to information on carcinogenicity. Provision 29 CFR 1910.1017(I)(4) requires that containers of polyvinyl chloride shall be labeled as containing vinyl chloride. Moreover, the provision requires that the label state that polyvinyl chloride is a cancer-suspect agent. Such labeling, however, is not required for "fabricated products." A "fabricated product" is described at 29 CFR 1910.1017(b)(6) as "...a product made wholly or partly from polyvinyl chloride, and which does not require further processing at temperatures, and for times, sufficient to cause mass melting of the polyvinyl chloride resulting in the release of vinyl chloride." Consequently, polyvinyl chloride resin that has not yet been processed into film, or sheeting, or has not yet undergone final molding or extrusion, must be labeled in accordance with 29 CFR 1910.1017(I)(4); whereas the film, sheeting, final molded products, and final extruded products do not.

Whenever labeling according to 29 CFR 1910.1017(I)(4) applies for a polyvinyl chloride product, then the provisions of the Hazard Communication Standard, 29 CFR 1910.1200, also apply, subject to the limits on scope and applicability found in the standard.

SOURCE LETTER
FEb 26, 1986
RE: Status of PVC Under Hazard Communication Standard

On behalf of the (Company) we request an official interpretation of OSHA's Hazard Communication Standard, 29 C.F.R. 1910.1200.\(^1\) Members of the (Company) account for approximately 82% of the domestic production of vinyl chloride and 63% of the domestic production of polyvinyl chloride.

\(^1\) SPI, the major national trade association of the plastics industry, is a corporation organized under the Not-for-Profit Corporation Law of the State of New York. Its 1,600 member companies and individuals and 49 operating units include those who supply raw materials; and engineer or construct molds or similar accessory equipment for the plastics industry. The majority of SPI members are the processors and
Our concern focuses upon the status of polyvinyl chloride (PVC) as a carcinogen or potential carcinogen under the Standard. PVC is not a carcinogen. However, confusion may be created due to the characterization of existing scientific evidence in a document referenced in the Standard.

As you know, Section (d) of the Standard requires chemical manufacturers and importers to evaluate the hazards of their chemical products. It further states, at subsection (4), that those evaluating chemicals must treat the following sources as establishing that a given chemical is a carcinogen or potential carcinogen for purposes of the Standard:

i) The National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);

ii) International Agency for Research on Cancer (IARC) Monograph (latest editions); or

iii) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

The Standard notes that the Registry of Toxic Effects, published by the National Institute for Occupational Safety and Health (NIOSH), indicates whether a chemical has been found to be a carcinogen or potential carcinogen by NTP or IARC.

Polyvinyl chloride, or PVC, is produced from vinyl chloride monomer through a chemical reaction called polymerization. While vinyl chloride monomer is a regulated hazardous material, it is transformed through polymerization into a white granular powder, PVC, which is nonhazardous. Polymerization is a "one way reaction"; thus, PVC powder does not revert back to vinyl chloride. PVC is widely used in a large number of commercial products, including water pipe, floor and wall coverings, vinyl siding, upholstery, records and wrapping films.

PVC is not listed as a carcinogen or potential carcinogen by NTP in its most recent Annual Report on Carcinogens. Similarly, PVC is not included among those substances regulated by OSHA and listed in 29 C.F.R. Subpart Z. We believe that confusion concerning the carcinogen or potential carcinogen status of PVC under the Standard may stem from a listing in the NIOSH Registry, which characterizes an IARC study of PVC in the following fashion:

REVIEW: CARCINOGENIC DETERMINATION: ANIMAL: POSITIVE

REVIEW: CARCINOGENIC DETERMINATION: HUMAN: INDEFINITE

However, IARC Volume 19, does not report a conclusion that PVC is a carcinogen or potential carcinogen. The referenced IARC study is one of a series which focused on evidence generated from various subcutaneous implementation tests. These tests produced local tumors when particles of a correct size were used. Such results are not accepted as sufficient evidence of carcinogenicity by either the scientific community or various Federal agencies. 29 C.F.R. 1910.44 b)(ii). In addition, it is important to note that IARC's summary of substances classified as Group I or Group II does not include PVC, accordingly, we believe that PVC is not covered by the Standard. See OSHA Instruction CPL 2-2.38, p. C-2. Rather, there is an error in the NIOSH Registry in characterizing the IARC studies.

We would be most appreciative if you could confirm, at your earliest convenience, that polyvinyl chloride (PVC) is not a carcinogen or potential carcinogen under the Hazard Communication Standard.

converters of plastic resins into end products which represent 75% of the dollar volume sale of plastics in this country.

Vol. 2-437
OSHA Instruction CPL 2-2.22

OSHA PROGRAM DIRECTIVE


1. Purpose

The purpose of this directive is to provide guidelines and establish uniform inspection and compliance procedures for the occupational exposure standard for arsenic and arsenic-containing compounds, inorganic compounds published in the Federal Register May 5, 1978, and effective August 1, 1978.

2. Documentation Affected

This directive supplements and references the OSHA Industrial Hygiene Field Operations Manual (IHFOM) and the OSHA Field Operations Manual (FOM).

3. Background

The advent of the new standard for occupational exposure to inorganic arsenic has created the need for additional guidance beyond that contained in the IHFOM and FOM. This directive focuses on providing such supplemental guidance.

4. Clarification

a. Based on available scientific evidence, the occupational Safety and Health Administration (OSHA) concludes that employees exposed to elemental arsenic and to inorganic compounds containing trivalent and pentavalent arsenic have an increased risk of developing cancer. Therefore, in accordance with OSHA policy of limiting employee exposures to carcinogens to the lowest level generally feasible, a new, more protective standard for occupational exposure to the aforementioned chemicals has been promulgated.

b. The standard limits occupational exposure to air contaminated with the chemicals under its scope on the basis of the mass concentration of arsenic that is airborne. The limit is 10 micrograms of arsenic per cubic meter of air, averaged over any 8-hour period.

c. Other provisions of the standard concern the following:

(1) Notification of the OSHA Area Office of operations dictating establishment of regulated areas.

(2) Exposure monitoring.

(3) Regulated areas.

(4) Methods of compliance.

(5) Respiratory protection.

(6) Protective work clothing and equipment.

(7) Housekeeping.

(8) Hygiene facilities and practices.

(9) Medical surveillance.

(10) Employee information and training.

(11) Signs and labels.
OSHA Instruction CPL 2-2.22 (cont.)

(12) Recordkeeping.

(13) Observation of monitoring.

d. Table Z-1 of 29 CFR 1910.1000 was amended May 5, 1978, as follows:

(1) Previous entry, "Arsenic and its compounds (as AS) -- 0.5 mg., changed to indicate that only organic arsenic compounds are included under the 0.5 mg./M3 limit.

(2) Calcium arsenate and lead arsenate are deleted from the Table because they are now covered under 29 CFR 1910.1018.

e. Arsine is not included in the standard and remains as an entry in Table Z-1 of 29 CFR 1910.1000.

5. Action

a. Resource allocations.

Include arsenic, all arsenic-containing, inorganic compounds and arsenic among the substances in the "High Hazard Health" category. Use the guidelines in OSHA Program Directive #400-3, Annual Field Compliance Program Plan, to plan compliance inspections. Arsine is included in the "High Health Hazard" category because it is a highly toxic substance which when encountered will often be associated with chemicals regulated under 29 CFR 1910.1018. Refer to Attachment 6 with this directive for a listing of some types of establishments where there is a potential for exposures regulated under 29 CFR 1910.1018.

b. Scope and applicability.

(1) Coverage by industry segments.

29 CFR 1910.1018 applies to "General Industry", "Construction" and Maritime Employment", but does not apply to "agricultural operations."

(2) Occupational exposures within the scope of the standard.

29 CFR 1910.1018 applies to most occupational exposures to elemental arsenic and arsenic-containing, inorganic compounds. Many of the occupational exposures covered occur at establishments listed in the industry profile, Attachment 6 with this directive.

(3) Occupational exposures outside the scope of the standard.

(a) 29 CFR 1910.1018 does not apply to occupational exposure resulting from cotton ginning, agricultural uses of arsenic or any of its compounds, treatment of wood with any type of arsenic-containing preservatives and application of any type of arsenic-containing pesticides.

(b) 29 CFR 1910.1018 does not apply to arsenic exposures of farm employees and applicators which occur during mixing of pesticides and cleaning of pesticide containers. These operations are considered to be a part of pesticide application.

(c) 29 CFR 1910.1018 does not apply to exposures resulting from utilization of arsenically preserved wood.

(4) Portions of the standard which are inapplicable when airborne concentrations are below set limits.

(a) Portions of the standard which are inapplicable when initial monitoring reveals that all employee exposures are at or less than the permissible exposure limit are as follows:
o Paragraph (d)--Notification of use.

o Subparagraph (e)(3)(ii)--Exposure monitoring-- Frequency.

o Subparagraph (e)(5)(ii)--Exposure monitoring-- Employee notification.

o Subparagraph (e)(6)(i)--Exposure monitoring-- Accuracy of measurement.

o Paragraph (f)--Regulated area.

o Paragraph (g)--Methods of compliance.

o Paragraph (h)--Respiratory protection.

o Subparagraph (m)(3)(i)--Hygiene facilities and practices--Lunchrooms.

o Subparagraph (m)(5)--Hygiene facilities and practices--Vacuuming clothes. (In fact, this subparagraph is inapplicable if 8-hour TWA airborne exposures are at or less than 100 micrograms (as arsenic) per cubic meter.)

o Subparagraph (p)(2)--Signs and labels--Signs.

NOTE: Additional portions of the standard, designed to control eye and skin contact and ingestion hazards, may also be inapplicable, but this cannot be established merely on the basis of intensity of exposure to contaminated air.

(b) Portions of the standard, in addition to those listed in 5 b.(4)(a) of this directive, which are inapplicable when initial monitoring reveals that all employee exposures are at or less than the action level are as follows:

o Subparagraph (e)(3)(iii)--Exposure monitoring-- Frequency.

o Subparagraph (e)(3)(iv)--Exposure monitoring-- Frequency.

o Subparagraph (e)(6)(ii)--Exposure monitoring-- Accuracy of measurement.

o Paragraph (n)--Medical surveillance.

o Subparagraph (q)(2)--Recordkeeping--Medical surveillance.

NOTE: 1. Paragraph (n) and subparagraph (q)(2) are applicable if the employer has employees whose past exposures meet the criteria presented in 29 CFR 1910.1018 (n)(1)(i)(B).

2. Additional portions of the standard, designed to control eye and skin contact and ingestion hazards, may also be inapplicable, but this cannot be established merely on the basis of intensity of exposure to contaminated air.

(5) Independent contractors and their employees.

(a) In accordance with established policy contained in the FOM, Chapter X, under F., independent contractors such as construction contractors are responsible for protecting their employees from health and safety hazards even if they are not the creators of the hazards. However, independent contractors would not normally be required to achieve this protection for their employees by instituting permanent engineering controls at their client's establishment. For example, independent contractors would obviously not be required to protect their employee's from arsenic trioxide fume from a reverberatory furnace in a copper smelter through installing engineering controls for the furnace.
Although, as in the furnace example, it might not be feasible for independent contractors to protect their employees by controlling at the source an emission they are not creating, it might be feasible for them to achieve some protection of their employees with other forms of engineering controls and with work practices. Where this is fact, independent contractors must institute such controls, e.g., provide portable local exhaust hoods and require their employees to vacate specified areas during cycles or periods of peak air contamination.

(b) The foregoing discussion relates to the methods of compliance provisions under 29 CFR 1910.1018(g). All other provisions under 29 CFR 1910.1018 are accorded the same applicability to independent contractors as to general industry employers.

c. Interpretations and discussions.

The reader is encouraged to first read the pertinent portion of 29 CFR 1910.1018 and then read the following interpretation and/or discussion:


(a) The permissible exposure limit is expressed in terms of the mass of arsenic in a cubic meter of air. The volume unit in the expression is a cubic meter of air at 25°C and 760 mm Hg. This is generally accepted to be the "standard cubic meter" of the industrial hygiene profession.

(b) Compliance officers and employers must convert the volumes of air they sampled to "standard volumes." The conversion is performed by a simple calculation presented in each sampling data sheet attached to this directive.


(a) A given employee’s exposure will not have to be directly measured by placing a personal sampling system on him or her if another employee’s exposure that is known to be virtually identical will be measured and represented as the given employee’s exposure.

(b) A measurement is not representative of an employee’s exposure if it is not at least as accurate as 29 CFR 1910.1018(e)(6) requires it to be.


At least 7 continuous hours of sampling is required if the employee’s exposure occurs continuously or intermittently over a 7- to 8-hour period. If all the exposure occurs in less than a 7-hour span, it is necessary to sample only during this lesser period.


(a) Table I of this directive depicts the minimum frequency with which employers must measure each employee’s exposure while working at a routine job.

(b) Employees such as maintenance employees who are continuously performing different jobs must have their exposures measured each time they perform a job resulting in a potentially different exposure. Table II of this directive depicts the minimum frequency of measurement of exposure required if the employee occasionally repeats the same job.
OSHA Instruction CPL 2-2.22 (cont.)


(a) Analytical accuracy.

Sufficient analytical accuracy is achievable with arsine generation, atomic absorption spectrophotometric; flameless atomic absorption spectrophotometric, d.c. discharge emission spectrophotometric and X-ray fluorescence methods.

(b) Sampling accuracy.

(i) Any of the air contaminants listed or specified in Attachment 2 with this directive can be sampled with sufficient accuracy at 301
Table I

Minimum Required Frequency for Measuring Each Employee's Exposure While Working at a Routine Job

<table>
<thead>
<tr>
<th>Present exposure result</th>
<th>Last exposure result</th>
<th>Longest time that may elapse between next measurement provided an (e)(4) event does not occur first</th>
</tr>
</thead>
<tbody>
<tr>
<td>At or below AL</td>
<td>None. Present measurement is an initial measurement</td>
<td>No further measurement required until an (e)(4) event occurs</td>
</tr>
<tr>
<td>At or below AL</td>
<td>Above AL, but at or below PEL</td>
<td>6 months</td>
</tr>
<tr>
<td>At or below AL</td>
<td>Above PEL</td>
<td>6 months</td>
</tr>
<tr>
<td>At or below AL</td>
<td>At or below AL</td>
<td>No further measurement required until (e)(4) event occurs provided 7 days or more elapsed between last two measurements</td>
</tr>
<tr>
<td>Above AL, but at or below PEL</td>
<td>Not relevant for determining the next time exposure must be measured</td>
<td>6 months</td>
</tr>
<tr>
<td>Above PEL</td>
<td>Not relevant for determining the next time exposure must be measured</td>
<td>3 months</td>
</tr>
</tbody>
</table>

Abbreviations: AL = action level  
PEL = permissible exposure limit  
(e)(4) = 29 CFR 1910.1018(e)(4)
OSHA Instruction CPL 2-2.22 (cont.)

Table II
Minimum Required Frequency for Measuring Sporadically Occurring Employee Exposure

<table>
<thead>
<tr>
<th>Present exposure result</th>
<th>Last exposure result for the same job</th>
<th>Longest time that may elapse before exposure from the job must be remeasured</th>
</tr>
</thead>
<tbody>
<tr>
<td>At or below AL</td>
<td>None. Present measurement is an initial measurement</td>
<td>No further measurement required until an (e)(4) event occurs.</td>
</tr>
<tr>
<td>At or below AL</td>
<td>Above AL, but at or below PEL</td>
<td>6 months plus time that elapses before the job is performed again</td>
</tr>
<tr>
<td>At or below AL</td>
<td>Above PEL</td>
<td>6 months plus time that elapses before the job is performed again</td>
</tr>
<tr>
<td>At or below AL</td>
<td>At or below PEL</td>
<td>No further measurement required until an (e)(4) event occurs provided 7 days or more elapsed between last two measurements</td>
</tr>
<tr>
<td>Above AL, but at or below PEL</td>
<td>Not relevant for determining the next time exposure must be measured</td>
<td>6 months plus time that elapses before the job is performed again</td>
</tr>
<tr>
<td>Above PEL</td>
<td>Not relevant for determining the next time exposure must be measured</td>
<td>3 months plus time that elapses before the job is performed again</td>
</tr>
</tbody>
</table>

Abbreviations: AL = action level
PEL = permissible exposure limit
(e)(4) = 29 CFR 1910.1018(e)(4)

Vol. 2-444
OSHA Instruction CPL 2-2.22 CH-1
June 3, 1985
SUBJECT: Removal of Obsolete Sections

A. Purpose. This notice transmits page changes which remove sections that contain policies and procedures superseded by guidelines set forth in the Field Operations Manual (FOM), OSHA Instruction CPL 2.45A.

B. Scope. This applies OSHA-wide.

C. Action. Replace existing pages with the attached CH-1 pages as listed below:

<table>
<thead>
<tr>
<th>Existing Pages</th>
<th>Replacement Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 and 6</td>
<td>5 and 6</td>
</tr>
<tr>
<td>15 through 27</td>
<td>15 through 27</td>
</tr>
<tr>
<td>Attachment 1</td>
<td>1 through 18</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Significant Changes. The instruction will be totally revised and reprinted at a later date. In the interim, the following sections are removed.

CPL 2-2.22, January 2, 1979:
Paragraph 5 b.(5), Independent contractors and their employees, page 6;
Paragraph 5 d.(3), Opening Conference, through Paragraph 6;
Effective Date, pages 16 through 27; and
Attachment 1, pages 1 through 18.

E. Background. A decision was made at the time the FOM was revised to incorporate all policies and procedures of a nontechnical nature into that manual. When the FOM was published, numerous changes were made to existing health policy. These changes made the procedural sections of the instruction obsolete. To avoid confusion for directives users, it has become necessary to remove inapplicable sections from the instruction. The remainder of the instruction is still in effect until the directive has been totally revised and reprinted at a later date.

o Subparagraph (p)(2)--Signs and labels--Signs.

NOTE: Additional portions of the standard, designed to control eye and skin contact and ingestion hazards, may also be inapplicable, but this cannot be established merely on the basis of intensity of exposure to contaminated air.

(b) Portions of the standard, in addition to those listed in 5 b(4)(a) of this directive, which are inapplicable when initial monitoring reveals that all employee exposures are at or less than the action level are as follows:

- Subparagraph (e)(3)(iii)--Exposure monitoring--Frequency.
- Subparagraph (e)(3)(iv)--Exposure monitoring--Frequency.
- Subparagraph (e)(6)(ii)--Exposure monitoring--Accuracy of measurement.
- Paragraph (n)--Medical surveillance.
- Subparagraph (q)(2)--Recordkeeping--Medical surveillance.

Vol. 2-445
NOTES:

1. Paragraph (n) and subparagraph (q)(2) are applicable if the employer has employees whose past exposures meet the criteria presented in 9 CFR 1910.1018 (n)(1)(i)(B).

2. Additional portions of the standard, designed to control eye and skin contact and ingestion hazards, may also be inapplicable, but this cannot be established merely on the basis of intensity of exposure to contaminated air.

(c) Interpretations and discussions.

The reader is encouraged to first read the pertinent portion of 29 CFR 1910.1018 and then read the following interpretation and/or discussion:


(a) The permissible exposure limit is expressed in terms of the mass of arsenic in a cubic meter of air.
ABSTRACT
The inorganic arsenic standard applies to employees mixing chromated copper arsenate and applying it to wood until they move beyond the preservative holding vessel.

(NOTE: Standard was last amended in 1989).

INTERPRETATION 29 CFR 1910.1018(a)
OCT 6, 1978

This is in response to your letter concerning the applicability of the standard for occupational exposure to inorganic arsenic to operations involving chromated copper arsenate (CCA) wood preservative. Please accept my apology for the delayed response.

On the basis of your telephone conversation with Mr. X on approximately September 15, 1978, it is understood that you are referring to the manufacture of CCA wood preservative for internal plant use only. It is also understood on the basis of that telephone conversation that the preservative is prepared in a mixing (or reaction) vessel from base chemicals. The preservative is then pumped to a holding vessel from which it is pumped into the vessel where the treatment of the wood takes place. When the treatment of wood is complete, the preservative remaining in the treatment vessel is then recycled back to the holding vessel.

The answers to your specific questions assuming manufacture of CCA wood preservative for internal plant use only are as follows:

1. An employee mixing CCA and applying it to the wood is covered by 29 CFR 1910.1018 until he/she moves beyond the preservative holding vessel. Neither EPA or OSHA regulations apply beyond the holding vessel.

ABSTRACT An interpretation letter regarding the inorganic arsenic standard and as it applies to the manufacture of antimony oxide by the fuming process.

INTERPRETATION 29 CFR 1910.1018(a)

DEC 5, 1978

This is in response to your letter to Mr. X in which you state your view about the applicability of 29 CFR 1910.1018 (the standard for occupational exposure to inorganic arsenic, published in the Federal Register on May 5, 1978) to the manufacture of antimony oxide by the fuming process. Please accept my apology for the delay.

The arsenic containing species you mention as becoming airborne during the process is an inorganic compound containing arsenic. In accordance with the definition under 29 CFR 1910.1018(b), all such species are "inorganic arsenic". Since your discussion indicates that there is a significant potential for exposure to an inorganic arsenic compound, 29 CFR 1910.1018 applies to the manufacture of antimony oxide by the fuming process.

Chemical reactivity is not a criterion that determines whether an "inorganic arsenic" compound is exempt from 29 CFR 1910.1018. A determining criterion is the propensity for an "inorganic arsenic" compound to find its way into the body.

For example, 29 CFR 1910.1018 does not apply when light emitting diodes containing gallium arsenide conductors are assembled into calculators or watches. That is because only minimal gallium arsenide will either rub off onto the hands or volatilize during the process.
AN INTERPRETATION letter regarding the review of proposal to utilize air tunnels for personnel arsenic removal. 1910.1018(m)(5) requires the vacuuming of clothing where ambient levels exceed 100mg/m3 of arsenic. This is appropriate since many arsenic compounds are either corrosive to the skin or cause sensitization. A proposal to utilize air tunnels for personnel arsenic removal is a concern because arsenic will be forced through clothing causing skin contact.
An interpretation letter regarding the medical examination requirements of the inorganic arsenic standard. Respirator fit testing requirements medical surveillance, training and showering requirements of the inorganic arsenic standard. Under the arsenic standard respirator quantitative fit testing is a requirement for employees having more than 20 employees wearing negative pressure respirator the quantitative fit testing shall be performed after the initial issuance of the respirator, semiannually. Quantitative testing is also a requirement semi-annually after initial issuance of a negative pressure respirator. Medical surveillance requirements, training, and pay for shower time are mentioned.

29 CFR 1910.1018(h)(2)(ii); (h)(3)(ii); (m)(2)(1); (n)(1)(ii); (o)(1)(ii)

This is in response to your inquiry addressed to Mr. X of my staff regarding the Occupational Safety and Health Administration's interpretation of specific sections of the arsenic standard.

The Arsenic Standard under 29 CFR 1910.1018(n)(1)(ii) requires "that all medical examinations and procedures be performed by or under the supervision of a licensed physician." The physician interpreting the chest X-rays must be capable of giving them a rating in accordance with the criteria of the International Labor Office UICC/Cincinnati (ILO-U/C), as required under 29 CFR 1910.1018(n)(2)(ii)(A).

The set of standard films illustrating the ILO-U/C Classification of Radiographs of Pneumoconioses is being revised. The new set of films will be available soon. For further information you may contact:

Washington Branch
International Labor Office
1750 New York Avenue, N.W.
Washington, D.C. 20006

In regards to your question about the relationship between quantitative fit testing and the selection of respirators prescribed in Tables I and II, I offer the following explanation.

Tables I and II are used for the selection of respirators based upon airborne concentration levels. For example, if an employee exposed to arsenic trioxide is exposed to a maximum concentration of 400 micrograms of arsenic per cubic meter of air as an 8-hour, time-weighted average, then any respirator in Table I other than one of those across from item (v) may be selected, provided the respirator will afford the minimum protection factor required.

In this example, the minimum protection factor required is 400 divided by the permissible exposure limit = 400/10 = 40. The quantitative fit test is used to determine if the respirator selected actually provides the required protection factor. If the respirator does not do this, then another brand or type of respirator that will do so must be selected.

Quantitative fit testing results may be substituted for the respirator selection logic in Table I. This is so if:

1. The need for eye and face protection or considerations other than the protection factor do not militate against the use of the respirator.
2. The testing is competently and accurately performed.
3. The respirator provides an adequate protection factor without being uncomfortably tight.
Quantitative fit test results shall not be substituted for the respirator selection logic in Table II. This is because Table II pertains to the selection of respirators which will provide protection from inorganic arsenicals in the gaseous state. Respirators with filter cartridges have limitations for purifying the air of gases and vapors due to "breakthrough" of the filter media. Thus, although a quantitative fit test result may indicate that a respirator with a cartridge filter has a very high protection factor, the respirator may nonetheless not provide adequate protection at a high concentration because of early breakthrough of the filter by the gas or vapor.

Respirators must be selected from Table II, where respirator protection is required against any of the substances included or specified in the list that follows:

1. Arsenic trichloride
2. Arsenic trifluoride
3. Arsenic pentafluoride
4. Arsenic tribromide
5. Arsenic triiodine
6. Arsenic monophosphide
7. Any other arsenic-containing, inorganic compound that has an equilibrium vapor concentration (as arsenic) in excess of 1 microgram per cubic meter at 30°C. (This is an administrative interpretation.)

29 CFR 1910.1018 does not address the issues of whether and how much workers should be paid for taking showers required by the standard. It is our view that the standard should not be interpreted to create a right for payment. However, the Fair Labor Standards Act (FLSA) appears to pertain. With one or two exceptions it interprets shower times as "hours worked." (29 U.S.C. SS 206, 207, 203(o), Steiner v. Mitchell, 350 U.S. 247 (1955).) The exceptions apply to situations where "time spent in changing clothes or washing at the beginning or end of each workday was excluded by the express terms of or by custom or practice under a bona fide collective bargaining agreement applicable to the particular employee." (29 U.S.C. S203(o), 29 CFR S785.26, Nardone v. General Motors, Inc., 207F Supp. 336 (D.C. N.J. 1962).) The FLSA may not, however, require any more than minimum wage to be paid.

Making training materials available to the employee for the employee to take home to read would be adequate to comply with 29 CFR 1910.1018(o)(a)(i). This is not to be confused with a training program which must be presented by formal instruction with all items of 29 CFR 1910.1018(o)(1)(ii)(A-F) covered.
An interpretation letter regarding employees must be paid for travel time for medical examination under the inorganic arsenic standard. Under the arsenic standard it is important that employees be paid for time spent traveling to and taking medical examinations. The standard stipulates the exam shall be provided without cost to the employee, without loss of pay and at a reasonable time and place, per 1910.1018(n)(1)(ii).

INTERPRETATION 29 CFR 1910.1018(n)(1)(ii)

APR 16, 1980

SUBJECT: Violation of 1910.1018(n)(1)(ii) at (Company).

Arsenic is a proven carcinogen. The current status of scientific knowledge does not permit the prediction of a safe exposure level. The permissible exposure level for arsenic, 10 ug/m3, is not a safe level, but a feasible level. The arsenic standard, 1910.1018, therefore, contains various industrial hygiene provisions in addition to the permissible exposure limit to further reduce the cancer risk to the employees. As such, medical surveillance is a vital component of the standard because an employee must participate in the medical surveillance program to receive its benefits, the standard encourages participation by requiring that the medical examinations be provided by the employer without cost to the employees, without loss of pay and at a reasonable time and place. An employer's failure to give these minimal provisions can result in a serious health risk due to lack of employee participation in the medical program.

When dealing with compliance with these matters of payment and convenience, we first recommend that the labor bargaining unit and management try to work out the differences equitably. However, because of the hazard that is created by failure to comply with the provisions, OSHA must cite where the violations occur.

In the case at hand, OSHA requires that the employees be paid for time spent taking medical examinations including time traveling when the exams are off work hours. It appears that the situation will not be corrected by local bargaining and that the continued failure to pay employees will jeopardize the protection provided by the medical surveillance program. Therefore, a citation is warranted. The classification should be serious. The amount of pay should be based on the employees wages. The citation should read "...failure to provide the physical examination without cost to the employee".

(Page 2 first paragraph unreadable. Next paragraph is as follows:)

To calculate the gravity, you should update the employers "good faith" and "history of previous violations" from the recent inspection activity at the plant. A high probability should be given if worker do not participate in the medical surveillance program due to the lack of compensation or inconvenience; a low probability should be given if the employees receive examinations despite the lack of compensation and inconvenience. If you have any further questions feel free to contact us.

Vol. 2-452
Dear Mr. R:

Thank you for your letter dated October 8, 1992 requesting an interpretation of the inorganic arsenic (29 CFR 1910.1018) and lead (29 CFR 1910.1025) standards, as they relate to the cleaning of protective footwear.

Both standards require the employer to provide shoes or disposable shoe coverlets to employees (at no cost to employees) exposed to lead and/or inorganic arsenic above the permissible exposure limit (without regard to the use of respirators), or where the possibility of skin (or eye) irritation exists. Therefore, you must initially provide shoes or shoe coverlets to your employees, and repair or replace them as needed to maintain their effectiveness. It would be acceptable for employees to vacuum the employer-provided shoes at the end of each work shift, as long as the vacuums are used and emptied in a manner that would minimize the reentry of lead and/or inorganic arsenic into the workplace.

Also, shoes or shoe coverlets must be removed at the end of the work shift only in "change rooms" provided for that purpose. The change rooms must be equipped with separate storage facilities for protective work clothing and equipment and for street clothing which prevent cross-contamination. The shoes must be kept in the storage facility rather than being taken or worn home by employees.

Since your concern mainly rests with providing shoes to your employees, you might want to consider providing shoe coverlets as an acceptable alternative. Disposable shoe coverlets are currently available from a number of vendors.

We appreciate the opportunity to clarify this issue for you, with respect to federal regulations. However, please be aware that Arizona administers its own occupational safety and health program, through the Arizona Division of Occupational Safety and Health (ADOSH), under the provision of the Occupational Safety and Health Act (Act) of 1970. As part of that program, the State is responsible for the enforcement of occupational safety and health standards in the State, subject to monitoring by Federal OSHA. We recommend that future inquiries be addressed to ADOSH at the following address:

Vol. 2-452.1
SOURCE LETTER

October 8, 1992

Dear Ms. M,

By letter dated September 9, 1992, from J. J. C, Director, Office of Variance Determination, I have been advised that our application for a permanent variance from 1910.1018(j) & 1910.1025(g) has been referred to your office for evaluation. Our application requested that we be permitted to require the cleaning of protective footwear, provided and worn by our employees working in an inorganic arsenic and lead environment, with the HEPA filter vacuum system at the conclusion of the workday in lieu of providing shoes to those employees. We noted, in our application, that the regulations clearly authorize vacuuming of protective work clothing or equipment worn by such employees before they enter lunch rooms.

If current regulations will permit us to require employees to vacuum their boots at the conclusion of the workday and do not mandate that we, instead, provide them boots, we would appreciate that clarification. If, however, the regulations mandate that shoes be provided to the employees and cannot be interpreted as permitting the utilization of the HEPA filter vacuum system in lieu thereof, then we reiterate our application for permanent variance and request that you so advise the Office of Variance Determination.

Copies of our application and Mr. C response are attached for your convenience.

Any expediency in this matter would be appreciated.
When both inorganic arsenic and lead are present in the workplace, the employer must comply with the housekeeping requirements of both standards. Since the lead standard prohibits the use of compressed air for cleaning under any circumstances, the employer must comply with the housekeeping requirements under Section 1910.1025(h)(2)(i).

March 18, 1993

This memorandum is in response to your memorandum of December 14, 1992 requesting interpretation of the provisions in the inorganic arsenic standard, 29 CFR 1910.1018 and the lead standard, 29 CFR 1910.1025 that prohibit the use of compressed air for cleaning floors and other surfaces. We apologize for the delay in our response.

You stated that the employer is concerned with the use of compressed air while cleaning the flash typically covered with lead and arsenic. The inorganic arsenic standard under Section 1910.1018(k)(2) states that "floors and other accessible surfaces may not be cleaned by the use of compressed air." The employer feels that the areas that need cleaning are not "accessible" and therefore the use of compressed air would be acceptable under Section 1910.1018(k)(2).

Because of the presence of both inorganic arsenic and lead in the area of the flash furnaces, the employer must comply with the housekeeping requirements of both standards. Since the lead standard prohibits the use of compressed air for cleaning under any circumstances, the employer must comply with the housekeeping requirements under Section 1910.1025(h)(2)(i). An employer complying with this provision of the lead standard will, of course, also be in compliance with Section 1910.1018(k)(2) of the inorganic arsenic standard.

The Attached request from M. C. is concerned with the use of compressed air while cleaning flash furnaces that are typically covered with lead and arsenic dust. The employer has determined that these areas are not "accessible", therefore, use of compressed air is allowable. Our Arsenic standard says that air may not be used in "accessible" areas, the Lead standard indicates that compressed air may not be used under any circumstance.

Have we ever addressed the use of air for cleaning purposes when lead or arsenic are involved?

I would appreciate it if you would provide an interpretation that I can share with the M. Company.
OSHA Instruction CPL 2-2.47

JAN 5, 1989


A. Purpose. This instruction provides current compliance dates for the lead standard, with clarification of the implementation schedule for the engineering and work practice control provisions in 29 CFR 1910.1025(e)(1), Table 1.

B. Scope. This instruction applies OSHA-wide.

C. Action. Regional Administrators and Area Directors shall ensure that the compliance dates established in this instruction are followed during the effective time period of this instruction.

D. Federal Program Change. This instruction describes a Federal Program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Advise the State designees that this instruction provides the current compliance dates for the lead standard and clarifies the implementation schedule for the engineering and work practice control provisions in 29 CFR 1910.1025(e)(1), for ensuring that the compliance dates are followed.

4. Ensure that State designees acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. The State's acknowledgment letter should indicate (1) that the implementation schedule in the State's equivalent to 29 CFR 1910.1025(e)(1) has established compliance dates earlier than the current dates set out in this instruction for compliance with the Federal standard; or, (2) in response to this instruction, will establish an implementation schedule in accordance with F. and Appendix A of this instruction. The State's acknowledgment letter should also indicate whether the State has stayed enforcement of 29 CFR 1910.1025(e)(1) for the industries listed in Appendix A of this instruction.

5. Review policies, instructions and guidelines issued by the State to determine if this change has been communicated to State program personnel.

E. Background.

1. The effective date of the engineering controls provisions of the lead standard is considered to be June 29, 1981, since this is the date on which the Supreme Court denied certiorari on the appeal of the decision of the U.S. Court of Appeals for the D.C. Circuit.

2. On August 15, 1980, the United States Court of Appeals for the District of Columbia Circuit upheld the validity of the entire lead standard for the following industry sectors: primary and secondary lead smelting, can manufacturing, battery manufacturing, printing, ink manufacturing, wallpaper manufacturing, electronics manufacturing, paint and coating manufacturing, and gray-iron foundries. However, for several industry sectors (see Appendix A), the Court stayed the enforcement of 29 CFR 1910.1025(e)(1), which requires compliance with the PEL through engineering and work practice controls. The stay has not yet been lifted.

3. On December 11, 1981, OSHA issued a revised Supplemental Statement of Reasons regarding the feasibility of complying with the lead standard for certain industries. At that time, Table I was amended "to extend the compliance deadline for the other industries to two and one-half years to allow sufficient time for the design and installation of controls and to prevent inequities to the affected industries as a result of the Secretary's reconsideration of the standard" (46 FR 60758).
4. It is OSHA's belief that the compliance dates for "all other industries" will be 2 1/2 years from the date that the stay is lifted, with the exception of auto manufacture/solder grinding industry which will be 7 years from that date.

5. In the same Revised Supplemental Statement of Reasons of December 11, 1981, OSHA also amended the lead standard in three important aspects. The first amendment was to exempt employers from the requirement to implement engineering and work practice controls to achieve 50 ug/m3 for employees who are exposed above the PEL for 30 days or more annually. The employer shall still be required to implement engineering controls to reduce exposures to 200 ug/m3, but thereafter may implement any combination of engineering and work practice controls (including administrative) and respiratory controls to reduce employee exposure to or below 50 ug/m3.

6. The second amendment was the change in the language of paragraph (e)(1) to reflect OSHA's past compliance policy by incorporating the concept of feasibility of engineering and work practice controls so that employers may use effective respiratory equipment to achieve compliance with the standard once they have demonstrated the infeasibility of such controls.

7. The third amendment was OSHA's request of the Court to remand the record for nine industry sectors for further administrative proceedings. These nine industry sectors are lead pigments manufacture, lead chemicals manufacture, leaded steel production, shipbuilding and repair, nonferrous foundries, secondary copper smelting, brass and bronze ingot production, battery breaking (when not part of secondary lead smelting operation), and stevedoring.

8. On March 31, 1987, the Court of Appeals for the District of Columbia granted OSHA's request of December 11, 1981, to remand the record to OSHA for further administrative proceedings to determine the feasibility of paragraph (e)(1) of the lead standard in the nine industry sectors listed above and ordered OSHA to return the record on or before October 1, 1987. On July 31, 1987, the Court granted OSHA's motion to extend to January 1, 1988, for return of the record.

   a. A public hearing was held in Washington, D.C., from November 3-6, 1987. On December 16, 1987, the Court granted OSHA's request to extend the deadline for return of the record until July 15, 1988.

   b. On July 15 and again on November 30, 1988, OSHA filed for extension to complete its economical and technological feasibility analyses for all nine industry sectors concerning Paragraph (e)(1). The Court's decision is pending.

9. The stay of enforcement of 29 CFR 1910.1025 (e)(1) remains in effect for the industries listed in Appendix A of this Instruction. The industries for which (e)(1) is stayed must install engineering controls to meet the 200 ug/m3 level. They may use any combination of engineering, work practice (including administrative controls), and respiratory controls to meet the 50 ug/m3 PEL.

F. Current Implementation Schedule.

1. In accordance with the decision of the US Court of Appeals for the D.C. Circuit, the implementation schedule for 29 CFR 1910.1025 (e)(1) should appear as shown in Appendix B of this Instruction.

2. Under 29 CFR 1910.1025(j), Medical Surveillance, Paragraph (2)(i), the zinc Protoporphyrin (ZPP) test is required as of December 29, 1981.

3. All provisions of the lead standard 29 CFR 1910.1025 are enforceable except for the following:

   a. Paragraph (e)(1) [therefore, (e)(3) and (r)(7) as well] for the selected industries listed in Appendix A of this Instruction however, 1910.1025(e)(1) is enforceable insofar as it requires employers in these industries to reduce air lead levels to a level of 200 ug/m3 through the implementation of engineering controls.

Vol. 2-454
b. Paragraph (f)(2)(i), Table II. As published in the January 26, 1979, Federal Register notice (44 FR 5446), OSHA granted 3M's request to reconsider the respirator issue and permitted the continued use of dust, Fume, and mist air-purifying respirators for concentrations not in excess of 0-5 mg/m3 in addition to the respirators listed in Table II, pending reconsideration.
Appendix A


Agriculture Pesticides
Aluminum Smelting
Ammunition Manufacturing
Artificial Pearl Processing
Auto Manufacturing/Solder Grinding
Book Binding
Brass and Bronze Ingot Production
Brick Manufacture
Cable Coating
Collection and Processing of Scrap (Battery Breaking)
when not part of secondary lead smelter operations
Copper Smelting
Cutlery
Diamond Processing
Electroplating
Explosives Manufacture
Gasoline Additive Manufacture
Glass Manufacture
Gold, Silver, and Platinum Smelting
Jewelry Manufacture
Lamp Manufacture
Lead Burning (Brazing/Welding)
Lead Chemicals Manufacture
Lead Pigments Manufacture
Lead Sheet Metal Manufacture
Leather Manufacture
Machining
Miscellaneous Lead Products
Nickel Smelting
Nonferrous Foundries
Pipe Galvanizing
Plastics and Rubber Manufacture
Plumbing
Pottery and Ceramics
Sheet Metal Manufacture
Shipbuilding and Repair
Solder Manufacture
Soldering
Spray Painting
Steel Manufacture (Leaded Steel)
Stevedoring
Telecommunications
Terne Metal
Textiles
Tin Rolling and Plating
Wine Making
Zinc Smelting

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OSHA Instruction CPL 2-2.47 (cont.)

Note: Due to slight inconsistencies in wording and grouping of industries in various Federal Register publications and memorandums, the Agency has decided to use primarily the listing provided in the Federal Register notice of January 21, 1981, (46 FR 6134). In the December 11, 1981, Supplemental Statement (46 FR 69758), OSHA reaffirmed its conclusions that Compliance with the PEL was generally feasible for most of these industries but requested the Court to remand the record to OSHA for nine of these industries (listed previously) Paragraph 1910.1025(e)(1) does, however, require the employers in these industries to implement feasible engineering controls to reduce air lead levels to 200 ug/m3.
OSHA Instruction CPL 2-2.47 (cont.)

Appendix B

Implementation Schedule of 1910.1025(e)(1)

Dates to Achieve Compliance with Engineering and Work Practice Controls to Specified Level

<table>
<thead>
<tr>
<th>Industry 1</th>
<th>200 ug/m³ 2</th>
<th>100 ug/m³</th>
<th>50 ug/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary lead production</td>
<td>1971</td>
<td>6/29/84</td>
<td>6/29/91</td>
</tr>
<tr>
<td>Secondary lead production</td>
<td>1971</td>
<td>6/29/84</td>
<td>6/29/86</td>
</tr>
<tr>
<td>Lead-acid battery manufacturing</td>
<td>1971</td>
<td>6/29/83</td>
<td>6/29/86</td>
</tr>
<tr>
<td>Electronics, gray iron foundries, ink manufacture, paints and coating manufacture, can manufacture, wall paper manufacture, and printing</td>
<td>1971</td>
<td>N/A</td>
<td>6/29/82</td>
</tr>
<tr>
<td>Lead pigment manufacture, Lead chemical manufacture, non-ferrous foundries, leaded steel manufacture, ship building and ship repair, battery breaking in the collection and processing of scrap (when not part of secondary lead smelter), secondary copper smelter, and brass and bronze ingot production.</td>
<td>1971</td>
<td>N/A</td>
<td>N/A 3</td>
</tr>
<tr>
<td>Auto manufacture/Solder grinding.</td>
<td>1971</td>
<td>N/A</td>
<td>Stayed 4</td>
</tr>
<tr>
<td>All other industries. 1</td>
<td>N/A</td>
<td>Stayed 5</td>
<td></td>
</tr>
</tbody>
</table>

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1 Includes ancillary activities located on the sad work site.
2 This continues an obligation from Table Z-2 of 29 CFR 1910.1000, which had been in effect since 1971 but which was deleted upon the effectiveness of this section.
3 The feasibility of achieving the PEL by engineering and work practice controls for these industries have yet to be determined therefore no date has been scheduled.
4 This date was to be 7 years from the date that the stay is lifted.
5 The date, which was to be 2 1/2 years, after the effective date for paragraph (e), has been stayed by the U.S. Court of Appeals for the D.C. Circuit, 647 F. 28 1189 (1980).
OSHA Instruction CPL 2-2.47 (cont.)

SUBJECT: List of Laboratories Approved for Blood Lead Analysis.

A. Purpose. This instruction establishes the OSHA List of Laboratories Approved for Blood Lead Analysis on the OSHA Computerized Information System (OCIS).

B. Scope. This instruction applies OSHA-wide.

C. Action. OSHA Regional Administrators and Area Directors shall ensure that the OSHA List of Laboratories Approved for Blood Lead Analysis is used in accordance with the following:

1. The OSHA List of Laboratories Approved for Blood Lead Analysis can be accessed as menu selection "BL" on the OCIS menu.

2. The OSHA List of Laboratories Approved for Blood Lead Analysis is to be used for compliance purposes and to assist employers in complying with the provisions of the lead standard for accuracy in blood lead analysis.

3. Questions concerning the blood lead program should be addressed to Blood Lead Program Director, U.S. Department of Labor, 1781 South 300 West, Salt Lake City, Utah 84165-0200. Telephone (801) 524-4270 or FTS 588-4270.

D. Approved Plan States. Regional Administrators shall ensure that this instruction is forwarded to each State designee. They shall also advise the States that the current OSHA List of Laboratories Approved for Blood Lead Analysis will be maintained on the OSHA Computerized Information System (OCIS) and assure that the States are familiar with procedures for accessing this system.

E. Program Change. The OSHA List of Laboratories Approved for Blood Lead Analysis will be available to OSHA personnel through the OSHA Computerized Information System (OCIS). Periodic updates will be issued in hard copy to participant labs and other interested parties. A quarterly Notice transmitting the list will no longer be issued.

Refer to the Field Operations Manual CPL 2.45B on the main OCIS Menu (FO) for searching this instruction.
An interpretation letter discussing the requirements for employee notification of exposure monitoring results under the lead standard are defined in (d)(8). Within 5 working days after the receipt of monitoring results, the employer shall notify each employer in writing of the results. If the PEL was exceeded, in the notice a statement will be made to that effect and to what corrective action will be implemented to reduce exposures.

Employers may comply by personal written notification. Posting written exposure monitoring results for general consumption is also an acceptable method, as long as the intent of the standard is not violated. For example:

1. Results for every affected employee must be posted within five working days after the receipt of the monitoring results.

2. Results must be posted in a reasonable and accessible area.

3. Each affected employee must be informed of the posting location.

4. Affected employees who are not scheduled to work at or be near the posting location must be individually notified in writing of their exposure monitoring results.

In addition, the monitoring results shall be made available, upon request, to affected employees, former employees or their authorized employee representative, for copying (as required by 29 CFR 1910.1025(n)(4)(ii)).

OSHA regards the methods described in this letter as satisfactory manners of notifying employees of the results of exposure measurements, when there is no standard requiring that the notification be done.
An interpretation letter regarding payment for shower time and travel expenses for medical surveillance under the lead standard. The lead standard does not address payment for shower time, however, the Fair Labor Standards Act may require it. If medical surveillance is offered outside of work and what is considered reasonable time and place then time and travel expenses must be paid by the employer.

This is in response to your memorandum dated May 18, 1979.

29 CFR 1910.1025 does not address the issues of whether and how much workers should be paid for taking showers required by the standard. It is our view that the standard should not be interpreted to create a right for payment. However, the Fair Labor Standards Act (FLSA) appears to pertain. With one or two exceptions it interprets shower time as "hours worked." 29 U.S.C. ss 206, 207, 203(o), Steiner v. Mitchell, 350 U.S. 247 (1955). The exceptions apply to situations where "time spent in changing clothes or washing at the beginning or end of each workday was included by the express terms of or by custom or practice under a bona fide collective bargaining agreement applicable to the particular employee." 29 USC S203(o), 29 CFR S785.26. Nardone v. General Motors, Inc., 207 F. Supp 336 (D.C., N.J. 1962) The FLSA may not, however, require any more than minimum wage to be paid.

29 CFR 1910.1025(l)(1) is interpreted as prohibiting drinking water fountains in areas where the 8-hour time-weighted average airborne lead concentration exceeds 50 micrograms per cubic meter. This restriction on fountain locations is necessary in order to avoid creating situations where employees would have to remove their respirators and expose themselves to an adverse environment in order to get a drink. It is not necessary to limit the locations of the fountains to change rooms, lunchrooms and showers, if there are other areas where the aforementioned airborne concentration level is not exceeded.

In accordance with 29 CFR 1910.1025(j)(1)(iii), the employer shall provide medical surveillance without cost to employees and at a reasonable time and place. The phrase "reasonable time and place" releases the employer from an obligation to make medical surveillance available during an employee's assigned work shift. If the medical surveillance is not provided during an employee's work shift, then the employer must pay the employee for his/her time and pay any necessary travel.
An interpretation letter regarding recordkeeping requirements for medical removals made pursuant to the lead standard. The lead standard does not state a blood lead level for recording on the 200 form. Medical removal due to lead symptoms need to be recorded on the 200 form per 29CFR 1904.2.

FEB 20, 1980

The Assistant Secretary has asked me to respond to your request for a clarification of 29 CFR 1904, as it pertains to medical removals made pursuant to the lead standard, 29 CFR 1910.1025. Please accept my apology for the delay in this reply.

The recordkeeping requirements of 29 CFR 1910.1025(n)(3) for recording cases of (a) employees removed from exposure to lead due to elevated blood lead levels and (b) employees removed because they have symptoms of lead poisoning, are separate from the OSHA occupational injury and illness recordkeeping system requirement (29 CFR 1904).

The lead standard does not specify a blood lead level limit for OSHA injury and illness recording. Medical removal cases of employees with symptoms of lead poisoning such as anemia and renal complications, or blood lead levels which the examining physician diagnosed as indicating illness, continue to be entered in the OSHA occupational injury and illness recordkeeping system (OSHA 200 log).

Therefore, some instances of removal where blood lead levels are below those specified for removal by 29 CFR 1910.1025(k) must be recorded in conformance with 29 CFR 1904; for example, when an examining physician has diagnosed the employee to be suffering adverse health effects. The record presented in the preamble to the lead standard demonstrates that adverse signs and symptoms have been observed in workers with blood leads as low as 40 ug/100g.

This information should aid in revising your proposed recordkeeping policy. In addition, I have enclosed a Bulletin of the United States Department of Labor, Bureau of Labor Statistics, which may provide additional clarifications of this matter.

Vol. 2-462
An interpretation letter discussing medical examinations under the lead standard. An employer could decide that his legal and ethical responsibilities require that he exclude from lead exposure any employee with unknown medical status (k)(2)(D)(vii). OSHA cannot require an employer to keep such an employee in a lead-exposed job or to provide medical removal benefits. Refusal to take a physical is not a protected activity under section 11(c) of the OSHA Act of 1970. Also, the use of an employer's personal physician verses employers and should pay for a second opinion medical exam.


MAY 27, 1987

SUBJECT: Regional Interpretation of the Lead Standard

Attached is some correspondence with the (Company) concerning medical examinations under the lead standard. You may wish to incorporate this into the ODIS standards interpretation file. I trust our interpretation file is in conformance with the views of the National Office.

MAY 27, 1987

This is in response to your letter of May 7, 1987 concerning medical surveillance under the OSHA lead standard (29 CFR 1910.1025).

Mr. X, the person who wrote to you, sent a similar inquiry to our (City) Area Office at about the same time. A copy of his letter and the Area Director's response is attached.

Continued exposure to lead can have serious medical consequences for a person with high blood lead or with certain medical conditions such as kidney disease. The OSHA required medical examination is designed to identify such persons so that they can be removed from further lead exposure (with medical removal benefits). A person who has not had an examination may have and undiagnosed condition which could cause him to develop a serious disease on continued exposure. An employer could decide that his legal and ethical responsibilities require that he exclude from lead exposure any employee with unknown medical status. OSHA cannot require an employer to keep such an employee in a lead-exposed job or to provide medical removal benefits. In addition, refusal to take a physical is not a protected activity under section 11(c) of the OSHA law.

Discussions between and employee (or a union) and an employer could convince the employer to accept a medical examination by an employee's personal physician in lieu of the company doctor, and, if that occurs, the employer must pay for the exam. However, OSHA cannot require such an agreement.

To summarize, you are right that an employer cannot force an employee to use the company physician. But, conversely, a company cannot be required to use a physician not of their own choosing (at least for the initial medical examination). Similarly, an employee can refuse to participate in an OSHA required medical program, but an employer cannot be required to allow him to continue to be exposed to lead.

Of course, there are many benefits for employees to participate in a medical program, and we would strongly recommend that they do so. If an employee chooses, he can have his personal physician review the findings of the company doctor, and even conduct additional tests, and have the company pay the costs. We would suggest that Mr. X participate in the company's examination program and then avail himself of the multiple physician review mechanism if he disagrees with the findings of the company doctor.
SOURCE LETTERS

MAY 7, 1987

Attached is a letter from one of our stewards at (Company) in (City, State). A member at this operation has refused a company physical as required by the lead standard, 1910.1025. Instead, he would like to have a private physician perform this physical and have the results forwarded to the company.

I believe that the company cannot force him to use their physician, but that if he wants a private physician to perform the physical, he must pay for it himself. I also do not believe the company has the right to suspend the member or discriminate against him in any way for his refusal.

Stumped April 27, 1987

I am presently handling a case for a member who felt uncomfortable with a company physician and therefore refused to take a lead physical. I advised him that his right was to refuse and to have the physical performed by his private physician. The medical director at (Company), Dr. X, contacted Labor Relations who notified our Chief Steward. The Labor Representative explained that they intended to suspend the man pending investigation unless he submitted to a physical performed by the company doctor. The Chief Steward, contacted our attorney and he agreed with the company's position.

I based my opinion of this position on the Boilermakers Occupational Safety and Health Manual pg. 298 & 299 which states that an employee has the right to refuse and that the only action the company can take is to make the employee sign a statement indicating that he understands the risks.

MAY 11, 1987

This letter is in response to your letter dated May 3, 1987 concerning medical examinations for employees working in a lead area.

The standard does not require that you participate in any of the medical procedures, etc. which (Company) is required to make available to you. Medical surveillance can, however, play a very important role in protecting your health. You are strongly encouraged, therefore, to participate in a meaningful fashion. The standard contains a multiple physician review mechanism which would give you a chance to have a physician of your choice directly participate in the medical surveillance program. If you were dissatisfied with an examination by a physician chosen by your employer, you could select a second physician to conduct an independent analysis.

The employer is required to instruct each examining and consulting physician to not reveal in the written opinion, or in any other means of communication with the employer, findings, including laboratory results or diagnosis unrelated to an employee's occupational exposure to lead and advise the employee of any medical condition, occupational or nonoccupational, which dictates further examination or treatment.

I recently learned that my employer, (Company) considers a Lead Physical a condition of employment. They apparently base this practice on OSHA's requirement that records are to be maintained for those exposed to lead in the performance of their job.

I had always been under the impression that the OSHA law allowed an employee to refuse a lead physical and that the employer was merely required to instruct an employee as to the potential hazards.

Under these circumstances would I not have the right to have such a physical performed by a physician of my own choosing. Does an employer have the right to threaten to terminate my employment should I refuse to submit to a lead physical? Can I have my lead physical performed by my own physician, at my own expense, and provide the results to my employer? Do I have a right to cite my employer for this practice and if so, what procedure should I follow?
An interpretation concerning precautions for prevention of lead ingestion and appropriate respirators for protection from lead exposure. Personal hygiene plays an important role in controlling lead ingestion. The full shift wearing of a powered air-purifying respirator (PAPR) for protection from lead exposure not only provides a higher degree of protection and comfort to the worker but may be more cost effective than wearing a negative-pressure air-purifying respirator. The benefits and limitations of negative pressure air purifying and PAPR's are discussed.

This is in response to your April 15 letter to the Deputy Assistant Secretary concerning the full shift wearing of negative-pressure air-purifying respirators as related to the Occupational Safety and Health Administration's (OSHA's) standard for lead.

Ingestion of lead occurs primarily when food is consumed but may occur when contaminated tobacco products are used during breaks or lunch periods. It is understandable that one cannot eat or smoke when a respirator is worn. However, good personal hygiene habits rather than extended respirator wearing better control the ingestion of lead. Methods used to motivate workers to wear respirators could also be used to change personal hygiene habits. For example, some companies have located the handwashing facilities at the entrance to a break or eating area.

Many employers preclude the use of powered air-purifying respirators (PAPR) because of the initial cost of the units. However, PAPRs may very well prove to be more cost-effective in use. Negative-pressure air-purifying respirators have higher breathing resistance and offer a lower degree of protection due to the inward leakage of air contaminants during the inhalation cycle. They also require frequent fit testing. On the other hand, PAPRs are operated in the positive-pressure mode. They require no fit testing and the breathing resistance is relatively low. PAPRs are acceptable at concentrations where the negative-pressure respirators are not permitted. Many professionals attribute the poor results achieved by PAPRs in the field performance studies conducted by the National Institute for Occupational Safety and Health (NIOSH) to deficiencies in the experimental design. The Los Alamos National Laboratory is conducting a study for the Nuclear Regulatory Commission and OSHA to evaluate the effectiveness of respirators during use. A part of this study is designed to determine the performance of PAPRs when they are used under extremes of temperatures and humidity during a moderately heavy workload. The preliminary results indicate that PAPRs offer a high degree of protection under these test conditions.

Prolonged wearing of negative-pressure air-purifying respirators can cause skin irritation. Frequent face washing and cleaning of the respirator facepiece are necessary to reduce the dermatitis problem. Donning of the facepiece is required after each face wash and additional time is needed to insure that the facepiece is fitted properly before the wearer reenters the contaminated atmosphere. The high breathing resistance of the negative-pressure respirators may reduce the productivity of workers especially when the respirator are worn when both temperature and humidity are high.

PAPRs do not have the problems associated with the use of negative-pressure respirators. A conservative estimate of a worker's productivity loss due to the wearing of negative-pressure respirator is 30 minutes per workshift. If the employee works 230 days a year, the annual loss in productivity will be about 15 workdays. The cost of loss of productivity will be about 15 workdays. The cost of loss of productivity far exceeds the cost of purchasing and maintaining the PAPR, without considering the additional cost incurred in performing fit testing for negative-pressure respirators as required in the lead standard. Some loose-fitting PAPRs can accommodate bearded employees and thus eliminate the potential for labor-management relations problems. Some PAPRs have received additional approval for use in workplaces containing both lead aerosols and other gaseous air contaminants such as sulfur.
dioxide. The weight of the PAPRs should pose no problem to the wearer since many of OSHA's petite female compliance officers have worn them for the whole workshift.

Summarizing, we believe the full shift wearing of a PAPR not only provides a higher degree of protection and comfort to the worker but may be more cost effective than wearing a negative-pressure air-purifying respirator.

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SOURCE LETTER

APR 15, 1985

RE: Lead Standard

This letter requests on behalf of (Company), a trade association composed of the principal U.S. manufacturers of lead-acid starting, lighting and ignition batteries, confirmation of our interpretation of a portion of the Occupational Health Standard for Lead contained in 29 CFR Section 1910.1025 et seg.

The standard provides in Section 1910.1025(e)(2) that:

"(2) Respiratory protection. Where engineering and work practice controls do not reduce employee exposure to or below the 50 ug/m³ permissible exposure limit, the employer shall supplement these controls with respirators in accordance with paragraph (f)."

Paragraph (f) provides as follows:

"(f) Respiratory protection.

(1) General. Where the use of respirators is required under this section, the employer shall provide, at no cost to the employee, and assure the use of respirators which comply with the requirements of this paragraph. Respirators shall be used in the following circumstances:

(i) During the time period necessary to install or implement engineering or work practice controls, except that after the dates for compliance with the interim levels in table I, no employer shall require an employee to wear a negative pressure respirator longer than 4.4 hours per day;

"(ii) In work situations in which engineering and work practice controls are not sufficient to reduce exposures to or below the permissible exposure limit; and

"(iii) Whenever an employee requests a respirator."

Although the standard does not permit employers to require employees to wear negative pressure respirators longer than 4.4 hours per day during the period of time in which the employer is installing or implementing engineering or work practice controls to meet the PEL, the standard does not prohibit employers from requiring full-shift respirator wear in situations in which the employer is meeting the PEL or where the employer has taken all feasible steps to meet the PEL. This interpretation of the standard is consistent with its language and with its goal of protecting worker health.

The battery manufacturing industry has been highly successful in the last several years in reducing the blood-lead levels of its employees. This has been accomplished through a combination of engineering and work practice controls as well as increased respirator wear. The experience of the battery manufacturing industry, including published studies and data previously given to OSHA, strongly supports the conclusion that increased respirator wear plays an important role in reducing employee blood-levels. Respirators significantly reduce the ingestion and inhalation of lead by employees. Despite the best efforts of employers to encourage good personal hygiene practices among their employees, many employees ingest lead by placing their hands and fingers in or near their mouths; if an employee is wearing a respirator, the ingestion of lead is much less likely to occur. Even where air-leads are consistently well below 50 ug/m³ some employees experience blood-lead levels higher than desirable, unless wearing respirators. Similar issues arise when new employees are in training; in this case elevation of blood-lead levels sometimes occurs rapidly, even between blood-lead sampling, unless respirators are worn during the training period.
(Company) believes, based on the collective experience of its members, that full-shift respirator wear is beneficial to employee health for these reasons.

Although the standard permits an employer to require an employee to wear a powered air purifying respirator (PAPR) for more than 4.4 hours per day, many employees resist wearing a PAPR because of its greater weight and cumbersomeness. In addition, recent tests in the battery industry raise doubts about the effectiveness of protection with PAPR's in actual use in the industry. While most employees cooperate in wearing negative pressure respirators, few will not wear any respirator unless required to do so by the employer. To require these employees to wear PAPR's does not, typically, lead them to request and wear a negative pressure respirator. The more likely action is to wear a PAPR in such a manner as to negate its effectiveness. In this case, a habit of disdain for effective hygiene protection is encouraged rather than corrected. The more effective course is directly to require use of a negative pressure respirator. Thus, protection of employee health will be significantly enhanced if employers are permitted to require employees to wear negative pressure respirators more than 4.4 hours per day.

(Company) believes that the language of the standard and the goal of protecting worker health support our interpretation of 29 CFR Section 1910.1025 (f)(1) as permitting employers to require full-shift negative pressure respirator wear when the employer has achieved compliance with the PEL or has taken all feasible steps to meet the PEL. We request that OSHA confirm that our understanding is correct.
An interpretation letter regarding a response to a request for information regarding exposure to lead and sulfuric acid. Health effects of lead are discussed. Requirements for blood lead monitoring, removal and employment returning are outlined.

This is in response to your letter dated March 25 to the Public Health Service's Office of Disease Prevention and Health Promotion Health Information Center, which has been has referred to the Occupational Safety and Health Administration (OSHA) for a response.

In your letter you expressed your concern regarding your husband and his coworkers' exposure to lead and sulfuric acid. Your questions are answered as follows:

Question 1:

What happens to the men when they have a constant daily exposure to lead; but their levels stay in the 25-40 microgram (ug)/100 grams (g) of blood range?

Answer:

Blood lead levels are indicators of risk for health effects. That means that the higher the blood level of lead, the higher the risk for disease related to lead. The organ systems most commonly associated with lead poisoning are the neurological, gastrointestinal, hematological, nephrological, and reproductive systems. In general the hematological system is the organ system most sensitive to lead exposure, and is known to be consistently affected in various was in the range of 25-40 ug/100g. The other organ systems may be affected in this blood lead range, but the risk of such problems (i.e., the chance that they will occur) is less.

Question 2:

Can they actually develop symptoms of lead poisoning in this range?

Answer:

At least one report correlating symptoms of illness with blood lead levels has found that mild abdominal pain, fatigue, and joint pain are more common if blood lead levels are greater than 30ug/100g.

Question 3:

Is it possible that lead had caused mood changes, circulation, gastric and cardiac problems?

Answer:

a) mood changes - Subtle changes in psychological function are known to occur with blood lead levels is difficult.

b) circulation - Some reports exist which state that increased blood pressure is associated with lead exposure. Again, the relationship to blood lead levels is not easily defined.
c) gastric - Peptic ulcers and colic are known consequences of lead toxicity. Generally the blood lead levels associated with these problems are reported to be higher than 25-40ug/100g.

d) cardiac - no known association.

Sulfuric acid is an irritant and can cause eye, nose, and throat irritation as well as rashes. Stomach ulcers are unlikely to be caused by sulfuric acid (more likely lead, as noted above).

Blood typing difficulties are unlikely to be of occupational origin.

OSHA's lead standard, 29 CFR 1910.1025, requires employers to monitor their employees' blood lead levels. For the most part, if an employee's blood lead level is at or above 50mg/100g of whole blood the employer would be required to remove the employee from exposure until the employee's blood lead level drops to a level at or below 40ug/100g of whole blood. It appears from your letter that the company is complying with this requirement.

The lead standard allows for employees who develop signs and symptoms commonly associated with lead intoxication to ask for medical advice regardless of what past blood lead exposures were. If the employer selects the initial physician the employee has the right to designate a second physician to review any findings, determinations or recommendations of the initial physician. The standard also has a mechanism of review if the two physicians disagree.

Under the Occupational Safety and Health Act of 1970 employees have the right to file a complaint with OSHA. In addition, the name of the employee can be withheld from the employer, upon request to OSHA, when a complaint is filed. If your husband or his coworkers feel that an unsafe or unhealthful condition exists a complaint can be filed with the local OSHA Area Office. The (Company) in (City, State), would be covered by our (City) Area Office. If you wish, you may contact your area office.

That office can also answer any additional questions you may have on OSHA regulations or activities. If you have additional medical questions regarding lead you may wish to contact Dr. X.

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SOURCE LETTER

APR 2, 1987

I'm one wife of many who are concerned about our husbands health.

Our husbands are employed at (Company), (City, State), manufacturing batteries.

All the workers are exposed to either sulfuric acid or lead, depending on what job the have in the process of manufacturing.

The workers exposed to lead have periodic blood drawn to check the lead concentration in their blood. If they test in the danger level they are moved till the level decreases.

When their level has decreased they return to their area.

The questions we have are:
1) What happens to the men when they have a constant daily exposure, but their levels stay in the 25-40 ug/100 g of blood range?

2) Can they actually develop symptoms of lead poisoning in this range?

3) Is it possible the lead has caused; mood changes, circulation; gastric & cardiac problems?

Men working with the sulfuric acid complain of nose, throat, & gastric discomfort, including stomach ulcers & skin rashes. Another problem that was discovered by accident is blood typing difficulties.

These are some of the problems we are seeing in our men.

The workers have asked for information on all these discomforts. Plant management has provided little or no information.

Is it possible for you to provide the information we need? Any type of printed material would be greatly appreciated, or the names of departments that will help.
ABSTRACT

An interpretation letter regarding OSHA policy for medical surveillance requirements under the lead standard 1910.1025(j). The OSHA policy regarding medical surveillance requirements is that the employer must make the medical examination available, at no cost, to the employee, but the employee, is not required to take the examination(j)(i)(iii). There is also a provision for multiple physical medical surveillance for employees OSHA encourages employees to participate in medical surveillance programs.

INTERPRETATION


AUG 6, 1987

This is in response to your letter of June 26 on behalf of your constituent, a shop steward for (Company) in (City, State). Mr. J represents an employee who was required by his employer to submit to a medical examination in order to prevent lead related illnesses.

The Occupational Safety and Health Administration's (OSHA) policy regarding medical surveillance requirements is that the employer must make the medical examination available, at no cost, to the employee, but the employee, is not required to take the examination. OSHA does not require an employer to force the employees to take medical examinations. However, OSHA's regulations are intended as minimum standards. Employers can adopt more stringent requirements for themselves, and in doing so, may enforce mandatory participation in programs within the guidelines of labor/management relations.

The medical surveillance provisions of OSHA's lead standard contain a multiple physicians review mechanism which gives workers an opportunity to obtain a second and possibly third opinion regarding the medical determinations made pursuant to the standard (29 CFR 1910.1025(j)(3)(iii)). An employee may designate a second physician to review any findings, determinations or recommendations of an initial physician chosen by the employer.

In dealing with the public in the matter of medical surveillance, OSHA realizes that many tests may be considered invasive of personal privacy. In addition, many persons only trust medical personnel that they select themselves. Nevertheless, OSHA encourages employees to participate in medical surveillance programs. Such programs can often detect changes in an employee's health status, so that the individual's exposure conditions can be corrected before serious damage is done.
An interpretation letter regarding 29 CFR 1910.1025(f) - Respiratory Protection. The values for the airborne concentrations of lead in air presented in 1910.1025, Table II, represent the maximum concentrations at which the corresponding respirator can be used. These values are actual concentrations and not time weighted averages. The parenthetical values (e.g.; 10 x PEL) represent only the derivation of these concentrations and apply to the concentration times the protection factor assigned to the respiratory protection.

INTRODUCTION


MAY 22, 1989


This is in response to your letter of April 13, 1989 concerning the subject captioned above. Your interpretation of the respiratory protection requirements of the lead standard is correct.

The values for the airborne concentrations of lead in air presented in 29 CFR 1910.1025, Table II, represent the maximum concentrations at which the corresponding respirator can be used. These values are actual concentrations and not time weighted averages. The parenthetical values (e.g.; 10 x PEL) represent only the derivation of these concentrations.

SOURCE LETTER

APR 13, 1989

SUBJECT: 29 CFR 1910.1025 - Respiratory Protection Interpretation

Table II of 29 CFR 1910.1025 lists required respiratory protection for protection against lead. The table lists concentrations of exposure followed by the corresponding concentration in relationship to the permissible exposure limit, e.g. "not in excess of 0.5 mg/meter cubed (10X PEL)". Recently, the wording of the table caused some confusion as to whether the exposure to determine appropriate respiratory protection was to be a time-weighted-average (based on the definition of permissible exposure limit) or an upper limit of concentration based on the phrase "not in excess of 0.5 mg/meter cubed...".

It is our understanding that respiratory protection is to be based on the upper limit of concentration for lead since the values in parentheses, i.e. "10X PEL", are intended to demonstrate only the derivation of the lead concentration for determining the appropriate respiratory protection. This would also agree with the NIOSH protocol for approving respirators. Our understanding of this issue was confirmed with the Office of Health Compliance Assistance. Due to the potential for this issue arising again, we are requesting written confirmation of this interpretation.
In 1970, Congress created OSHA and delegated to it the responsibility for protecting the health and safety of American workers. In 1978, on the basis of mounting evidence regarding the adverse health effects of lead in the body, OSHA lowered the permissible airborne lead exposure limit (PEL) to 50 ug/m3 and established limits for the maximum amount of lead to be permitted in employees' blood. These limits were established to reduce the risk of development of serious, chronic health effects as well as to prevent acute lead intoxication.

In addition to establishing the PEL, OSHA also included temporary medical removal protection (MRP) provisions to insure that immediate action would be taken to reduce the exposures of individual workers with elevated blood lead levels. Since immediate imposition of most appropriate MRP removal and return triggers would have been too disruptive to the labor force in major industry segments, OSHA phased in the MRP provisions in four steps over a five-year period. The first phase required removal of employees having blood lead levels at or above 80 ug/100 ml of whole blood and permitted return when levels were reduced to 60 ug/100 ml. The second phase, which became effective on March 1, 1980, required removal at 70 ug/100 ml and permitted return at 50 ug/100 ml. On March 1, 1981, the third phase required removal at 60 ug/100 ml and permitted return at 40 ug/100 ml. As of March 1, 1983, the final phase requires employee removal when the average of the last three blood lead test results, or the average of all test results over the previous six months, exceeds 50 ug/100 ml, and permits return at 40 ug/100 ml.

Compliance with both the PEL and the blood lead levels is considered feasible in most industries. However, OSHA does provide a relief mechanism, through the filing of a variance application, for employers who are unable to comply with the standards. Firms that are able to demonstrate the infeasibility of complying with the 50 ug/100 m1 removal trigger have been granted interim orders and temporary variances from the current standard.

Some of the points made by Mr. X appear to be based on misinformation. Mr. X's claim that OSHA's most recent removal trigger of 50 ug/100 m1 on an average is less than the blood lead levels of those who do not work in foundries is incorrect. In fact, average adult blood lead levels are less than 20 ug/100 m1. While Mr. X claims that neither he nor his coworkers appear to exhibit signs or symptoms of lead poisoning, there is scientific and medical evidence that prolonged excess exposures resulting in blood lead levels above 50 ug/100 m1 greatly increase the probability that workers will suffer irreversible health effects. These effects may include kidney damage and peripheral and central nervous system damage.

For further information, we have enclosed a copy of the OSHA lead standard which provides supporting documentation for the feasibility of complying with the PEL and medical removal protection provisions.
SOURCE LETTER

6 September, 1984

I would like to know why a Federal agency like OSHA can tell people where they can work and where they can't.

I work for (Company), (City, State). We make products for automobiles. I work in the foundry, where there is high lead contamination. I have worked there for over 16 years. I have never exceeded the lead standards until now.

When I started at (Company) the standard for lead contamination in the blood was 70 milligrams. Now OSHA has lowered the standard to 50 milligrams and this amount is lower than most people on the outside carry in their blood. There are about 100 people in the department and some have worked as long as 25 or 30 years. No one has ever got lead poisoning or been sick. The standards now are so low that most of the men cannot stay in the department. I think it is against my constitutional rights to be told where and when I can work. When the lead standards were 60 milligrams, it was a lot easier to maintain under 60 than it is to maintain under 50. I had to be moved to a job that I didn't ask for until my lead is 40 or below through 2 blood tests. OSHA says it is for my own good. How can they say it is for my own good, when they don't know what is good for me. I would to know if this a free country or if I have to work a job just because OSHA says so. The company has tried hard to meet OSHA standards which is almost impossible. OSHA, itself, says this standard is too low but at the present time they are not going to do anything about it. I would like to know if there is anything you can do for me. I don't think it is right for a company and the people who work there to follow standards by someone (OSHA) who does not seem to know what they are doing. We have never had any lead poisoning in the shop at the higher standards. About all the people in the department thinks the standards should be raised to at least 60 milligrams. I know there has to be lead standard, but why so low? I would appreciate some answers to this inquiry.
An interpretation letter explaining employers responsibilities under the lead standard. Lead Standard 29 CFR 1910.1025. An outline or summary of employer responsibility monitor the blood lead level in their employees as well as other previous described in the standard. Some of the responsibilities are personal protection, personal hygiene, medical examinations, medical removal protection, and training. Section II(c) of the OSHA Act protects employees from being discriminated against for making complaints about safety and health issues.

April 25, 1983

Thank you for your letter of March 17, 1983, on behalf of Mr. X of (City, State). You requested an explanation of the Occupational Safety and Health Administration regulations for lead for Mr. X, who is employed by the (Company).

The OSHA standard for occupational exposure to lead, 29 CFR 1910.1025, sets a permissible limit of 50 micrograms of lead per cubic meter of air, averaged over eight hours, for employees' daily exposure to lead. Keeping exposures below this limit is intended to assure that employees will suffer no material impairment to health or bodily functions. The standard requires the employer to carry out a comprehensive program to reduce or maintain worker exposure within this limit.

Such a program for employee protection includes efficient monitoring and control of sources of lead exposure; providing personal protection in the form of respirators and clothing; and provision of hygiene facilities for eating and drinking, and places to change clothing and wash or shower before, during, and after work. The employer must also monitor the employees health, by providing medical examinations and consultations (counseling), blood lead level testing, and medical removal protection. Medical removal protection is currently implemented when an employee's blood lead level exceeds 60 micrograms per 100 grams of whole blood; this is scheduled to change to 50 micrograms/100 grams after September 1, 1983.

When an employee's blood lead level exceeds this trigger level, the employer is required to remove the employee from working in areas of high lead exposure until his or her blood lead concentration returns to an acceptable level. It is within the prerogative of the employer to use such measures as may be deemed necessary to ensure that employees with high blood lead levels do not continue to be exposed to excessive amounts of lead.

Finally, but most importantly, the employer must provide workers with training and education on the hazards of exposure to lead. While the employer must comply with the provision of the lead standard, success in protecting the worker cannot be guaranteed unless the employer enjoys the complete cooperation of alert and informed workers, interested in protecting themselves.

When an employee's blood lead level begins to climb despite the control measures that have been implemented, the employer should carefully examine the protection program to determine if there are any deficiencies in carrying it out, in order to ensure that it is followed by both management and employees. Where corrective measures are needed, the employer should undertake them. Generally, taking care to avoid situations in the workplace that could cause lead to be absorbed by the body should be uppermost in the minds of employers and employees alike.

In his letter, Mr. X alludes to a 8-day suspension resulting from a confrontation he had with his supervisor over his high lead level. Section 11(c) of the Occupational Safety and Health Act prohibits discrimination against employees who make safety and health complaints. It does not appear that Mr. X was engaging in such protected activity; however, we are referring Mr. X's letter to our 11(c) investigative staff for appropriate action in order to make a determination in this regard.
A copy of the lead standard is enclosed. The appendices contain a very readable summary of the standard which should be helpful for employees. If Mr. X has any questions on the lead standard or other OSHA activity, he should feel free to contact the OSHA Area Office nearest him:

Area Director
U.S. Department of Labor - OSHA
4300 Goodfellow Blvd.
Building 105E
St. Louis, Missouri 63120
Telephone: (314) 263-2749
An interpretation letter regarding organic lead soap containing lead naphthenate, it is regulated under the lead standard. An "organic lead soap" referred to in 29 CFR 1910.1025 (b) is the lead salt of an organic acid, the latter usually being a fatty acid. Lead naphthenate would be a lead soap and, therefore, would be a substance regulated by 29 CFR 1910.1025.

This is in response to your letter of December 6, 1984, requesting the definition of "organic lead soap," a term used in the standard for occupational exposure to lead, 29 CFR 1910.1025.

An "organic lead soap" is the lead salt of an organic acid, the latter usually being a fatty acid. Lead naphthenate would be an organic lead soap and, therefore, would be a substance regulated by 29 CFR 1910.1025.
An interpretation letter clarifying employment options for employees that fall under the medical removal protection benefits of the lead standard (1910.1025(k)). A response is given to questions regarding the OSHA Lead Standard, 29 CFR 1910.1025. After medical removal protection (MRP), the employer is required to return the employee to his former job status. The employer may elect to keep the employee in his former job status. The employer may elect to keep the employee in a "low-level" exposure area during MRP until 18 months have expired. If the employee's blood lead rises after MRP, and the physician recommends medical removal, the employee must be given another 18 months of MRP.

The Assistant Secretary has asked us to respond to your letter of May 7, asking specific questions regarding the Occupational Safety and Health Administration (OSHA) lead standard (29 CFR 1910.1025).

Your questions relate to a situation in which an employee is removed from lead exposure because of a confirmed blood lead above 60 ug/100 g blood; and, if after 14 months, the employee's blood lead, on a confirmed specimen, is 35 ug/100 g blood. The following answers and sections of the lead standard apply to your questions:

Question 1:

Is the employer required to return him to his former job?

Answer:

Yes. The employer is required to return the employee to his former job status.

Section 29 CFR 1910.1025(k)(1)(iii)(A)(3) of the lead standard applies: "For an employee removed due to a blood lead level at or above 60 ug/100 g, or due to an average blood lead level at or above 50 ug/100 g, when two consecutive blood sampling tests indicate that the employee's blood lead level is at or below 40 ug/100 g of whole blood...."

Question 2:

May the employer elect to keep him in his current "low-level" exposure area until 18 months have expired?

Answer:

Yes.

Section 29 CFR 1910.1025(k)(2)(i) of the lead standard applies: "The employer shall provide to an employee up to eighteen (18) months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to this section."

Question 3:

If the employer keeps him in the low-level exposure area for 18 months and the doctor allows him to return to his regular job, and his blood lead rises, can the doctor then recommend removal without the employer being required to give the employee another 18 months of MRP?
Answer:

No, the doctor cannot recommend medical removal without the employer being required to give the employee another 18 months of medical removal protection. See section 29 CFR 1910.1025(k)(2)(l), quoted above. The employer must provide up to 18 months of medical removal protection on each occasion of removal.

Should you require additional information concerning the lead standard, you may wish to contact our Regional Office:

U.S. Department of Labor - OSHA
32nd Floor Rm. 3244
230 South Dearborn Street
Chicago, Illinois 60604
Telephone: 312-353-2220

SOURCE LETTER

MAY 7, 1985

I have some questions about the OSHA Lead Standard.

A worker is removed from lead exposure because of a confirmed blood lead above 60 ug/100 g blood. He is placed in a work assignment which has an air-lead exposure less than 30 ug/m3. After 14 months, his blood lead, on a confirmed specimen, is 35 ug/100 g blood. Is the employer required to return him to his former job? May the employer elect to keep him in his current "low-level" exposure area until 18 months have expired? If the employer keeps him in the low-level exposure area for 18 months and the doctor allows him to return to his regular job, and his blood lead rises, can the doctor then recommend removal without the employer being required to give the employee another 18 months of MRP?
An interpretation letter discussing criteria for final medical determinations under medical removal protection benefits of the lead standard, 1910.1025(k). A response is given to questions regarding the OSHA Lead Standard, 29 CFR 1910.1025. No final determination can be made that the worker is incapable of safely returning to the workplace until 18 months after a worker is removed from lead exposure. During that 18 months, the worker is entitled to full medical removal protection (MRP) benefits.

MAY 24, 1985

Your letter dated May 8, 1985, concerning questions regarding the lead standard has been referred to this office for reply.

Question:
If a worker develops a non-lead related medical condition for which a physician feels that exposure to lead is contra-indicated, can a final medical determination be made before 18 months and, if so, is the employee entitled to any MRP subsequent to the final medical determination?

Answer:
Under sections (j) and (k) of the lead standard, a final medical determination can be made to return the worker in question before 18 months, but no final determination can be made that the worker is "incapable of ever safely returning to his or her former job status" until 18 months after the worker's removal. During that 18 months, the worker is entitled to full MRP benefits.

Question:
If a worker has been on MRP for 18 months, and his blood lead has not declined to the acceptable level for return, but the physician feels that acceptable to do so, and permits him to return to his former exposures and subsequently the individual develops a medical condition or elevation of blood lead for which the physician feels that transfer to a lower exposure area is indicated, is MRP once again provided to the employee? Is there a particular minimum duration of time that the worker is entitled to receive MRP under such a transfer? Or, is the return and transfer subsequent to the individual receiving a period of MRP for 18 months based solely on the discretion of the physician's opinion and the final medical determination?

Answer:
If, after 18 months on removal, a physician determines that an employee with still elevated blood lead levels may return to his/her former job status and the physician later determines that removal once again is necessary, the employee is again entitled to full MRP benefits until the physician determines he/she is again able to return to work; or, until after 18 months of the second removal have passed, a final medical determination is made that the employee is "incapable of ever safely returning to his or her former job status."
SOURCE LETTER

MAY 8, 1985

I have a number of questions regarding the lead standard.

If a worker develops a non-lead related medical condition for which a physician feels that exposure to lead is contra-indicated, can a final medical determination be made before eighteen months and, if so, is the employee entitled to any MRP subsequent to the final medical determination?

If a worker has been on MRP for 18 months, and his blood lead has not declined to the acceptable level for return, but the physician feels that acceptable to do so, and permits him to return to his former exposures and subsequently the individual develops a medical condition or elevation of blood lead for which the physician feels that transfer to a lower exposure area is indicated, is MRP once again provided to the employee? Is there a particular minimum duration of time that the worker is entitled to receive MRP under such a transfer? Or, is the return and transfer subsequent to the individual receiving a period of MRP for 18 months based solely on the discretion of the physician's opinion and the final medical determination?
RECORD ID 1352

STANDBY NUMBER 1910.1025(d)(8)(i)
INFORMATION DATE 810622

ABSTRACT If an employer has compelling justification not to satisfy the requirements of (d)(8) he need not meet the 5 day employee notification required under the lead standard. An example of compelling justification (reasons) is discussed.

INTERPRETATION 29 CFR 1910.1025(d)(8)(i)
JUN 22, 1981

SUBJECT: Lead Standard--Employee Notification Requirements

This memorandum is to clarify enforcement procedures for employee notification requirements under the lead standard, 29 CFR 1910.1025(d)(8).

29 CFR 1910.1025(d)(8) reads as follows:

(8) Employee notification.

(i) Within 5 working days after the receipt of monitoring results, the employer shall notify each employee in writing of the results which represent that employee's exposure.

(ii) Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken or to be taken to reduce exposure to or below the permissible exposure limit.

There may be a few isolated circumstances where not meeting the 5 working day limit can be justified. For example, where exposure levels generally do not exceed 50 micrograms per cubic meter (μg/m3), and where there are several thousand employees represented by the exposure level, it may not be practical for employers to notify all subject employees by the 5 working day requirement. In such situations, alternative procedures may be acceptable as long as employees are notified in a reasonable period of time (e.g., employer notifies those employees monitored in the required 5 days, and notifies the rest of the employees represented by the exposure level on a quarterly basis).

Ordinarily, citations should be issued for violating the 5 working day notification requirement. However, do not cite where the employer has compelling justification and has kept the employees and employee representatives informed of the situation.

The Division of Occupational Health Programming (FTS 523-8031) is available to assist in answering any questions from Regional Offices as to whether an employer has compelling justification.

You are requested to provide each of the Area Offices and State Designees in your Region with a copy of this memorandum.
RECORD ID 1773

STANDARD NUMBER 1910.1025(e)(1)
INFORMATION DATE 861219

ABSTRACT An interpretation letter regarding industrial classification for lead oxide production under the lead standard. A company producing only lead oxide and not batteries would be classified in the "all other industries" category with regards to 1910.1025(e)(1) Table 1.

INTERPRETATION 29 CFR 1910.1025(e)(1)

DEC 19, 1986

This is in response to your letter of August 13, regarding your industrial classification under the Occupational Safety and Health Administration's lead standard, 29 CFR 1910.1025.

Since your company produces only lead oxide and does not produce batteries, your company would in fact be classified in the "all other industries" category with regards to 29 CFR 1910.1025(e)(1) Table 1.

SOURCE LETTER

AUG 13, 1986

This letter is a request for a written determination from the Occupational Safety and Health Administration as to the Industry Classification of (Company). as to 29 CFR 1910.1025(e)(1) Table 1. (Company) is a producer of Lead Oxide used in lead acid storage battery manufacturing. We operate plants in (City, State), (City, State) and (City, State).

We assumed that our company was in the Lead Acid Battery Manufacturing category, so we filed applications for the Cooperative Assessment Agreement for our plants. We have been informed by Mr. X in your (City C) Regional Office and Mr. X and Mr. X in the (City D) Office that (City, State) is classified in the "All other industries" category in the Lead Standard 29 CFR 1910.1025(e)(1), Table 1.

This classification is satisfactory with us, but we would like a written determination to prevent (City, State) from being reclassified at some later date.
An interpretation letter regarding Powered air-purifying helmets; they are personal protective equipment 1910.1025(f), not engineering controls as described under 1910.1025(e). The purpose of engineering controls is to reduce the amount of airborne substances in the surrounding area employee's work. Respiratory protection controls exposures at the employees breathing zone.

Your letter to Mr. X., of our (City, State), Area Office has been forwarded to OSHA's National Office for a response because an issue of nationwide significance is involved.

You request in your letter that OSHA regard powered, air-purifying helmets as a form of engineering control. We do not feel that the Agency can adopt this position.

Powered, air-purifying helmets are a form of protection worn by employees against hazardous airborne substances. Clearly, forms of protection that must be worn are personal protective equipment. In order for a device or method to qualify as an engineering control for an airborne substance, it must reduce the amount of the airborne substance in the surroundings in which individuals move about. For that matter, the ultimate objective of an engineering control is to improve the environment to the point that personal protective equipment need not be worn. Thus, powered, air-purifying helmets must be considered personal protective equipment, and not engineering controls.
RECORD ID 1984

STANDARD NUMBER 1910.1025(f)(3)(ii)
INFORMATION DATE 820729

ABSTRACT An interpretation on "semiannually" as used under the fit testing requirements of the lead standard. Under the lead standard quantitative or qualitative fit testing of respirators must be conducted twice over each 365 day period. These should be as close to every six months as practicable. The fit testing protocols will be in accordance with Appendix D.


JUL 29, 1982

Thank you for your letter of June 23, 1982, concerning interpretation of the phrase "semiannually" as used in the Occupational Safety and Health Administration's standard for employee exposure to lead.

Within the context of the requirement for quantitative fit testing under the Lead Standard, the phrase "semiannually" would require that two independent measurements be taken over each 365-day period. To assure that both of these requirements are being met, the testing should be conducted as close to every six months as practicable. OSHA would not cite for minor deviations if the intent of the requirements is being met, but two measurements taken back-to-back would be viewed as a single test. In contrast, some requirements under the lead standard are incurred at least every six months. In this case, the minimum tests required in 365-days would be two and could be more depending on when repeat measurements are performed. Repeat testing would have to be performed by the end of the next six-month interval, and no averaging of testing times to reach an overall goal of two times a year would be permissible.
A letter interpreting the review of acceptable housekeeping requirements under the lead standard 1910.1025(h). Use of the listed housekeeping practices surfaces free from accumulations of lead, no cleaning with compressed air, vacuuming of dust preferred over day: sweeping, shoveling or brushing, wet and dry methods can be used when vacuuming is shown to be ineffective constitutes compliance with the housekeeping requirements of the lead standard.

SEP 18, 1979

This is in reference to your application submitted on behalf of (Company) for a temporary variance from the housekeeping requirements (1910.1025(h)) of the Occupational Health Standards on Lead.

An evaluation of the application and conversations between you and my staff reveal that the applicant is presently using several interim housekeeping practices - vacuuming, water hosing, and tenant sweeping - until an effective in-house vacuuming system or other equally effective methods have been designed, installed and tested. You stated that vacuuming is performed by a contractor in areas where heavier lead dust accumulates, wet hosing is performed daily at the end of each shift in areas with light lead dust accumulation, and the tenant sweeper is used only in the loading and transportation area where there is no significant accumulation of lead dust.

You further stated that various housekeeping methods are used because engineering controls such as isolation of the processes and an improved ventilation system have achieved success in reducing lead dust accumulation. Furthermore, observation of the dust and knowledge of the processes enable the applicant to better understand which method is more effective for lead dust removal. Moreover, the environmental monitoring program will identify sources of employee lead exposure and areas where housekeeping practices should be focused. Thus, providing additional protection until the vacuuming system has been completely designed, installed, and tested.

We have determined that the above housekeeping practices, if followed by the applicant, will constitute compliance with the housekeeping requirements of the lead standard in Section 1910.1025(h). Therefore, a variance is unnecessary. The application was discussed with the (City) Area Director and he concurs with our decision in this matter.

However, we do advise that a fine mist be used first before performing water hosing to prevent dispersal of lead dust into the workplace.

Accordingly, no further action will be taken on the X Corporation application. Affected employees and their authorized representatives shall be notified of our decision in the same manner they were informed of the request for a variance.
RECORD ID 1354

STANDARD NUMBER 1910.1025(i)(3)(i)
INFORMATION DATE 811022

ABSTRACT An interpretation letter regarding the lead standard does not address pay for showering 1910.1025(i)(3). The lead standard does not address pay for showering because it was OSHA's expectation that employers would pay workers for the time needed to shower. The Fair Labor Standards Act may require employers provide time during their work shift to shower.

INTERPRETATION 29 CFR 1910.1025(i)(3)(i)

OCT 22, 1981

OSHA's (City) Regional Office requested us to respond to your inquiry of August 18, 1981, as to whether (Company's) policy of ten minutes of paid shower time is in agreement with OSHA's lead standard, 29 CFR 1910.1025. Please accept my apology for our delay in replying.

The basic intent of the provision dealing with showers (29 CFR 1910.1025(i)(3)(i)) is to assure that employees shower at the workplace after their exposure to lead ends for the day. The lead standard does not address the issue of whether and how much time workers should be paid for showering. The standard did not deal with this issue because it was OSHA's expectation that employers would pay workers for the time needed to take showers required by the standard.

The (company's) action of requiring employees to shower partly on their own time may, however, violate the Fair Labor Standards Act (FLSA). Further information concerning the FLSA is available at the following address and telephone number:

Office of Fair Labor Standards
Employment Standards Administration
Room S3502
Department of Labor
200 Constitution Ave., N.W.
Washington, D.C. 20210
Telephone: (202) 523-8353
RECORD ID 2005

INFORMATION DATE 830614

ABSTRACT An interpretation letter regarding employer's responsibility when an employee refuses blood lead testing. The employer's obligation under 1910.1025(j) is to provide medical tests and examinations as required, whether or not an employee cooperates without cost to employees and at a reasonable time and place. Substitution of other biological and lead determining tests for those required by the standard is not acceptable.

JUN 14, 1983

This is in response to your inquiry of April 26, 1983, regarding an employer's responsibility under OSHA's lead standard (29 CFR 1910.1025) in situations where an employee refuses to submit to blood lead testing. Please accept my apology for the delay in responding.

As you know, such blood lead testing must be provided in conformance with the biological and medical requirements of the lead standard, at 1910.1025(j). However, neither the lead standard, nor any other OSHA standard, makes participation in the medical surveillance program mandatory for the employee. The employer's obligation is to provide medical tests and examinations as required, whether or not an employee cooperates.

Substitution of other tests for those required by the standard is not acceptable in this case. Although your employee expresses an aversion to the blood tests and refuses to take them, a non-invasive test (such as urinary lead or hair lead) cannot be substituted for the blood lead and zinc protoporphyrin (ZPP) sampling and analyses specified at 1910.1025(j)(2)(i) and (j)(3)(ii)(D) and related provisions.

Since there is an element of risk involved, your concern about this problem is understandable. We would suggest that you use the opportunity afforded under 1910.1025(j)(3) for a medical consultation prior to conducting any medical procedures with such a worker. In an informal way, a physician, nurse, or other professional may be able to deal with the sensitivity of the issue and build up the employee's confidence that the medical program is designed to protect his or her health from the hazards of lead. Careful counseling may help to override the employee's fear to bring about the needed cooperation.

When an employer has fulfilled the obligation of providing medical testing, it is necessary to document any employee refusal to undergo it, while proceeding with any other medical procedures that are required by OSHA, with which the employee will cooperate.
RECORD ID 4108

INFORMATION DATE 901212

ABSTRACT An interpretation letter regarding the Lead Standard, i.e. medical tests concerning blood lead level tests, reference 29 CFR 1910.1025(j)(2)(i) as read with 1910.1025(k)(1)(i)(C) and (D). Paragraph (k)(1)(i)(C) requires medical removal when a periodic and a follow-up blood sample test indicate that the employee's blood lead level is at or above 60 ug/100g of whole blood. The follow-up test is intended to assure that no unnecessary removals occur. Paragraph (k)(1)(i)(D) requires medical removal when the average of the last three blood sampling tests indicate the employee's blood lead level is at or above 50 ug/100g of whole blood, unless the last blood sampling test indicates a blood lead level at or below 40 ug/100g of whole blood. No follow-up tests within two weeks are required under paragraph (k)(1)(i)(D).


DEC 12, 1990

SUBJECT: Interpretation of Lead Standard

This is in response to your memorandum of October 9, requesting an interpretation of 29 CFR 1910.1025(j)(2)(i) as read with 1910.1025(k)(1)(i)(C) and (D).

Paragraph (j)(2)(ii) states that whenever the results of a blood lead level test indicate that an employee's blood lead level exceeds the numerical criterion for medical removal under paragraph (k)(1)(i), the employer shall provide a second (follow-up) blood sampling test within two weeks after the employer receives the results of the first sampling test.

Paragraph (k)(1)(i)(C) requires medical removal when a periodic and a follow-up blood sample test indicate that the employee's blood lead level is at or above 60 ug/100g of whole blood.

Paragraph (k)(1)(i)(D) requires medical removal when the average of the last three blood sampling tests indicate the employee's blood lead level is at or above 50 ug/100g of whole blood, unless the last blood sampling test indicates a blood lead lead level at or below 40 ug/100g of whole blood.

It is the Agency's position, upon carefully reading the standard, that a follow-up blood lead level testing is required within two weeks of the receipt of the first blood sampling test which exceeds 60 ug/100 g of whole blood. The follow-up test is intended to assure that no unnecessary removals occur.

In response to your concerns, 29 CFR 1910.1025 paragraph (k)(1)(i)(C), which references the follow-up test, is therefore applicable. By contrast, paragraph (k)(1)(i)(D) does not reference the follow-up test and requires an average of three tests of 50 ug/100 g of whole blood for medical removal. The lead standard does not require under paragraph (k)(1)(i)(D) any follow-up tests within two weeks.

SOURCE LETTERS

OCT 9, 1990

SUBJECT: Request for interpretation of Lead Standard

Attached please find a memorandum and supporting documents from our (City A) Area Office in which they request an interpretation of the lead standard by the National Office in order to support a contested case involving (Company). At issue is the interpretation of 29 CFR 1910.1025(j)(2)(ii) as read with 1910.1025(k)(1)(i)(C) and (D). It is our position that these paragraphs require follow-up blood lead level testing within two weeks of receipt of the first blood sampling test which exceeds 50 ug/100g of whole blood.

Vol. 2-489
OCT 1, 1990

SUBJECT: (Company)--Interpretation of Lead Standard for Litigation

The attached memo references our dispute with (Company) in a case which is currently in contest. I believe that 29 CFR 1910.1025(k)(1)(C) and (D) both are applicable. The company chooses to refer only to (C) and thus argues that they are not in violation of (D). We believe that (Company) is now selectively reading the standard for their own purposes and, further, the fact that they are not even in compliance with (C) supports a violation as well as the classification as willful.

We also believe that both (C) and (D) are applicable due to the fact that the heading of each reads, "...and thereafter." In addition, the preamble to the standard FR page 54460, 11/28/78, clearly states that both sections are applicable.

However, the Solicitor's Office has again requested an interpretation from (the Regional Office) RO/(the National Office) NO. No doubt, they will want us to survey each RO (each (Area Office) AO?) to find out how they are interpreting and enforcing this standard. It is with great reluctance that we approach you for said interpretation since to not do so would provide them with an easy excuse to vacate. I have advised them that the standard and preamble are clear in this respect but they are insistent in further pursuit and information even before the complaint is filed.

Attachments:
OCT 1, 1990

SUBJECT: (Company) - Request For Assistance In Litigation

Enclosed is a copy of citations issued by our office to the subject company for apparent violations of the OSHA lead standard for, in part, failing to conduct subsequent blood lead tests within two weeks of the receipt of any test result which exceeded the applicable numerical criterion for medical removal, which is 50ug/100gm of whole blood.

As discussed between your staff and my staff I am requesting assistance on interpretation of Section 29CFR1910.1025(j)(2)(ii) of the lead standard, which deals with frequency of blood tests, as triggered by the numerical criteria referenced in Section 29CFR1910.1025(k)(1)(i). In a memo from Mr. X to me, a copy of which is enclosed, solicitor Mr. X relates the Respondent's argument that the two-week retesting is triggered by a result above 60ug/100gm whole blood, rather than 50ug, based on the reference in subparagraph .1025(k)(1)(i) to the term "follow-up blood sampling test", which term is absent from subparagraph .1025(k)(1)(i)(d).

Mr. K. considers the company's argument colorable and thus in order to resolve the conflicting interpretations all information on the Agency's position are needed from the Regional and National Offices.

AUG 31, 1990

SUBJECT: Litigation in (Company) OSHRC Docket No. 90 SOL #XXX-90-XXXX, Inspection No. XXXXXXX

This is to request your assistance regarding the interpretation of a provision of the lead standard and in obtaining an expert witness regarding the nature and feasibility of engineering controls regarding overexposure to lead in this case. This will also confirm Mr. X's discussion of August 28, 1990 with Mr. X of your staff regarding the grouping of recordkeeping violations contained in Willful Citation No. 4, Item 1 with those cited in Willful Citation No. 4, Item 2.

In Willful Item 4, Citation No. 4, Respondent is charged with a violation of 29 CFR 1910.1025(j)(2)(ii) as a result of conducting follow-up blood sampling tests more than two weeks after receipt of the first test indicating a blood lead level above 50 micrograms. The requirement to resample is triggered by the numerical criteria contained in the medical removal provisions of the lead standard. Respondent first argues that medical removal is required where 1) a periodic test and follow-up test show 60 micrograms or above or 2) where the average of three tests taken in a six month period exceeds 50 micrograms. See 1910.1025(k)(1)(i)(c) and (d) respectively. This contention appears to be supported by the language of
the regulation. Respondent then argues that it is a finding of 60 micrograms that triggers a follow up since it is subsection (c) and not (d) which specifically refers to a "follow-up blood sampling test."

Subsection (d), which uses a 50 microgram criteria, refers to an average of three tests over a six month period and not to a follow up blood sampling test.

Respondent appears to have a colorable argument regarding the use of 60 micrograms as the criteria for requiring a follow-up test. The conflicting interpretations of OSHA and the Respondent regarding the resampling requirement must be resolved. It is requested that you obtain all information regarding the agency's position on this issue from OSHA's Regional and National Offices. It is also requested that you determine if Respondent has ever been cited for violating the resampling provisions by refusing to re-test on the basis of a 50 micrograms sample. (This is to be distinguished from a violation based on a failure to test after a 60 microgram sample)

Item 3(a) of Willful Citation No. 4 concerns engineering and work practice controls to reduce employment exposure to lead. To successfully litigate this issue it will be necessary to obtain an expert witness regarding the nature and feasibility of engineering controls. Please identify possible expert witnesses within 45 days.

On August 28th, Mr. X discussed the recordkeeping citation with your staff. After reviewing the recordkeeping citations and noting that both deal with unrecorded occupational illness, it is recommended that citation item number 1 be withdrawn and be grouped as part of item two with each test in excess of 50 micrograms listed separately. A single citation identifying unrecorded occupational illnesses is consistent with the BLS guidelines' interpretation of an occupational illness as an abnormal condition.
ABSTRACT
An interpretation letter regarding medical protection removal requirements of the lead standard 1910.1025(k). It is not necessary for a previous employer to continue medical protection removal benefits (assuming that he has no medical problems) relative only to his elevated blood lead after he leaves employment voluntarily. A new employer may not place an employee in a location where he is exposed above the action level if his blood lead is above the return level as a result of exposure from previous employment.

INTERPRETATION
FEB 10, 1986

This is in response to your letter dated November 26, 1984, which you resubmitted May 6, 1985. Please accept my apology for the lengthy delay of this response. The overwhelming number of letters and telephone calls regarding the Hazard Communication Standard has caused unavoidable delays in responding to the public's concerns.

Your letter describes a lead exposure case history and submits two questions relating to it for interpretation relative to the legal requirements of the lead standard, 29 CFR 1910.1025. Briefly, the case history involved an employee who, while on medical removal protection because of a high blood lead reading, voluntarily leaves his job and applies for employment in another company where he will have exposure to lead to a degree which would require medical surveillance. His pre-employment examination at the new company shows his blood lead to be 45 ug/dl, the same as it was when he left his previous employer.

Question 1:
Is it necessary for his previous employer to continue benefits (assuming that he has no medical problems) relative only to his elevated blood lead after he leaves employment voluntarily.

Answer:
No.

Question 2:
May the new employer place him into lead exposure involving more than exposure to an air lead of 30 ug/m3 air since he never had, with that new employer, a blood lead which exceeded a level requiring removal?

Answer:
Paragraph (j)(3)(i)(B) of 29 CFR 1910.1025 a requires a pre-assignment medical examination for employees who will be exposed above the action level for more than 30 days per year. A proper examination includes a complete work and medical history (see 1910.1025(j)(3)(ii)(A). Accordingly, the attending physician should conclude that the employee was in the process of recovering from a removal-level blood lead. The ensuing physician review process should therefore lead to a conclusion preventing the employee from working at a location where exposure exceeds the action level until his blood lead falls below the return level (see 1910.1025(k)(1)(ii)(A).
I am writing with regard to the OSHA Lead Standard.

A person becomes employed in a job involving lead exposure. The blood lead at the time of the pre-employment examination is 15 ug/dl. The blood lead is rechecked after six months of employment and found to be 65 ug/dl and this value is confirmed at 64 ug/dl on a repeat specimen taken within two weeks. The individual is placed on MRP in an environment which has less than 30 ug lead per cubic meter of air. Blood leads are monitored monthly. After three months, the blood lead is 45 ug/dl. At that point the employee voluntarily leaves the company where he will have exposure to lead to a degree which would require medical surveillance. He is given a pre-employment examination. On that pre-employment examination his blood lead is found to be 45 ug/dl.

Based on the above, I have a number of questions which I would appreciate your answering.

1. Is it necessary for his previous employer to continue any benefits (assuming that he has no medical problems) relative only to his elevated blood lead after he leaves employment voluntarily?

2. May the new employer place him into lead exposure involving more than exposure to an air lead of 30 ug/m3 air since he never had, with that new employer, a blood lead which exceeded a level requiring removal?

I would appreciate your answers relative to legal requirements and not as may be influenced by good medical practice which I consider to be a truly necessary but -- for the purposes here -- not relevant, since I am only interested in what the legal requirements may be under the OSHA Lead Standard.
INTERPRETATION 29 CFR 1910.1025(k)(2)(vii); 1910.1025(k)(1)(iii); 1910.1025(k)(2)(i)

DEC 23, 1986

This is in response to your inquiry of May 1, regarding the medical removal protection (MRP) provisions of the Occupational Safety and Health Administration's (OSHA) lead standard, 29 CFR 1910.1025(k). We apologize for the delay in responding to your letter.

In the situation you describe in your letter an employer voluntarily removed an employee from exposure to airborne concentration of lead above the action level pursuant to 29 CFR 1910.1025(k)(2), throughout the eighteen month period.

In response to your specific question:

1. At the expiration of the 18 month voluntary MRP period the employer is still required to provide to the employee a medical examination in accordance with 29 CFR

2. Voluntary removal clearly may be continued beyond 18 months along with MRP benefits.

3. Assuming that the same medical conditions were present good medical practices would again dictate removal.

4. Each new occurrence constituting removal either pursuant to the standards provisions for voluntary removal or temporary removal cause the process to cycle.

5. Such limitations are construed as partial voluntary removals. The lead standard does not speak to such issues, accordingly employee rights to overtime and benefits do not fall within OSHA purview.

6. This depends on the sequence of events. Once circumstances constitute a removal either temporary or voluntary than such action would be improper. In other words a retrospective decision to administratively reduce exposure short circuits the standards MRP provisions. An employer upon hiring or unilaterally may choose to administratively control exposures as long as these actions do not interfere or impede MRP removals that are underway or pending.

The above answers are regretfully as complex as your questions. Many variables are possible that would effect our answers on similar issues. Exposure levels and changes in workplace condition are among the dependent variable.
This letter seeks an informal written interpretation from the Occupational Safety and Health Administration with respect to the medical removal protection provision set forth in the occupational health standard for lead, promulgated at 29 C.F.R. 1910.1025(k).

Specifically, the undersigned seeks a response concerning the rights of an employer to voluntarily remove an employee pursuant to 29 C.F.R. 1910.1025(k)(2)(vii) based on the following sets of facts.

An employer has voluntarily removed an employee from exposure to lead in accordance with 29 C.F.R. 1910.1025(k)(2)(vii). The employee has been placed in an area having an exposure to lead below the action level for a period of eighteen (18) months. During the 18-month time period, the employee has provided medical removal protection benefits in accordance with 29 C.F.R. 1910.1025(k)(2)(i). At all relevant times, the employee’s blood lead level has remained between the removal and return trigger levels. Based on these facts, we hereby request a response to the following questions:

(1) At the expiration of the 18-month time period of voluntary removal is the employer required to make available to the employee a medical examination in accordance with 29 C.F.R. 1910.1025(k)(2)(vi) in order to obtain a final medical determination?

(2) Assuming a final medical determination has been rendered which concludes that the employee may return to his former job status may the employer, pursuant to 29 C.F.R. 1910.1025(k)(2)(vii), nevertheless maintain the employee on voluntary removal?

(3) Assuming a final medical determination has been rendered which concludes that the employee may return to his former job status, if the employee’s blood lead level increases may the employer again place the employee back on voluntary removal or are future questions concerning his removal to be determined by a licensed physician conducting another final medical determination. In responding to this question, please note that the employee was initially placed on voluntary removal and he was not placed on temporary removal due to an elevated blood lead level above the removal trigger level.

(4) If your response to question (3) above is that future decisions are to be decided by another final medical determination, would your response differ if the employee’s blood lead level increased to a level that would require removal pursuant to 29 C.F.R. 1910.1025(k)(1)(i)(D)? Please again note that the employee was initially placed on voluntary removal.

(5) Assuming that a final medical determination had been rendered which concludes that the employee may return to his former job status and the determination does not contain any measures to protect the worker's health, may the employer nevertheless adopt restriction to protect the worker's health such as restricting overtime, requiring full-time usage of respirators, or rotating the employee from work areas above and below the action level? Would any or all of the restrictions listed herein require the payment of medical removal protection benefits in accordance with 29 C.F.R. 1910.1025(k)(2)(i)?

(6) With respect to the employer’s work force in general, may the employer adopt any of the restrictions listed in question (5) above in order to reduce and maintain low blood lead levels? If the employer adopts any or all of the restrictions, must he provide medical removal protection benefits in accordance with 29 C.F.R. 1910.1025(k)(2)(i) to affected employees within the work force?

While I recognize that the above issues may be complex, I would appreciate greatly if you could respond promptly to this letter so that I can in turn advise several clients who are presently confronting the problems described herein. Please contact me if I can provide any additional information to help clarify the questions raised in this letter.
An interpretation regarding elements of the training program covered under 1910.1025(l). The information in Appendices A and B, as well as Appendixes C and D of the Lead Standard, must be included in employee training per 1910.1025(l)(1)(v)(A).

DEC 12, 1979

The Assistant Secretary has asked me to respond to your letter dated November 26, 1979, requesting a temporary variance from Section 1910.1025(l)(i)(iii) Lead - Training Program, of the Occupational Safety and Health Standards.

We did advise you by letter dated September 12, 1979, of the importance of implementing the requirements of Section 1910.1025(l) not pertaining to Appendices A & B. Your only obligation concerning Appendices A & B as required by Section 1910.1025(l)(1)(i) is to inform your employees of their content. Section (q) of the regulation states that the Appendices are intended to provide information and are not intended to create any additional obligation not otherwise imposed.

It would appear from the statements made in your application concerning your employees' initial briefing describing safety and health, rules, need for medical examinations, the use of personal protective equipment and your continuing on the job training could be readily modified to discuss the Appendices to meet the requirements of Section 1910.1025(l)(1)(i). We would recommend that you complete this initial training as rapidly as possible to make your employees aware of the hazards associated with lead. You will meet the requirements of Section 1910.1025(l)(1)(v)(A) for those employees who have already received the initial training by providing them with a copy of Appendices A & B as published in the Federal Register dated October 23, 1979.

However, as stated above, it is critical that you indoctrinate your employees to the hazards of lead immediately as required by Section 1910.1025(l)(1)(v). Your very extensive or comprehensive training program when completed could be substituted and serve as the program at that time.

Based on the information in your application, a temporary variance does not appear to be necessary. Therefore, no further action will be taken on your application.

Employees and their authorized representatives shall be informed of this clarification in the same manner they were informed of your application for variance.
OSHA Instruction STP 2-1.108

APRIL 11, 1983
Office of State Programs

SUBJECT: Occupational Exposure to Lead: Respirator Fit Testing

A. PURPOSE. This instruction describes a Federal program change to the Regions and State designees.

B. SCOPE. This instruction applies OSHA-wide.

C. REFERENCES.
1. OSHA Instruction STP 2-1.94, February 14, 1979.
2. OSHA Instruction STP 2-1.102, May 17, 1982.

D. FEDERAL PROGRAM CHANGE. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:
1. Ensure that this instruction is forwarded to each State designee.
2. Provide a copy of the amendment to the standard to the State designee upon request.
4. Ensure that each State designee acknowledges receipt of this change in writing, within 30 days of notification, to the Regional Administrator. The acknowledgment should include (a) the State's plan to adopt and implement the change, (b) the State's plan to develop an alternative change which is as effective, or (c) the reasons why no change is necessary to maintain a program which is as effective.
5. Inform each State designee that the State must amend the State's standard to ensure that it remains at least as effective as the amended 29 CFR 1910.1025(f)(3)(ii) and submit a plan supplement within 6 months of the date of Federal publication.
6. Ensure that the State's progress in adoption and implementation of the standard is monitored and evaluated in accordance with OSHA policy and procedure.

E. BACKGROUND.
2. Federal Register notice, dated November 12, 1982 amends 29 CFR 1910.1025(f)(3)(ii) of the lead standard which allows employers to choose between quantitative fit testing or one of three qualitative fit test protocols - isoamyl acetate, saccharin solution aerosol, or irritant fume - to select appropriate and effective negative pressure half-mask respirators for lead-exposed employees.
3. Under 29 CFR 1953.23(a)(2), States are provided up to 6 months from publication in the Federal Register for adoption of standards and amendments as effective as these standards and amendments, but until State adoption is effected, Federal OSHA will assume enforcement responsibility in all States.
OSHA Instruction STP 2-1.169

December 1, 1992
Office of State Programs

SUBJECT: Occupational Exposure to Cadmium; Final Rule

A. PURPOSE. This instruction describes a Federal Program Change to the Regions and State designees.

B. SCOPE. This instruction applies OSHA-wide.

C. REFERENCE. OSHA Instruction STP 2-1.117, August 31, 1984, State Standards.

D. FEDERAL PROGRAM CHANGE. This instruction describes a Federal Program Change which affects State programs. Each Regional Administrator shall:

1. Ensure that this amended instruction is forwarded to each State designee.

2. Provide a copy of the FEDERAL REGISTER notice to the State designee upon request.

3. Explain the technical content of the FEDERAL REGISTER Notice at 57 FR 42102, September 14, 1992, Occupational Exposure to Cadmium; Final Rule, to the State designees upon request.

4. Inform each State designee that under 29 CFR 1953.23(a) and (b), the State must, within six months of the date of the FEDERAL REGISTER publication listed in item 3 above, amend its final rule or adopt the final rule to ensure that the State standard is at least as effective as the Final Rule for Occupational Exposure to Cadmium; Final Rule 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926.

The State must submit a plan supplement to the Regional Administrator within 30 days of State promulgation.

5. Ensure that each State designee acknowledges receipt of this instruction in writing, within 30 days of notification, to the Regional Administrator. The acknowledgment should include (a) the State's plan to adopt and implement the standard change, (b) the State's plan to develop an alternative change, which is as effective, or (c) the reasons why no change is necessary to maintain a program which is as effective as the Federal program.

E. DIFFERENT STATE STANDARDS. Section 18(c)(2) of the Act requires that State standards be "at least as effective" as the Federal and, when applicable to products used or distributed in interstate commerce, the standards must be required by compelling local conditions and not unduly burden interstate commerce. In addition to the "at least as effective" criterion, this "product clause test" will be applied to State standards with substantively different requirements from the comparable Federal standard, as described in STP 2-1.117. A State standard expanded in scope from the Federal is considered to be a substantively different standard.

F. INTERIM ENFORCEMENT. Under 29 CFR 1953.23(a) and (b), State plan States are provided up to six months from publication of the Federal standard in the FEDERAL REGISTER to promulgate an identical or "at least as effective" as standard. If a State, for whatever reason, is unable to promulgate a standard in a timely manner (six months for a permanent standard, 30 days for an emergency temporary standard) the State shall be expected to provide assurance that it will enforce the substantive provisions of the new or revised Federal standard through such means as temporary adoption of an identical standard, or an alternative, specified enforcement mechanism.

G. EFFECTIVE DATES. The final rule for general industry becomes effective on December 14, 1992; handwashing facilities to be provided within 60 days for both large and small businesses; initial
exposure monitoring to be provided within 60 days after effective date (120 for small businesses); employee information and training and medical surveillance to be provided within 90 days after effective date (180 for small businesses); respiratory protection and regulated areas to be provided within 90 days after effective date (150 days for small businesses); written compliance programs, change rooms, showers and lunch room facilities to be completed within one year after effective date (the same for small businesses); and engineering controls to be installed within two years after effective date (same for small businesses); and work practice controls to be implemented as soon as possible after engineering controls. The initial effective date for an identical or different State standard may be no later than the date of State promulgation or the Federal effective date, whichever is later. The delayed effective dates for specific provisions of an identical or different State standard may be no later than the date of State promulgation or the Federal delayed effective date, whichever is later.

I. EXPLANATION.

1. On September 14, 1992, OSHA issued a new standard regulating occupational exposure to cadmium, 29 CFR 1910 and 29 CFR 1915, applicable to general industry and agriculture and maritime. A separate standard regulating exposure to cadmium in the construction industry was also developed, because the differences in job duration, exposure and worksite conditions warrant unique treatment. OSHA is publishing the construction standard at 29 CFR 1926.63.

2. The basis for this action is a determination by the Assistant Secretary that employees exposed to cadmium face a significant risk to their health from lung cancer, prostate cancer, and serious kidney damage at the current permissible exposure limits and that promulgating this standard will substantially reduce that risk. The information gathered during the rulemaking demonstrates that employees chronically exposed to levels of cadmium well below existing permissible exposure limits are at increased risk of developing kidney dysfunction and cancer.

3. The new standard establishes a single 8-hour time weighted average exposure limit (TWA PEL) of 5 micrograms of cadmium per cubic meter (ug/m³) of air for all cadmium compounds, including dust and fumes. Employers are required to comply with this limit primarily by means of engineering and work practice controls. Also, the standard establishes a single 8-hour action limit of 2.5 ug/m³. Employers are required to implement medical surveillance for employees exposed above the AL as required by this standard.

4. For a smaller number of industries/processes, OSHA has also established a separate engineering control air limit (SECAL) of either 15ug/m³ or 50ug/m³ (see Table 1 of Regulatory Text) as the lowest feasible level above the PEL that can be achieved by engineering and work practice controls. Like the PEL for other industries, the SECAL, where applicable, must be achieved by engineering and work practice controls except to the extent that the employer can demonstrate that such controls are not feasible.

5. Under 29 CFR 1953.23(a) and (b), State Plan States are provided up to six months from the publication in the FEDERAL REGISTER for adoption of parallel State standards and amendments. States should promulgate their equivalent of this standard by March 14, 1993.
For the sake of clarity, I will enumerate and respond to your questions in the order you raised them:

Question 1:
Are bulk gasoline storage facilities storing fuel prior to distribution to fuel end-users, commercial and farm accounts exempted from compliance with the standard?

Answer:

No. The standard covers all bulk storage facilities, including all bulk plants and all bulk terminals unless they have met the vapor recovery exemption. As discussed in the standard's preamble, OSHA clearly exempts the retail gasoline sector. Bulk storage facilities storing fuel prior to distribution to end-user/commercial and farm accounts are not exempted from compliance with the Benzene Standard. The standard states that "the storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge form bulk wholesale storage facilities" are exempted from the Benzene Standard. Since bulk plants and bulk terminals that purchase form other bulk storage facilities are storing fuels prior to its final discharge form bulk storage facilities, they are not exempt form the Benzene Standard.

Exemptions from the standard are based on whether exposures are likely to be consistently under the action level. Exemptions are based on the use of vapor recovery systems, not on the source of the bulk wholesale storage facilities' fuel.

Question 2:

What type of respirator(s) must a gasoline bulk storage facility covered by the standard use in the event of an emergency?

Answer:

Employers are responsible for protecting employees against recognized hazards. Employers are responsible for protecting employees against the type(s) of hazards that might be reasonably expected to be encountered at the workplace, not just from the hazard associated with excessive exposure to benzene. If, in the worksites in question, employees are responsible for responding to emergency situations, or working in a situation where the employer has specific knowledge through on-site exposure monitoring results that exposures are or may reach "high" or "unknown" levels, then the employer has the responsibility to supply his or her employees with the proper respiratory protection, including self-contained breathing apparatus, as appropriate. If, in an emergency situation at a gasoline bulk storage facility covered by the standard, the normal response of the employees is to...
leave the area and call in firefighters or other emergency response personnel, then there is no need to have SCBAs on hand for the employees that normally work at that location, since it is not anticipated that they will be subjected to the emergency exposures. However, if it is required of an employee to work in recognized hazardous situations such as confined space entry or situations where high concentrations of benzene or other asphyxiants are likely to be encountered (including excessive concentrations of gasoline vapors in air), then the employee must of course be provided with proper respiratory protection.

The Benzene Standard, 29 CFR 1910.1028 is specific regarding occupational exposures. The employer is still responsible for providing protection against other emergencies that may arise from other situations, including, as mentioned as an example above, excessive concentrations of gasoline vapor in air. OSHA cannot specify the exact requirements for all emergency situations. Responsibility for providing adequate protection to employees rests solely with the employer, based on his or her specific worksite situations.
This response provides an interpretation regarding medical surveillance requirements under the benzene standard. If the employer offers a medical examination and the employee refuses, the employer has no additional obligation. Having the employee sign a release is a good way to document the refusal. An employer is responsible for providing medical surveillance based on the employee's exposure with that employer, not based on possible exposures with other employers. Ongoing medical surveillance must be made available for employees who were exposed to over 10 ppm for more than 30 days in any year.

This is in further response to your letter of November 24, 1987, regarding the medical surveillance provisions of the benzene standard, 29 CFR 1910.1028(i). We believe some additional clarification may be needed to our response of February 8.

Regarding the employers' responsibility when an employee refuses to take a medical examination, as mentioned in our earlier letter, your interpretation is essentially correct. The employee is not required to take the medical examination. If the employer fairly and in good faith offers the examination to the employee and the employee refuses, the employer has no additional obligation under the standard. As you mention, having the employee sign a release affirming that he or she had been offered the benefits and refused to participate is a good way to document the refusal.

Your second question dealt with whether employers must include new employees in a medical surveillance program because of possible benzene exposure with prior employers. The response given in our February 8 letter is accurate. An employer is responsible for providing medical surveillance to its employees based on the the employees' exposures with that employer, not based on possible exposures with other employers.

Your third question was on employers' responsibilities to provide ongoing medical surveillance for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer. Our earlier response is not completely clear on this point.

The purpose of this provision is to provide medical surveillance for those employees who were exposed to higher exposures in the past and would most benefit by it. Accordingly, employees who were exposed to over 10 ppm for more than 30 days in any year while employed by the employees' current employer are covered by the requirement for yearly medical surveillance. This interpretation is consistent with use of the term "a year" prior to effective date of the standard rather than the term "the year."
The interpretation letter discussing the benzene standard and how it does not include a provision for the reduction of the PEL for extended work shifts. Sampling strategies should be modified when extended work shifts are present.

This responds to your letter dated February 4, to Acting Regional Administrator in (City A), requesting clarification of OSHA policy relative to the adjustment of the permissible exposure limit (PEL) for benzene for extended work shifts. Your letter was forwarded to my office for response.

The current standard for benzene, reference 29 CFR 1910.1028 does not include a provision for the reduction of the PEL for extended work shifts. Sampling strategy, however, should be appropriately modified to adequately evaluate employee exposure when extended work shifts are present. The 8 hour period expected to produce the worst or highest concentration of benzene must be identified and sampled. Employee exposure to benzene should be evaluated against the 8-hour time weighted average and the short term exposure limit.
ABSTRACT  This interpretation provides a clarification of OSHA's intent under the scope and application section of the benzene standard and responds to questions about additional monitoring, written compliance, and medical surveillance. The intent of the standard is to exempt the retail gasoline sector. The scope and application section (a) is not clear regarding its coverage/exemption intentions. Included is a request that, when rulemaking of the benzene standard is re-opened, a proposal be published to clarify section (a) in order to make the Agency's intent for coverage clear.

INTERPRETATION  29 CFR 1910.1028(a)(2)(i); (a)(2)(v); (e)(5)(i); (e)(5)(ii); (e)(7)(i); (f)(1)(i); (f)(2)(i); (f)(2)(i); (f)(1)(i); (f)(2)(i); (f)(2)(i); 1910.1028(i)(1)(i); (k)(2)(iii)

AUG 16, 1988

This is in response to your letter to me of February 26, which was recently re-submitted to the Office of Health Compliance Assistance for response, requesting interpretation of several provisions of the Occupational Safety and Health Administration (OSHA) final standard for occupational exposure to benzene.

For the sake of clarity, I will enumerate and respond to your questions in the order you raised them:

SCOPE OF COVERAGE

Question 1:

In paragraphs (a)(2)(i) through (a)(2)(vii), OSHA identifies exemptions to the Standard. Can OSHA identify whether the exemptions are operation-dependent, or employee-dependent? In other words, must an employer in a non-exempt operation monitor employee exposures, whether or not the employee is executing a job task identical to one in an exempt operation?

Answer:

Exemptions to the benzene standard are based on whether benzene is present in the workplace and exposures are expected to be or are likely to be consistently under the action level. Exemptions are therefore neither "operation-dependent" nor "employee-dependent," but are dependent on benzene exposure levels. An employer executing an operation that is covered by the benzene standard must initially monitor his or her employees' exposure to determine whether or not those employees are experiencing exposures at or above the action level. However, for non-exempt work operations where the only exposure to benzene is from liquid mixtures containing less than the amounts of benzene specified at 1910.1028 (a)(v), the provisions of the benzene standard do not apply.

Question 2:

Is it correct to assume that employees loading and unloading marine vessels whose cargo contains 0.1% or more benzene are covered by the OSHA benzene standard if they are shore-based personnel, while ship-based personnel are covered by the U.S. Coast Guard?

Answer:

Yes.
ADDITIONAL MONITORING

Question 3:

In paragraph (e)(5)(i), OSHA states that additional monitoring must be performed "when there has been a change in the production, process, control equipment, personnel or work practices". There has been some question as to the precise meaning of the term "personnel" in this case. Is it correct to assume that OSHA intended this term to refer to a change of a job task, rather than an individual?

Answer:

The language at 1910.1028 (e)(5)(i) is consistent with the wording of the additional monitoring requirements found in, for example, OSHA's lead, arsenic and acrylonitrile standards. As explained in the benzene standard preamble, additional monitoring is required when a change has occurred in the workplace that would make the employer suspect that new or additional exposures are occurring to his or her employees. The use of the word "personnel" does refer to an individual worker when the employer may suspect that that individual's work practices or ways of performing his assigned duties would lead to or are creating new or additional exposures. The employer is also responsible for conducting initial monitoring for any newly-assigned employee to that work operation, as required under (e)(2), in situations where the employer suspects that new or additional exposures are occurring to his employees at that workplace or work operation. The redetermination procedure is necessary to ensure that the most recent monitoring results accurately reflect the existing exposure conditions. This data enables the employer to take appropriate actions to help lower the new employee's exposures, such as changing his work practices or providing appropriate respiratory protection.

Employees also have the right, under the standard at 1910.1028(e)(7), to be informed of their monitoring results. Therefore, any employee who was assigned to a new job task, and who through this "personnel change" would be working in a new or different level of benzene exposure, has the right to be informed of the new or different exposure levels they would be experiencing.

However, as also pointed out in the preamble: "Except for initial monitoring requirements, where an employer can document which shift at a location has the highest exposure, the employer needs to monitor only representative employees on the shift with the highest exposures." Representative air sample monitoring does not require that each individual employee's exposure level be measured. The employer has the responsibility of showing that his measurements are truly representative of each employee's exposure to benzene. Again, where the employer suspects that new or additional exposures are occurring due to a personnel change, it is the responsibility of that employer to monitor the resultant new exposures to ensure that none of his employees is being exposed to higher benzene levels.

METHODS OF COMPLIANCE

Question 4:

There is some question about the requirement in paragraph (f)(2)(i) for the employer to develop a written compliance program for engineering and work practice controls in those cases where there are no available engineering or work practice controls to reduce exposures. Would it be correct to assume that the employer must document why engineering controls and work practices will not reduce exposure, and that such documentation would be sufficient to meet this provision of the standard?
Answer:

Yes. The requirement to establish and implement a written compliance program for the utilization of engineering and work practice controls to reduce employee exposure to benzene is considered, as noted in the preamble to the standard, to be "standard industrial hygiene practice." These plans are to be "revised as appropriate," since engineering and/or work practice controls that may not exist or be feasible at the time that the written compliance program is developed, may subsequently be devised. In addition, paragraph (f)(1)(ii) requires that "wherever the feasible engineering and work practice controls that can be instituted are not sufficient to reduce employee exposure to or below the PELs, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls." The employer would therefore have to document why no types of controls are feasible to reduce employee exposures at his workplace. The documentation should include an explanation of why the utilization of even some types of engineering and/or work practice controls would not help reduce employee exposure to benzene even partially, which implies that the employee(s) would need to be protected from the balance of the exposure through the use of personal respiratory equipment.

MEDICAL SURVEILLANCE

Question 5: .

There is nothing in the standard to provide guidance as to when an employer may terminate medical surveillance. In a letter of interpretation issued by Mr. X on December 31, 1986, responding to a similar inquiry regarding medical surveillance under the Asbestos Standard, he states the following:

"Where exposure is discontinued a periodic exam must be performed approximately 1 year after the last exposure above the action level, and these employees must be provided with a termination exam when employment ends."

Would the same criteria apply for discontinuing medical exams under the Benzene Standard?

Answer:

It is true that the benzene standard does not specifically require medical examinations upon the termination of employment or termination of exposure. However, it may be in the best interest of the employer and his company's recordkeeping efforts, to provide a medical exam upon termination of employment or termination of exposure, especially if the previously exposed employee had displayed abnormal blood counts. Exams are required if the employee is exposed to benzene at or above the action level 30 or more days per year or at or above the PEL 10 or more days per year, and for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer. For this last category of employees, the medical surveillance exam requirements would continue as long as that previously exposed employee was employed by that same employer. With regard to employees in the other two categories of medical surveillance coverage, those exposed to benzene at or above the action level for 30 or more days per year or those exposed above the PELs for 10 or more days per year, the employer should take into consideration that it may be difficult for him to predict over a year of work tasks what exact levels of benzene exposure that person will experience; i.e., whether or not, especially for borderline cases, that employee will be above the exposure limits which would trigger a medical exam. In other words, the employer may not know ahead of time whether or not an individual employee will experience these levels of exposure until after the year will have passed. It would therefore be prudent for an employer to provide a medical surveillance examination to all employees who may be exposed to these levels of benzene.
AUG 16, 1988

SUBJECT: Benzene Standard

As explained in letters of interpretation that have been written subsequent to the standard's effective date of December 10, 1987, exemptions to the standard are based on whether exposure to benzene are likely to be above the action level, and on the use of vapor recovery systems. The intent of the standard (as per discussion in the preamble) is to exempt the retail gasoline sector, specifically, exposures caused from gasoline pumping. We believe that the scope and application section (a) of the standard, as written, is not clear as to its coverage/exemption intentions. We are therefore requesting that when rulemaking on the benzene standard is re-opened in order to discuss the applicability of certain portions of the rule to barge and tanker cleaning and repair, that a proposal be published to clarify section (a), scope and application of the standard in order to make the Agency's intent for coverage clear.

Several inquiries have been received for the Directorate of Compliance Programs to accomplish this clarification through the issuance of a compliance program directive. However, we believe that notice and comment rulemaking is the proper avenue to take in affecting this much needed clarification.
This interpretation letter addresses respirator selection and quantitative fit testing. The levels stated in the left column of Table I 1910.1028(g) represent airborne concentrations of benzene for which the specific respirator type(s) stated in the right-hand column are meant to provide protection. The use of a half-mask respirator complies with respirator selection requirements where STEL exposures to benzene are 50 ppm and below, and the worker's overall TWA exposure does not exceed 10 ppm. A memorandum was sent to all OSHA Regional Administrators to clarify compliance policy on the use of the Particulate device for quantitative fit testing.

This is in response to your letter of September 29, 1988, requesting clarification on several issues relating to compliance with the Occupational Safety and Health Administration's (OSHA) final rule on occupational exposure to benzene. Please accept my apology for the delay in response.

I will respond to your questions in the order in which they were raised:

Question 1:

Table 1- Respiratory Protection for Benzene (52 FR 34564) does not indicate whether the airborne concentrations listed in the left column are time-weighted-averages (TWAs) or instantaneous exposure levels. Are the levels indicated in Table 1 TWAs?

Answer:

Yes. The levels stated in the left column of Table I of 29 CFR 1910.1028(g) represent airborne concentrations of benzene for which the specific respirator type(s) stated in the right-hand column are meant to provide protection. The levels in Table I were arrived at by multiplying the permissible exposure limit (PEL) by the protection factor assigned a specific type of respirator (half-mask, negative pressure respirators are usually assigned a protection factor of ten; ten times the PEL of one ppm in ten ppm; etc.). This is consistent with the values found in the respirator tables of other previously-promulgated OSHA standards such as OSHA's lead standard, which allows the use of, as an example, half-mask negative-pressure respirators for concentrations of lead up to "ten times the PEL." Ten ppm benzene is ten times the PEL of one ppm benzene (ten times the 8-hour, time-weighted average permissible exposure limit of one ppm).

Question 2:

Table 1 referred to in question 1 above does not address respiratory protection for short term exposure levels (STELs). Consequently, according to Table 1 the use of half-mask respirators against STELs exceeding 10 ppm is prohibited. Typically, a half-mask respirator is assigned a protection factor of 10 and considered protective against STELs less than or equal to 50 ppm. Is it correct to assume that OSHA will permit the use of half-mask respirators for STELs less than or equal to 50 ppm?

Answer:

OSHA standards promulgated prior to the final benzene standard do rely on the assignment or a protection factor of ten (10) when permitting the use of half-mask, negative pressure respiratory protection for exposures up to ten times the PEL. OSHA allows the use of a half-mask, negative pressure respirator with air-purifying cartridges when airborne concentrations of benzene are 10 ppm or less, which is ten times the PEL of 1 ppm, measured as an 8-hour time-weighted average exposure. OSHA refers to the STEL as a "PEL" (see 1910.1028(c). Ten times the STEL of 5 ppm is
50 ppm. Assuming the respirator provides a protection factor of ten, the use of this respirator in concentrations up to 50 ppm would reduce the in-mask concentration to 5 ppm, the STEL, which is not to be exceeded for more than 15 minutes. The use of a half-mask respirator would therefore comply with the respirator selection requirements where STEL exposures to benzene are 50 ppm and below, and as long as the worker's overall time-weighted average exposure during the 8-hour shift does not exceed 10 ppm.
ABSTRACT

Providing employees with personal respiratory protection devices does not relieve the company of the requirement to monitor its employees' exposures to airborne benzene. This requirement applies even though the company has assumed the worst conditions of benzene exposure and provides the most highly protective respirators required. 29 CFR 1910.1028(e)(4) specifies that monitoring cannot be terminated until employee exposures are maintained consistently below the benzene action level of 0.5 parts per million (ppm) as demonstrated (1) by initial monitoring or (2) by periodic monitoring of at least two consecutive measurements taken 7 days apart.

INTERPRETATION

29 CFR 1910.1028(b); (e)(4)(i); (e)(7)(i); (g)(1)(ii); (i)(6)(iii); (j)(1)(i)

NOV 13, 1989

This is in response to your letter to the (City) Area Office of the Occupational Safety and Health Administration (OSHA) concerning monitoring employee exposures to airborne benzene.

Your company's practice of providing its employees with personal respiratory protection devices does not relieve it of the requirement to monitor its employees' exposures to airborne benzene. This is so even though your company has assumed the worst conditions of benzene exposure and provides the most highly protective respirators required.

The conditions for terminating the monitoring of employee exposures to 8-hour, time-weighted average (TWA) concentrations of benzene are provided in the benzene standard at 29 CFR 1910.1028(e)(4). In short, 29 CFR 1910.1028(e)(4) relates that this monitoring cannot be terminated until employee exposures are maintained consistently below an 8-hour TWA benzene concentration of 0.5 parts per million (ppm).

The standard does not provide specific conditions for terminating the monitoring of employee exposures to 15-minute TWA concentrations of benzene. Our compliance policy is to accept termination of this monitoring when the results of the monitoring demonstrate that employee exposures do not exceed the short term exposure limit (STEL) of 5 ppm.

You should be aware that employee exposure is defined at 29 CFR 1910.1028(b) as "exposure to airborne benzene which would occur if the employee were not using respiratory protective equipment." OSHA was aware of outside exposure situations when it issued the standard. The agency concludes that employers can do a good evaluation of outside employee exposures by notation of environmental conditions and other factors that influence each exposure result.

Moreover, the benzene standard requires employers to inform each of their employees of their levels of exposure to airborne benzene and to provide the same information to the physician conducting the medical surveillance program. Please refer to 29 CFR 1910.1028(e)(7)(i) and (i)(6)(iii). In addition, the standard requires employers to post warning signs at the entrances to regulated areas, that is, areas where employees will be overexposed to benzene if they remain there. Please refer to 29 CFR 1910.1028(d) and (j)(1)(i). Employers would be unable to comply with these requirements if they did not monitor the airborne benzene concentrations.
Respiratory protection tables in 1910.1028 for benzene and 1910.1025 for inorganic lead provide the protection factor assigned for various respiratory protection devices. The protection factor for a respirator indicates the maximum amount a respirator may be assumed to reduce exposure in actual workplace situations. An approval limitation for organic vapor cartridges by NIOSH prohibits using the respirator for protecting employees from atmospheres having any benzene concentration peaks above 1,000 ppm. The respirator's protection factor for full face air purifying respirators in the lead standard 1910.1028 is 50 and may be used in 8-hour TWA inorganic lead aerosol concentrations not exceeding 2.5 milligrams per cubic meter.


The fundamental information conveyed by each table is the protection factor assigned various respiratory protection devices. The protection factor for a respirator indicates the maximum amount a respirator may be assumed to reduce exposure in actual workplace situations. For example, if a respirator has a protection factor of 10 and an employee wears the respirator for 8 hours in an atmosphere where the 8-hour, time-weighted average (TWA) airborne concentration of an air contaminant is 80 parts per million (ppm), the respirator may be assumed to have reduced the employee's exposure to an 8-hour TWA concentration of 8 ppm, i.e., 80 ppm divided by 10. If there were also a 15-minute period where the TWA concentration of the air contaminant were, for example, 300 ppm, the respirator may be assumed to have also reduced this 15-minute TWA exposure to 30 ppm, i.e., 300 ppm divided by 10.

In the reverse situation, where one knows the protection factor for a respirator and the PEL or PELs for an air contaminant, one can determine the maximum concentration(s) of the air contaminant in which the respirator may be used. For example, if a respirator has a protection factor of 10 for an air contaminant having an 8-hour TWA PEL of 2 ppm and a short term exposure limit (STEL) of 10 ppm, the maximum concentrations of the air contaminant in which the respirator may be used are 8-hour TWA concentrations of 20 ppm and 15-minute TWA concentrations of 100 ppm, i.e., 2 ppm times 10 and 10 ppm times 10.

Table 1 in the benzene standard relates the protection factor for benzene for various respiratory protective devices indirectly by stating at what maximum 8-hour TWA airborne benzene concentration each device may be used for protecting employees. This value divided by the 8-hour TWA PEL for benzene is the protection factor of each device for benzene.

Looking at Table 1 one notes that the maximum 8-hour TWA airborne benzene concentration in which a full facepiece respirator with organic vapor cartridges may be used is 50 ppm. Since the 8-hour TWA PEL for benzene is 1 ppm, the protection factor for that respirator is 50, i.e., 50 ppm divided by 1 ppm. Benzene also has a 15-minute STEL of 5 ppm. Therefore, there is also a maximum 15-minute TWA benzene concentration in which the respirator may be used for protecting employees. It is 50 times 5 ppm 250 ppm. Moreover, an approval limitation for organic vapor cartridges by the National Institute For Occupational Safety and Health (NIOSH) prohibits using the respirator for protecting employees from atmospheres having any benzene concentration peaks above 1,000 ppm.

Table II in the inorganic lead standard relates the protection factor against inorganic lead aerosols for various respiratory protective devices directly by stating the maximum inorganic lead aerosol concentrations in which various respirators may be worn in terms of multiples of the 8-hour TWA PEL. For example, a full facepiece, air-purifying respirator with high-efficiency filters may be worn in 8-hour TWA
lead aerosol concentrations not exceeding 50 times the 8-hour TWA PEL. The statement indicates that the respirator’s protection factor for inorganic lead is 50 and it may be used in 8-hour TWA inorganic lead aerosol concentrations not exceeding 2.5 milligrams per cubic meter.

SOURCE LETTER
SEP 12, 1989
SUBJECT: Respiratory Protection Tables

Attached is a letter written to Dr. X concerning the respiratory protection table of the benzene standard, 29 CFR 1910.1028, as well as a memorandum to this office concerning the respiratory protection table of the lead standard, 29 CFR 1910.1025.

The letter to Dr. X states the airborne concentrations in the respiratory protection table for benzene are time weighted averages. The memo to this office states that the airborne concentrations in the respiratory protection table for lead are maximum concentrations. Although the correspondence refers to two different standards, there is inconsistency in the responses.

It should be noted that the NIOSH approval for dust, fume and mist cartridges states that the cartridges are approved for “dusts, fumes, and mists having an exposure limit measured as a time weighted average. Organic vapor cartridges are approved as “respiratory protection against not more than 1000 parts per million organic vapors by volume”. The NIOSH approvals tend to indicate that cartridges for organic vapors should not be used if exposures exceed a maximum level whereas for dust or fume the use of cartridges should be compared to a time weighted average.

Clarification is requested concerning the apparent difference in the interpretation of the respiratory protection tables for the benzene and lead standards.
The only type of PAPR that may be used for protecting employees from benzene is one that uses a tight-fitting full facepiece and an organic vapor canister providing a minimum service life of 4 hours when tested under the relevant criteria presented in the footnote to the respirator selection table 1910.1028(g) Table 1.

This in response to your memorandum of February 12 on behalf of the State of [STATE], requesting clarification of the type of powered air-purifying respirator (PAPR) permitted by the respirator selection table in standard 29 CFR 1910.1028 for benzene.

The only type of PAPR that may be used for protecting employees from benzene is one that uses a tight-fitting full facepiece and an organic vapor canister providing a minimum service life of 4 hours when tested under the relevant criteria presented in the footnote to the respirator selection table.
This interpretation addresses whether the benzene standard applies to benzene exposures experienced by aircraft maintenance and repair workers who work on jet fuel tanks. The Benzene Standard 1910.1028(a)(2)(i) exempts from coverage the "storage, transportation, distribution or use of gasoline, motor fuel or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities..." Maintenance and repair operations on jet fuel tanks are not operations involving the "storage, transportation, distribution or use" of the fuel. If, as a result of these maintenance or repair operations, there are significant benzene exposure levels in a non-exempt work operation, then they should be covered under the scope of the standard.

**INTERPRETATION**

29 CFR 1910.1028(a)(2)(i)

AUG 27, 1990

SUBJECT: Coverage under the Benzene Standard

The attached memorandum from our (City) Regional Office requests a clarification of the applicability of OSHA's benzene standard, 29 CFR 1910.1028. At issue is whether the standard applies to benzene exposures experienced by aircraft maintenance and repair workers who work on jet fuel tanks. Jet fuel contains a significant percentage of benzene as one of its component ingredients.

Section (a)(2)(i) of 29 CFR 1910.1028 exempts from coverage the "storage, transportation, distribution or use of gasoline, motor fuel or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities..." (emphasis added). Exemptions to the benzene standard were based on information available to OSHA during the rulemaking regarding the presence of benzene in various workplaces and whether exposures would be expected to be or would likely be consistently under the action level. As discussed in the standard's preamble, OSHA clearly exempted the retail gasoline sector. No evidence in the rulemaking record exists, however, for expected occupational exposures to benzene from jet fuel in the types of operations described in the attached memo from our Regional Office. The operations detailed in the attached correspondence are situations where benzene exposure results from employees working with jet fuel, subsequent to its final discharge from bulk storage facilities. Therefore, these operations could, in a plain reading of the standard, be exempt from coverage under 1910.1028.

However, as pointed out by our Regional Office, even though the source of exposure in this situation clearly results from exposure to a "fuel," the exposures are a result of repair and/or maintenance operations on the jet tanks and do not result from work operations involving the "storage, transportation, distribution or use" of the fuel.

Exemptions in the standard are (as stated in previous letters of interpretation) "neither 'operation-dependant nor 'employee dependent,' but are dependent upon benzene exposure levels." The maintenance and repair operations described in this situation certainly result in significant benzene exposure levels in a non-exempt work operation, and should be covered under the scope of the standard.

SOURCE LETTER

JUL 10, 1990

SUBJECT: Clarification of Coverage

RE: 29 CFR 1028 - Benzene Standard
The question has surfaced concerning whether or not the benzene standard covers aircraft maintenance and repair workers who work on fuel cells (tanks) which contain benzene as a component of the jet fuel.

An example of the repair work that is done in some cases is as follows: The fuel cell is drained, the hatch removed, and the fuel cell entered to repair the leak. During this procedure the readings obtained by means of a detector tube reading were as high as 10 to 12 ppm of benzene at the opening. After the cell had been aired out for a time, the levels have been found to be at the 6 ppm level at the opening to the fuel cell. If the tests show that the air is not flammable/explosive, the employee gets into the tank to look for the source of the leaking problem so that it can be repaired.

The employer claims exemption from the benzene standard under 29 CFR 1028 (a)(2)(i) in that the hazard here is fuel that happens to contain benzene. Since the hazard is a fuel, it is felt that the exemption applies.

Another possible interpretation is that even though the jet fuel containing the benzene is certainly classified as a fuel, the employee is engaged in a repair/maintenance operation and not in activity of storing, trans, routing, distributing, dispensing, loading, unloading, or selling the fuel. In this case, it is repair work being done with a "benzene-containing solvent" in a confined space (fuel cell). The fact that this solvent is also a fuel could be considered as incidental.

Since the clarification of this issue could have nationwide implications involving repair/maintenance on both commercial and military aircraft, the matter is referred for your review and clarification.
Gasoline used as a fuel is exempt from 1910.1028 if the exposure is subsequent to final discharge from bulk storage facilities. However, benzene exposures are still covered and steps must be taken, if necessary, to control them. Gasoline used for other purposes is covered under 1910.1028 provided that the minimum percentage (0.1%) of benzene is present.

In operations where gasoline is not utilized as a fuel but is utilized as a "solvent" (as in certain cleaning operations) or during any other non-fuel uses of gasoline, occupational exposure to benzene would not be exempt from coverage if benzene is present in the gasoline in concentrations greater than 0.1 percent (0.1%) or more, as per section (a)(2)(v).

As discussed above, no evidence exists in OSHA's rulemaking records regarding the kind of workplace exposure to gasoline (and, therefore, possibly benzene) that you described in your letter. If you determine that benzene exposures to workers do exist during these operations, the agency would appreciate your forwarding this information to us so we could consider whether it would be appropriate to amend the benzene standard to include these operations and provide affected workers with appropriate safeguards.
The Medical Surveillance sections (i)(2) and (i)(3) of the standard require that during both the initial exams and periodic exams "a complete blood count including a leukocyte count with differential..." be performed. An automated differential is acceptable, even though cell abnormality is notable only through the performance of the manual test. Requirements of Appendix C, Sect. V.B.2, may be met by routine preparation of the blood smear from a blood sample anti-coagulated with EDTA.

JUL 20 1989

SUBJECT: Letter from Dr. X
Re: Interpreting Blood Test Parameters Under Benzene Standard

As requested, attached is a copy of our response to the letter you forwarded us on May 22, from Dr. X of (City, State), in which he raised questions relative to the blood testing requirements of the benzene standard, 29 CFR 1910.1028.

JUL 20, 1989

This is in response to your letter of May 14, to the Occupational Safety and Health Administration (OSHA) Regional Office in (City). Your letter, which had been forwarded to us for reply, sought specific guidance relative to OSHA's standard for occupational exposure to benzene, 29 CFR 1910.1028.

The Medical Surveillance sections (i)(2) and (i)(3) of the standard require that during both the initial exams and periodic exams "a complete blood count including a leukocyte count with differential..." be performed. You questioned whether a manual differential was acceptable, pointing out that cell abnormality was notable only through the performance of the manual test. The language of the standard does not designate which type must be performed and so therefore either type would be acceptable. However, as with many OSHA health standards, in terms of enforcement of this requirement, the benzene standard sets only the minimal criteria that must be met in order to be in compliance with the requirements of the rule. If, in your opinion as the physician responsible for the employees' medical surveillance program, performing a manual differential provides you superior information on the effects of benzene exposure on the exposed employees than automated counting, you are encouraged to continue to perform the manual tests. Again, however, you are not required to do so.

Additionally, according to section (i)(7)(i)(B) of the standard, the employer must provide affected employees with the physician's written opinion as to whether or not "the employee has any detected medical conditions which would place the employee's health at greater than normal risk of material impairment from exposure to benzene." If a manual differential is performed that indicates the presence of any cell abnormalities, and since changes in cell morphology such as the kind that might be noted during a manual differential may be indicative of a hematological abnormality, the physician would need to report this finding in his written opinion.

Your second question concerned the language in Appendix C - Medical Surveillance Guidelines for Benzene, section V.B.2, which requires that the peripheral blood smear may be prepared from "fresh, uncoagulated blood" except under "certain limited conditions" when the smear may be prepared from a blood sample anti-coagulated with EDTA. You questioned what the "limited conditions" were and offered that the use of anti-coagulated blood was routine clinical practice. As result of discussions with personnel from OSHA's Office of Occupational Medicine and Directorate of Health Standards, we were unable to determine the derivation of the qualification that blood should, only under "limited conditions," be anticoagulated. Our staff physicians agreed that it is indeed routine procedure for blood samples to be anti-coagulated before examination, since it is rare that blood samples are able to be analyzed immediately.
after the sample is collected. It is, therefore, perfectly acceptable to routinely prepared blood smears that have been made from blood anti-coagulated with EDTA.
OSHA Instruction STP 2-1.139

OCT 20 1987
Office of State Programs

SUBJECT: Occupational Exposure to Benzene

A. PURPOSE. This instruction describes a Federal program change to the Regions and State designees.

B. SCOPE. This instruction applies OSHA-wide.

C. FEDERAL PROGRAM CHANGE. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this instruction is forwarded to each State designee.

2. Provide a copy of the Federal Register notice to the State designee upon request.

3. Explain the technical content of the Federal Register notice at 52 FR 34460, September 11, 1987, Occupational Exposure to Benzene, to the State designee upon request.

4. Ensure that each State designee acknowledges receipt of this instruction in writing, within 30 days of notification, to the Regional Administrator. The acknowledgment should include (a) the State's plan to adopt and implement the standard, (b) the State's plan to develop an alternative standard, which is as effective, or (c) the reasons why no standard is necessary to maintain a program which is as effective.

5. Inform each State designee that the State must promulgate a standard to ensure that it is at least as effective as the Occupational Safety and Health Administration (OSHA) revised final rule for occupational exposure to benzene, in 29 CFR Part 1910, and submit a plan supplement as soon as possible, but not later than 6 months from the date of Federal publication.

D. DIFFERENT STATE STANDARDS. Section 18(c)(2) of the OSH Act requires that State standards be "at least as effective" as the Federal and, when applicable to products used or distributed in interstate commerce, be required by compelling local conditions and not unduly burden interstate commerce. In addition to the "at least as effective" criterion, this "product clause test" will be applied to State standards with substantively different requirements from the comparable Federal standards, as discussed in OSHA Instruction STP 2-1.117.

E. INTERIM ENFORCEMENT. Under 29 CFR 1953.23(a) and (b), State plan States are provided up to 6 months from publication of the Federal standard in the Federal Register to promulgate an identical or "at least as effective" as standard. If a State, for whatever reason, is unable to promulgate a standard in a timely manner (6 months for a permanent standard, 30 days for an emergency temporary standard) the State shall be expected to provide assurance that it will enforce the substantive provisions of the new or revised Federal standard through such means as use of its general duty clause or equivalent, temporary adoption of an identical standard, or an alternative, specified enforcement mechanism.

F. EFFECTIVE DATES. The initial effective date for an identical or different State standard may be no later than the date of State promulgation or the Federal effective date, whichever is later. Where a Federal standard contains delayed effective dates for various provisions, the State effective dates for these provisions may be no later than the delayed Federal dates or the date of State promulgation, whichever is later.
G. EXPLANATION.

1. On September 11, 1987, OSHA published at 52 FR 34460, a revised final rule titled Occupational Exposure to Benzene, which amended its existing standard for occupational exposure to benzene. The revised standard reduces the permissible exposure (PEL) from 10 parts benzene per million parts of air (10 ppm) to an eight (8)-hour time-weighted average (TWA) of 1 ppm and a short-time exposure limit (STEL) of 5 ppm. The standard also provides for methods of compliance, personal protection equipment, employee monitoring, medical surveillance, medical removal protection, communication of hazards to employees, regulated areas and, recordkeeping.

2. The present OSHA standard for benzene (29 CFR Part 1910.1000 Table Z-2) was adopted in 1971 from the then current ANSI standard without rulemaking under the authority of section 6(a) of the Act. Neither the ANSI standard nor the resultant OSHA standard was based on the possible leukemogenic effects of exposure to benzene.

3. Since 1977, OSHA has been involved in various court cases concerning the benzene standard. In December 1985, OSHA published a proposed rule for a revised standard covering occupational exposure to benzene. The proposal, based on the entire benzene record, presented OSHA's preliminary determination that the risks of leukemia and other benzene-related health effects needed to be reduced, lowered the permissible exposure limit (PEL) and included other provisions designed to reduce the risk.

4. This final benzene standard is based on a thorough consideration of the entire record of this proceeding.

5. The standard is to become effective 90 days after issuance. All provisions except for engineering controls must be completed 60 days after the effective date. The completion of engineering controls is not required until two years after the effective date.
OSHA Instruction CPL 2-2.36

November 30, 1983

SUBJECT: AIDS (Hepatitis B Risks in the Health Care System)

A. Purpose. This instruction provides a description of the hazard of hepatitis B infection to workers in the health care delivery system and recommends work practice techniques to reduce those risks of that hazard.

B. Scope. This instruction applies OSHA-wide.

C. Reference. OSHA Instruction CPL 2.58, October 1, 1983, and CPL 2.59, November 9, 1983

D. Action. As part of OSHA's outreach program, Regional Administrators and Area Directors shall ensure that copies of Appendix A are mailed to all major health care facilities listed in Appendix B in their respective areas. Appendix C is a letter that could be used as a vehicle to convey this document to those facilities. In conjunction with Area Offices being Full Service Resource Centers, copies of Appendix A shall be made available from the Area Office to members of health care facilities upon request.

E. Federal Program Change. This instruction describes a change in the Federal program for which a State response is not required. Each Regional Administrator, however, shall:

1. Ensure that this change is promptly forwarded to State designees.

2. Explain the technical content of this change as well as the Region's plans for implementing it to the State designee.

3. Encourage States to adopt similar program initiatives where such initiatives are not already in place by taking the action described in D and mailing Appendix A to the identified major health care facilities.

F. Background. OSHA has become aware that a significant risk of contacting hepatitis B exists among the various occupations involved in health care delivery. In order to help both employers and employees recognize and prevent this disease, OSHA has developed a field instruction describing the disease, the high-risk workers, and recommending work practices and procedures currently available.

G. Mailing. The National Office will furnish either lists or labels of establishments' name and addresses for this mailing for some of the facilities indicated in Appendix B. These mailing lists and additional copies of Appendix A will be sent to the Regional Offices in approximately 4 weeks. However, some of these facilities are not identified by SIC codes and Regional Administrators/Area Directors should try and identify these facilities to the extent possible and add them to the above lists.
Appendix A

The Risk of Hepatitis B Infection For Workers In The Health Care Delivery System and Suggested Methods For Risk Reduction

Office of Occupational Medicine
Directorate of Technical Support
Occupational Safety and Health Administration
U.S. Department of Labor
October 1983

Preface

I wish to thank Ed Jones, M.D. for his invaluable assistance drawing up this document. I am grateful to the following for their comments and suggestions which have been used wherever possible:

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INTRODUCTION

Hepatitis B infection represents a significant occupational hazard to all workers who contact blood or body fluids from patients infected with the hepatitis B virus. This communication will:

- provide a brief explanation of hepatitis B,
- cite examples of those workers within the health care delivery system who are at increased risk of acquiring the infection,
- list suggested work practices to limit exposure to hepatitis B,
- describe the hepatitis B virus vaccine which may be recommended to you by your employer to prevent a hepatitis B virus infection, and
- describe immune globulins and their use.

HEPATITIS

Hepatitis is an inflammation of the liver which can be caused by various toxins, medications or infectious agents. Most infectious hepatitis is caused by viruses; some of these viruses are identified by the letters "A" and "B" and one or more are grouped under the designation "non A/non B". The hepatitis B virus is frequently shortened to HBV and the infection caused by this virus is called hepatitis B.

Although many people with hepatitis may feel or look ill, up to 50 percent of people with a hepatitis B infection will be unaware that they have contracted the virus. Hepatitis B is a frequent cause of sporadic hepatitis in the United States. Centers for Disease Control (CDC) surveys estimate that 200,000 new infections occur here each year and nearly 10 percent of those infected become "chronic carriers" of the hepatitis a virus. About 10,000 people are hospitalized each year with HBV infections.

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Acutely infected individuals and chronic carriers of this virus can be identified by laboratory tests that detect part of the protein that is on the surface of this virus. This protein is called the "hepatitis B surface antigen" (HBsAg) and can be detected in the blood and body fluids of infected individuals. A person is designated a "chronic carrier" when two blood tests at least 6 months apart are positive for the HBsAg.

1. The infection in these carriers may be eradicated in a few years or it may continue for many years. All people who are "chronic carriers" or who are acutely infected with the virus should be considered potentially infectious. Many chronic carriers of the HBsAg have few or no symptoms, however up to 25 percent may develop chronic active hepatitis.

2. This illness has a varied prognosis but can lead to cirrhosis and death. Chronic carriage of the surface antigen has also been associated with cancer of the liver (hepatoma).

In addition to detection of the HBsAg, other laboratory tests are available to document current or past infection with the HBV. Anti-bodies are produced by the body's defense mechanisms in an attempt to eradicate the invading virus. One is produced against the HBsAg and is designated anti-HBs. Detection of this antibody in blood obtained from an individual indicates that the individual has been immunized against the HBV or that the individual has successfully eradicated an infection with this virus. This antibody usually persists indefinitely.

Another antibody is manufactured against a different antigen (protein) of the hepatitis B virus which is called the core antigen. This antibody is labeled anti-HBc and can also be detected in a blood sample from a person with a current or past infection caused by the HBV. This antibody may also persist indefinitely. The presence of anti-HBs in adequate titer in blood drawn from an individual ensures that the individual is incapable of acquiring or transmitting the HBV. The detection of anti-HBs alone cannot be used to differentiate between a current or past infection. Although the Work Practice recommendations in this communication are intended to limit exposure to the HBV, it is currently believed that the same methods could be used to limit exposure to the "non A/non B" hepatitis viruses.

Since the CDC estimates that 0.3 percent of the U.S. population are chronic carriers of the HBsAg and 10,000 patients are admitted to hospitals each year with newly acquired HBV infections, the risk to workers in the health care delivery system is obvious.

3. All body fluids from acutely or chronically infected patients should be considered potentially infectious. Although feces classically has been considered infectious, contamination with blood is necessary for virus transmission. Saliva, semen and blood have been demonstrated to be capable of transmitting infection with the HBV.3

Workers within the health care delivery system who have no exposure to these fluids from infected individuals should not be at an increased risk of acquiring a hepatitis B virus infection. About 1 percent of patients admitted to large city hospitals are chronic HBsAg carriers. Approximately 1 percent of all health care workers in a hospital setting are chronically infected with the HBV virus.

4. The long term risk of HBV infection in workers with frequent blood contact varies between 15 and 30 percent.

5. The following are examples of the specialties and job categories that have been shown to be at increased risk of HBV infection: pathologists and pathology laboratory staff, surgeons and surgical residents, pediatricians, clinical laboratory staff and technicians, internists, dentists and dental technicians, emergency room staff, dialysis unit workers, operating and recovery room staff, IV therapy teams, intensive care unit nurses, hematology and oncology ward staff, blood bank personnel, obstetricians, gynecologists and family practitioners.

6. Workers within the health care delivery system need to follow guidelines designed to reduce their risk of HBV infection.
The consequences of HBV virus infection in women of child bearing age deserve special attention. Many women who are acutely or chronically infected in the few months before and after delivery transmit this infection to their children. Many of these children become chronic carriers of the hepatitis B surface antigen. Although transmission to the newborn may not be prevented, chronic carriage of the HBsAg in these children can be dramatically reduced with prompt administration of HBIG (hepatitis B immune globulin).

7. A pediatrician should be consulted regarding HBIG use and possible future hepatitis B virus vaccine administration. Preventing HBV infection in pregnant women who are working in a high risk setting is obviously a high priority.

**RECOMMENDED WORK PRACTICE TECHNIQUES IN CARING FOR PATIENTS INFECTED WITH THE HEPATITIS B VIRUS**

The following recommendations have been abstracted and modified largely from CDC guidelines 10, 11.

1. **INPATIENT IDENTIFICATION:**

   Although hospitals may design their own identification system, many hospitals are currently using a CDC recommended, category specific, classification system. Under this system some infectious patients, including all those infected with the hepatitis B virus, will be identified by a pink card displayed on the door or near the bed of the individual. It will be titled "Blood/Body Fluid Precautions" and list some work practice information that is essential in caring for the patient. If the hospital has adopted the CDC's alternate recommendation of a disease-specific identification system, a different card will be displayed and will probably contain the phrase "Hepatitis B".

2. **GLOVES:**

   They are indicated for patient contact or procedures in which blood, body fluid or saliva will be handled. Gloves should always be worn when the worker's hands are abraded or active dermatitis is present.

3. **GOWNS:**

   They should be worn when contamination of skin or clothing with blood, body fluid or saliva is likely.

4. **BAGGING OF ARTICLES:**

   Objects that are likely to be contaminated with infectious material should be placed in an impervious bag. If puncture, or outside contamination of the bag is likely, a second bag should be added. Bags should be clearly labeled to designate contaminated articles or infectious waste.

5. **REUSABLE EQUIPMENT:**

   Sterilization or, if impossible, decontamination, is necessary. A recommended information source is the CDC Guideline for Hospital Environmental Control: Cleaning, Disinfection and Sterilization of Hospital Equipment.

6. **HANDWASHING:**

   Hands should be washed after caring for infected patients, after removing gloves or immediately after possible contact with blood, body fluid or saliva.

7. **NEEDLES AND SYRINGES:**

   Disposable syringes should be used whenever possible. Needles should not be recapped or bent. They should be placed in a labeled, puncture resistant container dedicated solely for this disposal purpose.
OSHA Instruction CPL 2-2.36 (cont.)

8. NEEDLE STICK EXPOSURE:

All needle sticks involving needles potentially contaminated with HBV should be immediately reported to your supervisor or to the person responsible for infection control. These exposures should be assessed for the potential of HBV transmission and the appropriateness of immune globulin administration. This will be discussed in more detail later in this communication. Known exposure of a worker's eyes, mouth or broken skin to HBV infected saliva should be reported and assessed in the same fashion.

9. LINEN:

Obviously contaminated linen should be placed in a laundry bag in the infected area and handled as described above in bagging of articles. This marked linen should not be sorted before cleaning and laundry employees personnel should wear gloves while handling this material.

10. REUSABLE DISHES, UTENSILS AND TRAYS:

Obviously contaminated equipment should be bagged and labeled. Dishwashers handling these items should use gloves.

11. DRESSINGS AND PAPER TISSUES:

All contaminated disposable items should be bagged, labeled and disposed of in accordance with local regulations.

12. LAB SPECIMENS:

They should be clearly labeled and if the outside of the specimen container is contaminated, disinfection or bagging may be necessary. In most cases laboratory employees should use gloves and lab coats or aprons while performing tests on these specimens.

13. ROOM CLEANING:

This should be done in a fashion similar to the recommendations from the CDC.

14. BLOOD SPILLS:

They should be cleaned immediately with detergent and water. A solution of 5.25 percent sodium hypochlorite diluted between 1:10 and 1:00 with water may be indicated for disinfection following the initial cleanup.

15. EXAMINATIONS AND PROCEDURES:

Gloves should be worn at all times during examination of the oropharynx, gastrointestinal tract and genitourinary tract. Hands should be washed when the gloves are removed. Instruments and material from these examinations such as dental instruments, X-ray film containers placed in the mouth, gastroscopes, cystoscopes, sigmoidoscopes etc. should be considered infectious and handled only with gloves. Disinfection or sterilization of reusable items will obviously be necessary.

The following is a brief description of this new vaccine. A more detailed description of the vaccine and its uses, as recommended by the CDC, can be found in reference 1.

This preparation is a suspension of inactivated HBsAg particles of a specific size. These particles are obtained from the blood of donors known to be infected with the HBV. No viable infectious agents are known to survive the vaccine preparation process which includes several procedures that inactivate representative viruses of all known types. The healthy adult vaccines requires a series of three vaccine injections with the second and third injections being given at 1 and 6 months after the first. With proper administration, the vaccine is about 90 percent (80-95 percent) effective in preventing infection in susceptible vaccines. It is possible that immunity produced by this vaccination will decrease with time and boosters will have to be given to ensure protection.
OSHA Instruction CPL 2-2.36 (cont.)

Vaccines have been carefully monitored by the CDC in an effort to record all potential side effects. As of March 1, 1983, the vaccine had been administered to over 200,000 people. There have been 62 illnesses that occurred in vaccines that might represent natural background illness or vaccine side effects. Six of these illnesses were defined as serious. This meant that they met one of the following criteria: lasted 14 or more days, caused permanent disability, were life threatening, or required hospitalization or intensive medical care.

The majority of serious illnesses involved the central nervous system. One major concern has been that this vaccine is prepared from plasma donated by some individuals who are at increased risk of developing Acquired Immune Deficiency Syndrome (AIDS). If an infectious agent were the cause of AIDS, it is extremely unlikely that it could survive the vaccine preparation process. 14 is, is not the correct incidence of side effects will not be known until more individuals have received the vaccine and have been followed medically for a significant period of time.

Based upon cost effectiveness, it appears that administration of this vaccine would be acceptable in populations with attack rates as low as 1 or 2 percent per year. 13 The cost effectiveness of screening for prior HBV infection before vaccine administration varies with the cost of the vaccine and screening tests and the prevalence of this infection in the group being considered for vaccination. In general, screening of workers in the health care delivery system would not be justified economically. Some employers might elect to screen workers for anti-HBs regardless of cost considerations. This would identify those workers who are already immune to HBV infection and would be subjected to potential risks with no expected gain if vaccinated.

IMMUNE GLOBULINS

Immune globulins can modify infection with the HBV in various situations after exposure has occurred. Immune globulins are sterile solutions of antibodies obtained from the blood of donors. Immune globulin (IG) prepared in the United States contains antibodies to the hepatitis B virus. Hepatitis B immune globulin (HBIG) contains the same antibodies (anti-HBs) but in a much higher concentration. Whether IG or HBIG should be given and in what concentration depends upon an accurate assessment of the probability and mode of exposure and the potential adverse reactions to immune globulins. A significant lapse in time between exposure and administration of IG or HBIG would be expected to decrease its effectiveness.

Acute exposure to blood or body fluids containing the HBsAg, either by cut, needle stick or mucous membrane (eye, mouth) exposure, is the most important indication for consideration of administration of HBIG or IG. Many other exposures to potentially infectious body fluids also warrant assessment. Reference 9 covers this subject in detail and contains the latest CDC recommendations on the subject. Workers whose serum already contains HBsAg, anti-HBs or anti-HBc are not usually considered at risk to acquire a new HBV infection and typically do not receive immune globulins. Evidence that some "chronic carriers" can acquire a second HBV infection has recently been published. 6 When required, immune globulins should be given immediately to maximize effectiveness. If a needle stick exposure has occurred to blood from a person who has a high likelihood of HBV infection, immune globulin should be immediately administered to the exposed individual after blood for the appropriate laboratory tests (noted above) has been obtained. Blood from the source of the exposure should be checked for the HBsAg. Follow-up HBIG administration should be accomplished if indicated by these tests.

CONCLUSION

It is clear that many health care workers are at substantial risk of HBV infection. Appropriate work practice in the care of all patients, especially those with a current HBV infection, should reduce the incidence of HBV infections in this group of workers. All needle stick exposures should be quickly reported so that immune globulin administration may be considered. However, OSHA, through dissemination of this notice, is not rendering any judgment on the safety or advisability of this or any other medical treatment. Instead OSHA seeks to make the affected public aware that immune globulin administration and the HBV vaccine are available and their use should be considered. Whether the HBV vaccine should be offered to an individual worker depends upon many factors, including his/her job description, the risk of HBV acquisition in this job at his/her particular health facility, and his/her susceptibility to HBV infection. Because these particulars will vary significantly from one facility to another, the decision will have to be made by the appropriate personnel at each health care location.

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OSHA Instruction CPL 2-2.36 (cont.)

References


Appendix B

Name and Addresses

Major Health Care Facilities     SIC CODES     Furnished
Hospitals          8062, 8069     Yes
Nursing Homes      8051, 8059     Yes
Hospices           No
Emergency Care Facilities
(non-hospitals)    No
Dialysis Units (non-hospitals)  No
Blood Donation and Bank Facilities
(non-hospitals)    8091     Yes
Clinical Laboratories 8071     Yes

Appendix C

Dear Health Care Professional:

The Occupational Safety and Health Administration (OSHA) is aware that a significant risk of contracting hepatitis B exists among the occupations involved in health care delivery. The Agency has developed the enclosed document, suitable for direct distribution to your employees, describing the disease, identifying the high-risk workers and recommending work practice techniques that can be implemented to help prevent this disease.

Local OSHA offices have recently assumed wider responsibilities for serving as a safety and health resource center for the communities they serve. Therefore, as your local OSHA contact I am providing this document to you for the information of your employees. In addition, I'd like to offer any assistance we might provide in this or any other safety and health topic of concern to you.
OSHA Instruction CPL 2-2.44B

FEB 27, 1990

SUBJECT: AIDS (Enforcement Procedures for Occupational Exposure to Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV))

A. Purpose. This instruction provides uniform inspection procedures and guidelines to be followed when conducting inspections and issuing citations under section 5(a)(1) of the Act and pertinent standards for health care workers potentially exposed to HBV and HIV.

B. Scope. This instruction applies OSHA-wide.


D. References.


E. Action. Regional Administrators and Area Directors shall ensure that the policies and procedures explained in this instruction are implemented in scheduling and conducting inspections. Regional Administrators shall further ensure that all relevant procedures established in this instruction are adhered to by State 7(c)(1) consultation projects.

F. Federal Program Change. This instruction describes a Federal Program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is promptly forwarded to each State designee.
2. Explain the technical content of this change to the State designee as requested.
3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. Procedures and time frames for State notification, acknowledgment and plan supplement submission are set out in OSHA Instruction STP 2.22A, CH-2, Chapter III, Paragraph I.1.a.

   a. Paragraph I.1.a.(1) contains procedures Regional Administrations shall follow in notifying States of federal program changes via two-way memoranda.

   b. Paragraph I.1.a.(2) contains procedures for State response. (States should acknowledge receipt as soon as the State’s intentions are known, but must do so no later that 70 calendar days after the date of issuance. The State’s acknowledgment must indicate its intention to follow OSHA’s policies and procedures, or describe its intended alternative policy and/or procedures, which must be “at least as effective” as OSHA’s.

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c. State plan supplements must be submitted according to the schedule established in OSHA Instruction STP 2.22A, CH-2, Paragraph 1.1.a.(3).

d. Although States are not required to enforce General Duty Provisions, they are strongly urged to do so.

4. Advise State designees of the following:

a. In order to ensure a sound and consistent national enforcement and litigation strategy in relation to the complex issues addressed by this instruction, State implementation of the procedures in this instruction, or comparable State procedures, must be carefully coordinated with OSHA.

b. The State is also responsible for extending coverage under its procedures for addressing occupational exposure to HBV and HIV in the public sector, such as police, fire, ambulance and other emergency response workers.

c. The Directorate of Technical Support is available to assist the States in locating expert witnesses. (See paragraph O., Expert Witnesses.)

d. In regard to paragraph I., Inspection Scheduling, Goal and Scope, the State's response to the Regional Administrator is to include a projection of the number of inspections the State expects to conduct in both the private and public sector.

5. After Regional review of the State plan supplement and resolution of any comments thereon, forward the State submission to the National Office in accordance with established procedures. The Regional Administrator shall provide a judgment on the relative effectiveness of each substantial difference in the State plan change and an overall assessment thereon with a recommendation for approval or disapproval by the Assistant Secretary.

6. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel.

G. Definitions.

1. Health Care Facility. Those establishments listed under the Standard Industrial Classification (SIC) codes 80* and 7261; and clinics, health units, and nurses' stations at industrial work sites.

2. Health Care Worker. An employee of a health care facility including, but not limited to, nurses, physicians, dentists and other dental workers, optometrists, podiatrists, chiropractors, laboratory and blood bank technologists and technicians, research laboratory scientist, phlebotomists, dialysis personnel, paramedics, emergency medical technicians, medical examiners, morticians, housekeepers, laundry workers and others whose work may involve direct contact with body fluids, as defined below, from living individuals or corpses.

3. Universal Precautions. The term "universal precautions" refers to a system of infectious disease control which assumes that every direct contact with body fluids is infectious and requires every employee exposed to direct contact with body fluids to be protected as though such body fluids were HBV or HIV-infected. Therefore, universal precautions are intended to prevent health care workers from parenteral, mucous membrane, and non-intact skin exposures to blood-borne pathogens.

4. Body Fluids. Fluids that have been recognized by CDC as directly linked to the transmission of HIV and/or HBV and/or to which universal precautions apply: blood, semen, blood products, vaginal secretions, cerebrospinal fluid, synovial fluid, pericardial fluid, amniotic fluid, and concentrated HIV or HBV viruses.

5. Phlebotomist. A phlebotomist is any health care worker who draws blood samples.
OSHA Instruction CPL 2-2.44B (cont.)

6. Infection Control (IC) Program. An IC program is the establishment’s oral or written policy and implementation of procedures relating to the control of infectious disease hazards where employees may be exposed to direct contact with body fluids. An IC Program must address all of the areas outlined in this directive.

7. Joint Advisory Notice. Department of Labor/Department of Health and Human Services-Joint Advisory Notice (Federal Register, Vol. 52, No. 210; October 30, 1987) is a list of recommendations developed to assist employers in implementing the Centers for Disease Control (CDC) guidelines.

H. Background. In September 1986, OSHA was petitioned by various unions representing health care employees to develop a standard to protect workers from occupational exposure to blood-borne diseases. Although the Agency has decided to pursue development of such a standard, as a result of recent rule-making petitions and OSHA’s evaluation of those petitions, the Agency has concluded that the risk of contracting hepatitis B and AIDS among members of various occupations within the health care system requires an immediate response through a variety of existing mechanisms.

1. Occupational exposure may occur in many ways, including needle stick and cut injuries. Health care workers employed in certain occupations are assumed to be at high risk for blood-borne infections due to their routinely increased exposure to body fluids from potentially infected patients. These high risk occupations include but are not limited to physicians, pathologists, dentists and dental technicians, x-ray technicians, phlebotomists, emergency room, intensive care and operating room nurses and technicians, laboratory and blood bank technologists and technicians. Other health care workers who may be directly exposed to such body fluids depending on their exact work assignments include such occupations as housekeeping personnel, laundry workers, orderlies, morgués, research laboratory workers, paramedics, medical examiners. Employees in any occupation where they are directly exposed to body fluids are considered to be at substantial risk of occupational exposure to HIV and/or HBV.

2. Ward clerks and administrators have virtually no increased risk of contact with body fluids as a result of their employment; they are thus at no greater risk of contracting blood-borne diseases than other members of the general population.

3. Neither HBV nor HIV is transmitted by casual contact in the workplace.

4. The employer’s obligations are those set forth in the Occupational Safety and Health Act (OSH Act) of 1970. However, the CDC has published guidelines to protect workers from HBV and HIV (See Appendices A & B). OSHA is relying on these guidelines as reflecting an appropriate and widely recognized and accepted standard of protection to be followed by health care employers in carrying out their responsibilities under the OSH Act.

5. The same personal protective equipment and work practices used to prevent occupational transmission of HBV are effective in preventing occupational transmission of HIV. The CDC has called for use of “universal precautions” when working with blood and/or body fluids from any patient.

6. One difference between the two viruses is that there is currently a vaccine to prevent HBV infection, which the CDC has recommended for persons at substantial risk of occupational exposure, but there is no vaccine for HIV.

I. Inspection Scheduling, Goal and Scope.

1. Inspection scheduling shall be conducted in accordance with the procedures outlined in the FOM, Chapter II, and for Federal agencies, Chapter XIII, except as modified in the following sections.

2. The National Office shall develop and distribute a list of health care establishments by State to the appropriate Regional Administrators to identify the establishments to be programmed for inspection within the Region.

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OSHA Instruction CPL 2-2.44B (cont.)

a. This list shall be randomly selected from among all establishments identified as being within the health care industries, viz., those industries having primary Standard Industrial Classification (SIC) codes 80** (Health Services) and 7261 (Funeral Service and Crematories).

b. A widely available commercial listing shall be the source of such establishments (Duns Marketing Service).

c. All establishments listed as having less than 11 employees shall be excluded from the list.

d. More establishments will be provided to the Regions than will actually be needed to allow for replacement of establishments.

3. The Regional Administrator shall use an additional random selection method to identify the establishments actually to be programmed for inspection within the Region.

a. The number of health care establishments to be selected from the list provided by the National office shall be at least equal to the inspection goal identified in the annual program plan developed for the Region.

b. The names of the establishments selected by the Regional Administrator shall be distributed to the appropriate Area Office and shall constitute the Inspection Register for that office.

c. An inspection of all establishments listed on the Inspection Register shall be conducted unless they are deleted for some legitimate reason.

4. Any establishment deleted shall be replaced by another establishment selected according to 1.3.

a. Area Directors shall inform the Regional Administrator of any deletions.

b. The Regional Administrator shall select the next establishment by random number procedure from the list provided by the National Office.

c. Because of the random number selection procedures, it may happen that the next establishment does not belong to the same Office other than the one deleting the first establishment.

5. When an inspection of an establishment listed on the Health Care Inspection Register is not conducted because the employer has refused entry, a warrant shall be sought in accordance with the current procedure for handling such refusals. Only if the court refuses to grant a warrant or if the Regional Solicitor declines to apply for a warrant, is such an establishment to be replaced according to 1.3.

6. Each Region shall conduct the minimum number of health care facility inspections (e.g., hospitals, clinical laboratories, blood donor centers, etc.) annually identified in this program plan.

7. All inspections, programmed or unprogrammed, conducted at health care facilities or at other facilities (such as manufacturing plants) which support an on-site health care unit shall be directed to all areas involving the hazard of direct exposure to body fluids potentially contaminated with HBV or HIV.

a. Primary areas of concern are emergency rooms, operating rooms, direct patient care areas, laboratories, and x-ray. Secondary areas of concern are laundry and housekeeping.

b. Records review procedures for the purpose of conducting a records only inspection do not apply.

c. Expansion to additional units may be appropriate when:
OSHA Instruction CPL 2-2.44B (cont.)

(1) The IC program shows significant deficiencies in complying with OSHA requirements, as set forth in this instruction, that may indicate the existence of more widespread problems.

(2) Relevant complaints are received from employees which are specifically related to direct exposures to body fluids.

J. Inspection Procedures. The procedures given in the FOM, Chapter III, shall be followed except as modified in the following sections.

1. When entering a hospital or health care facility, the CSHO shall locate the Hospital Administrator, the Medical Director or other person in charge and present credentials.

2. Health care facilities generally administer internal IC programs. This function may be performed by a committee or an individual. Upon entry the CSHO shall request the presence of the infection control nurses and/or other individuals who will be responsible for providing records pertinent to the inspection.

3. Careful examination of the facility's IC program is the core element of these inspections. Occupational injury and illness records shall be carefully scrutinized, and employees selected from all appropriate areas of the facility shall be interviewed to verify both the accuracy of the OSHA-200 form records the effectiveness of the IC program.

4. Needle sticks, like any other puncture wound, are considered injuries for recordkeeping purposes due to the instantaneous nature of the event. Only those work-related injuries that involve loss of consciousness, transfer to another job, restriction of work or motion, or medical treatment are required to be put on the OSHA 200 form. Use of prescription medication (beyond a single dose for minor injury or discomfort) is considered medical treatment. Therefore, any needle stick requiring medical treatment (e.g., gamma globulin, hepatitis B immune globulin, hepatitis B vaccine, etc.) shall be recorded. In addition, since this type of treatment is considered absolutely necessary, and must be administered by a physician or licensed medical personnel, such an injury cannot be considered minor.

5. In the event the facility being inspected does not have a formal IC program, employee interviews, combined with an inspection of appropriate areas of the facility shall be used to determine the effectiveness of the establishment's efforts to protect employees from exposure to potential infectious disease sources.

6. CSHOs shall use appropriate caution when entering patient care areas of the facility. When such visits are judged necessary for determining actual conditions in the facility, the privacy of patients shall be respected. Photographs of patients will not normally be necessary and in no even shall identifiable photographs be taken without their consent.

7. The walk around portion of the inspection shall consist of a spot-check approach. The CSHO shall identify on the basis of professional judgment what areas should be physically checked out and to what extent. It is not expected that a comprehensive walk around inspection of the workplace will be necessary. The CSHO is to be satisfied that an IC program is in place and judged to be effective.

8. If an inspection is conducted in an establishment outside of SIC codes 80** and 7261, and a health care unit is on site, the provisions of Sections J. through T. apply and shall be enforced.

K. Federal Agency Facilities. Health care facilities owned by agencies of the Federal Government are subject to inspection under this instruction.

1. Where an inspection other than one scheduled on the regular Federal establishment targeting list is to be made at a Federal health care facility in accordance with this instruction, notification of agency headquarters personnel, through the Office of Federal Agency Programs (OFAP), shall be accomplished prior to any facility visits.
OSH

A

M. Violations. The IC program shall be carefully evaluated to determine compliance with OSHA requirements, as clarified by those CDC guidelines relating to health care worker safety and health. The description of the OSHA requirements in this section is based upon those guidelines. Violations of OSHA requirements will normally be classified as serious.

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OSHA Instruction CPL 2-2.44B (cont.)

1. 29 CFR 1910.132(a) and (c). The standard provides in pertinent part:

"(a) Application. Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment,...encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact."

(c) Design. All personal protective equipment shall be of safe design and construction for work to be performed.

The following personal protective measures shall have been addressed by the IC program and verified by interviews and walk around.

a. Gloves. The use of gloves will vary according to the procedure involved. The use of disposable gloves is indicated for procedures where body fluids are handled.

(1) The use of gloves is particularly important in the following circumstances:

   a If the health care worker has cuts, abraded skin, chapped hands, dermatitis or the like.
   b During instrumental examination of otopharynx, gastrointestinal tract and genitourinary tract.
   c When examining abraded or non-intact skin or patients with active bleeding.
   d During invasive procedures.
   e During all cleaning of body fluids and decontaminating procedures.

(2) Gloves must be of appropriate material, usually intact latex or intact vinyl, of appropriate quality for the procedures performed, and of appropriate size for each health care worker. Where gloves do not meet these requirements 29 CFR 1910.132(c) shall be cited.

(3) Employers shall not wash or disinfect surgical or examination gloves for reuse.

(4) General purpose utility (rubber) gloves worn by maintenance, housekeeping, laundry or other non medical personnel may be decontaminated and reused.

(5) No gloves shall be used if they are peeling, cracked, or discolored, or if they have punctures, tears, or other evidence of deterioration. Failure to meet these requirements shall be cited under 29 CFR 1910.132(c).

b. Gowns. The use of gowns, aprons, or lab coats is required when splashes to skin or clothing with body fluids are likely to occur. Gowns, including surgical gowns, shall be made of, or protect all areas of exposed skin.

c. Masks and Eye Protectors. The use of masks and protective eyewear or face shields is required when contamination of mucosal membranes, eyes, mouth or nose) with body fluids such as splashes or aerosolization of such material (e.g., during surgical or dental procedures), is likely to occur. They are not required for routine care.

d. Resuscitation Equipment. Pocket masks, resuscitation bags, or other ventilation devices shall be provided in strategic locations as well as to key personnel (e.g., paramedics) where the need for resuscitation is likely. This will minimize the need for emergency mouth-to-mouth resuscitation.
e. Invasive Procedures. Personal protective equipment as described above shall be used when performing invasive procedures to avoid exposure. When a health care worker's skin or mucous membranes may come in contact with body fluids, gowns, masks, and eye protection shall be worn, as noted above.

f. Phlebotomy. Gloves shall generally be provided to and used by phlebotomists. Employers who do not make them available shall be cited for failure to provide under 29 CFR 1910.132(a). Employers who make gloves available, but discourage or prohibit their use shall be cited for failure to use under 29 CFR 1910.132(a), if in fact the gloves are not being used. However, no citation for failure to use shall be issued where the phlebotomist voluntarily and without the encouragement of the employer does not wear gloves, unless the following circumstances exist:

(1) For performing phlebotomy when the health care worker has cuts, scratches, or other breaks in his/her skin.

(2) In situations where the CSHO and/or health care worker judges that hand contamination with blood may occur, for example, when performing phlebotomy on an uncooperative patient.

(3) For performing finger and/or heel sticks in infants and children.

(4) When persons are receiving training in phlebotomy.

g. Dentistry. Gloves are required for contact with oral mucous membranes. Surgical mask and protective eyewear or chin-length plastic face shields are required during dental procedures in which splashing, spattering or aerosolization of blood, saliva or gingival fluids is likely. (Saliva and gingival fluids are included because of the likelihood that they may contain blood in their setting.)

h. Laboratories. The use of gloves are required for processing body fluid specimens. Masks and protective eyewear are required when the worker's mucosal membrane may come in contact with body fluids.

i. Postmortem Procedures. Persons performing or assisting in postmortem procedures are required to wear personal protective equipment as noted above to avoid exposure to body fluids.

2. 29 CFR 1910.22 (a)(1) and (a)(2). The standard provides in pertinent part:

"(a) Housekeeping.

(1) All places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition.

(2) The floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition...."

The IC program shall have identified housekeeping operations involving substantial risk of direct exposure to body fluids and shall have addressed the proper precautions to be taken while cleaning rooms and blood spills. The application of these procedures shall be verified by employee interviews and the walk around.

a. Room Cleaning Where Body Fluids are Present. Schedules shall be as frequent as necessary according to the area of the institution, type of surface to be cleaned, and the amount and type of soil present.

b. Disinfectants. Following the initial cleanup, one of the following shall be used for cleaning blood and/or body fluids:
OSHA Instruction CPL 2-2.44B (cont.)

(1) Chemical germicides that are approved for use as hospital disinfectants and are
tuberculocidal when used at recommended dilutions.

(2) Products registered by the Environmental Protection Agency as being effective against
HIV with an accepted HIV (AIDS virus) label.

(3) A solution of 5.25 percent sodium hypochlorite (household bleach) diluted between
1:10 and 1:100 with water.

3. 29 CFR 1910.141(a) (4) (i) and (ii). The standard provides in pertinent part:

"(4) Waste disposal.

(i) Any receptacle used for solid or liquid waste or refuse shall be so constructed that is
does not leak and may be thoroughly cleaned and maintained in a sanitary condition.
Such a receptacle shall be equipped with a solid, tight-fitting cover, unless it can be
maintained in a sanitary condition without a cover. This requirement does not prohibit
the use of receptacles which are designed to permit the maintenance of a sanitary
condition without regard to the aforementioned requirements.

(ii) All sweepings, solid or liquid wastes, refuse, and garbage shall be removed in such a
manner to avoid creating a menace to health and as often as necessary or appropriate
to maintain the place of employment in a sanitary condition."

The IC program shall have addressed the handling and disposal of the following potentially
contaminated items. The effectiveness of the program in this regard shall be verified through the
employee interviews and the walk around.

a. Sharp instruments and disposable items. Needles shall not be recapped, purposely bent or
broken by hand, removed from disposable syringes, or otherwise manipulated by hand.
Resheathing instruments, self-sheathing needles, or forceps shall be used to prevent
recapping needles by hand.

(1) After they are used, disposable syringes and needles, scalpel blades, and other sharp
items shall be placed in puncture-resistant containers for disposal.

(2) Such containers shall be easily accessible to personnel needing them and located in all
areas where needles are commonly used, including emergency rooms, intensive care
units, and surgical suites and shall be so constructed that they will not spill their
contents if knocked over and will not themselves allow injuries when handled.

(3) These containers shall also be located on patient floors and any other setting where
blood is drawn and needles are used.

b. Lab specimens. All specimens of body fluids shall be put in a well constructed container with
a secure lid to prevent leaking during transport and shall be disposed of in an approved
manner. Contaminated materials used in laboratory tests should be decontaminated before
reprocessing or be placed in bags and disposed of in accordance with institutional policies for
disposal of infectious waste.

4. 29 CFR 1910.145(f). The standard provides in pertinent part:

"(f)(3) Use. Tags shall be used as means to prevent accidental injury or illness to employees
who are exposed to hazardous or potentially hazardous conditions, equipment or
operations which are out of the ordinary, unexpected or not readily apparent. Tags shall
be used until such time as the identified hazard is eliminated or the hazardous operation is
completed. Tags need not be used where signs, guarding or other positive means of
protection are being used.
General tag criteria. All required tags shall meet the following criteria:

(i) Tags shall contain a signal word and a major message.
   (a) The signal word shall be "BIOHAZARD," or the biological hazard symbol.
   (b) The major message shall indicate the specific hazardous condition or the instruction to be communicated to the employee.

(ii) The signal word shall be readable at a minimum distance of five feet (1.52 m) or such greater distance as warranted by the hazard.

(iii) The tag's major message shall be presented in either pictographs, written text or both.

(iv) The signal word and the major message shall be understandable to all employees who may be exposed to the identified hazard.

(v) All employees shall be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.

(vi) Tags shall be affixed as close as safely possible to their respective hazards by a positive means such as string, wire, or adhesive that prevents their loss or unintentional removal.

(f)(8) Biological hazard tags.

(i) Biological hazard tags shall be used to identify the actual or potential presence of a biological hazard and to identify equipment, containers, rooms, experimental animals, or combination thereof, that contain or are contaminated with hazardous biological agents.

The IC program shall have addressed the labeling procedures to be followed in the facility. That these procedures are followed shall be confirmed by employee interviews and the walk around.

a. Bags or other receptacles containing articles contaminated with potentially infectious material, including contaminated disposable items, must be tagged or otherwise identified. The tag shall have the signal word "BIOHAZARD" or the biological hazard symbol. The tag shall indicate that the bag could contain infectious wastes and give any additional instructions; e.g., if the outside of the bag is contaminated with body fluids, a second outer bag should be used.

b. If tags are not used, other equally effective means of identification shall be used (e.g., red bagging).

c. Employees shall be informed of the meaning of tags. With respect to tagged material, they shall also be instructed to use double bagging where puncture or outside contamination is likely.

5. Section 5(a)(1). Section 5(a)(1) provides:

"Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

a. Section 5(a)(1) citations must meet the requirements outlined in the FOM, Chapter IV, and can be issued only where there is a hazard which cannot be abated by implementing an abatement method required by the standards above. All applicable abatement methods identified as correcting the same hazard shall be issued under a single 5(a)(1) citation.
b. If a citation under 5(a)(1) is justified, the citation, after setting forth the SAVE for section 5(a)(1), shall state:

Health care workers (specify categories, such as doctors, nurses, etc.) (Specify location) were exposed to the hazard of being infected by HBV and/or HIV through possible direct contact with blood or other body fluids. Feasible and useful abatement methods for reducing this hazard, among others, are: (List abatement methods not required by the standard which employer is not implementing.)

c. Recognition for purposes of citing section 5(a)(1) is recognition of the hazard of being infected with HBV and/or HIV through possible direct contact with body fluids. The health care industry generally accepts and, therefore, recognizes the determination of this hazard by the CDC, which is the acknowledge authority in this area. The employer's IC program can also constitute evidence of recognition.

d. The following are examples of feasible and useful abatement methods. The non-use of any of these methods is likely to result in the continued existence of a serious hazard and may, therefore, allow citation under 5(a)(1). Consequently, all of these methods shall have been implemented. To determine whether they are being implemented, the CSHO shall evaluate the IC program and verify with employee interviews and the walk around.

(1) Hepatitis B Vaccination. The facility's IC policy regarding hepatitis B vaccinations shall address all circumstances warranting such vaccinations and shall identify employees at substantial risk of directly contacting body fluids. All such employees shall be offered hepatitis B vaccinations free of charge in amounts and at times prescribed by standard medical practices.

(2) Linen. The IC program shall have identified all laundry operations involving substantial risk of direct exposure to body fluids. Linen soiled with body fluids shall be handled as little as possible and with minimum agitation to prevent contamination of the person handling the linen. All soiled linen shall be bagged at the location where it was used; it shall not be sorted or rinsed in patient-care areas. Soiled linen shall be placed and transported in bags that prevent leakage.

(3) Reusable Equipment. Standard sterilization and disinfection procedures currently recommended for hepatitis B in a variety of health care settings are adequate to sterilize or disinfect instruments, devices, or other items contaminated with body fluids. A recommended source of information is the CDC's Guidelines for Hospital Environmental Control: Cleaning, Disinfection and Sterilization of Hospital Equipment.

(4) Bagging of Articles. Objects that are contaminated with potentially infectious materials shall be placed in an impervious bag. If outside contamination of the bag is likely, a second bag shall be added.

(5) Handwashing. After removing gloves, hands or other skin surfaces shall be washed thoroughly and immediately after contact with body fluids.

(6) Follow-up Procedures After Possible Exposure to HIV or HBV:

(a) If a health care worker has a percutaneous (needle stick or cut) or mucous membrane (splash to eye, nasal mucosa, or mouth) exposure to body fluids or has a cutaneous exposure to blood when the worker’s skin is chapped, abraded, or otherwise non-intact, the source patient shall be informed of the incident and tested for HIV and HBV infections, after consent is obtained.
(b) If patient consent is refused or if the source patient tests positive, the health care worker shall be evaluated clinically and by HIV antibody testing as soon as possible and advised to report and seek medical evaluation of any acute febrile illness that occurs within 12 weeks after exposure. HIV sero-negative workers shall be retested 6 weeks post-exposure and on a periodic basis thereafter (12 weeks and 6 months after exposure).

(c) Follow up procedures shall be taken for health care workers exposed or potentially exposed to HBV. The types of procedures depends on the immunization status of the worker (i.e., whether HBV vaccination has been received and antibody response is adequate) and the HBV serologic status of the source patient. The CDC Immunization Practices Advisory Committee has published its recommendations regarding HBV post exposure prophylaxis in table format in June 7, 1985, Morbidity and Mortality Weekly Report.

(d) If an employee refuses to submit to the procedures in (b) or (c) above when such procedures are medically indicated, no adverse action can be taken on that ground alone since the procedures are designed for the benefit of the exposed employee.

(7) Training and Education of Health Care Workers. The employer’s training program shall be evaluated in accordance with Appendix C.

(a) All high risk health care workers such as those listed in H.1 shall receive education on precautionary measures, epidemiology, modes of transmission and prevention of HIV/HBV. Health care workers shall be counseled regarding possible risks to the fetus from HIV/HBV and other associated infectious agents.

(b) In addition, such high risk workers must receive training regarding the location and proper use of personal protective equipment. They shall be trained concerning proper work practices and, if the facility has implemented them, shall understand the concept of “universal precautions” as it applies to their work practices. They shall be trained about the meaning of color coding or other methods (except tags) used to designate contaminated articles or infectious waste. Where tags are used, training about tags and precautions to be used in handling contaminated articles or infectious waste is governed by 29 CFR 1910.145(f). (See section M.4.) Workers shall receive training about procedures to be used if they are exposed to needle stick or to body fluids.

N. Other Standards.

1. The hazard communication standard, 29 CFR 1910.1200 only applies to hazardous chemicals or physical hazards in the workplace and thus does not apply to biological hazards such as blood borne diseases.

2. A record concerning employee exposure to HIV and/or HBV is an employee exposure record within the meaning of 29 CFR 1910.20. A record about HIV and/or HBV status is also an employee medical record within the meaning of 29 CFR 1910.20. However, under 29 CFR 1913.10, the CSHO may obtain these records for purposes of determining compliance with 29 CFR 1910.20.

3. Generally, 29 CFR 1910.134 does not apply since there are no respirators approved for biohazards. However, placing respirators in areas where they could be contaminated by body fluids constitutes a violation of 29 CFR 1910.134 (b) (6)
OSHA Instruction CPL 2-2.44B (cont.)

O. Expert Witnesses. The Directorate of Technical Support will assist the Regional Offices and the States in location expert witnesses.

1. In the event that a 5(a)(1) citation is contested, proper expert witness support shall be immediately obtained. Issues which the expert must be prepared to address include:
   a. The risk to workers associated with the exposure circumstances.
   b. Existence, feasibility and utility of abatement measures.
   c. Recognition of the hazard in the industry, by the employer.

2. Expert witnesses may also be necessary in other cases, particularly those involving 29 CFR 1910.132(a).

P. Recording in the IMIS. Current instructions for completing the appropriate inspection classification boxes (Items 24 and 25) on the OSHA-1, Inspection Report, as found in the IMIS Manual shall be applied when recording inspections conducted at health care facilities or at facilities with health care units:

1. Inspections conducted in such facilities shall be coded as "Comprehensive" or "Partial" in Item 35 of the OSHA-1, as appropriate. Such inspections shall not be coded as records only inspections.

2. The OSHA-1 for health care facility or unit inspections scheduled as a result of a complaint shall be marked as "Safety" or "Health" as appropriate (Item 21), "Complaint" (Item 24.), and "National Emphasis Program" (Item 25d.). Record "BLOOD" in the space in Item 25d.

3. The OSHA-1 for health care facility or unit inspections scheduled from the Safety or the Health Establishment List or from the Health Care Establishment List shall be marked as "Safety" or "Health," as appropriate (Item 21.), "Planned" (Item 24h), "Safety" or "Health Planning Guide" as appropriate (Item 25b.), "National Emphasis Program" (Item 25d.). Record "BLOOD" in the space in Item 25d.

4. The OSHA-1 for any unprogrammed safety or health inspection conducted in a health care facility or unit shall be marked "Unprogrammed" (Item 24a, through g., as appropriate), "National Emphasis Program" (Item 25d.) and "BLOOD" recorded in space in Item 25d.

Q. Referrals.

1. When a complaint or inquiry is received from a source in a State plan State regarding occupational exposure to blood-borne disease, the Regional Administrator shall refer it to the State plan designee for action.

2. When complaint or inquiry regarding occupational exposure to blood-borne disease in a State or local government health care facility is received in a State without an OSHA approved State plan, the Regional Administrator shall refer it to the appropriate State public health agency or local health agency with jurisdiction over the health care facilities.

R. Personal Protective Equipment for CSHOs.

1. CSHOs shall not participate in activities that will require them to come into contact with body fluids, needles or other sharp instruments contaminated with blood. To evaluate such activities, CSHOs normally shall establish the existence of hazards and adequacy of work practices through employee interviews and shall observe them at a safe distance.
2. CSHOs shall take necessary precautions to avoid direct contact with body fluids. It will not normally be necessary for CSHOs actually to enter hazardous areas and, therefore, to use personal protective equipment. On the rare occasions when entry into potentially hazardous areas is judged necessary, the CSHO shall be properly equipped as required by the health care facility as well as by his/her own professional judgment, after consultation with the supervisor (FOM, Chapter III).

S. Copies of Citations. Copies of all citations issued pursuant to this program shall be sent expeditiously to the Office of Health Compliance Assistance through the Director of Field Programs. Such information is necessary for program monitoring and evaluation.

T. Informal Settlement Agreements and Notices of Contest. Copies of all settlement agreements and notices of contest shall be sent expeditiously to the office of Health Compliance Assistance through the Director of Field Programs.

APPENDIX A

CENTER FOR DISEASE CONTROL, June 24, 1988, Vol. 37 / No. 24
377 Update: Universal Precautions for Prevention of Transmission of Human Immunodeficiency Virus, Hepatitis B Virus, and Other Blood-borne Pathogens in Health-Care Settings

MORBIDITY AND MORTALITY WEEKLY REPORT

Perspectives in Disease Prevention and Health Promotion

Update: Universal Precautions for Prevention of Transmission of Human immunodeficiency Virus, Hepatitis B Virus, and Other Blood-borne Pathogens in Health-Care Settings

Introduction The purpose of this report is to clarify and supplement the CDC publication entitled "Recommendations for Prevention of HIV Transmission in Health-Care Settings" (1). In 1983, CDC published a document entitled "Guideline for Isolation Precautions in Hospitals" (2) that contained a section entitles "Blood and Body Fluid Precautions." The recommendations -in this section called for blood and body fluid precautions when a patient was known or suspected to be infected with blood-borne pathogens. In August 1987, CDC published a document entitled "Recommendations for Prevention of HIV Transmission in Health-Care Settings" (1) In contrast to the 1983 document, the 1987 document recommended that blood and body fluid precautions be consistently used for all patients regardless of their blood-borne infection status. This extension of blood and body fluid precautions to all patients is referred to as "Universal Blood and Body Fluid Precautions" or "Universal Precautions." Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other blood-borne pathogens.

Universal precautions are intended to prevent parenteral, mucous membrane, and non-intact skin exposures of health-care workers to blood-borne pathogens. In addition, immunization with HBV vaccine is recommended as an important adjunct to universal precautions for health-care workers who have exposures to blood (3,4). Since the recommendations for universal precautions were published in August 1987, CDC and the Food and Drug Administration (FDA) have received requests for clarification of the following issues: 1) body fluids to which universal precautions apply, 2) use of protective barriers, 3) use of gloves for phlebotomy, 4) selection of gloves for use while observing universal precautions, and 5) need for making changes in waste management programs as a result of adopting universal precautions.

* The August 1987 publication should be consulted for general information and specific recommendations not addressed in this update.

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Body Fluids to Which Universal Precautions Apply

Universal precautions apply to blood and to other body fluids containing visible blood. Occupational transmission of HIV and HBV to health-care workers by blood is documented (4,5). Blood is the single most important source of HIV, HBV, and other blood-borne pathogens in the occupational setting. Infection control efforts for HIV, HBV, and other blood-borne pathogens must focus on preventing exposures to blood as well as on delivery of HBV Immunization. Universal precautions also apply to semen and vaginal secretions. Although both of these fluids have been implicated in the sexual transmission of HIV and HBV, they have not been implicated in occupational transmission from patient to health-care worker. This observation is not unexpected, since exposure to semen in the usual health-care setting is limited, and the routine practice of wearing gloves for performing vaginal examinations protects health-care workers from exposure to potentially infectious vaginal secretions. Universal precautions also apply to tissues and to the following fluids: cerebrospinal fluid (CSF), synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid. The risk of transmission of HIV and HBV from these fluids is unknown: epidemiologic studies in the health-care and community counseling are currently inadequate to assess the potential risk to health-care workers from occupational exposures to them. However, HIV has been isolated from CSF, synovial, and amniotic fluid (6-8). and HBsAg has been detected in synovial fluid, amniotic fluid, and peritoneal fluid (9-11). One case of HIV transmission was reported after a percutaneous exposure to bloody pleural fluid obtained by needle aspiration (12). Whereas aseptic procedures used to obtain these fluids for diagnostic or therapeutic purposes protect health-care workers from skin exposures, they cannot prevent penetrating injuries due to contaminated needles or other sharp instruments.

Body Fluids to Which Universal Precautions Do Not Apply

Universal precautions do not apply to feces, nasal secretions, sputum, sweet tears, urine, and emesis unless they contain visible blood. The risk of transmission of HIV and HBV from these fluids and materials is extremely low or nonexistent. HIV has been isolated and HBsAg has been demonstrated in some of these fluids; however, epidemiologic studies in the health-care and community setting have not implicated these fluids or materials in the transmission of HIV and HBV infections (13,14). Some of the above fluids and excretions represent a potential source for nosocomial and community-acquired infections with other pathogens, and recommendations for preventing the transmission of non-bloodborne pathogens have been published (2).

Precautions for Other Body Fluids in Special Settings

Human breast milk has been implicated in perinatal transmission of HIV, and HBsAg has been found in the milk of mothers infected with HBV (10,13). However, occupational exposure to human breast milk has not been implicated in the transmission of HIV nor HBV infection to health-care workers. Moreover, the health-care worker will not have the same type of intensive exposure to breast milk as the nursing neonate. Whereas universal precautions do not apply to human breast milk, gloves may be worn by health-care workers in situations where exposures to breast milk might be frequent, for example, in breast milk banking.

Saliva of some persons infected with HBV has been shown to contain HBV-DNA at concentrations 1/1,000 to 1/10,000 of that found in the infected person's serum (15). HBsAg-positive saliva has been shown to be infectious when injected into experimental animals and in human bite exposures (16-18). However, HBsAg-positive saliva has not been shown to be infectious when applied to oral mucous membranes in experimental primate studies (18) or through contamination of musical instruments or cardiopulmonary resuscitation dummies used by HBV carriers (19,20). Epidemiologic studies of nonsexual household contacts of HIV-infected patients, including several small series in which HIV transmission failed to occur after bites or after percutaneous inoculation or contamination of cuts and open wounds with saliva from HIV-infected patients, suggest that the potential for salivary transmission of HIV is remote (5,13,14,21,22). One case report from Germany has suggested the possibility of transmission of HIV in a household setting from an infected child to a sibling through a human bite (23). The bite did not break the skin or result in bleeding. Since the date of sero-conversion to HIV was not known for either child in this case, evidence for the role of saliva in the transmission of virus is unclear (23). Another case report suggested the possibility of transmission of HIV from husband to wife by contact with saliva during kissing (24). However, follow-up studies did not confirm HIV infection in the wife (21).
Universal precautions do not apply to saliva.

General infection control practices already in existence - including the use of gloves for digital examination of mucous membranes and endotracheal suctioning, and handwashing after exposure to saliva - should further minimize the minute risk, if any, for salivary transmission of HIV and HBV (1,25). Gloves need not be worn when feeding patients and when wiping saliva from skin.

Special precautions, however, are recommended for dentistry (1). Occupationally acquired infection with HBV in dental workers has been documented (4), and two possible cases of occupationally acquired HIV infection involving dentists have been reported (5,26). During dental procedures, contamination of saliva with blood is predictable, trauma to health-care workers' hands is common, and blood spattering may occur. Infection control precautions for dentistry minimize the potential for non-intact skin and mucous membrane contact of dental health-care workers to blood-contaminated saliva of patients. In addition, the use of gloves for oral examinations and treatment in the dental setting may also protect the patient's oral mucous membranes from exposures to blood, which may occur from breaks in the skin of dental workers' hands.

Use of Protective Barriers

Protective barriers reduce the risk of exposure of the health-care worker's skin or mucous membranes to potentially infective materials. For universal precautions, protective barriers reduce the risk of exposure to blood, body fluids containing visible blood, and other fluids to which universal precautions apply. Examples of protective barriers include gloves, gowns, masks, and protective eyewear. Gloves should reduce the incidence of contamination of hands, but they cannot prevent penetrating injuries due to needles or other sharp instruments. Masks and protective eyewear or face shields should reduce the incidence of contamination of mucous membranes of the mouth, nose, and eyes. Universal precautions are intended to supplement rather than replace recommendations for routine infection control, such as handwashing and using gloves to prevent gross microbial contamination of hands (27). Because specifying the types of barriers needed for every possible clinical situation is impractical, some judgment must be exercised. The risk of nosocomial transmission of HIV, HBV, and other blood-borne pathogens can be minimized if health-care workers use the following general guidelines:

1. Take care to prevent injuries when using needles, scalpels, and other sharp instruments or devices: when handling sharp instruments after procedures; when cleaning used instruments; and when disposing of used needles. Do not recap used needles by hand; do not remove used needles from disposable syringes by hand; and do not bend, break, or otherwise manipulate used needles by hand. Place used disposable syringes and needles, scalpels, and other sharp items in puncture-resistant containers for disposal. Locate the puncture-resistant containers as close to the use area as is practical.

2. Use protective barriers to prevent exposure to blood, body fluids containing visible blood, and other fluids to which universal precautions apply. The type of protective barrier(s) should be appropriate for the procedure being performed and the type of exposure anticipated.

3. Immediately and thoroughly wash hands and other skin surfaces that are contaminated with blood, body fluids containing visible blood, or other body fluids to which universal precautions apply.
Gloves should reduce the incidence of blood contamination of hands during phlebotomy (drawing blood samples), but they cannot prevent penetrating injuries caused by needles or other sharp instruments. The likelihood of hand contamination with blood containing HIV, HBV, or other blood-borne pathogens during phlebotomy depends on several factors: 1) the skill and technique of the health-care worker, 2) the frequency with which the health-care worker performs the procedure (other factors being equal, the cumulative risk of blood exposure is higher for a health-care worker who performs more procedures), 3) whether the procedure occurs in a routine or emergency situation (where blood contact may be more likely), and 4) the prevalence of infection with blood-borne pathogens in the patient population. The likelihood of infection after skin exposure to blood containing HIV or HBV will depend on the concentration of virus (viral concentration is much higher for hepatitis B than for HIV), the duration of contact, the presence of skin lesions on the hands of the health-care worker, and for HBV - the immune status of the health-care worker. Although not accurately quantified, the risk of HIV infection following intact skin contact with infective blood is certainly much less than the 0.5% risk following percutaneous needle stick exposures (5).

In universal precautions, all blood is assumed to be potentially infective for blood-borne pathogens, but in certain settings (e.g., volunteer blood-donation centers) the prevalence of infection with some blood-borne pathogens (e.g., HIV, HBV) is known to be very low. Some institutions have relaxed recommendations for using gloves for phlebotomy procedures by skilled phlebotomists in settings where the prevalence of blood-borne pathogens is known to be very low. Institutions that judge that routine gloving for all phlebotomies is not necessary should periodically reevaluate their policy. Gloves should always be available to health-care workers who wish to use them for phlebotomy. In addition, the following general guide-lines apply:

1. Use gloves for performing phlebotomy when the health-care worker has cuts, scratches, or other breaks in his/her skin.
2. Use gloves in situations where the health-care worker judges that hand contamination with blood may occur, for example, when performing phlebotomy on an uncooperative patient.
3. Use gloves for performing finger and/or heel sticks on infants and children.
4. Use gloves when persons are receiving training in phlebotomy.

Selection of Gloves

The Center for Devices and Radiological Health, FDA, has responsibility for regulating the medical glove industry. Medical gloves include those marketed as sterile surgical or nonsterile examination gloves made of vinyl or latex. General purpose utility ("rubber") gloves are also used in the health-care setting, but they are not regulated by FDA since they are not promoted for medical use. There are no reported differences in barrier effectiveness between intact latex and intact vinyl used to manufacture gloves. Thus, the type of gloves selected should be appropriate for the task being performed. The following general guidelines are recommended:

1. Use sterile gloves for procedures involving contact with normally sterile areas of the body.
2. Use examination gloves for procedures involving contact with mucous membranes, unless otherwise indicated, and for other patient care or diagnostic procedures that do not require the use of sterile gloves.
3. Change gloves between patient contacts.
4. Do not wash or disinfect surgical or examination gloves for reuse. Washing with surfactants may cause "wicking," i.e., the enhanced penetration of liquids through undetected holes in the glove. Disinfecting agents may cause deterioration.
OSHA Instruction CPL 2-2.44B (Appendix A cont.)

5. Use general-purpose utility gloves (e.g., rubber household gloves) for housekeeping chores involving potential blood contact and for instrument cleaning and decontamination procedures. Utility gloves may be decontaminated and reused but should be discarded if they are peeling, cracked, or discolored, or if they have punctures, tears, or other evidence of deterioration.

Waste Management

Universal precautions are not intended to change waste management programs previously recommended by CDC for health-care settings (1). Policies for defining, collecting, storing, decontaminating, and disposing of infective waste are generally determined by institutions in accordance with state and local regulations. Information regarding waste management regulations in health-care settings may be obtained from state or local health departments or agencies responsible for waste management.

Reported by: Center for Devices and Radiological Health, Food and Drug Administration, Hospital Infections Program, AIDS Program, and Hepatitis Br, Div of Viral Diseases, Center for Infectious Diseases, National Institute for Occupational Safety and Health, CDC. Editorial Note: Implementation of universal precautions does not eliminate the need for other category- or disease-specific isolation precautions, such as enteric precautions for infectious diarrhea or isolation for pulmonary tuberculosis (1,2). In addition to universal precautions, detailed precautions have been developed for the following procedures and/or settings in which prolonged or intensive exposures to blood occur: invasive procedures, dentistry, autopsies or morticians' services, dialysis, and the clinical laboratory. These detailed precautions are found in the August 21, 1987, "Recommendations for Prevention of HIV Transmission in Health-Care Settings" (1). In addition, specific precautions have been developed for research laboratories (28).

TABLE I. Summary of cases of specified notifiable diseases, United States

(Note: Table I was not reproduced for this guide.)

TABLE II. Notifiable diseases of low frequency, United States

(Note: Table II was not reproduced for this guide.)

References


APPENDIX B

Recommendations for Prevention of HIV Transmission in Health-Care Settings

Introduction

Human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS), is transmitted through sexual contact and exposure to infected blood or blood components and perinatally from mother to neonate. HIV has been isolated from blood, semen, vaginal secretions, saliva, tears, breast milk, cerebrospinal fluid, amniotic fluid, and urine and is likely to be isolated from other body fluids, secretions, and excretions. However, epidemiologic evidence has implicated only blood, semen, vaginal secretions, and possibly breast milk in transmission.

The increasing prevalence of HIV increases the risk that health-care workers will be exposed to blood from patients infected with HIV, especially when blood and body fluid precautions are not followed for all patients. Thus, this document emphasizes the need for health-care workers to consider all patients as potentially infected with HIV and/or other blood-borne pathogens and to adhere rigorously to infection-control precautions for minimizing the risk of exposure to blood and body fluids of all patients.

The recommendations contained in this document consolidate and update CDC recommendations published earlier for preventing HIV transmission in health-care settings: precautions for clinical and laboratory staffs (1) and precautions for health-care workers and allied professionals (2); recommendations for preventing HIV transmission in the workplace (3) and during invasive procedures (4); recommendations for preventing possible transmission of HIV from tears (5); and recommendations for providing dialysis treatment for HIV-infected patients (6). These recommendations also update portions of the "Guideline for Isolation Precautions in Hospitals" (7) and reemphasize some of the recommendations contained in "Infection Control Practices for Dentistry" (8). The recommendations contained in this document have been developed for use in health-care settings and emphasize the need to treat blood and other body fluids from all patients as potentially infective. These same prudent precautions also should be taken in other settings in which persons may be exposed to blood or other body fluids.

Definition of Health-Care Workers

Health-care workers are defined as persons, including students and trainees, whose activities involve contact with patients or with blood or other body fluids from patients in a health-care setting.

Health-Care Workers with AIDS

As of July 10, 1987, a total of 1,875 (5.8%) of 32,395 adults with AIDS, who had been reported to the CDC national surveillance system and for whom occupational information was available, reported being employed in a health-care or clinical laboratory setting. In comparison, 6.8 million persons representing 5.6% of the U.S. labor force were employed in health services. Of the health-care workers with AIDS, 95% have been reported to exhibit high-risk behavior; for the remaining 5%, the means of HIV acquisition was undetermined. Health-care workers with AIDS were significantly more likely than other workers to have an undetermined risk (5% versus 3%, respectively). For both health-care workers and non-health-care workers with AIDS, the proportion with an undetermined risk has not increased since 1982. AIDS patients initially reported as not belonging to recognized risk groups are investigated by state and local health departments to determine whether possible risk factors exist. Of all health-care workers with AIDS reported to CDC who were initially characterized as not having an identified risk and for whom follow-up information was available, 66% have been reclassified because risk factors were identified or because the patient was found not to meet the surveillance case definition for AIDS. Of the 87 health-care workers currently categorized as having no identifiable risk, information is incomplete on 16 (18%) because of death or refusal to be interviewed; 38 (44%) are still being investigated. The remaining 33 (38%) health-care workers were interviewed or had other follow-up information available. The occupations of these 33 were as follows: five physicians (15%), three of whom were surgeons; one dentist (3%); three nurses (9%); nine nursing assistants (27%); seven housekeeping or maintenance workers (21%); three clinical laboratory technicians (9%); one therapist (3%); and four others who did not have contact with patients (12%). Although 15 of these 33 health-care workers reported parenteral and/or other non-needle stick exposure to blood or body fluids from patients in the 10 years preceding their diagnosis of AIDS, none of these exposures involved a patient with AIDS or known HIV infection.
OSHA Instruction CPL 2-2.44B (Appendix B cont.)

Risk to Health-Care Workers of Acquiring HIV in Health-Care Settings

Health-care workers with documented percutaneous or mucous-membrane exposures to blood or body fluids of HIV-infected patients have been prospectively evaluated to determine the risk of infection after such exposures. As of June 30, 1987, 883 health-care workers have been tested for antibody to HIV in an ongoing surveillance project conducted by CDC (9). Of these, 708 (80%) had percutaneous exposures to blood, and 175 (20%) had a "mucous membrane or an open wound contaminated by blood or body fluid. Of 396 health-care workers, each of whom had only a convalescent-phase serum sample obtained and tested at 90 days post-exposure, one-for whom heterosexual transmission could not be ruled out—was sero-positive for HIV antibody. For 425 additional health-care workers, both acute- and convalescent-phase serum samples were obtained and tested, none of 74 health-care workers with non-percutaneous exposures sero-converted, and three (0.9%) of 351 with percutaneous exposures sero-converted. None of these three health-care workers had other documented risk factors for infection.

Two other prospective studies to assess the risk of nosocomial acquisition of HIV infection for health-care workers are ongoing in the United States. As of April 30, 1987, 332 health-care workers with a total of 453 needle stick or mucous-membrane exposures to the blood or other body fluids of HIV-infected patients were tested for HIV antibody at the National Institutes of Health (10). These exposed workers included 103 with needle stick injuries and 229 with mucous-membrane exposures: none had sero-converted.

A similar study at the University of California of 129 health-care workers with documented needle stick injuries or mucous-membrane exposures to blood or other body fluids from patients with HIV infection has not identified any sero-conversions (11). Results of a prospective study in the United Kingdom identified no evidence of transmission among 150 health-care workers with parenteral or mucous-membrane exposures to blood or other body fluids, secretions, or excretions from patients with HIV infection (12).

In addition to health-care workers enrolled in prospective studies, eight persons who provided care to infected patients and denied other risk factors have been reported to have acquired HIV infection. Three of these health-care workers had needle stick exposures to blood from infected patients (13-15). Two were persons who provided nursing care to infected persons; although neither sustained a needle stick, both had extensive contact with blood or other body fluids, and neither observed recommended barrier precautions (16,17). The other three were health-care workers with non-needle stick exposures to blood from infected patients (18). Although the exact route of transmission for these last three infections is not known, all three persons had direct contact of their skin with blood from infected patients, all had skin lesions that may have been contaminated by blood, and one also had a mucous-membrane exposure.

A total of 1,231 dentists and hygienists, many of whom practiced in areas with many AIDS cases, participated in a study to determine the prevalence of antibody to HIV; one dentist (0.1%) had HIV antibody. Although no exposure to a known HIV-infected person could be documented, epidemiologic investigation did not identify any other risk factor for infection. The infected dentist, who also had a history of sustaining needle stick injuries and trauma to his hands, did not routinely wear gloves when providing dental care (19).

Precautions To Prevent Transmission of HIV

Universal Precautions

Since medical history and examination cannot reliably identify all patients infected with HIV or other blood-borne pathogens, blood and body-fluid precautions should be consistently used for all patients. This approach, previously recommended by CDC (3,4), and referred to as "universal blood and body-fluid precautions" or "universal precautions," should be used in the care of all patients, especially including those in emergency-care settings in which the risk if blood exposure is increased and the infection status of the patient is usually unknown (20).
OSHA Instruction CPL 2-2.44B (Appendix B cont.)

1. All health-care workers should routinely use appropriate barrier precautions to prevent skin and mucous-membrane exposure when contact with blood or other body fluids of any patient is anticipated. Gloves should be worn for touching blood and body fluids, mucous membranes, or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids, and for performing venipuncture and other vascular access procedures. Gloves should be changed after contact with each patient. Masks and protective eyewear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose, and eyes. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.

2. Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids. Hands should be washed immediately after gloves are removed.

3. All health-care workers should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needle stick injuries, needles should not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items should be placed in puncture-resistant containers for disposal; the puncture-resistant containers should be located as close as practical to the use area. Large-bore reusable needles should be placed in a puncture-resistant container for transport to the reprocessing area.

4. Although saliva has not been implicated in HIV transmission, to minimize the need for emergency mouth-to-mouth resuscitation, mouthpieces, resuscitation bags, or other ventilation devices should be available for use in areas in which the need for resuscitation is predictable.

5. Health-care workers who have exudative lesions or weeping dermatitis should refrain from all direct patient care and from handling patient-care equipment until the condition resolves.

6. Pregnant health-care workers are not known to be at greater risk of contracting HIV infection than health-care workers who are not pregnant; however, if a health-care worker develops HIV infection during pregnancy, the infant is at risk of infection resulting from perinatal transmission. Because of this risk, pregnant health-care workers should be especially familiar with and strictly adhere to precautions to minimize the risk of HIV transmission.

Implementation of universal blood and body-fluid precautions for all patients eliminates the need for use of the isolation category of "Blood and Body Fluid Precautions" previously recommended by CDC (7) for patients known or suspected to be infected with blood-borne pathogens. Isolation precautions (e.g., enteric, "AFB" [7]) should be used as necessary if associated conditions, such as infectious diarrhea or tuberculosis, are diagnosed or suspected.

Precautions for Invasive Procedures

In this document, an invasive procedure is defined as surgical entry into tissues, cavities, or organs or repair of major traumatic injuries 1) in an operating or delivery room, emergency department, or outpatient setting, including both physicians' and dentists' offices; 2) cardiac catheterization and angiographic procedures; 3) a vaginal or cesarean delivery or other invasive obstetric procedure during which bleeding may occur; or 4) the manipulation, cutting, or removal of any oral or perioral tissues, including tooth structure, during which bleeding occurs or the potential for bleeding exists. The universal blood and body-fluid precautions listed above, combined with the precautions listed below, should be the minimum precautions for all such invasive procedures.
OSHA Instruction CPL 2-2.44B (Appendix B cont.)

1. All health-care workers who participate in invasive procedures must routinely use appropriate barrier precautions to prevent skin and mucous-membrane contact with blood and other body fluids of all patients. Gloves and surgical masks must be worn for all invasive procedures. Protective eyewear or face shields should be worn for procedures that commonly result in the generation of droplets, splashing of blood or other body fluids, or the generation of bone chips. Gowns or aprons made of materials that provide an effective barrier should be worn during invasive procedures that are likely to result in the splashing of blood or other body fluids. All health-care workers who perform or assist in vaginal or cesarean deliveries should wear gloves and gowns when handling the placenta or the infant until blood and amniotic fluid have been removed from the infant's skin and should wear gloves during post-delivery care of the umbilical cord.

2. If a glove is torn or a needle stick or other injury occurs, the glove should be removed and a new glove used as promptly as patient safety permits: the needle or instrument involved in the incident should also be removed from the sterile field.

Precautions for Dentistry*

Blood, saliva, and gingival fluid from all dental patients should be considered infective. Special emphasis should be placed on the following precautions for preventing transmission of blood-borne pathogens in dental practice in both institutional and non-institutional settings.

1. In addition to wearing gloves for contact with oral mucous membranes of all patients, all dental workers should wear surgical masks and protective eyewear or chin-length plastic face shields during dental procedures in which splashing or spattering of blood, saliva, or gingival fluids is likely. Rubber dams, high-speed evacuation, and proper patient positioning, when appropriate, should be utilized to minimize generation of droplets and spatter.

2. Handpieces should be sterilized after use with each patient, since blood, saliva, or gingival fluid of patients may be aspirated into the handpiece or waterline. Handpieces that cannot be sterilized should be flushed with water, then rinsed. Handpieces should be flushed at the beginning of the day and after use with each patient. Manufacturers' recommendations should be followed for use and maintenance of waterlines and check valves and for flushing of handpieces. The same precautions should be used for ultrasonic scalers and air/water syringes.

3. Blood and saliva should be thoroughly and carefully cleaned from material that has been used in the mouth (e.g., impression materials, bite registration), especially before polishing and grinding intraoral devices. Contaminated materials, impressions, and intraoral devices should also be cleaned and disinfected before being handled in the dental laboratory and before they are placed in the patient's mouth. Because of the increasing variety of dental materials used intraorally, dental workers should consult with manufacturers as to the stability of specific materials when using disinfection procedures.

4. Dental equipment and surfaces that are difficult to disinfect (e.g., light handles or X-ray-unit heads) and that may become contaminated should be covered with impervious-backed paper, aluminum foil, or clear plastic wrap. The coverings should be removed and discarded, and clean coverings should be put in place after use with each patient.

Precautions for Autopsies or Morticians' Services

In addition to the universal blood and body-fluid precautions listed above, the following precautions should be used by persons performing postmortem procedures:

* General infection-control precautions are more specifically addressed in previous recommendations for infection-control practices for dentistry (8).
OSHA Instruction CPL 2-2.44B (Appendix B cont.)

1. All persons performing or assisting in postmortem procedures should wear gloves, masks, protective eyewear, gowns, and waterproof aprons.

2. Instruments and surfaces contaminated during postmortem procedures should be decontaminated with an appropriate chemical germicide.

Precautions for Dialysis

Patients with end-stage renal disease who are undergoing maintenance dialysis and who have HIV infection can be dialyzed in hospital-based or free-standing dialysis units using conventional infection-control precautions (21). Universal blood and body-fluid precautions should be used when dialyzing all patients.

Strategies for disinfecting the dialysis fluid pathways of the hemodialysis machine are targeted to control bacterial contamination and generally consist of using 500-750 parts per million (ppm) of sodium hypochlorite (household bleach) for 30-40 minutes or 1.5%-2.0% formaldehyde overnight. In addition, several chemical germicides formulated to disinfect dialysis machines are commercially available. None of these protocols or procedures need to be changed for dialyzing patients infected with HIV.

Patients infected with HIV can be dialyzed by either hemodialysis or peritoneal dialysis and do not need to be isolated from other patients. The type of dialysis treatment (i.e., hemodialysis or peritoneal dialysis) should be based on the needs of the patient. The dialyzer may be discarded after each use. Alternatively, centers that reuse dialyzers, i.e., a specific single-use dialyzer is issued to a specific patient, removed, cleaned, disinfected, and reused several times on the same patient only - may include HIV-infected patients in the dialyzer-reuse program. An individual dialyzer must never be used on more than one patient.

Precautions for Laboratories*

Blood and other body fluids from all patients should be considered infective. To supplement the universal blood and body-fluid precautions listed above, the following precautions are recommended for healthcare workers in clinical laboratories.

1. All specimens of blood and body fluids should be put in a well-constructed container with a secure lid to prevent leaking during transport. Care should be taken when collecting each specimen to avoid contaminating the outside of the container and of the laboratory form accompanying the specimen.

2. All persons processing blood and body-fluid specimens (e.g., removing tops from vacuum tubes) should wear gloves. Masks and protective eyewear should be worn if mucous-membrane contact with blood or body fluids is anticipated. Gloves should be changed and hands washed after completion of specimen processing.

3. For routine procedures, such as histologic and pathologic studies or microbiologic culturing, a biological safety cabinet is not necessary. However, biological safety cabinets (Class I or II) should be used whenever procedures are conducted that have a high potential for generating droplets. These include activities such as blending, sonicating, and vigorous mixing.

4. Mechanical pipetting devices should be used for manipulating all liquids in the laboratory. Mouth pipetting must not be done.

5. Use of needles and syringes should be limited to situations in which there is no alternative, and the recommendations for preventing injuries with needles outlined under universal precautions should be followed.

6. Laboratory work surfaces should be decontaminated with an appropriate chemical germicide after a spill of blood or other body fluids and when work activities are completed.

* Additional precautions for research and industrial laboratories are addressed elsewhere (22, 23).
OSHA Instruction CPL 2-2.44B (Appendix B cont.)

7. Contaminated materials used in laboratory tests should be decontaminated before reprocessing or be placed in bags and disposed of in accordance with institutional policies for disposal of infective waste (24).

8. Scientific equipment that has been contaminated with blood or other body fluids should be decontaminated and cleaned before being repaired in the laboratory or transported to the manufacturer.

9. All persons should wash their hands after completing laboratory activities and should remove protective clothing before leaving the laboratory.

Implementation of universal blood and body-fluid precautions for all patients eliminates the need for warning labels on specimens since blood and other body fluids from all patients should be considered infective.

Environmental Considerations for HIV Transmission

No environmentally mediated mode of HIV transmission has been documented. Nevertheless, the precautions described below should be taken routinely in the care of all patients.

Sterilization and Disinfection

Standard sterilization and disinfection procedures for patient-care equipment currently recommended for use (25,26) in a variety of health-care settings - including hospitals, medical and dental clinics and offices, hemodialysis centers, emergency-care facilities, and long-term nursing-care facilities-are adequate to sterilize or disinfect instruments, devices, or other items contaminated with blood or other body fluids from persons infected with blood-borne pathogens including HIV (21,23).

Instruments or devices that enter sterile tissue or the vascular system of any patient or through which blood flows should be sterilized before reuse. Devices or items that contact intact mucous membranes should be sterilized or receive high-level disinfection, a procedure that kills vegetative organisms and viruses but not necessarily large numbers of bacterial spores. Chemical germicides that are registered with the U.S. Environmental Protection Agency (EPA) as "sterilants" may be used either for sterilization or for high-level disinfection depending on contact time. Contact lenses used in trial fittings should be disinfected after each fitting by using a hydrogen peroxide contact lens disinfecting system or, if compatible, with heat (78 C - 80 C [172.4 F - 176.0 F]) for 10 minutes.

Medical devices or instruments that require sterilization or disinfection should be thoroughly cleaned before being exposed to the germicide, and the manufacturer's instructions for the use of the germicide should be followed. Further, it is important that the manufacturer's specifications for compatibility of the medical device with chemical germicides be closely followed. Information on specific label claims of commercial germicides can be obtained by writing to the Disinfectants Branch, Office of Pesticides, Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460.

Studies have shown that HIV is inactivated rapidly after being exposed to commonly used chemical germicides at concentrations that are much lower than used in practice (27-30). Embalming fluids are similar to the types of chemical germicides that have been tested and found to completely inactivate HIV. In addition to commercially available chemical germicides, a solution of sodium hypochlorite (household bleach) prepared daily is an inexpensive and effective germicide. Concentrations ranging from approximately 500 ppm (1:100 dilution of household bleach) sodium hypochlorite to 5,000 ppm (1:10 dilution of household bleach) are effective depending on the amount of organic material (e.g., blood, mucus) present on the surface to be cleaned and disinfected. Commercially available chemical germicides may be more compatible with certain medical devices that might be corroded by repeated exposure to sodium hypochlorite, especially to the 1:10 dilution.
OSHA Instruction CPL 2-2.44B (Appendix B cont.)

Survival of HIV in the Environment

The most extensive study on the survival of HIV after drying involved greatly concentrated HIV samples, i.e., 10 million tissue-culture infectious doses per milliliter (31). This concentration is at least 100,000 times greater than that typically found in the blood or serum of patients with HIV infection. HIV was detectable by tissue-culture techniques 1-3 days after drying, but the rate of inactivation was rapid. Studies performed at CDC have also shown that drying HIV causes a rapid (within several hours) 1-2 log (90%-99%) reduction in HIV concentration. In tissue-culture fluid, cell-free HIV could be detected up to 15 days at room temperature, up to 11 days at 37°C (98.6°F), and up to 1 day if the HIV was cell-associated.

When considered in the context of environmental conditions in health-care facilities, these results do not require any changes in currently recommended sterilization, disinfection, or housekeeping strategies. When medical devices are contaminated with blood or other body fluids, existing recommendations include the cleaning of these instruments, followed by disinfection or sterilization, depending on the type of medical device.

These protocols assume "worst-case" conditions of extreme virologic and microbiologic contamination, and whether viruses have been inactivated after drying plays no role in formulating these strategies. Consequently, no changes in published procedures for cleaning, disinfecting, or sterilizing need to be made.

Housekeeping. Environmental surfaces such as walls, floors, and other surfaces are not associated with transmission of infections to patients or health-care workers. Therefore, extraordinary attempts to disinfect or sterilize these environmental surfaces are not necessary. However, cleaning and removal of soil should be done routinely.

Cleaning schedules and methods vary according to the area of the hospital or institution, type of surface to be cleaned, and the amount and type of soil present. Horizontal surfaces (e.g., bedside tables and hard-surfaced flooring) in patient-care areas are usually cleaned on a regular basis, when soiling or spills occur, and when a patient is discharged. Cleaning of walls, blinds, and curtains is recommended only if they are visibly soiled. Disinfectant fogging is an unsatisfactory method of decontaminating air and surfaces and is not recommended.

Disinfectant-detergent formulations registered by EPA can be used for cleaning environmental surfaces, but the actual physical removal of microorganisms by scrubbing is probably at least as important as any antimicrobial effect of the cleaning agent used. Therefore, cost, safety, and acceptability by housekeepers can be the main criteria for selecting any such registered agent. The manufacturers' instructions for appropriate use should be followed.

Cleaning and Decontaminating Spills of Blood or Other Body Fluids

Chemical germicides that are approved for use as "hospital disinfectants" and are tuberculocidal when used at recommended dilutions can be used to decontaminate spills of blood and other body fluids. Strategies for decontaminating spills of blood and other body fluids in a patient-care setting are different than for spills of cultures or other materials in clinical, public health, or research laboratories. In patient-care areas, visible material should first be removed and then the area should be decontaminated. With large spills of cultured or concentrated infectious agents in the laboratory, the contaminated area should be flooded with a liquid germicide before cleaning, then decontaminated with fresh germicidal chemical. In both settings, gloves should be worn during the cleaning and decontaminating procedures.
Laundry

Although soiled linen has been identified as a source of large numbers of certain pathogenic microorganisms, the risk of actual disease transmission is negligible. Rather than rigid procedures and specifications, hygienic and common-sense storage and processing of clean and soiled linen are recommended (28). Soiled linen should be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. All soiled linen should be bagged at the location where it was used; it should not be sorted or rinsed in patient-care areas. Linen soiled with blood or body fluids should be placed and transported in bags that prevent leakage. If hot water is used, linen should be washed with detergent in water at least 71°C (160°F) for 25 minutes. If low-temperature (<70°C [158°F]) laundry cycles are used, chemicals suitable for low-temperature washing at proper use concentration should be used.

Infective Waste

There is no epidemiologic evidence to suggest that most hospital waste is any more infective than residential waste. Moreover, there is no epidemiologic evidence that hospital waste has caused disease in the community as a result of improper disposal. Therefore, identifying wastes for which special precautions are indicated is largely a matter of judgment about the relative risk of disease transmission. The most practical approach to the management of infective waste is to identify those wastes with the potential for causing infection during handling and disposal and for which some special precautions appear prudent. Hospital wastes for which special precautions appear prudent include microbiology laboratory waste, pathology waste, and blood specimens or blood products. While any item that has had contact with blood, exudates, or secretions may be potentially infective, it is not usually considered practical or necessary to treat all such waste as infective (23,26). Infective waste, in general, should either be incinerated or should be autoclaved before disposal in a sanitary landfill. Bulk blood, suctioned fluids, excretions, and secretions may be carefully poured down a drain connected to a sanitary sewer. Sanitary sewers may also be used to dispose of other infectious wastes capable of being ground and flushed into the sewer.

Implementation of Recommended Precautions

Employers of health-care workers should ensure that policies exist for:

1. Initial orientation and continuing education and training of all D.C. health-care workers—including students and trainees—on the D.C. epidemiology, modes of transmission, and prevention of HIV and D.C. other blood-borne infections and the need for routine use of D.C. universal blood and body-fluid precautions for all patients.

2. Provision of equipment and supplies necessary to minimize the risk D.C. of infection with HIV and other blood-borne pathogens.

3. Monitoring adherence to recommended protective measures. When D.C. monitoring reveals a failure to follow recommended precautions, D.C. counseling, education, and/or re-training should be provided, and, if necessary, appropriate disciplinary action should be considered.

Professional associations and labor organizations, through continuing education efforts, should emphasize the need for health-care workers to follow recommended precautions.

Serologic Testing for HIV Infection

Background

A person is identified as infected with HIV when a sequence of tests, starting with repeated enzyme immunoassays (EIA) and including a Western blot or similar, more specific assay, are repeatedly reactive. Persons infected with HIV usually develop antibody against the virus within 6-12 weeks after infection.
OSHA Instruction CPL 2-2.44B (Appendix B cont.)

The sensitivity of the currently licensed EIA tests is at least 99% when they are performed under optimal laboratory conditions on serum specimens from persons infected for \( \geq 12 \) weeks. Optimal laboratory conditions include the use of reliable reagents, provision of continuing education of personnel, quality control of procedures, and participation in performance-evaluation programs. Given this performance, the probability of a false-negative test is remote except during the first several weeks after infection, before detectable antibody is present. The proportion of infected persons with a false-negative test attributed to absence of antibody in the early stages of infection is dependent on both the incidence and prevalence of HIV infection in a population (Table 1).

The specificity of the currently licensed EIA tests is approximately 99% when repeatedly reactive tests are considered. Repeat testing of initially reactive specimens by EIA is required to reduce the likelihood of laboratory error. To increase further the specificity of serologic tests, laboratories must use a supplemental test, most often the Western blot, to validate repeatedly reactive EIA results. Under optimal laboratory conditions, the sensitivity of the Western blot test is comparable to or greater than that of a repeatedly reactive EIA, and the Western blot is highly specific when strict criteria are used to interpret the test results. The testing sequence of a repeatedly reactive EIA and a positive Western blot test is highly predictive of HIV infection, even in a population with a low prevalence of infection (Table 2). If the Western blot test result is indeterminate, the testing sequence is considered equivocal for HIV infection.

When this occurs, the Western blot test should be repeated on the same serum sample, and, if still indeterminate, the testing sequence should be repeated on a sample collected 3-6 months later. Use of other supplemental tests may aid in interpreting of results on samples that are persistently indeterminate by Western blot.

Testing of Patients Previous CDC recommendations have emphasized the value of HIV serologic testing of patients for: 1) management of parenteral or mucous-membrane exposures of health-care workers, 2) patient diagnosis and management, and 3) counseling and serologic testing to prevent and control HIV transmission in the community. In addition, more recent recommendations have stated that hospitals, in conjunction with state and local health departments, should periodically determine the prevalence of HIV infection among patients from age groups at highest risk of infection (32).

Adherence to universal blood and body-fluid precautions recommended for the care of all patients will minimize the risk of transmission of HIV and other blood-borne pathogens from patients to health-care workers. The utility of routine HIV serologic testing of patients as an adjunct to universal precautions is unknown. Results of such testing may not be available in emergency or outpatient settings. In addition, some recently infected patients will not have detectable antibody to HIV (Table 1).

Personnel in some hospitals have advocated serologic testing of patients in settings in which exposure of health-care workers to large amounts of patients' blood may be anticipated. Specific patients for whom serologic testing has been advocated include those undergoing major operative procedures and those undergoing treatment in critical-care units, especially if they have conditions involving uncontrolled bleeding. Decisions regarding the need to establish testing programs for patients should be made by physicians or individual institutions. In addition, when deemed appropriate, testing of individual patients may be performed on agreement between the patient and the physician providing care. In addition to the universal precautions recommended for all patients, certain additional precautions for the care of HIV-infected patients undergoing major surgical operations have been proposed by personnel in some hospitals. For example, surgical procedures on an HIV-infected patient might be altered so that hand-to-hand passing of sharp instruments would be eliminated; stapling instruments rather than hand-suturing equipment might be used to perform tissue approximation; electro-cautery devices rather than scalpels might be used as cutting instruments; and, even though uncomfortable, gowns that totally prevent seepage of blood onto the skin of members of the operative team might be worn. While such modifications might further minimize the risk of HIV infection for members of the operative team, some of these techniques could result in prolongation of operative time and could potentially have an adverse effect on the patient.
TABLE 1

Estimated annual number of patients infected with HIV not detected by HIV-antibody testing in a hypothetical hospital with 10,000 admissions/year*

<table>
<thead>
<tr>
<th>Beginning prevalence of HIV infection</th>
<th>Annual incidence of HIV infection</th>
<th>Approximate number of HIV-infected patients</th>
<th>Approximate number of HIV-infected patients not detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0%</td>
<td>1.0%</td>
<td>550</td>
<td>17-18</td>
</tr>
<tr>
<td>5.0%</td>
<td>0.5%</td>
<td>525</td>
<td>11-12</td>
</tr>
<tr>
<td>1.0%</td>
<td>0.2%</td>
<td>110</td>
<td>3-4</td>
</tr>
<tr>
<td>1.0%</td>
<td>0.1%</td>
<td>105</td>
<td>2-3</td>
</tr>
<tr>
<td>0.1%</td>
<td>0.02%</td>
<td>11</td>
<td>0-1</td>
</tr>
<tr>
<td>0.1%</td>
<td>0.01%</td>
<td>11</td>
<td>0-1</td>
</tr>
</tbody>
</table>

* The estimates are based on the following assumptions: 1) the sensitivity of the screening test is 99% (i.e., 99% of HIV-infected persons with antibody will be detected); 2) persons infected with HIV will not develop detectable antibody (sero-convert) until 6 weeks (1.5 months) after infection; 3) new infections occur at an equal rate throughout the year; 4) calculations of the number of HIV-infected persons in the patient population are based on the mid-year prevalence, which is the beginning prevalence plus half the annual incidence of infections.

TABLE 2

Predictive value of positive HIV-antibody tests in hypothetical populations with different prevalences of infection

<table>
<thead>
<tr>
<th>Prevalence of infection</th>
<th>Predictive value of positive test*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatedly reactive enzyme immunoassay (EIA)**</td>
<td>0.2%</td>
</tr>
<tr>
<td></td>
<td>2.0%</td>
</tr>
<tr>
<td></td>
<td>20.0%</td>
</tr>
<tr>
<td>Repeatedly reactive EIA followed by positive Western blot (WB)(***)</td>
<td>0.2%</td>
</tr>
<tr>
<td></td>
<td>2.0%</td>
</tr>
<tr>
<td></td>
<td>20.0%</td>
</tr>
</tbody>
</table>

* Proportion of persons with positive test results who are actually infected with HIV.

** Assumes EIA sensitivity of 99.0% and specificity of 99.5%.

*** Assumes WB sensitivity of 99.0% and specificity of 99.9%.
OSHA Instruction CPL 2-2.44B (Appendix B cont.)

Testing programs, if developed, should include the following principles:

- Obtaining consent for testing.
- Informing patients of test results, and providing counseling for sero-positive patients by properly trained persons.
- Assuring that confidentiality safeguards are in place to limit knowledge of test results to those directly involved in the care of infected patients or as required by law.
- Assuring that identification of infected patients will not result in denial of needed care or provision of suboptimal care.
- Evaluating prospectively 1) the efficacy of the program in reducing the incidence of parenteral, mucous-membrane, or significant cutaneous exposures of health-care workers to the blood or other body fluids of HIV-infected patients and 2) the effect of modified procedures on patients.

Testing of Health-Care Workers

Although transmission of HIV from infected health-care workers to patients has not been reported, transmission during invasive procedures remains a possibility. Transmission of hepatitis B virus (HBV)-a blood-borne agent with a considerably greater potential for nosocomial spread-from health-care workers to patients has been documented. Such transmission has occurred in situations (e.g., oral and gynecologic surgery) in which health-care workers, when tested, had very high concentrations of HBV in their blood (at least 100 million infectious virus particles per milliliter, a concentration much higher than occurs with HIV infection), and the health-care workers sustained a puncture wound while performing invasive procedures or had exudative or weeping lesions or microlacerations that allowed virus to contaminate instruments or open wounds of patients (33,34).

The hepatitis B experience indicates that only those health-care workers who perform certain types of invasive procedures have transmitted HBV to patients. Adherence to recommendations in this document will minimize the risk of transmission of HIV and other blood-borne pathogens from health-care workers to patients during invasive procedures. Since transmission of HIV from infected health-care workers performing invasive procedures to their patients has not been reported and would be expected to occur only very rarely, if at all, the utility of routine testing of such health-care workers to prevent transmission of HIV cannot be assessed. If consideration is given to developing a serologic testing program for health-care workers who perform invasive procedures, the frequency of testing, as well as the issues of consent, confidentiality, and consequences of test results-as previously outlined for testing programs for patients-must be addressed.

Management of Infected Health-Care Workers

Health-care workers with impaired immune systems resulting from HIV infection or other causes are at increased risk of acquiring or experiencing serious complications of infectious disease. Of particular concern is the risk of severe infection following exposure to patients with infectious diseases that are easily transmitted if appropriate precautions are not taken (e.g., measles, varicella). Any health-care worker with an impaired immune system should be counseled about the potential risk associated with taking care of patients with any transmissible infection and should continue to follow existing recommendations for infection control to minimize risk of exposure to other infectious agents (7,35). Recommendations of the Immunization Practices Advisory Committee (ACIP) and institutional policies concerning requirements for vaccinating health-care workers with live-virus vaccines (e.g., measles, rubella) should also be considered.

The question of whether workers infected with HIV -- especially those who perform invasive procedures -- can adequately and safely be allowed to perform patient-care duties or whether their work assignments should be changed must be determined on an individual basis. These decisions should be made by the health-care worker's personal physician(s) in conjunction with the medical directors and personnel health service staff of the employing institution or hospital.
Management of Exposures

If a health-care worker has a parenteral (e.g., needle stick or cut) or mucous-membrane (e.g., splash to the eye or mouth) exposure to blood or other body fluids or has a cutaneous exposure involving large amounts of blood or prolonged contact with blood - especially when the exposed skin is chapped, abraded, or afflicted with dermatitis - the source patient should be informed of the incident and tested for serologic evidence of HIV infection after consent is obtained. Policies should be developed for testing source patients in situations in which consent cannot be obtained (e.g., an unconscious patient).

If the source patient has AIDS, is positive for HIV antibody, or refuses the test, the health-care worker should be counseled regarding the risk of infection and evaluated clinically and serologically for evidence of HIV infection as soon as possible after the exposure. The health-care worker should be advised to report and seek medical evaluation for any acute febrile illness that occurs within 12 weeks after the exposure. Such an illness - particularly one characterized by fever, rash, or lymphadenopathy -- may be indicative of recent HIV infection. Sero-negative health-care workers should be retested 6 weeks post-exposure and on a periodic basis thereafter (e.g., 12 weeks and 6 months after exposure) to determine whether transmission has occurred. During this follow-up period -- especially the first 6-12 weeks after exposure, when most infected persons are expected to seroconvert -- exposed health-care workers should follow U.S. Public Health Service (PHS) recommendations for preventing transmission of HIV (36,37).

No further follow-up of a health-care worker exposed to infection as described above is necessary if the source patient is sero-negative unless the source patient is at high risk of HIV infection. In the later case, a subsequent specimen (e.g., 12 weeks). If the source patient cannot be identified, decisions regarding appropriate follow-up should be individualized. Serologic testing should be available to all health-care workers who are concerned that they may have been infected with HIV.

If a patient has a parenteral or mucous-membrane exposure to blood or other body fluid of a health-care worker, the patient should be informed of the incident, and the same procedure outlined above for management of exposures should be followed for both the source health-care worker and the exposed patient.

References:


6. CDC. Recommendations for providing dialysis treatment to patients infected with human T-lymphotropic virus type III/Lymphadenopathy-associated virus infection. MMWR 1986;35:376-8, 383.


Evaluation of Employer Training and Education Programs

Training programs must be evaluated through program review and discussion with management and employees.

1. Training programs shall normally include epidemiology, clinical presentation, modes of transmission and prevention of HBV and HIV as well protective measures to be taken to prevent exposure.

2. The following questions provided a general outline of training topics to be reviewed when conducting an inspection at a health care facility. Responses shall be documented in the case file. Areas of interest include, but are not limited to, direct patient care areas, emergency room, operating rooms, clinical laboratories, x-ray, housekeeping and laundry.

   a. Has a training and information program been established for employees actually or potentially exposed to blood and/or body fluids?

   b. How often is training provided and does it cover:

      (1) Universal precautions?

      (2) Personal protective equipment?
OSHA Instruction CPL 2-2.44B (Appendix C cont.)

(3) Workplace practices include blood drawing, room cleaning, laundry handling, cleanup of blood spills?

(4) Needle stick exposure/management?

(5) Hepatitis B Vaccination?

c. Does new employee orientation cover infection disease control?

d. Does the employer evaluate the effectiveness of the training D.C. program through monitoring of employee compliance with the D.C. guidelines?

e. Have employees been informed of the precautionary measures outlined in the CDC guidelines?

f. Is personal protective equipment provided to employees? In all D.C. appropriate locations? (Specificaly, ask about gloves, mask, eye D.C. protection, gowns (as appropriate).)

g. Is the necessary equipment (i.e., mouthpieces, resuscitation bags, D.C. or other ventilation devices) provided for administering D.C. mouth-to-mouth resuscitation on potentially infected patients?

h. Does training identify the specific procedures implemented by the D.C. employer to provide protection, such as proper use of personal D.C. protective equipment?

i. Are facilities available to comply with workplace practices, such as handwashing sinks, needle containers, detergents and D.C. disinfectants to clean up spills?

j. Are employees aware of specific workplace practices to follow when D.C. appropriate? Specifically ask about:

  o Handwashing.
  o Handling sharp instruments.
  o Routine examinations.
  o Blood spills.
  o Handling spills.
  o Disposal of contaminated materials.
  o Reusable equipment.

k. Are workers aware of procedures to follow after a needle stick or D.C. blood exposure? Have they had such experiences, and are the D.C. guidelines followed?

l. Are employees aware of the Hepatitis B vaccination program? Do they D.C. take advantage of it?
ABSTRACT
This interpretation provides CPL 2-2.44B clarifications concerning the overall effectiveness of products registered with the EPA as effective against the human immunodeficiency virus (HIV) and the length of sleeves necessary to protect dentists from exposure to blood and/or body fluids. Paragraph M.2.b. of OSHA Instruction CPL 2-2.44B describes the types of products which may be used following the initial cleanup of blood or body fluids. The intent of the disinfectant category in paragraph M.2.b.(2) is to allow the use of products registered by the EPA as being effective against HIV for cleanups in which HIV is the only infectious matter of concern. Professional judgment is allowed in determining protective equipment which is appropriate to protect against blood-borne diseases or pathogens.

INTERPRETATION
29CFR 1910.1030(d)(3)(ii); (d)(4)(ii)(A); AIDS (Blood-borne Pathogens Exposures)

JUL 19, 1990

SUBJECT: CPL 2-2.44B Clarifications

This is in response to your May 15 memo requesting clarification of the following two issues: (1) the overall effectiveness of products registered with the EPA as effective against the human immunodeficiency virus (HIV) and (2) the length of sleeves necessary to protect dentists from exposure to blood and/or body fluids.

The attached letter and updated listings clarify the intent of the Environmental Protection Agency (EPA) in this matter. List A identifies sterilants which represent the highest level of antimicrobial activity and are intended to destroy all viruses. List B identifies disinfectants which have been documented as effective against tuberculosis bacteria and the specific viruses named on the product label. List C details products that are registered with the EPA as effective specifically against the AIDS virus. The attached February 9, 1989, Federal Register notice clarifies the EPA's labeling requirements for HIV efficacy claims.

Paragraph M.2.b. of OSHA Instruction CPL 2-2.44B describes the types of products which may be used following the initial cleanup of blood or body fluids. The intent of the disinfectant category in paragraph M.2.b.(2) is to allow the use of products registered by the EPA as being effective against HIV for cleanups in which HIV is the only infectious matter of concern (e.g., those fluids found in HIV experimental laboratories). To determine the overall effectiveness of a particular product for use in a cleanup where HBV or other blood-borne pathogens are also of concern, one must compare the listing of HIV-effective products with the other two listings to check if they overlap for the product of interest. You are correct in your assumption that a product which is only effective against HIV may very well not be effective against HBV which is much more resistant to activation than is HIV. Thus the need to compare the listings.

With regards to your second inquiry, both the OSHA Instruction CPL 2-2.44B and the proposed regulation on Occupational Exposure to Blood-borne Pathogens are performance oriented and allow for the exercise of professional judgement in determining the protective equipment which is appropriate to protect the skin from blood or body fluids. The final determination regarding the existence of a hazard (in this case exposure of the forearms to blood and body fluids) must be made in the workplace by direct OSHA compliance officer observation of the particular situation.

As a point of interest, the American Dental Association's Infection Control Guidelines states that "long sleeves and high collars that protect the user from the spatter of body fluids and which cover street clothing provide the best coverage."
SOURCE LETTER

MAY 15, 1990

SUBJECT: CPL 2-2.44B Clarification

Clarification is requested concerning CPL 2-2.44B, Enforcement Procedures for Occupational Exposure to Hepatitis B and HIV. Section M.2.b.(2) states that products registered by EPA as effective against HIV may be used for cleanup of blood or body fluids. It appears that this is somewhat misleading in that such products are considered effective against HIV only. The Hepatitis B virus is considered more virulent and as such may not be inactivated by such products.

Also, clarification is requested concerning the issue of protective clothing. It is common practice for dentists to wear short sleeve shirts when performing dental procedures. Would we now require such dentists to wear long sleeve shirts or other protective garments to protect potentially exposed skin from blood or body fluids generated during dental procedures?

Dear Health Care Professionals:

This is in response to your recent request for information pertaining to antimicrobial pesticides that are registered by the U.S. Environmental Protection Agency (EPA) as sterilants and/or hospital disinfectants under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

An important aspect of the information concerning labeling of antimicrobial pesticides is an understanding of the terminology used by the manufacturers of these products, and by EPA.

Antimicrobial pesticides identified by the term sterilizer or sterilant are intended to destroy all viruses and all living bacteria, fungi, and their spores on inanimate surfaces. Sterilization is the highest level of antimicrobial activity. Manufacturers or registrants of these types of antimicrobial pesticides are required to submit to EPA specific effectiveness data using resistant bacterial spores to support sterilization claims on their product labels. Attachment (A) is a listing of the antimicrobial pesticides currently registered by EPA as sterilizers.

Antimicrobial pesticides identified by the term disinfectant are intended to provide a lower level of activity than sterilization. Disinfectants destroy or irreversibly inactivate specific viruses, bacteria, or pathogenic fungi, but not necessarily their spores, on inanimate surfaces. Most disinfectants, even with prolonged contact times, are not effective as sterilizers. To support effectiveness as a disinfectant, specific data relative to each bacteria, pathogenic fungus or virus against which a product is claimed to be effective must be submitted to EPA by the manufacturer or registrant. To be registered as a hospital disinfectant, a product must be shown to be effective against Staphylococcus aureus, Salmonella choleraesuis, and Pseudomonas aeruginosa. However, a registrant may optionally claim effectiveness against additional microorganisms such as Mycobacterium tuberculosis, pathogenic fungi, or certain specific viruses, provided such efficacy is documented with appropriate data.

It should be noted that disinfectants bearing virucidal claims on their product labels are registered as being effective only against the specifically tested and named viruses on the label, rather than all viruses. Attachment (B) is a listing of the antimicrobial products currently registered by EPA as hospital disinfectants, and that have also been documented as effective against Mycobacterium tuberculosis and the specific viruses named on the product labels.

Also enclosed is Attachment (C), a special listing of the products registered by EPA that have been documented as effective against HIV (AIDS virus) on environmental surfaces. These lists are not intended, and therefore should not be construed, as endorsements or recommendations by EPA of specific products for any purpose. They are simply listings of registered products in certain categories of effectiveness. You may wish to contact the manufacturers or registrants for specific information concerning their products. The individual product labels should be consulted for appropriate use directions.

New and revised products are continuously being registered by the Environmental Protection Agency. Therefore, at some time in the future these listings may be updated, and again made available to the public.
**ABSTRACT**

This letter clarifies OSHA's requirements regarding the recapping of needles when working with bloodborne diseases. OSHA Instruction CPL 2-2.44B clarifies OSHA's prohibition against recapping and expressly allows recapping by some method other than the two-handed method. The finger protector described as being three-quarters of an inch in diameter does not protect the hand holding the needle sheath from puncture. OSHA cannot consider it acceptable protection for use with a two-handed recapping procedure. OSHA views it as a temporary measure, for use by EMT's or home health care workers, therefore the needle should be disposed of in a sharps container.

**INTERPRETATION**

29CFR 1910.1030(d)(2); (d)(2)(vii); (d)(2)(vii)(B); (d)(3)(i); (d)(4)(iii);
Needle Re-Cap Methods

JUL 6, 1990

Dear Mr. T:

This is in further response to your letter of May 16 in which you requested information on the ability of your Nonmechanical Incapacitation Syringe Safety Needle Sheath to satisfy Occupational Safety and Health Administration (OSHA) requirements. Our response to your questions is as follows:

**Question 1:**

Because of OSHA recommended guidelines as to recapping of used syringes with original needle guard, will the needle sheath described, which is designed with a cone shaped finger protector of three quarters (3/4") diameter, be sufficient to satisfy OSHA requirements?

**Answer:**

OSHA Instruction CPL 2-2.44B, "Enforcement Procedures for Occupational Exposure to Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV)" clarifies OSHA's prohibition against recapping and expressly allows recapping by some method other than the traditional two-handed procedure, i.e., the use of re-sheathing instruments, self sheathing needles, or forceps is permitted.

The finger protector described in your letter as being three-quarters of an inch in diameter does not adequately protect the hand holding the needle sheath from accidental puncture. Since the three-quarters of an inch diameter prohibition against recapping and expressly allows recapping by some method other than the traditional two-handed procedure, i.e., the use of resheathing instruments, self sheathing needles, or forceps is permitted.

The finger protector described in your letter as being three-quarters of an inch in diameter does not adequately protect the hand holding the needle sheath from accidental puncture. Since the three-quarters of an inch diameter leaves much of the hand area uncovered, OSHA cannot consider it acceptable protection for use with a two-handed recapping procedure.

**Question 2:**

Based on the current methods of handling used syringes by encasing them in a plastic container, can the needle sheath described be considered as a waste container?

**Answer:**

While disabling the syringe with adhesive appears to be a good idea, OSHA views its use as a temporary measure, suitable for use by emergency medical technicians or home health care workers.

Vol. 2-560
Since there is no guarantee of correct usage or proper function of the device, the needle should still be disposed of in a sharps container.

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**SOURCE LETTERS**

(No Date)

Dear Mr. T:

This is an interim response to your letter of May 16 in which you requested information on the ability of your Nonmechanical Incapacitation Syringe Safety Needle Sheath to satisfy Occupational Safety and Health Administration (OSHA) requirements.

We are currently looking into this matter and expect to provide you with a full response shortly. Thank you for your patience.

MAY 16, 1990

Dear Mr. S:

I have had several discussions with personnel at OSHA who have been most helpful and have recommended that I contact your office.

Attached is a description of a new patented Nonmechanical Incapacitation Syringe Safety Needle Sheath.

I have two questions concerning this device and its ability to satisfy OSHA requirements.

1. Because of OSHA recommended guidelines as to recapping of used syringes with original needle guard, will the needle sheath described, which is designed with a cone shaped finger protector of three quarters (3/4") diameter, be sufficient to satisfy OSHA requirements?

2. Based on the current methods of handling used syringes by encasing them in a plastic container, can the needle sheath described be considered as a waste container? Please keep in mind that large generators should still follow normal final disposal requirements for used syringes.

I would appreciate your comments on the above questions and appreciate any other comments OSHA wishes to make.

Attachments 2

Nonmechanical Incapacitation Syringe Safety Needle Guard

The invention is comprised of a sheath, similar to a conventional needle guard, containing a fast curing colored liquid adhesive. A penetrable membrane which prevents flow and premature curing of the adhesive is inserted and secured within the sheath (needle guard) structure. There are several adhesives which will accomplish required end results.

The needle and luer lock portion of the syringe, after use, is immediately inserted into the sheath and the syringe plunger is pulled back and then pushed forward. The action of inserting the needle breaks the membrane, lodging the luer lock past the membrane when fully inserted and coating the outer surface of the luer lock with the adhesive. The action of pulling back the syringe plunger causes the adhesive to flow through the needle and into the space in the luer lock and into the syringe body, the flow of the adhesive being clearly visible due to the colored adhesive. It should be noted that the colored adhesive is preferred, but not required. When adhesive fills the syringe body enough to fix the plunger to the body the plunger is pushed forward to bring the rubber plunger tip in contact with the adhesive in the body. Note that the amount of adhesive in the sheath is enough to accomplish the above noted objective.

The end result is that the adhesive permanently adheres the sheath to the exterior surface of the syringe luer lock, the luer lock to the syringe body while filling the barrel in the needle and coating the exterior of the needle even though it is permanently encapsulated within the sheath. All components parts of the

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syringe assembly are adhered permanently together with the barrel of the needle completely filled, rendering the syringe and needle assembly completely inoperative and incapable of causing injury.

The device is manufacturable with molding and filling technologies which are currently available.

The device is designed (but not limited) to be a separate entity to avoid sterilization and FDA approval.

The device avoids the possibility of contamination by personnel during secondary handling at collection points.

The device can be used at user option and will work with secondary handling, collection and disposal requirements.

The device gives protection against secondary handling and disposal inadequacies.

The device also has an enlarged flange for guiding the needle and for preventing a needle puncture to the users hand during stress situations or inattentiveness.

Drying cycle does vary reflective of the type of adhesive and the amount of air contact. Upon first contact the curing process of the adhesive begins when the sheath is secured over the luer lock and becomes resistant to removal within seconds. The syringe and needle assembly is further rendered inoperative immediately the moment the adhesive is applied since removal of adhesive during the brief curing period requires equipments and solvents which would destroy the syringe plastic.
This interpretation responds to a request for review of brochures describing the Monoject System of Safety and Monoject Safety Syringe. OSHA does not endorse or approve any particular type of product or medical device. OSHA Instruction CPL 2-2.44B clarifies OSHA’s prohibition against recapping and expressly allows that “resheathing instruments, self-sheathing needles, or forceps shall be used to prevent recapping needles by hand”. The Self-sheathing needles described in the Monoject Safety Syringe brochure and the one-handed recapping method described in the Monoject System of Safety brochure are permitted under CPL 2-2.44B. The final determination regarding compliance with OSHA’s requirements in the area of bloodborne hazards must be made in the workplace.

This is in response to your letter of May 11, addressed to my staff. You requested that we review the brochures describing your company’s Monoject System of Safety and Monoject Safety Syringe.

As Ms. X has discussed with you, the Occupational Safety and Health Administration (OSHA) does not endorse or approve any particular type of product or medical device. The current compliance directive (OSHA Instruction CPL 2-2.44B: Enforcement Procedures for Occupational Exposure to Hepatitis B Virus and Human Immunodeficiency Virus) clarifies OSHA’s prohibition against recapping and expressly allows that “resheathing instruments, self-sheathing needles, or forceps shall be used to prevent recapping needles by hand” (page 16). The type of self-sheathing needles described in your Monoject Safety Syringe brochure and the one-handed recapping method described in your Monoject System of Safety brochure are permitted under OSHA Instruction CPL 2-2.44B. Of course, the final determination regarding compliance with OSHA’s requirements in the area of bloodborne hazards must be made in the workplace by direct OSHA compliance officer observation of employee work practices while utilizing your product.
This interpretation letter addresses the risk of bloodborne disease in dentistry. The specific issue is whether the use of natural teeth for (State) Board of Dentistry manual skills exam is a violation of OSHA regulations. Until a final standard on occupational exposure to bloodborne pathogens is promulgated, OSHA is enforcing current standards applicable to the hazards of bloodborne disease to protect employees from contact with blood or other potentially infectious materials including the residual pulp inside of teeth. Natural teeth should be transported and labeled in accordance with the sanitation standard 1910.141, and the accident prevention signs and tags standard, 1910.145. OSHA jurisdiction extends only to employees and health and safety in the workplace and does not cover those taking examinations who are not employees of the Board.

INTERPRETATION

29 CFR 1910.1030(e); 1910.1030(a); 1910.141; 1910.145

DEC 21, 1990

This is in response to your letter of November 5, addressed to Director of the Office of Information and Consumer Affairs, which was referred to this office for response. You inquired as to whether the use of natural teeth for the State of (State) Board of Dentistry manual skills exam was a violation of the Occupational Safety and Health Administration (OSHA) regulations.

Until a final standard on occupational exposure to bloodborne pathogens is promulgated, OSHA is enforcing a number of current standards which are applicable to the hazards of bloodborne disease (see enclosed copy of OSHA Instruction CPL 2-2.44B "Enforcement Procedures for Occupational Exposure to Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV)"). OSHA requires that employers train employees in the use of universal precautions for infection control and protect employees by means of appropriate personal protective equipment (e.g., gloves) from contact with blood or other potentially infectious materials including the residual pulp inside of teeth.

OSHA views natural teeth which may be used by dental students as specimens which should be transported and labeled in accordance with 29 CFR 1910.141, OSHA's waste disposal regulation, and 29 CFR 1910.145, the accident prevention signs and tags standard. Specimens must be placed in well constructed containers with a secure lid to prevent leaking during transport and must be disposed of in an approved manner. The containers are also required to be labeled with a tag identifying the contents as a biohazard.

Please bear in mind that, while these requirements are sound health policy for any facility, in accordance with the Occupational Safety and Health Act of 1970, OSHA jurisdiction extends only to employees and health and safety in the workplace and does not cover those taking examinations who are not employees of the Board.

SOURCE LETTER

NOV 5, 1990

The State of (State) - Board of Dentistry requires dental exam candidates to use freshly extracted natural teeth in order to take the manual dental exam.

I would like to know if dental supply companies can sell natural teeth or if dentists can donate natural teeth to exam candidates.

Is using natural teeth for the State of (State) - Dental Manual Skills exam a violation of OSHA regulations?
OSHA Instruction CPL 2-2.44C

February 13, 1992
Office of Health Compliance Assistance


A. PURPOSE. This instruction establishes policies and provides clarifications to ensure uniform inspection procedures are followed when conducting inspections to enforce the Occupational Exposure to Bloodborne Pathogens Standard.

B. SCOPE. This instruction applies OSHA-wide.

C. CANCELLATION. This instruction cancels OSHA Instruction CPL 2-2.44B, February 27, 1990, (except as noted at M.9 of this instruction).

D. REFERENCES.


E. ACTION. OSHA Regional Administrators and Area Directors shall use the guidelines in this instruction to ensure uniform enforcement of the Bloodborne Pathogens Standard. The Directorate of Compliance Programs will provide support as necessary to assist the Regional Administrators and Area Directors in enforcing the Bloodborne Pathogens Standard.

F. FEDERAL PROGRAM CHANGE. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:
1. Ensure that this change is promptly forwarded to each State designee, using a format consistent with the Plan Change Two-Way Memorandum in Appendix P of OSHA Instruction STP 2.22A CH-3.

2. Explain the technical content of this change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing to the Regional Administrator as soon as the State's intention is known, but not later than 70 calendar days after the date of issuance (10 days for mailing and 60 days for response). This acknowledgment must include the State's intention to follow OSHA's policies and procedures described in this instruction, or a description of the State's alternative policy and/or procedure which is "at least as effective" as the Federal policy.

4. Ensure that the State designees submit a plan supplement, in accordance with OSHA Instruction STP 2.22A CH-3, as appropriate, following the established schedule that is agreed upon by the State and Regional Administrator to submit non-Field Operations Manual/Technical Manual Federal Program Changes.

   a. If a State intends to follow the revised inspection procedures described in this instruction, the State must submit either a revised version of this instruction, adapted as appropriate to reference State law, regulations and administrative structure, or a cover sheet describing how references in this instruction correspond to the State's structure. The State's acknowledgment letter may fulfill the plan supplement requirement if the appropriate documentation is provided.

   b. If the State adopts an alternative to Federal enforcement inspection procedures, the State's plan supplement must identify and provide a rationale for all substantial differences from Federal procedures in order for OSHA to judge whether a different State procedure is as effective as the comparable procedure.

5. After Regional review of the State plan supplement and resolution of any comments thereon, forward the State submission to the National Office in accordance with established procedures. The Regional Administrator shall provide a judgment on the relative effectiveness of each substantial difference in the State plan change and an overall assessment thereon with a recommendation for approval or disapproval by the Assistant Secretary.

6. Advise State designees that the State is also responsible for extending coverage under its procedures for addressing occupational exposure to bloodborne pathogens to the public sector, such as police, firefighters, ambulance and other emergency response employees.

7. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State program personnel.

G. BACKGROUND. In September 1986, OSHA was petitioned by various unions representing health care employees to develop an emergency temporary standard to protect employees from occupational exposure to bloodborne diseases. The agency decided to pursue the development of a Section 6(b) of the Act standard and published a proposed rule on May 30, 1989.

1. The agency also concluded that the risk of contracting the hepatitis B virus (HBV) and human immunodeficiency virus (HIV) among members of various occupations within the health care sector required an immediate response and therefore issued OSHA Instruction CPL 2-2.44, January 19, 1988. That instruction was canceled by CPL 2-2.44A, August 15, 1988, and subsequently, CPL 2-2.44B was issued February 27, 1990.

2. On December 6, 1991, the agency issued its final regulation on occupational exposure to bloodborne pathogens (29 CFR 1910.1030). Based on a review of the information in the
rulemaking record, OSHA has determined that employees face a significant health risk as the result of occupational exposure to blood and other potentially infectious materials (OPIM) because they may contain bloodborne pathogens. These pathogens include HBV which causes Hepatitis B, a serious liver disease, and HIV, which causes Acquired Immunodeficiency Syndrome (AIDS). The agency further concludes that this hazard can be minimized or eliminated using a combination of engineering and work practice controls, personal protective clothing and equipment, training, medical surveillance, hepatitis B vaccination, signs and labels, and other provisions.

H. INSPECTION, SCHEDULING, AND SCOPE.

1. Inspection scheduling shall be conducted in accordance with the procedures outlined in the FOM, Chapter II, and for Federal agencies, Chapter XIII, except as modified in paragraphs 2., 3., and 4. below.

2. All inspections, programmed or unprogrammed, shall include, if appropriate, a review of the employer's exposure control plan and employee interviews to assess compliance with the standard.

3. Expansion of an inspection to areas involving the hazard of occupational exposure to body fluids (including onsite health care units and emergency response or first aid personnel) shall be performed when:
   a. The exposure control plan or employee interviews indicate deficiencies in complying with OSHA requirements, as set forth in 29 CFR 1910.1030 or this instruction.
   b. Relevant formal employee complaints are received which are specifically related to occupational exposure to blood or OPIM.
   c. A fatality/catastrophe inspection is conducted as the result of occupational exposure to blood or OPIM.

4. Regional Offices may develop and implement local emphasis programs as a supplement to complaint-generated inspection activities. (See the FOM, Chapter II.)

I. GENERAL INSPECTION PROCEDURES. The procedures given in the FOM, Chapter III, shall be followed except as modified in the following sections:

1. Where appropriate, the facility administrator, infection control director or occupational health nurse, "in service" education (i.e., training) director, and head of central services and/or housekeeping shall be included in the opening conference or interviewed early in the inspection.

2. If the facility maintains a file of "incident reports" or a first aid log on injuries (e.g., needlesticks), this shall be reviewed as it may contain injuries not included on the OSHA 200 log.

3. Compliance officers shall take necessary precautions to avoid direct contact with body fluids and shall not participate in activities that will require them to come into contact with body fluids, needles or other sharp instruments contaminated with blood. To evaluate such activities, compliance officers normally shall establish the existence of hazards and adequacy of work practices through employee interviews and shall observe them at a safe distance.

4. On occasions when entry into potentially hazardous areas are judged necessary, the compliance officer shall be properly equipped as required by the facility as well as by his/her own professional judgment, after consultation with the supervisor.

5. Compliance officers shall use appropriate caution when entering patient care areas of the facility. When such visits are judged necessary for determining actual conditions in the facility, the privacy of patients shall be respected. Photographs of patients normally will not be necessary and in no event shall identifiable photographs be taken without their consent.
J. RECORDING OF EXPOSURE INCIDENTS. For OSHA 200 recordkeeping purposes, an occupational bloodborne pathogens exposure incident (e.g., needlestick, laceration, or splash) shall be classified as an injury since it is usually the result of an instantaneous event or exposure. It shall be recorded if it meets one of the following recordability requirements:

1. The incident is a work-related injury that involves loss of consciousness, transfer to another job, or restriction of work or motion.

2. The incident results in the recommendation of medical treatment beyond first aid (e.g., gamma globulin, hepatitis B immune globulin, hepatitis B vaccine, or zidovudine) regardless of dosage.

3. The incident results in a diagnosis of seroconversion. The serological status of the employee shall not be recorded on the OSHA 200. If a case of seroconversion is known, it shall be recorded on the OSHA 200 as an injury (e.g., "needlestick" rather than "seroconversion") in the following manner:
   a. If the date of the event or exposure is known, the original injury shall be recorded with the date of the event or exposure in column B.
   b. If there are multiple events or exposures, the most recent injury shall be recorded with the date that seroconversion is determined in column B.

K. MULTI-EMPLOYER WORKSITE. The following citation guidelines apply in multi-employer worksites (See FOM, Chapter V, F.):

1. Employers shall be cited for violations of the standard to which their own employees are exposed.

2. They shall also be cited for violations to which employees of other employers on their premises are exposed to the extent that they control the hazard. For example, they shall be cited for not providing personal protective equipment to unprotected employees of other employers on their premises.

3. Physicians who are members of professional corporations are generally considered to be employees of that corporation. Therefore, the corporation may be cited for violations affecting those physicians, such as failure to provide the hepatitis B vaccine. Also, the hospitals where they work may be cited for violations to which they are exposed.

4. No citation shall be issued where the only persons exposed are physicians who are sole practitioners or partners, and thus not employees under the Occupational Safety and Health Act.

L. FEDERAL AGENCY FACILITIES. Agencies of the Federal Government are covered by this instruction.

M. CLARIFICATION OF THE STANDARD ON OCCUPATIONAL EXPOSURE TO BLOODBORNE PATHOGENS, 29 CFR 1910.1030. The guidance that follows relates to specific provisions of 29 CFR 1910.1030 and is provided to assist compliance officers in conducting inspections where the standard may be applicable:

NOTE: Compliance officers shall refer to 29 CFR 1910.1030 regulatory text and preamble for further information.

1. SCOPE AND APPLICATION - 29 CFR 1910.1030(a). This section defines the range of employees covered by the standard.
a. Since there is no population that is risk free for HIV or HBV infectivity, any employee who has occupational exposure to blood or other potentially infectious material will be included within the scope of this standard.

b. Although a list is included below of a number of job classifications that may be associated with tasks that have occupational exposure to blood and other potentially infectious materials, THE SCOPE OF THIS STANDARD IS IN NO WAY LIMITED TO EMPLOYEES IN THESE JOBS. The hazard of exposure to infectious materials affects employees in many types of employment and is not restricted to the health care industry. At the same time, EMPLOYEES IN THE FOLLOWING JOBS ARE NOT AUTOMATICALLY COVERED UNLESS THEY HAVE OCCUPATIONAL EXPOSURE:

- Physicians, physician's assistants, nurses, nurse practitioners, and other health care employees in clinics and physicians' offices;
- Employees of clinical and diagnostic laboratories;
- Housekeepers in health care facilities;
- Personnel in hospital laundries or commercial laundries that service health care or public safety institutions;
- Tissue bank personnel;
- Employees in blood banks and plasma centers who collect, transport, and test blood;
- Freestanding clinic employees (e.g., hemodialysis clinics, urgent care clinics, health maintenance organization (HMO) clinics, and family planning clinics);
- Employees in clinics in industrial, educational, and correctional facilities (e.g., those who collect blood, and clean and dress wounds);
- Employees assigned to provide emergency first aid;
- Dentists, dental hygienists, dental assistants and dental laboratory technicians;
- Staff of institutions for the developmentally disabled;
- Hospice employees;
- Home health care workers;
- Staff of nursing homes and long-term care facilities;
- Employees of funeral homes and mortuaries;
- HIV and HBV research laboratory and production facility workers;
- Employees handling regulated waste;
- Medical equipment service and repair personnel;
- Emergency medical technicians, paramedics, and other emergency medical service providers; and
- Firefighters, law enforcement personnel, and correctional officers (employees in the private sector, the Federal Government, or a State or local government in a State that has an OSHA-approved State plan).

INSPECTION GUIDELINES. The scope section of this standard states that it "applies to all occupational exposure to blood or other potentially infectious materials as defined by paragraph (b)." The compliance officer must take careful note of the phrase "as defined by paragraph (b)" when determining coverage. Definitions of particular importance that the compliance officer must clearly understand before beginning an inspection are: Blood, Bloodborne Pathogens, Contaminated, Exposure Incident, Occupational Exposure, Other Potentially Infectious Materials, and Regulated Waste. These will be of use in determining if an employee in either a health care or a non-health care setting is covered by this standard.

NOTES:

1. Part-time, temporary, and health care workers known as "per diem" employees are covered by this standard.

2. If an employee is trained in first aid and identified by the employer as responsible for rendering medical assistance as part of his/her job duties, that employee is covered by the standard.
3. Employees in the construction and maritime industries who have occupational exposure to blood or OPIM are covered by the standard.

2. DEFINITIONS - 29 CFR 1910.1030(b). The following provides further clarifications of some definitions found in this section:

a. "Blood": The term "human blood components" includes plasma, platelets, and serosanguineous fluids (e.g., exudates from wounds).

b. "Bloodborne Pathogens": While HBV and HIV are specifically identified in the standard, the term includes any pathogenic microorganism that is present in human blood and can infect and cause disease in persons who are exposed to blood containing the pathogen. Other examples include hepatitis C, malaria, syphilis, babesiosis, brucellosis, leptospirosis, arboviral infections, relapsing fever, Creutzfeld-Jakob disease, Human T-lymphotrophic Virus Type 1, and viral hemorrhagic fever.

c. "Exposure Indicent": "Non-intact skin" includes skin with dermatitis, hang-nails, cuts, abrasions, chafing, etc.

d. "Occupational Exposure": The term "reasonably anticipated" includes the potential for exposure as well as actual exposure. Lack of history of blood exposures among first aid personnel of a particular manufacturing site, for instance, does not preclude coverage.

NOTE: This definition does not cover "good Samaritan" acts which result in exposure to blood or other potentially infectious materials from assisting a fellow employee, although OSHA encourages employers to offer follow-up procedures in such cases.

e. "Other Potentially Infectious Materials" (OPIM): Coverage under this definition also extends to blood and tissues of animals who are deliberately infected with HIV or HBV.

f. "Parenteral": This definition includes human bites that break the skin, which are most likely to occur in violent situations such as may be encountered by prison personnel and police and in emergency rooms or psychiatric wards.

g. "Regulated Waste": This definition is covered in detail at M.4.d.(3) of this instruction.

3. EXPOSURE CONTROL PLAN - 29 CFR 1910.1030(c). This section requires the employer to identify those tasks and procedures in which occupational exposure may occur and to identify the positions whose duties include those tasks and procedures identified with occupational exposure. The exposure control plan required by section 1910.1030(c)(1) is a key provision of the standard because it requires the employer to identify the individuals who will receive the training, protective equipment, vaccination, and other benefits of the standard.

INSPECTION AND CITATION GUIDELINES. The compliance officer shall review the facility's written exposure control plan. While the plan may be part of a larger document, such as one addressing all health and safety hazards in the workplace, in order for the plan to be accessible to employees, it must be a cohesive entity by itself or there must be a guiding document which states the overall policy goals and references the elements of existing separate policies that comprise the plan.

- The compliance officer shall determine whether the plan is reviewed annually and updated to reflect significant modifications in tasks or procedures which may result in occupational exposure as required in section (c)(1)(iv).

- The content of the exposure control plan shall be reviewed for at least the following elements:
a. SECTIONS (c)(1)(ii)(A) and (c)(2)(i). The exposure determination requires employers to identify and document:

(1) Those job classifications in which all employees have occupational exposure, and
(2) Those job classifications in which some employees have occupational exposure.
   (a) In the latter case, the specific tasks and procedures, or groups of closely related tasks and procedures, which are associated with occupational exposure must be delineated. For example, only some of the employees in a hospital laundry room might be assigned the task of handling contaminated laundry.
   (b) The tasks and procedures that are grouped must be related; i.e., they must share a common activity such as "vascular access procedures," "handling of contaminated sharps," or "handling of deceased persons," etc.
(3) The exposure determination shall have been made without taking into consideration the use of personal protective clothing or equipment.

b. SECTION (c)(1)(ii)(B). The schedule and method of implementation for sections (d)-(h) in a manner appropriate to the circumstances of the particular workplace must be addressed in the exposure control plan. An annotated copy of the final standard may be adequate for small facilities. An employer may state on a copy of the final standard when and how he/she will implement the provisions of the standard. Larger facilities could develop a broad facility-wide program incorporating provisions from the standard that apply to their establishments.

c. SECTION (c)(1)(ii)(C). The exposure control plan shall include the procedure for evaluating the circumstances surrounding exposure incidents, including an evaluation of the policies and "failures of control" at the time of the exposure incident. Also to be considered are the engineering controls and work practices in place, as well as protective equipment or clothing used, at the time of the exposure incident.

d. SECTION (c)(1)(iii). The location of the plan may be adapted to the circumstances of a particular workplace provided that the employee can access a copy at the workplace, during the workshift (e.g., if the plan is maintained solely on computer, employees must be trained to operate the computer). In accordance with 29 CFR 1910.20, a hard copy of the exposure control plan shall be made available to the employee within 15 working days of the employee's request.

e. SECTIONS (c)(2)(i)(A) and (B). As previously discussed in the exposure control plan, the employer is required to list the job classifications covered by the plan. The list is part of the exposure determination. If a job classification, task, or procedure with occupational exposure is omitted from the list, but all employees in the job or performing the task or procedure have been included in all other aspects of the plan (i.e., vaccinations, training, etc.), it is to be considered a de minimis violation.

4. METHODS OF COMPLIANCE - 29 CFR 1910.1030(d). Section (d) sets forth the methods by which employers shall protect their employees from the hazards of bloodborne pathogens and comply with this standard through the use of universal precautions, engineering controls, work practice controls, personal protective equipment, proper housekeeping and handling of regulated waste.

a. Universal Precautions - 1910.1030(d)(1). Universal precautions is OSHA's accepted method of control to protect employees from exposure to all human blood and OPIM. The term "universal precautions" refers to a concept of bloodborne disease control which requires that all human blood and OPIM be treated as if known to be infectious for HIV, HBV, or other bloodborne pathogens regardless of the perceived "low risk" of a patient or patient population.
OSHA Instruction CPL 2-2.44C (cont.)

(1) Another method of infection control is called Body Substance Isolation (BSI). This method defines all body fluids and substances as infectious. BSI incorporates not only the fluids and materials covered by this standard but expands coverage to include all body fluids and substances.

(2) BSI is an acceptable alternative to universal precautions provided facilities utilizing BSI adhere to all other provisions of this standard.

CITATION GUIDELINES. If the employer has a policy of treating the blood or OPIM of some patients as potentially infectious and the blood or OPIM of others (e.g., the elderly or children) as not infectious, a violation of this provision exists.

M.4.b. ENGINEERING CONTROLS AND WORK PRACTICES - 1910.1030(d)(2). This section requires the employer to institute engineering and work practice controls as the primary means of eliminating or minimizing employee exposure. In those circumstances in which occupational exposure remains after institution of engineering and work practice controls, employers must provide, and ensure that employees use, personal protective equipment as additional protection.

INSPECTION GUIDELINES. The compliance officer shall determine through interviews or observation of work involving the use of needles whether proper engineering controls and work practices, such as immediate disposal of used needles into a sharps container, are used.

- Most preferable is the use of devices which offer an alternative to needles being used to perform the procedure. Examples of such devices include stopcocks (on-off switch), needle-protected systems or needleless systems which can be used in place of open needles to connect intravenous lines. Other devices which are integral to the syringe, such as self-sheathing needles, allow both hands to remain behind the needle and require very little manipulation to isolate the needle safely.

- When a health care worker must recap, such as during intermittent administration of various drugs during certain procedures, and when it is not feasible to use self-sheathing needle syringes, the employee must use some type of device that protects the hand or allows a safe one-handed recapping method. A proper one-handed scoop method is a work practice which may also be used in these circumstances. (See M.4.b.(3)(b) of this instruction on section 1910.1030(d)(2)(vii) for details.)

- The compliance officer shall evaluate the work practices used by health care providers to determine that they ensure the effectiveness of engineering controls. For example, some devices provide a fixed barrier between the hands and the needle after use. While some finger/hand shields available on the market offer full protection of the hand holding the needle sheath from accidental puncture, some do not. They may leave much of the hand area uncovered and are not considered acceptable protection for use in a two-handed recapping procedure. Both the shield and the cap must be constructed so that an employee is not exposed to puncture from a needle protruding from the side or end of the cap.

- The compliance officer should note that sharps may include more than the traditional needles or scalpels. They also include anything that might produce a puncture wound which would expose employees to blood or OPIM (e.g., the ends of contaminated orthodontia wires or broken glass).

CITATION GUIDELINES. Section (d)(2) shall be cited for failure to use engineering/work practice controls. A citation for the appropriate section of 1910.1030(g)(2)(vii) shall be grouped with it, if the compliance officer determines that inadequate training caused the failure to use such controls.

- Citations shall be issued if engineering or work practice controls are not used to eliminate or minimize employee exposure.

- While employers do not automatically have to institute the most sophisticated engineering controls (e.g., needleless IV connectors, self-sheathing needles), it is the employer's responsibility to
evaluate the effectiveness of existing controls and to review the feasibility of instituting more advanced engineering controls.

M.4.b.(1) SECTION 1910.1030(d)(2)(ii). This section requires that engineering controls be examined and maintained or replaced on a regular schedule to ensure their effectiveness. Regularly scheduled inspections are required to confirm, for instance, that engineering controls such as protective shields have not been removed or broken, that sharps disposal containers are being replaced in sufficiently frequent intervals and that other physical, mechanical or replacement-dependent controls are functioning as intended.

CITATION GUIDELINES. It is the employer's responsibility to regularly examine and repair and/or replace engineering controls as often as necessary to ensure that each control is maintained and that it provides the protection intended. If the compliance officer finds that there is no system for regular checking of the engineering controls, section 1910.1030(d)(2)(ii) shall be cited.

- If there is a check system, but the compliance officer finds, for example, that the biosafety cabinet is not functional, filters are overloaded (in research laboratories or production facilities), disposal containers are overfilled, or a hematon splash shield is broken or missing, section 29 CFR 1910.1030(d)(2)(ii) shall be cited if an effective monitoring system would have uncovered the deficiency.

- Additionally, if there is unprotected employee exposure, section 1910.1030(d)(2)(i) shall be cited for failure to use personal protective equipment after institution of engineering controls.

M.4.b.(2) SECTIONS 1910.1030(d)(2)(iii) THROUGH 1910.1030(d)(2)(vi). These sections require employers to provide handwashing facilities which are readily accessible to employees. Handwashing with soap and at least tepid running water must be performed as soon as feasible, particularly in cases of gross contamination, to adequately flush contaminated material from the skin.

M.4.b.(2)(a) SECTION 1910.1030(d)(2)(iv). This section allows the use of alternative handwashing methods as an interim measure when soap and water are not a feasible means of washing the hands or other parts of the body. Antiseptic hand cleaner, in conjunction with clean cloth or paper towels, or antiseptic towelettes are examples of alternative methods.

1. When these types of alternatives are used, employees shall wash their hands (or other affected area) with soap and running water as soon as feasible thereafter.

2. The compliance officer may see these types of alternative washing methods used by ambulance-based paramedics and emergency medical technicians (EMT's), firefighters, police, and mobile blood collection personnel who are exposed to blood or OPIM with no means of washing up with running water.

M.4.b.(2)(b) SECTION 1910.1030(d)(2)(v). This section requires employers to ensure that employees wash their hands immediately or as soon as feasible after removal of gloves or other PPE. There is no requirement for handwashing upon leaving the work area unless contact with blood or OPIM has occurred or gloves/PPE have been removed.

CITATION GUIDELINES. If the compliance officer finds that required handwashing facilities are not being provided, section 1910.1030(d)(2)(iii) shall be cited unless the employer demonstrates that handwashing facilities are not feasible. If infeasibility is demonstrated, section 1910.1030(d)(2)(iv) shall be cited when the required alternatives are not used. If handwashing is not performed by the employees after exposures or removal of gloves, sections 1910.1030(d)(2)(iv), 1910.1030(d)(2)(v), or 1910.1030(d)(2)(vi) shall be cited. This may be grouped with the pertinent training sections of 1910.1030(g)(2) if employees have not been adequately trained in handwashing procedures.

- At a fixed establishment, if employees need to perform handwashing, they must have a location for washing available at a reasonable distance from their normal work area; i.e., no further than what would be considered reasonable for location of restrooms.
If an employee must thread his/her way through doorways and/or stairs to wash with appropriate frequency so that there is a reasonable chance of resultant environmental surface contamination, a violation of section 1910.1030(d)(2)(iii) exists.

M.4.b.(3) SECTION 1910.1030(d)(2)(vii). Shearing or breaking of contaminated needles is completely prohibited by this section. Bending, recapping, or removing contaminated needles by hand is prohibited as a general practice. However, certain circumstances may exist in which these actions are necessary; e.g., when performing blood gas analyses, inoculating a blood culture bottle, administering incremental doses of a medication such as an anesthetic to the same patient, or removing the needle from a phlebotomy collection apparatus (e.g., vacutainer).

M.4.b.(3)(a) In these procedures, if the employer can demonstrate that no alternative is feasible or that such action is required by a specific medical procedure, recapping is allowed by some method other than the traditional two-handed procedure; e.g., by means of resheathing instruments or forceps.

M.4.b.(3)(b) The use of the properly performed one-hand scoop method (in which the hand holding the sharp is used to scoop up the cap from a flat surface) for recapping is a recognized and acceptable method; however, the scoop method must be performed in a safe manner and must be limited to situations in which recapping is necessary.

M.4.b.(3)(c) An acceptable means of demonstrating that no alternative is feasible would be a written justification included as part of the exposure control plan and stating that the particular medical procedure requires, for example, the bending of the needle and the use of forceps to accomplish this.

M.4.b.(4) SECTION 1910.1030(d)(2)(viii). Since reusable sharps, such as large bore needles, scalpels, and saws, pose the same percutaneous exposure hazard as disposable sharps, they must be contained in a manner that eliminates or minimizes the hazard until they are reprocessed. Therefore, the containers for reusable sharps must meet the same requirements as containers for disposable sharps (See M.4.d.(3)(b) of this instruction on section 1910.1030(d)(4)(iii)(A)(1)), with the exception that they are not required to be closable since it is anticipated that containers used for collecting and holding reusable sharps will, themselves, be reused. (See M.4.d.(2)(e) of this instruction on section 1910.1030(d)(4)(ii)(E) for the manner in which these reusable sharps are to be stored and processed, and M.4.d.(3)(g) on section 1910.1030(d)(4)(iii)(A)(4) on the requirements for cleaning and processing of these reusable containers.)

M.4.b.(5) SECTIONS 1910.1030(d)(2)(ix) and 1910.1030(d)(2)(x). These sections are intended primarily to eliminate or minimize indirect transmission of HBV from contaminated environmental surfaces.

M.4.b.(5)(a) Hand cream is not considered a "cosmetic" and is permitted. It should be noted that:

1. Some petroleum-based hand creams can adversely affect glove integrity, and
2. The handwashing requirements of section 1910.1030(d)(2)(v) and 1910.1030(d)(2)(vi) shall be followed.

M.4.b.(5)(b) The term "work area" means the area where work involving exposure or potential exposure to blood or OPIM exists, along with the potential contamination of surfaces. Employees are permitted to eat and drink in an ambulance cab, for example, as long as the employer has implemented procedures to permit employees to wash up and change contaminated clothing prior to entering the ambulance cab, and to ensure that patients and contaminated material remain behind the separating partition.

INSPECTION GUIDELINES. In addition to direct contamination of food or drink by blood or OPIM, the compliance officer must keep in mind that containers of food and beverage may also become contaminated, resulting in unsuspected contamination of the hands. The key to this section is whether food and drink may be contaminated by such processes as leakage/spilling of specimen containers, contact with contaminated items, or the performance of activities (e.g., laboratory analysis) that could generate splashes, sprays, or droplets of blood or OPIM.
CITATION GUIDELINES. Deficiencies of sections 1910.1030(d)(2)(iv) through 1910.1030(d)(2)(x) shall be cited in conjunction with the appropriate section of 1910.1030(g)(2) if inadequate training exists.

M.4.b.(6) SECTION 1910.1030(d)(2)(xi). The intent of this section is not only to decrease the chances of direct employee exposure through spraying or splashing of infectious materials onto employees, but also to reduce contamination of surfaces in the general work area.

M.4.b.(6)(a) Surgical power tools, lasers, and electrocautery devices may generate aerosols. However, OSHA does not believe that the data currently support the mandatory use of respiratory protection for exposure to aerosols, nor is there an effective engineering control to address aerosol exposure or approved respirator and filter cartridges.

M.4.b.(6)(b) Particularly hazardous is the use of sprays, brushes, and high pressure in equipment lines.

M.4.b.(6)(c) Typically, spattering or generation of droplets would necessitate use of eye protection and mask or a face shield. (See M.4.c.(8) of this instruction on section 1910.1030(d)(3)(x).)

CITATION Guidelines. A citation shall normally be issued for section 1910.1030(d)(2)(xi) if cleaning procedures unnecessarily cause splashing, spraying, spattering, and generation of droplets of blood or OPIM.

M.4.b(7) Section 1910.1030(d)(2)(xii). While this section prohibits mouth pipetting/suctioning, the agency allows a recognized emergency care method of clearing an infant's airways called "DeLee suctioning" in the following situation:

M.4.b(7)(a) In an emergency,

M.4.b(7)(b) When no other method is available; and

M.4.b(7)(c) Provided that a trap which prevents suctioned fluid from reaching the employee's mouth is inserted in-line between the infant and the employee.

M.4.b.(8) SECTION 1910.1030(d)(2)(xiii) - 1910.1030(d)(2)(xiii)(C). These sections deal with the containerization and labeling of specimens with the intent to eliminate or minimize the possibility of inadvertent employee contact with blood or OPIM which have leaked out of the container, contaminated exterior surfaces of the container, and/or surrounding surfaces. The labeling requirement warns employees that these substances are present so that proper handling precautions can be taken.

M.4.b.(8)(a) The labeling exemption listed in section 1910.1030(d)(2)(xiii)(A) applies to facilities which handle all specimens (not just those specimens which contain blood or OPIM) with universal precautions.

1. This exemption applies only while these specimens remain within the facility.
2. All employees who will have contact with the specimens must be trained to handle all specimens with universal precautions.
3. If the specimens leave the facility (e.g., during transport, shipment, or disposal) a label or red color - coding would be required.

M.4.b.(8)(b) Extracted teeth are subject to the containerization and labeling provisions of the standard.

M.4.b.(8)(c) The use of pneumatic tube systems for transport of small materials in hospitals now includes transmittal of laboratory specimens and other more fragile items. The primary concern in the transportation of clinical specimens in a pneumatic tube system is leakage of the specimen into the carrier and potentially into the system tubing. Some systems have virtually eliminated breakage as a cause of leakage by means of padded inserts for carriers and soft delivery of the carrier. Leakage generally results from improper packaging and/or the use of primary containers that do not prevent leakage during transport.

1. All workers who might potentially open a carrier shall be trained to regard the contents as biohazardous in nature. Employees who open biohazard carriers shall wear gloves in
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accordance with section (d)(3) when removing specimens from the tube system carrier, as it may be contaminated with leakage. They shall be trained in decontamination of the carrier and, if need be, the tube system in accordance with section (g)(2).

2. All precautions and standards for manual transport of specimens also apply to the automated transport of specimens (e.g., containerization and tagging/labeling).

INSPECTION GUIDELINES. The compliance officer must observe or document work practices to determine whether a secondary container is being used when necessary. If a bloody glove contaminates the outside of a primary container while the employee is placing a specimen, the employee would need to use a secondary container. Also, primary containers which may be punctured by their contents, including such items as pointed bone slivers, must be placed in a puncture-resistant container.

M.4.b.(9) SECTION 1910.1030(d)(2)(xiv). When it is not possible to decontaminate equipment prior to servicing or shipping (e.g., highly technical or sensitive equipment and/or limited access to contaminated parts), at least partial decontamination, such as flushing lines and wiping the exterior, shall be accomplished.

INSPECTION AND CITATION GUIDELINES. The compliance officer shall ensure that the employer's program makes provision for the required equipment labels. A label shall be attached to equipment stating which portions of the equipment remain contaminated in order to inform downstream servicing/repair employees of the hazard and precautions they need to take.

- Before citing 1910.1030(d)(2)(xiv), the compliance officer shall document that equipment is being shipped and/or serviced.

- Compliance officers shall observe or document work practices used when employees are decontaminating equipment. (See M.4.b.(6) of this instruction on section 1910.1030(d)(2)(xi) for use of high pressure equipment.)

- When decontaminating reusable equipment that is heavily soiled, the employee will have to perform some prewashing before proceeding with decontamination because most disinfectants/sterilants cannot sufficiently penetrate the organic material that may remain on such heavily soiled equipment. (See M.4.d.- (2)(e) of this instruction for details.)

M.4.c. PERSONAL PROTECTIVE EQUIPMENT - 1910.1030(d)(3). PPE must be used to prevent blood or OPIM from passing through to, or contacting the employees' work or street clothes, undergarments, skin, eyes, mouth, or other mucous membranes, unless engineering controls and work practices have eliminated occupational exposure.

M.4.c.(1) SECTION 1910.1030(d)(3)(i). The type and amount of PPE shall be chosen to protect against contact with blood or OPIM based upon the type of exposure and quantity of these substances which can be reasonably anticipated to be encountered during the performance of a task or procedure.

INSPECTION AND CITATION GUIDELINES. The financial responsibility for purchasing and providing PPE rests with the employer. The employer is not obligated under this standard to provide general work clothes to employees, but is responsible for providing PPE. If laboratory coats or uniforms are intended to protect the employee's body from contamination, they are to be provided by the employer.

M.4.c.(1)(a) Laboratory coats, uniforms and the like that are used as PPE shall be laundered by the employer and not sent home with the employee for cleaning. (See M.4.c.(4) of this instruction on section 29 CFR 1910.1030(d)(3)(iv).)

M.4.c.(1)(b) Scrubs are usually worn in a manner similar to street clothing, and normally should be covered by appropriate gowns, aprons or laboratory coats when splashes to skin or clothing are anticipated.

1. If a pullover scrub (as opposed to scrubs with snap closures) becomes minimally contaminated, employees should be trained in accordance with section
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1910.1030(g)(2)(vii)(G) to remove the pull-over scrub in such a way as to avoid contact with the outer surface; e.g., rolling up the garment as it is pulled toward the head for removal.

2. However, if the amount of blood exposure is such that the blood penetrates the scrub and contaminates the inner surface, not only is it impossible to remove the scrub without exposure to blood, but the penetration itself would constitute exposure. It may be prudent to train employees to cut such a contaminated scrub to aid removal and prevent exposure to the face.

M.4.c.(1)(c) A gown which is frequently ripped or falls apart under normal use would not be considered "appropriate PPE".

M.4.c.(1)(d) Resuscitator devices are to be readily available and accessible to employees who can reasonably be expected to resuscitate a patient.

1. Emergency ventilation devices also fall under the scope of PPE and hence must be provided by the employer for use in resuscitation (e.g., masks, mouthpieces, resuscitation bags, shields/overlay barriers).

2. Improper use of these devices shall be cited as a violation of section 1910.1030(d)(3)(ii). In addition, section 1910.1030(g)(2)(vii)(G) which requires employees to be trained in the types, proper use, location, etc., of the PPE shall be cited if inadequate training exists. Improper use includes failure to follow the manufacturer's instructions and/or accepted medical practice.

NOTE: The American Society for Testing Materials is currently (at the publication date of this document) testing and evaluating methods to be used for assessing the quality of PPE that is available for medical use.

M.4.c.(2) Section 1910.1030(d)(3)(ii). This section requires the use of PPE. It also provides for a limited exemption from the use of PPE, based on situations in which use of PPE would prevent the proper delivery of health care or public safety services, or would pose an increased hazard to the personal safety of the worker. The following represents examples of when such a situation could occur:

M.4.c.(2)(a) A sudden change in patient status occurs such as when an apparently stable patient unexpectedly begins to hemorrhage profusely, putting the patient's life in immediate jeopardy;

M.4.c.(2)(b) A firefighter rescues an individual who is not breathing from a burning building and discovers that his/her resuscitation equipment is lost/damaged and he/she must administer CPR;

M.4.c.(2)(c) A bleeding suspect unexpectedly attacks a police officer with a knife, threatening the safety of the officer and/or co-workers.

NOTE: An employee's decision not to use PPE is to be made on a case-by-case basis and must have been prompted by legitimate and truly extenuating circumstances. In such cases, no citation shall be issued when the employee temporarily and briefly abandons use of PPE. This does not relieve the employer of the responsibility to ensure that PPE is readily accessible at all times. The employer shall document why PPE was not used in each case and evaluate the circumstances surrounding the incident to reduce the likelihood of a future (unprotected) incident.

CITATION GUIDELINES. Section 1910.1030(d)(3)(ii) shall be cited if PPE is not being used properly. Improper use would include wearing the wrong PPE (e.g., wearing a laboratory coat when a rubber apron is needed) or wearing the wrong size PPE.

- In addition, section 1910.1030(g)(2)(vii)(G) shall also be cited if the employees have not been adequately trained.

- Unless all elements of the exemption, including the documentation requirement are met, the employer shall not receive the benefit of this exemption and section 1910.1030(d)(3)(ii) shall be cited.
M.4.c.(3) Section 1910.1030(d)(3)(iii). This section requires that the employer provide PPE in appropriate sizes and accessible locations. In addition, hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided. The compliance officer shall review the employer’s program and, through employee interviews, ensure that these provisions have been met.

CITATION GUIDELINES. If PPE is not provided, the compliance officer shall cite section 1910.1030(d)(3)(i). If PPE is not readily available, the compliance officer shall cite section 1910.1030(d)(3)(iii). For example, the clothing of paramedics out on an emergency call may become blood-soaked. If they are unable to change before the next emergency call because, a second set of clothing is located at the ambulance’s home base, and the ambulance does not return to base for prolonged periods, a violation of section 1910.1030(d)(3)(iii) would exist.

- If it is common practice that PPE is not utilized during certain situations or procedures where exposure to blood or OPIM is anticipated, then a violation of section 1910.1030(d)(3)(ii) would exist. If inaccessibility of PPE exists, section 1910.1030(d)(3)(iii) shall also be cited.

M.4.c.(4) Section 1910.1030(d)(3)(iv). It is the employer’s responsibility not only to provide PPE, but to clean, maintain, and/or dispose of it.

M.4.c.(4)(a) While many employees have traditionally provided and laundered their own uniforms or laboratory coats or the like, if the item’s intended function is to act as PPE, then it is the employer’s responsibility to provide, clean, repair, replace, and/or dispose of it.

M.4.c.(4)(b) Home laundering is not permitted since the employer cannot guarantee that proper handling or laundering procedures are being followed; it could also lead to the migration of contaminants to the home.

M.4.c.(4)(c) If the employee wishes to choose, wear, and maintain his/her own uniform or laboratory coat, then he/she would need to don additional employer-handled and employer-controlled PPE when performing tasks where it is reasonable to anticipate exposure to blood or OPIM.

CITATION GUIDELINES. If PPE is not cleaned/ laundered/disposed of by the employer, or if the employer cleans the PPE but there is a charge to the employee, then section 1910.1030(d)(3)(iv) shall be cited. If PPE is not repaired and/or replaced by the employer at no cost to the employee then section 1910.1030(d)(3)(v) shall be cited.

- If PPE is not removed when penetrated by blood or OPIM, the compliance officer shall cite section 1910.1030(d)(3)(vi).

- If the PPE is not changed, and additional PPE was available, section 29 CFR 1910.1030(g)(2)(vii)(G) may also be cited if employees have not been adequately trained.

M.4.c.(5) Section 1910.1030(d)(3)(vii). To minimize migration of contamination beyond the work area, employees who are provided designated lunchrooms or break rooms are permitted to eat/ drink/smoke in these areas as long as the employees wash up and change any contaminated clothing prior to entry.

INSPECTION AND CITATION GUIDELINES. The "work area" shall be evaluated on a case-by-case basis. While it is not the intent of the standard to require employees to change PPE when traveling, for example, from one hospital laboratory area to another, the compliance officer shall evaluate on a case-by-case basis whether the employee received adequate training in accordance with section 1910.1030(g)(2)(vii)(F) to ensure that no surface contamination occurs during the employee’s movement. A violation would exist for the following:

- An employee wearing contaminated gloves exits from a pathology laboratory to use a public telephone located in a public hallway of the hospital. Under such circumstances, it can be
reasonably anticipated that another employee, without benefit of gloves or knowledge of the potential surface contamination, could use the phone and unwittingly become contaminated.

M.4.c.(6) Section 1910.1030(d)(3)(ix)(A) - 1910.1030(d)(3)(ix)(C). These sections discuss the use of gloves. Gloves of appropriate sizes must be made available in accordance with section 1910.1030(d)(3)(iii). Studies have shown that gloves provide a barrier, but that neither vinyl nor latex procedure gloves are completely impermeable. Thus, handwashing after glove removal is required.

M.4.c.(6)(a) While disposable gloves shall be replaced as soon as practical when contaminated, obviously some critical procedures (i.e., surgery, delivery) cannot be interrupted to change gloves. The key words to evaluate are "practical" and "feasible".

M.4.c.(6)(b) Disinfecting agents may cause deterioration of the glove material; washing with surfactants could result in "wicking" or enhanced penetration of liquids into the glove via undetected pores thereby transporting potentially infectious materials into contact with the hand. For this reason, disposable (single use) gloves may not be washed and reused.

M.4.c.(6)(c) The compliance officer should note that certain solutions, such as iodine, may cause discoloration of gloves without affecting their integrity and function.

M.4.c.(6)(d) At a minimum gloves shall be used where there is reasonable anticipation of employee hand contact with blood, OPIM, mucous membranes, or nonintact skin; when performing vascular access procedures; or when handling or touching contaminated surfaces or items.

M.4.c.(7) Section 1910.1030(d)(3)(ix)(D). The exemption regarding the use of gloves during phlebotomy procedures applies only to employees of volunteer donor blood collection centers, and does not apply to phlebotomy conducted in other settings such as plasmapherisis centers or hospitals.

INSPECTION GUIDELINES. Where an employer in a volunteer donor blood collection center does not require routine gloving for all phlebotomies, the compliance officer shall document that the employer has fulfilled the requirements of sections 1910.1030(d)(3)(ix)(D)(1) through 1910.1030(d)(3)(ix)(D)(4)(iii), and that employees have received the training necessary to make an informed decision on the wearing of gloves.

CITATION GUIDELINES. Section 1910.1030(d)(3)(ix)(D) shall not be cited. Rather, the other sections of 1910.1030(d)(3) shall be cited if such an employer violates them and if the employer has not demonstrated fulfillment of all the requirements of the exemptions.

M.4.c.(8) Section 1910.1030(d)(3)(x). This section requires protection for the mucous membranes of the face and upper respiratory tract from droplet spattering. Minimum protection would consist of a mask in conjunction with eye glasses with solid side shields or a chin length face shield.

M.4.c.(8)(a) The employer would not necessarily have to provide prescription eyewear for employees. They could provide and mandate the use of side shields, goggles, and/or protective face shields, and provide proper training in decontamination procedures.

M.4.c.(8)(b) During microsurgery, when it is not reasonably anticipated that there would be any spattering, it would not constitute a violation for the surgeon, while observing surgery through a microscope, not to wear other eye protection.

M.4.c.(9) SECTIONS 1910.1030(d)(3)(xi)-(xii). Use of protective body clothing, such as gowns, aprons, laboratory coats, clinic jackets, surgical caps, or shoe covers, and the degree to which such PPE must resist penetration, are performance based. The employer must evaluate the task and the type of exposure expected and, based on the determination, select the "appropriate" personal protective clothing in accordance with section 1910.1030(d)(3)(i). For example, laboratory coats or gowns with long sleeves shall be used for procedures in which exposure of the forearm to blood or OPIM is reasonably anticipated to occur.
INSPECTION GUIDELINES. The compliance officer will need to evaluate the task being performed and the degree of anticipated exposure by direct observation, employee interview, or review of written standard operating procedures.

NOTE: There are no currently available standardized methods of testing and classification of performance specifications for resistance of clothing to biological hazards.

M.4.d. HOUSEKEEPING - 1910.1030(d)(4). The term "worksite" in this section refers not only to permanent fixed facilities such as hospitals, dental/medical offices, clinics, etc., but also covers temporary non-fixed workplaces. Examples of such facilities include but are not limited to ambulances, bloodmobiles, temporary blood collection centers, and any other non-fixed worksites which have a reasonable possibility of becoming contaminated with blood or OPIM.

M.4.d.(1) SECTION 1910.1030(d)(4)(i). Cleaning schedules and methods will vary according to the factors outlined in this section. While extraordinary attempts to disinfect or sterilize environmental surfaces such as walls or floors are rarely indicated, routine cleaning and removal of soil are required.

M.4.d.(1)(a) The employer must determine and implement an appropriate written schedule of cleaning and decontamination based upon the location within the facility (e.g., surgical operatory versus patient room), type of surface to be cleaned (e.g., hard-surfaced flooring versus carpeting), type of soil present (e.g., gross contamination versus minor splattering), and tasks and procedures being performed (e.g., laboratory analyses versus normal patient care).

M.4.d.(1)(b) The particular disinfectant used, as well as the frequency with which it is used, will depend upon the circumstances in which the housekeeping task occurs.

INSPECTION AND CITATION GUIDELINES. Compliance officers should consult the Environmental Protection Agency (EPA) lists of registered sterilants (representing the highest level of antimicrobial activity which destroys all viruses), tuberculocidal disinfectants (effective against tuberculosis bacteria and the specific viruses named on the product label as well as the hepatitis B virus), and antimicrobials with HIV efficacy claims for verification that the disinfectant used is appropriate. These lists are available from the Regional bloodborne pathogens coordinators.

NOTE: Products registered by the EPA as HIV-effective are not necessarily tuberculocidal and are therefore not necessarily effective against HBV which is more resistant to inactivation than is HIV. To determine the overall effectiveness of a particular product with an HIV-efficacy claim for use in a cleanup where HBV or other bloodborne pathogens are also of concern, the compliance officer must compare the listing of HIV-effective products with the other two listings to check if they overlap for the product of interest.

M.4.d.(2) SECTION 1910.1030(d)(4)(ii). Since environmental contamination is an effective method of disease transmission for HBV (the CDC states that HBV can survive for at least one week in dried blood on environmental surfaces or contaminated needles and instruments), section 1910.1030(d)(4)(ii) provides the minimum requirements for the cleaning and decontamination of equipment and environmental and working surfaces that come into contact with blood or OPIM.

M.4.d.(2)(a) In section 1910.1030(d)(4)(ii)(A), cleaning of contaminated work surfaces after completion of procedures is required to ensure that employees are not unwittingly exposed to blood or OPIM remaining on a surface from previous procedures.

1. Where procedures are performed on a continual basis throughout a shift or a day, as may be the case with a clinical laboratory technician performing blood analyses, it is not the agency's intent for the work surface to be decontaminated before the technician can proceed to the next analysis; rather for contaminated work surfaces to be decontaminated after the procedures are completed which, in the above example, would include a set of analyses. The completion of procedures might also occur when the employee is going to leave the work area for a period of time.
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2. Decontamination is not automatically required after each patient care procedure, rather only after procedures resulting in surface contamination.
3. There may be some instances in which "immediate" decontamination of overt contamination and spills may not be practical as with, for example, an operating table during surgery.
4. The third instance of mandated work surface decontamination is to be performed at the end of the work shift if the work surface may have become contaminated since the last cleaning by, for example, setting down contaminated instruments or specimens. This requirement is based upon the existence of a contaminated work surface rather than a particular worksite location. It does not, for example, encompass desks, countertops, and so forth that remain uncontaminated.

M.4.d.(2)(b) The use of protective coverings described in section 1910.1030(d)(4)(ii)(B) is an acceptable alternative for protecting items and surfaces against contamination and is particularly useful in situations in which a piece of equipment would be difficult to decontaminate but could be protected by a cover.

1. If this option is chosen, the covering must be removed and replaced at the stated minimum intervals; e.g., as soon as feasible following overt contamination or at the end of a workshift if they may have become contaminated during the shift.
2. More stringent decontamination rules, such as cleaning equipment or changing coverings between patients, may be prudent in infection control policy but do not fall under OSHA’s jurisdictional mandate to safeguard employee (not patient) health.

M.4.d.(2)(c) Section 1910.1030(d)(4)(ii)(C) requires both the inspection and decontamination on a regularly scheduled basis of cans, bins, pails, and so forth which are intended for reuse.

1. Since these containers may be used in a manner which presents the potential for their becoming contaminated with blood or OPIM, they must be cleaned immediately or as soon as feasible upon visible contamination. For example, a reusable metal trash can may be lined with a disposable plastic regulated waste bag which leaks and contaminates the can. In addition, regular decontamination will prevent the can from leaking, spilling, or contaminating the outside of successive bags.
2. Disinfection of these containers is not necessary to ensure their safety for their intended use; it may be possible to achieve their proper decontamination by means of a soap and water wash.

M.4.d.(2)(d) Since contaminated broken glass is capable of inflicting percutaneous injury and direct inoculation of bloodborne pathogens into the bloodstream, section 1910.1030(d)(4)(ii)(D) stipulates that broken glassware which may be contaminated shall not be picked up directly with the hands. The tools which are used in cleanup must be properly decontaminated or discarded after use and the broken glass placed in a sharps container and employees must be given specific information and training with respect to this task in accordance with the requirements of section 1910.1030(g)(2). Vacuum cleaners are not appropriate for cleanup of contaminated broken glass.

M.4.d.(2)(e) Section 1910.1030(d)(4)(ii)(E) prohibits employers from allowing employees to place their hands into containers whose contents include reusable sharps contaminated with blood or OPIM. (See M.4.d.(3)(g) of this instruction on section 1910.1030(d)(4)(iii)(A)(4).)

NOTE: The final standard recognizes that proper decontamination of reusable equipment, such as glassware or hand instruments, cannot be achieved in the presence of organic debris (e.g., blood) as it interferes with the efficacy of the disinfecting/sterilizing process and the number of products which can successfully penetrate a heavy bioburden is limited.

M.4.d.(2)(f) Violations of sections 1910.1030(d)(4)(ii) and 1910.1030(d)(4)(ii)(A) - 1910.1030(d)(4)(ii)(E) may result from a failure to adequately train employees in proper housekeeping procedures. If the compliance officer determines this is the case, violations should be grouped with the appropriate section(s) of 1910.1030(g)(2).
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M.4.d.(3) REGULATED WASTE - 1910.1030(d)(4)(iii). This section requires regulated waste to be properly contained and disposed of, so as not to become a means of transmission of disease to workers.

M.4.d.(3)(a) To eliminate the implication that OSHA has determined the "infectivity" of certain medical wastes, the bloodborne pathogens standard uses the term "regulated waste" to refer to the following categories of waste which require special handling, at a minimum:

1. Liquid or semi-liquid blood or OPIM.
2. Items contaminated with blood or OPIM and which would release these substances in a liquid or semi-liquid state if compressed.
3. Items that are caked with dried blood or OPIM and are capable of releasing these materials during handling.
5. Pathological and microbiological wastes containing blood or OPIM.

INSPECTION AND CITATION GUIDELINES. The compliance officer shall not use the actual volume of blood as the determining factor as to whether or not a particular material is to be considered regulated waste since 10 ml of blood on a disposable bed sheet would appear as a spot (not regulated waste) while the same amount of blood on a cotton ball would likely cause saturation and dripping (regulated waste). Similarly, an item may adequately contain these materials when in a static state yet liberate them when compacted in the waste container.

- Rather, the potential for dripping of liquid blood or OPIM, or flaking off of dried blood or OPIM should be considered.

- Under no circumstances should a bag of waste be squeezed or shaken to determine this. The compliance officer shall exercise professional judgment to make a determination based on visual factors such as a pool of liquid in the bottom of the container or dried blood flaking or falling off during handling, or based on employee interviews.

NOTES:

1. The compliance officer should keep in mind that while OSHA specifies certain features of the regulated waste containers, including appropriate tagging, the ultimate disposal method (landfilling, incinerating, and so forth) for medical waste falls under the purview of the EPA and possibly State and local regulations.
2. The EPA's Standard for the Tracking and Management of Medical Waste and a number of State regulations consider used needles to be regulated medical waste regardless of the presence of infectious agents. Failing information to the contrary, the compliance officer should consider a used needle to be contaminated.

M.4.d.(3)(b) Section 1910.1030(d)(4)(iii)(A)(1). The construction of the sharps containers must meet at least four criteria, two of which will be easily discernible. The compliance officer shall examine a container, preferably empty, to check that it is closable and color-coded or labeled.

1. Sharps containers are made from a variety of products, from cardboard to plastic. As long as they meet the definition of a sharps container, the compliance officer should consider them to be acceptable no matter what the composition.
2. At the time of publication of this instruction, the American Biological Safety Association was in the process of developing a standard for puncture-resistance of sharps disposal containers.
   a. If questions arise, the compliance officer shall consult the manufacturer's literature or contact the manufacturer directly to determine if the container is leak-proof on the sides and bottom, as well as puncture resistant.
   b. If the container is considered puncture-resistant by the manufacturer, but there is evidence, through observation or employee statements that sharps have been protruding through a container, section 1910.1030(d)(4)(iii)(A)(1)(ii) shall be cited.
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A container is as close as feasible to where sharps are used or can be reasonably anticipated to be found.

M.4(d)(3)(c). The exposure control plan specifies how and when the sharps container will be replaced and that the program is followed.

1. The employer's plan must include the method by which sharps containers will be determined to need to be replaced, such as sharps containers which have a transparent window or are at a height which allows employees to see if the container needs to be replaced.

2. If the employer has a plan but it is not followed, a citation for inadequate training on work practices, 1910.1030(g)(2)(vii)(F), shall be grouped with this section if a training violation exists.

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M.4.d.(3)(e) SECTION 1910.1030(d)(4)(ii)(A)(3)(i) and 1910.1030(d)(4)(ii)(A)(3)(ii). If work practice violations of these sections exist (e.g., not closing the container prior to movement or not placing the container in a secondary container if leakage is possible), they shall be grouped with:
1910.1030(g)(2)(vii)(F) if employees have not received adequate training.

M.4.d.(3)(f) SECTION 1910.1030(d)(4)(ii)(A)(3)(ii)(B). It is reasonable to presume that some sharps containers will contain residual liquids. If the container cannot be sealed to prevent leakage, it must be placed in a secondary container.

M.4.d.(3)(g) SECTION 1910.1030(d)(4)(ii)(A)(4). A reusable sharps container system will be acceptable if it does not expose employees to the risk of percutaneous injury. No system involving the manual opening, emptying, or cleaning of the containers will be allowed. The only acceptable system is a fully automated container cleaning system that eliminates employee exposure to sharps.

M.4.d.(3)(h) SECTION 1910.1030(d)(4)(ii)(B). While this section requires that regulated waste containers be closable, simply being closed does not ensure that wastes will be contained. Waste-containing bags may break and spill their contents, including liquid blood, while, for example, being loaded onto incinerator hoppers, thus contaminating both the employees and the work area.

1. Also, small medical offices which generate only a small volume of regulated waste may place that waste in a large holding container until the container is filled. In such a case, the design of the container must be such that it is able to retain the waste over an extended period of time between pick-ups by a specialized waste service.

2. The compliance officer should, therefore, check for visual signs of leakage of fluids during handling, storage, transport, or shipping.

3. Any failures to comply with the container construction requirements would be cited under this section. If the compliance officer determines that the employee was not properly trained to recognize the problem or use the containers correctly, a citation for the appropriate section 1910.1030(g)(2) should be grouped with violations of paragraph 1910.1030(d).

M.4.d.(3)(i) SECTIONS 1910.1030(d)(4)(ii)(B)(1)(iii) and 1910.1030(d)(4)(ii)(B)(2)(iii). Regulated waste containers are required to be labeled with the biohazard symbol or color coded to warn employees who may have contact with the containers of the potential hazard posed by their contents.

1. Even if a facility considers all of its waste to be regulated waste, the waste containers must still bear the required label or color-coding in order to protect new employees, who would not normally come into contact with wastes, and employees from outside the facility. This requirement is in contrast to the labeling alternative allowed when laundries use universal precautions for the handling of all soiled laundry. (See M.4.d.(4)(a) of this instruction on section 1910.1030(d)(4)(iv)(A)(2).)

2. Regulated waste that has been decontaminated need not be labeled or color-coded. The compliance officer in such a case shall verify that the employer's exposure control plan states the decontamination procedures to be followed.

a. In order to ensure that the decontamination process is successful, the employer must monitor factors such as the content, volume, density, configuration, and organic content of the load of waste. (See M.7.a.(2)) of this instruction on section 1910.1030(g)(1)(i)(l).

b. The temperature needed for the complete breakdown of plastics, as required by EPA, is sufficient to decontaminate regulated waste.

c. Autoclave efficiency can be verified by means of biological or chemical indicators. While most disposal bags used will contain an indicative color strip, if this is not the case a review may be made of the documentation kept for the sterilizer. Such documentation should include (1) date, time, and operator of each run, (2) type and approximate amount of waste tracked, (3) post-treatment reading of temperature-sensitive tape, (4) dates and results of calibration of the sterilizer, and (5) results of routine spore testing.

d. For a more detailed discussion of chemical decontamination, see guidelines at M.4.d.(1) of this instruction.
3. Although these sections contain label requirements, failure to label can also be cited under section 1910.1030(g)(1)(i).

M.4.d.(3)(j) SECTION 1910.1030(d)(4)(iii)(B)(2). A second container is required to be used when outside contamination of the first waste container occurs. This provision does not require routine double-bagging but rather requires double-bagging in such circumstances as a waste container being splashed with blood during surgery or autopsy, when a container has been handled by an employee with bloody gloves, or when a waste bag leaks blood or OPIM onto an adjacent bag.

M.4.d.(4) LAUNDRY - 1910.1030(d)(4)(iv). This section reduces employee exposure to bloodborne pathogens by reducing the amount of manual handling of contaminated laundry. Restricting the sorting to the laundry area will also reduce contamination of additional surfaces.

INSPECTION AND CITATION GUIDELINES. Sections 1910.1030(d)(4)(iv)(A) and 1910.1030(A)(1) limit the handling of laundry to removal and bagging or containerization. The compliance officer shall check the laundry collection program as well as the training of the employees assigned to these tasks.

M.4.d.(4)(a) SECTION 1910.1030(d)(4)(iv)(A)(2). The employer has been given the choice, by this section, to either:

1. Label or color-code according to section 1910.1030(g)(1)(i), or
2. Utilize universal precautions in the handling of all soiled (i.e., used) laundry.
   a. If universal precautions are used for handling all soiled laundry, the employer may use an alternative color or label for the bags/containers, as long as all employees are trained to recognize them as containing soiled laundry which requires the use of universal precautions.
   b. Training violations would be cited under the appropriate section of 1910.1030(g)(2)(vii).
3. Refer to M.4.d.(4)(d) on section 1910.1030(d)(4)(iv)(C) for labeling when laundry is shipped off-site.

M.4.d.(4)(b) SECTION 1910.1030(d)(4)(iv)(A)(3). The material for the bags or containers used in laundry collection must prevent soak-through or leakage of fluids to the exterior, if the contaminated laundry is wet and presents a reasonable likelihood of soak-through or leakage. Not all contaminated laundry must be placed in such bags or containers, only laundry wet enough to leak or soak through and expose workers handling the bags/containers to blood or OPIM.

M.4.d.(4)(c) SECTION 1910.1030(d)(4)(iv)(B). Employees direct contact with contaminated laundry must wear protective gloves and any other appropriate personal protective equipment, in order to prevent or reduce contact exposure to blood or OPIM. Any other personal protective equipment required must be determined on a case-by-case basis. Gowns, aprons, eyewear, and masks may be necessary to prevent employee exposure.

M.4.d.(4)(d) SECTION 1910.1030(d)(4)(iv)(C). The generator of the laundry must have determined if the facility to which it is shipped utilizes universal precautions. If not, all bags or containers of contaminated laundry must be labeled or color-coded in accordance with section (g)(1)(i). In this instance, if the generator of the laundry chooses to color-code rather than label, the color of the bag must be red.

INSPECTION AND CITATION GUIDELINES. The compliance officer shall check the employer's program to determine if laundry is shipped to another facility for cleaning and shall evaluate the methods used to ship contaminated laundry (CL) to a facility that does not utilize universal precautions in the handling of all soiled laundry. The following are unacceptable shipment methods and constitute violations of this section:
- The CL is not shipped labeled or in a red bag. Section 1910.1030(d)(4)(iv)(C) would be cited and grouped with the applicable subsection of 1910.1030(g)(1)(i).
- The CL is shipped with an improper label Section 1910.1030(d)(4)(iv)(C) would be cited and grouped with the applicable subsections of 1910.1030(g)(1)(i)(B), (C), and/or (D).

5. HIV AND HBV RESEARCH LABORATORIES AND PRODUCTION FACILITIES: 29 CFR 1910.1030(e). This section includes additional requirements that must be met by research laboratories and production facilities engaged in the culture, production, concentration, and manipulation of HIV and HBV.

- "Research laboratory" means a laboratory which produces or uses research laboratory scale amounts of HIV or HBV. Although research laboratories may not have the volume found in production facilities, they deal with solutions containing higher viral titers than those normally found in patients' blood. Academic research laboratories are included in this definition. Laboratories that conduct research unrelated to HIV or HBV on blood and other body fluids, or who use unconcentrated blood or blood components as the source of HIV or HBV, are not considered research laboratories for the purpose of this section.

- "Production facilities" are those engaged in industrial scale, large volume, or high concentration production of HIV or HBV.

1. Employers in such a facilities remain responsible for complying with the entire standard. Requirements stated elsewhere in the standard are not repeated.

2. These requirements are based largely on information from published guidelines of the Centers for Disease Control (CDC) and the National Institutes of Health (NIH) (See D.9. of this instruction, "Biosafety in Microbiological and Biomedical Laboratories.")

INSPECTION AND CITATION GUIDELINES. The compliance officer shall review the covered facility's plan, interview a sufficient number of employees, and observe work practices as necessary to determine if the requirements of this section are met. Care shall be taken to ensure the compliance officer understands the special practices and precautions in place at the facility, so that the compliance officer is not placed at risk. Specific requirements include:

a. SECTION 1910.1030(e)(2)(i). The term "regulated waste" refers to the OSHA definition as found in section 1910.1030(b) of this standard. The purpose of decontaminating regulated waste is to prevent the accidental exposure of other employees to the concentrated virus.

b. SECTIONS 1910.1030(e)(2)(ii)(A) through (M). Sections (A), (C), and (D) limit access to the laboratory and warn of the hazards associated with bloodborne pathogens. The compliance officer must review the written policies and procedures to determine if they are adequate to ensure that unauthorized individuals are not placed at risk nor that they can distract or otherwise interfere with the work of the authorized employees. Interviews with employees should be used to determine if the policies are followed.

(1) SECTION 1910.1030(e)(2)(ii)(E). The "other physical containment device" must be sufficient to ensure that virus-containing material will be kept away from the worker's mucous membranes, unprotected skin, and breathing zone.

(2) SECTIONS 1910.1030(e)(2)(ii)(H) and 1910.1030(e)(2)(ii)(I). These sections prevent the spread of contamination to other work areas. Section (I) allows for an
alternative to a HEPA filter as long as it is of equivalent or superior efficiency. HEPA filters may be ineffective in humid atmospheres.

(a) The employer must also have made provisions for routine maintenance and/or replacement of all filters and traps.

(b) If the compliance officer suspects that the engineering controls are failing to prevent the spread of the virus, the manufacturer should be contacted to establish the limits and required maintenance of the filters and traps.

(3) SECTION 1910.1030(e)(2)(ii)(J). The compliance officer shall determine if the use of needles and syringes is kept to a minimum and that they are properly handled as required, paying particular attention to establishing if the puncture-resistant containers are properly autoclaved or decontaminated before being discarded, reused, or incinerated.

(4) SECTION 1910.1030(e)(2)(ii)(M). This section ensures that any necessary additional procedures are developed to protect employees in situations unique to a research/production facility. The biosafety manual required by this section shall be reviewed and updated annually or more often if necessary. The facility will thus be required to review its procedures and determine if they are adequate to protect workers.

c. SECTION 1910.1030(e)(2)(iii). Specific containment equipment is required by this section to minimize or eliminate exposure to the viruses.

(1) If the compliance officer determines that biological safety cabinets (BSC) have been chosen as the means of containment, they must be certified (Class I, Class II, or Class III) when installed or moved, and at least annually.

(a) The compliance officer shall check that a dated tag is affixed to the BSC indicating who performed the certification. Alternatively, a certification report attesting to a minimum inward face velocity of at least 75 linear feet per minute and the integrity of the HEPA filters shall be reviewed by the compliance officer. The report must be dated and signed by the trained technician performing the measurements and integrity tests.

(b) See Appendix C for details on biological safety cabinets.

(2) In the alternative, appropriate combinations of PPE or physical containment devices (examples listed in the standard) will be accepted.

d. SECTIONS 1910.1030(e)(3)(i) and 1910.1030(e)(4)(iii). The handwashing facility must be supplied with at least tepid water, soap, and hand towels. The eyewash must supply a sufficient quantity of water to completely flush the eyes. A 15-minute supply of continuous free-flowing water is acceptable. The hands must be free to hold the eyelids open to aid in the complete flushing of the eyes. Portable facilities are acceptable only if they meet these requirements.

e. SECTION 1910.1030(e)(4) covers additional requirements for production facilities only. The requirement in section 1910.1030(e)(4)(v) minimizes the potential accidental exposure to other employees from the transport of culture fluids, plastic ware, and other contaminated equipment.

f. TRAINING REQUIREMENTS - 1910.1030(e)(5). The additional training requirements are specified in section 1910.1030(g)(2)(ix). Any violations found would be cited under that section of the standard. (See M.7.b.- (5) of this instruction for details.)
6. HEPATITIS B VACCINATION AND POST EXPOSURE EVALUATION AND FOLLOWUP - 29 CFR 1910.1030(f). This section provides a means to protect employees from infection caused by the hepatitis B virus by requiring employers to make the hepatitis B vaccination available to employees with occupational exposure to blood or OPIM. It also ensures that employees receive appropriate medical followup after each specific exposure incident. Appendix D provides general algorithms for these requirements.

a. GENERAL - 1910.1030(f)(1). This section refers to the hepatitis B vaccination as both the hepatitis B vaccine and vaccination series. These are to be made available to all occupationally exposed employees. In addition, a post-exposure evaluation and followup procedures are to be made available to all employees who experience an exposure incident. While it is OSHA's intent to have the employer remove, as much as possible, obstacles to the employee's acceptance of the vaccine, the term "made available" emphasizes that it is the employee's option to participate in the vaccination and followup programs.

INSPECTION GUIDELINES. The compliance officer shall examine the employer's program to determine if the vaccination series and post-exposure followup procedures meet the requirements of section (f)(1)(ii).

(1) SECTION 1910.1030(f)(1)(ii)(A). The term "no cost to the employee" means no "out of pocket" expense to the employee.

(a) The employer may not require the employee to use his/her health care insurance to pay for the series unless the employer pays all of the cost of the health insurance and unless there is no cost to the employee in the form of deductibles, co-payments, or other expenses. Even partial employee contribution to the insurance premium means the employee could be affected by a rise in the total premium caused by insurance company reaction to widespread hepatitis B vaccinations and is therefore unacceptable.

(b) The employer may not institute a program in which the employee pays the original cost of the vaccine and is reimbursed by the employer if she/he remains employed for a specified period of time.

(c) An "amortization contract" which requires employees to reimburse the employer for the cost of the vaccination should they leave his/her employ prior to a specified period of time is similarly prohibited.

(2) SECTION 1910.1030(f)(1)(ii)(B). The term "reasonable time and place" requires the medical procedures and evaluations to be convenient to the employee. They shall be offered during normally scheduled work hours. If participation requires travel away from the worksite, the employer must bear the cost.

(3) SECTION 1910.1030(f)(1)(ii)(C). The compliance officer may have to contact the Regional bloodborne pathogens coordinator to determine if the State board of nursing licensing allows licensed health care professionals other than physicians to carry out the procedures and evaluations required by section (f).

(4) SECTION 1910.1030(f)(1)(ii)(D). This section takes into consideration the changing nature of medical treatment relating to bloodborne pathogens. The CDC is the U.S. Public Health Service (USPHS) agency responsible for issuing guidelines and making recommendations regarding infectious agents. OSHA will accept the CDC guidelines current at the time of the evaluation or procedure. Copies of the current guidelines can be obtained by contacting the Regional bloodborne pathogens coordinator or CDC. (See Appendices A and B.)
NOTE: This section requires that the current USPHS/CDC guidelines be followed for all vaccinations, evaluations, and followup procedures. Any additional requirements (such as obtaining a written health care professional's opinion) specified in section (f) must also be met.

(5) SECTION 1910.1030(f)(1)(iii) requires that all laboratory tests be conducted by an accredited laboratory. The compliance officer must determine by means of employer documentation (e.g., certificate) that the laboratory is accredited by a national accrediting body (such as CDC or College of American Pathologists) or equivalent State agency which participates in a recognized quality assurance program.

b. HEPATITIS B VACCINATION - 1910.1030(f)(2). The compliance officer shall determine whether or not all occupationally exposed employees have the hepatitis B vaccination series made available to them after training required by section (g)(2)- (vii)(I) and within 10 working days of their initial assignment. The term "made available" includes the health care professional's evaluation and arranging for the administration of the first dose of the hepatitis B vaccination series to begin within the 10 days. This includes all employees with reasonably anticipated occupational exposure, regardless of how often the exposure may occur. Part-time and temporary employees are included in this coverage. The vaccine does not have to be made available if the employer documents (1) the exemption(s) set forth in section (f)(2), or (2) the signature of the employee on the mandatory declination form. (See Appendix A of 29 CFR 1910.1030.)

(1) SECTION 1910.1030(f)(2)(i) states the circumstances under which an employer is exempted from making the vaccination available. If, (a) the complete hepatitis B vaccination series was previously received, or (b) antibody testing shows the employee to be immune, or (c) the vaccine cannot be given for medical reasons, the series does not have to be made available. If the employer claims one of these exemptions, it must be documented in the employee's medical record.

(a) The hepatitis B vaccination must be given in the standard dose and through the standard route of administration as recommended in the USPHS/CDC guidelines. At the time of publication of this standard, intradermal inoculation of 0.1 of the normal dose of the hepatitis B vaccine is not recommended by the USPHS and therefore is not an acceptable administration method.

(b) Current USPHS guidelines do not recommend routine post-vaccination testing. Therefore, employers are not currently required to routinely test immune status after vaccination has been completed.

(2) SECTION 1910.1030(f)(2)(ii). Pre-vaccination screening for antibody status cannot be required of an employee, although if an employer wishes, he/she can make it available at no cost to employees. An employee may decline the prescreening, and the employer must still make the vaccination series available to the employee.

(3) SECTION 1910.1030(f)(2)(iii). The signing of the hepatitis B vaccine declination form by the employee, at the time the vaccination is made available, does not relieve the employer from the requirement to provide the vaccine at a later date if the employee so chooses.

(4) SECTION 1910.1030(f)(2)(iv). Although the declination form set forth in Appendix A does not have to be reproduced, the declination statement used by the employer must contain the same language as that found in Appendix A—no words may be added or subtracted.
OSHA Instruction CPL 2-2.44C (cont.)

(5) SECTION 1910.1030(f)(2)(v). At the time of this publication, the possible need for booster doses of the hepatitis B vaccine is still being assessed. There is no current requirement to provide boosters unless the USPHS recommends it at a later date.

c. POST-EXPOSURE EVALUATION AND FOLLOWUP - 1910.1030(f)(3). This section requires the employer to make immediately available a confidential medical evaluation and followup to an employee reporting an exposure incident.

NOTE: Employees who do not fall within the scope of this standard may still experience a specific exposure incident at work that is unrelated to the performance of their job duties. In such a case, OSHA strongly encourages their employer to offer them the followup procedures set forth in this section.

INSPECTION GUIDELINES. The compliance officer must determine if the employer's plan provides for immediate and confidential procedures. At sites where an exposure incident has occurred it should be determined if the procedures were properly followed through interviews, incident report reviews, and, if necessary, medical records reviews.

- The word "immediately" is used in the standard to emphasize the importance of prompt medical evaluation and prophylaxis. An exact time was not given in the standard since medical knowledge concerning the effectiveness of post-exposure prophylactic measures is constantly changing. OSHA requires the evaluation and followup procedures to be given as soon as possible after exposure.

- If the compliance officer believes that an employer is not properly following accepted post-exposure procedures, or needs specific information about current accepted procedures, the Regional bloodborne pathogens coordinator should be contacted. A health care professional in the National Office will then be consulted.

- The employer must also have established a system that maintains the required medical records in a way that protects the confidentiality of the employee's identity and test results. If the employer has contracted with a clinic or other health care facility to provide the followup programs, the confidentiality requirements must be part of the contract.

(1) SECTION 1910.1030(f)(3)(i). Documentation of the circumstances surrounding an exposure incident will help the employer and the compliance officer determine, for example, if PPE is being used or if training is lacking.

(2) SECTION 1910.1030(f)(3)(ii). This section requires the employer to identify the source individual in an exposure incident, unless this is infeasible. The employer must document in writing the identity of, or infeasibility of identifying, the source individual. Examples of when it may not be feasible to identify the source individual include incidents of needlesticks by unmarked syringes left in laundry or those involving blood samples which are not properly labeled, as well as prohibition by State or local law.

(a) SECTION 1910.1030(f)(3)(ii)(A). This section requires testing of the source individual's blood after consent is obtained. The employer must ask for consent from the source individual or anyone legally authorized to give consent on his/her behalf. If consent is not obtained, the employer must document this in writing. The compliance officer shall ensure that the employer's plan includes this provision.
1. For those jurisdictions that do not require consent of the individual, available blood must be tested. The term "if available" applies to blood samples that have already been drawn from the source individual.

2. OSHA does not require redrawing of blood specifically for HBV and HIV testing without consent of the source individual.

(b) SECTION 1910.1030(f)(3)(ii)(C). This section does not authorize the employer to be informed of the results of source individual or exposed employee testing. However, the results of the source individual's testing must be made available to the exposed employee.

1. The boundary between employer and health care professional may be blurred in a medical setting in which, for example, the physician is both the employer and the evaluating health care professional. In such cases, the compliance officer shall ensure that requirements for consent and confidentiality have been followed.

2. "Applicable laws and regulations concerning disclosure" refers to State and Federal laws that specifically cover medical privacy and confidentiality.

(c) SECTION 1910.1030(f)(3)(iii). The compliance officer must determine if the employer's program offers covered employees all of the listed requirements, in the event of an exposure incident. Counseling and evaluation of reported illnesses is not dependent on the employee's electing to have baseline HBV and HIV serological testing.

1. SECTION 1910.1030(f)(3)(iii)(A). Although the consent of the employee must also be obtained before collection of blood and before hepatitis B serological testing, the 90-day holding requirement in section 1910.1030(f)(3)(iii)(B) does not apply.

2. SECTION 1910.1030(f)(3)(iii)(B). This section allows employees the opportunity for future testing without the need for an immediate decision.

   a. Employees involved in an exposure incident have at least 90 days following baseline blood collection to decide if they wish to have their blood tested for HIV.

   b. Employers are required to preserve the blood the employee consented to have drawn, if it was not tested for HIV initially, for at least the 90-day period. Compliance officers shall check that if the employer contracts for post-exposure followup, the contractor has been informed of the 90-day requirement.

(d) SECTION 1910.1030(f)(3)(iv). See Appendices A and B for CDC's current guidelines on management of occupational exposure to HIV and HBV.

   d. INFORMATION PROVIDED TO THE HEALTH CARE PROFESSIONAL - 1910.1030(f)(4). This section requires the employer to provide information to the health care professional responsible for the employee's hepatitis B vaccination and post-exposure incident followup.

INSPECTION GUIDELINES. The compliance officer must determine if the employer's plan includes providing a copy of this standard to the health care professional responsible for the employee's hepatitis B vaccination.
OSHA Instruction CPL 2-2.44C (cont.)

(1) In the case of an exposure incident, the plan must provide for the transmission of the information required by 1910.1030(f)(4)(ii)(A) through (C) and (E) to the health care professional. The information required by 1910.1030(f)(4)(ii)(D) must be provided only if available.

(2) The employer does not have a specific right to know the actual results of the source individual's blood testing, but must ensure that the information is provided to the evaluating health care professional.

(3) If the evaluating health care professional is also the employer, the information must still be in the employee's record and made available at the time of a post-exposure incident. All applicable laws and standards of confidentiality apply in this situation.

e. HEALTH CARE PROFESSIONAL'S WRITTEN OPINION - 1910.1030(f)(5). The employer is required to obtain and provide a written opinion to the employee within 15 working days of completion of the original evaluation. Employer access is allowed to the health care professional's written opinion.

(1) SECTION 1910.1030(f)(5)(i) limits the health care professional's written opinion to very specific information regarding the employee's hepatitis B vaccine status, including indication for vaccine and whether such vaccination was completed.

(2) SECTION 1910.1030(f)(5)(ii) requires documentation that a post-exposure evaluation was performed and that the exposed employee was informed of the results as well as any medical conditions resulting from exposure which require further evaluation and treatment.

7. EMPLOYEE INFORMATION AND TRAINING - 1910.1030(g). Section (g) ensures that employees receive sufficient warning through labels, signs, and training to eliminate or minimize their exposure to bloodborne pathogens.

a. LABELS - 1910.1030(g)(1). Labels must be provided on containers of regulated waste, on refrigerators and freezers that are used to store blood or OPIM, and on containers used to store, dispose of, transport, or ship blood or OPIM. This requirement alerts employees to possible exposure since the nature of the material or contents will not always be readily identifiable as blood or OPIM. (See Appendix E.)

NOTE: This does not preempt either the U.S. Postal Service labeling requirements (39 CFR Part III) or the Department of Transportation's Hazardous Materials Regulations (49 CFR Parts 171-180).

INSPECTION AND CITATION GUIDELINES. The compliance officer shall determine that the warning labels in the facility are used as required by 29 CFR sections 1910.1030(g)(1)(i)(A) through 1910.1030(g)(1)(i)(D) and include the term "BIOHAZARD". OSHA does not require nor prohibit the use of warning signs or labels indicating source individuals' or specimens' known infectivity status although, in accordance with universal precautions, the agency strongly recommends against such warning signs.

(1) SECTIONs 1910.1030(g)(1)(i)(E) through 1910.1030(g)(1)(i)(G). These sections list exemptions from the labeling requirements which are additional to those exemptions listed for specimens in section 1910.1030(d)(2)(xiii)(A) and for laundry in section 1910.1030(d)(4)(iv)(A)(2). (See M.4.b.(8)(a) and M.4.d.(4)(a) of this instruction.)

(a) Blood and blood products bearing an identifying label as specified by the Food and Drug Administration, which have been screened for HBV and HIV
antibodies and released for transfusion or other clinical uses, are exempted from the labeling requirements.

(b) When blood is being drawn or laboratory procedures are being performed on blood samples, then the individual containers housing the blood or OPIM do not have to be labeled provided the larger container into which they are placed for storage, transport, shipment, or disposal (e.g., test tube rack) is labeled.

(2) SECTION 1910.1030(g)(1)(i)(I). Regulated waste that has been decontaminated by incineration, autoclaving, or chemical means, prior to disposal is not required to bear the BIOHAZARD warning label.

   (a) Decontamination is discussed at M.4.d.(3)(i)(2) of this instruction.

   (b) Failure to ensure adequate decontamination procedures prior to removal of the hazard label shall be cited under 1910.1030(g) (1)(i)(A), since the material would still be regulated waste.

b. INFORMATION AND TRAINING - 1910.1030(g)(2). All employees with occupational exposure must receive initial and annual training on the hazards associated with blood and OPIM, and the protective measures to be taken to minimize the risk of occupational exposure. Retraining shall take place when changes in procedures or tasks occur which affect occupational exposure. While the provisions for employee training are performance oriented, with flexibility allowed to tailor the program to, for example, the employee's background and responsibilities, the categories of information listed in section 1910.1030(g) (2)(vii) must be covered at a minimum. These requirements include some site-specific information.

INSPECTION GUIDELINES. The compliance officer shall verify that the training is provided at the time of initial employment or on or before June 4, 1992, and at least annually thereafter as well as whenever a change in an employee's responsibilities, procedures, or work situation is such that an employee’s occupational exposure is affected. "At the time of initial assignment to tasks where occupational exposure may take place" means that employees shall be trained prior to being placed in positions where occupational exposure may occur.

- Employees who received training on bloodborne pathogens within the year preceding March 6, 1992, shall receive information on the sections of the standard which were not included in their training. The annual retraining for these employees shall be provided within one year of their original training.

- Part-time and temporary employees, and health care employees known as "per diem" employees are covered and are also to be trained on company time.

- The compliance officer shall interview a representative number of employees from different work areas to determine that the training (including written material, oral presentations, films, videos, computer programs, or audiotapes) was presented in a manner that was appropriate to the employee's education, literacy level, and language, and also that the trainer was able to answer questions as needed. If an employee is only proficient in a foreign language, the trainer or an interpreter must convey the information in that foreign language.

(1) SECTIONs 1910.1c30(g)(2)(vii)(B) and (C). These sections require that HIV and HBV and other bloodborne diseases be described. The employer must convey the idea that a number of bloodborne diseases other than HIV and HBV exist, such as hepatitis C or syphilis. At the same time, the employer need not cover
such uncommon diseases as Cruetzfeld-Jacob disease unless, for example, it is appropriate for employees working in a research facility with that particular virus.

(2) SECTION 1910.1030(g)(2)(vii)(J). The word "emergency" in this section refers to blood exposure outside the normal scope of work. This does not refer to hospital emergency rooms or emergency medical technicians' work.

(3) SECTION 1910.1030(g)(2)(vii)(N). This section requires that there be an opportunity for interactive questions and answers with the person conducting the training session.

(a) Training the employees solely by means of a film or video without the opportunity for a discussion period would constitute a violation of this section.

(b) Similarly, a generic computer program, even an interactive one, is not considered appropriate unless the employer supplements such training with the site-specific information required (e.g., the location of the exposure control plan and the procedures to be followed if an exposure incident occurs) and a person is accessible for interaction.

(4) SECTION 1910.1030(g)(2)(viii). The person conducting the training is required to be knowledgeable in the subject matter covered by the elements contained in the training program as it relates to the workplace that the training will address. In addition to demonstrating expertise in the area of the occupational hazard of bloodborne pathogens, the trainer must be familiar with the manner in which the elements in the training program relate to the particular workplace.

(a) The compliance officer shall verify the competency of the trainer based on the completion of specialized courses, degree programs, or work experience, if he/she determines that deficiencies in training exist.

(b) Possible trainers include a variety of health care professionals such as infection control practitioners, nurse practitioners, registered nurses, physician's assistants, or emergency medical technicians.

(c) Non-health care professionals, such as industrial hygienists, epidemiologists, or professional trainers, may conduct the training provided they can demonstrate evidence of specialized training in the area of bloodborne pathogens.

(d) In some workplaces, such as dental or physicians' offices, the individual employer may conduct the training provided he or she is familiar with bloodborne pathogen exposure control and the subject matter required by sections 1910.1030(g)(2) - (viii)(A) through (N).

(5) SECTION 1910.1030(g)(2)(ix)(A) - 1910.1030(g)(2)(ix)(C). "Standard microbiological practices" in these sections refer to procedures outlined in "Biosafety in Microbiological and Biomedical Laboratories." (See D.9. of this instruction.)

(a) The requirement that "proficiency" be demonstrated means that employees who are experienced laboratorians may not need to be retrained in accordance with these sections.

(b) Education such as a graduate degree in the study of HIV or HBV, or another closely related subject area with a period of related laboratory research experience, would also constitute "proficiency."
OSHA Instruction CPL 2-2.44C (cont.)

(c) The employer is responsible for evaluating the employee's proficiency and for documenting the mechanism used to determine proficiency.

8. RECORDKEEPING - 1910.1030(h). Records are required to be kept for each employee covered by this standard for training, as well as for medical evaluations, treatment, and surveillance.

a. Medical records required by section (h)(1) will be of particular importance to the health care professional in determining vaccination status and courses of treatment to follow in the event of an exposure incident. Although the employer is required to establish and maintain medical records, he/she may contract for the services of a health care professional located off-site and that person or company may retain the records.

NOTE: While section 1910.1030(h)(1)(iii) requires that medical records are to be kept confidential, section 1910.1030(h)(1)(iii)(B) stipulates that disclosure is permitted when required by this standard or other Federal, State, or local regulations.

INSPECTION GUIDELINES. All medical records required to be kept by this standard are also required to be made available to OSHA. The compliance officer must protect the confidentiality of these records. If they are copied for the case file, the provisions of 29 CFR 1913.10 must be followed.

- The compliance officer shall review the employer's recordkeeping program to ensure that the required information is collected, and provision has been made to ensure the confidentiality of the medical records in accordance with 29 CFR 1910.20.

b. Section 1910.1030(h)(2) requires accurate record-keeping of training sessions, including titles of the employees who attend. The records are necessary to assist the employer and OSHA in determining whether the training program adequately addresses the risks involved in each job. Additionally, this information is helpful in tracking the relationship between exposure incidents (e.g., needlesticks) and various jobs and the corresponding level of training.

(1) Training records may be stored on-site and therefore the actual documents will be easily accessible for review. In order to ensure that the employee training is complete, all the components of the program required by section 1910.1030(g)(2)(vii) must be covered.

(2) Training records are not considered to be confidential and may be maintained in any file. They must be retained for 3 years from the training date.

9. DATES - 1910.1030(i). The effective dates of the requirements of the standard appear in Appendix F of this instruction.

NOTE: OSHA Instruction CPL 2-2.44B shall remain in effect until the effective dates of the requirements of 29 CFR 1910.1030.

N. INTERFACE WITH OTHER STANDARDS.

1. The hazard communication standard, 29 CFR 1910.1200, applies only to the hazards of chemicals in the workplace and does not apply to biological hazards such as bloodborne diseases.

2. Records concerning employee exposure to bloodborne pathogens and records about HIV and/or HBV status are considered employee medical records within the meaning of 29 CFR
1910.20. Under 29 CFR 1913.10, the compliance officer may review these records for purposes of determining compliance with 29 CFR 1910.20.

3. Generally, the respiratory protection standard, 29 CFR 1910.134 does not apply since there are no respirators approved for biohazards. However, placing respirators in areas where they could be contaminated by body fluids constitutes a violation of 29 CFR 1910.134(b)(6).

4. The Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, 29 CFR 1910.120, covers three groups of employees--workers at uncontrolled hazardous waste remediation sites; workers at Resource Conservation and Recovery Act (RCRA) permitted hazardous waste treatment, storage and disposal facilities; and those workers expected to respond to emergencies caused by the uncontrolled release of a hazardous substance.
   a. The definition of hazardous substance includes any biological agent or infectious material which may cause disease or death. There are potential scenarios where the bloodborne and HAZWOPER standards may interface such as:
      (1) Workers involved in cleanup operations at hazardous waste sites involving infectious waste;
      (2) Workers responding to an emergency caused by the uncontrolled release of infectious material; e.g., a transportation accident; and
      (3) Workers at RCRA permitted incinerators that burn infectious waste.
   b. Employers of employees engaged in these types of activities must comply with the requirements in 29 CFR 1910.120 as well as the bloodborne pathogens standard. If there is a conflict or overlap, the provision that is more protective of employee safety and health applies.

O. RECORDING IN THE IMIS. Current instructions for completing the appropriate inspection classification boxes on the OSHA-1, Inspection Report, as found in the IMIS Manual, shall be applied when recording bloodborne pathogens inspections:

1. For any inspection which includes an evaluation of the hazards of bloodborne pathogens, Item 42 of the OSHA-1 shall be recorded as follows:
   
   N 02 Blood

2. If local emphasis programs are approved at a later date, Item 25C of the OSHA-1 shall be completed with the appropriate value.

P. REFERRALS. When a complaint or inquiry regarding occupational exposure to bloodborne disease in a State or local government facility is received in a State without an OSHA approved State plan, the Regional Administrator should refer it to the appropriate State public health agency or local health agency with jurisdiction over the facility.
INTRODUCTION

CDC has issued guidelines to reduce the risk of human immunodeficiency virus (HIV) infection among health-care workers, emergency-response and public-safety workers, and others who might be exposed to HIV while performing job duties (1-4). The safety practices outlined in these guidelines remain the primary means of preventing occupational acquisition of HIV infection (5). Additionally, some physicians and some institutions have offered the option of using zidovudine (azidothymidine, AZT, ZDV, Retrovir) after occupational exposure to HIV (6). Data collected in an ongoing CDC surveillance project of health-care workers who have been occupationally exposed to blood from HIV-infected patients (7) indicate that during the period April-December 1989, 13 (8.6%) of 151 newly enrolled participants began a postexposure regimen of zidovudine. This report reviews Public Health Service (PHS) recommendations for postexposure management of workers who have occupational exposures that may place them at risk of acquiring HIV infection, provides background information on zidovudine and experience with zidovudine postexposure prophylaxis, and presents considerations relevant to a decision to offer postexposure prophylaxis.

Definition of Occupational Exposure

For purposes of this document, an occupational exposure (i.e., exposure that occurs during the performance of job duties) that may place a worker at risk of HIV infection is defined as a percutaneous injury (e.g., a needlestick or cut with a sharp object), contact of mucous membranes, or contact of skin (especially when the exposed skin is chapped, abraded, or afflicted with dermatitis or the contact is prolonged or involving an extensive area) with blood, tissues, or other body fluids to which universal precautions apply, including: a) semen, vaginal secretions, or other body fluids contaminated with visible blood, because these substances have been implicated in the transmission of HIV infection (2); b) cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid, because the risk of transmission of HIV from these fluids has not yet been determined (2); and c) laboratory specimens that contain HIV (e.g., suspensions of concentrated virus).

PHS Recommendations for Management of Persons After Occupational Exposures That May Place Them at Risk of Acquiring HIV Infection

Employers should make available to workers a system for promptly initiating evaluation, counseling, and follow-up after a reported occupational exposure that may place the worker at risk of acquiring HIV infection. Workers should be educated to report exposures immediately after they occur, because certain interventions that may be appropriate, e.g., prophylaxis against hepatitis B, must be initiated promptly to be effective (3,8,9). Workers who might reasonably be considered at risk of occupational exposure to HIV should be familiarized with the principles of postexposure management as part of job orientation and ongoing job training. If an exposure occurs, the circumstances should be recorded in the worker's confidential medical record. Relevant information includes the following:

* date and time of exposure
* job duty being performed by worker at time of exposure
* details of exposure, including amount of fluid or material, type of fluid or material, and severity of exposure (e.g., for a percutaneous exposure, depth of injury and whether fluid was injected; for a skin or mucous-membrane exposure, the extent and duration of contact and the condition of the skin, e.g., chapped, abraded, intact)
* description of source of exposure—including, if known, whether the source material contained HIV or HBV
* details about counseling, postexposure management, and follow-up
After an occupational exposure, both the exposed worker and the source individual should be evaluated to determine the possible need for the exposed worker to receive prophylaxis against hepatitis B according to previously published CDC recommendations (3,8,9). Because of the potentially severe consequences of hepatitis B virus infection, hepatitis B vaccine, which is both safe and highly effective (10), should be offered to any susceptible health-care worker who has an occupational exposure and has not previously been vaccinated with hepatitis B vaccine. Hepatitis B immune globulin may also be indicated, particularly if the source patient or material is found to be positive for hepatitis B surface antigen (HBsAg) (3,8,9).

In addition, the source individual should be informed of the incident and, if consent is obtained, tested for serologic evidence of HIV infection. If consent cannot be obtained (e.g., patient is unconscious), policies should be developed for testing source individuals in compliance with applicable state and local laws. Confidentiality of the source individual should be maintained at all times. If the source individual has AIDS, is known to be HIV-seropositive, or refuses testing, the worker should be evaluated clinically and serologically for evidence of HIV infection as soon as possible after the exposure (baseline) and if seronegative, should be retested periodically for a minimum of 6 months after exposure (e.g., 6 weeks, 12 weeks, and 6 months after exposure) to determine whether HIV infection has occurred. The worker should be advised to report and seek medical evaluation for any acute illness that occurs during the follow-up period. Such illness, particularly if characterized by fever, rash, myalgia, fatigue, malaise, or lymphadenopathy, may be indicative of acute HIV infection, drug reaction, or another medical condition. During the follow-up period, especially the first 6-12 weeks after the exposure when most infected persons are expected to seroconvert, exposed workers should follow PHS recommendations for preventing transmission of HIV. These recommendations include refraining from blood, semen, or organ donation and abstaining from or using measures to prevent HIV transmission during sexual intercourse (11-14). In addition, in countries such as the United States where safe and effective alternatives to breastfeeding are available, exposed women should not breast-feed infants during the follow-up period in order to prevent the infant's possible exposure to HIV in breast milk. During all phases of follow-up, confidentiality of the worker should be protected. If the source individual is HIV-seronegative and has no clinical manifestations of AIDS or HIV infection, no further HIV follow-up of the exposed worker is necessary unless epidemiologic evidence suggests that the source individual may have recently been exposed to HIV or if testing is desired by the worker or recommended by the health-care provider. In these instances, the guidelines may be followed as described above.

If the source individual cannot be identified, decisions regarding appropriate follow-up should be individualized, based on factors such as whether potential sources are likely to include a person at increased risk of HIV infection. The employer should make serologic testing available to all workers who are concerned about possible infection with HIV through an occupational exposure. Appropriate psychological counseling may be indicated as well.

ZIDOVUDINE

Background

Zidovudine is a thymidine analogue that has been shown in vitro to inhibit replication of some retroviruses, including HIV, by interfering with the action of viral ribonucleic acid (RNA)-dependent deoxyribonucleic acid (DNA) polymerase (reverse transcriptase) and possibly also by other mechanisms (15).

In a double-blind, placebo-controlled trial, zidovudine was shown to increase the length and quality of life of patients with advanced HIV infection and AIDS (16). Largely on the basis of the results of this trial, zidovudine was approved for marketing by the Food and Drug Administration (FDA) and is indicated for treatment of adults with symptomatic HIV infection, including AIDS, who have a history of cytologically confirmed Pneumocystis carinii pneumonia or an absolute CD4 lymphocyte count of less than 200/mm3. The dose of zidovudine originally approved for oral use by patients who have AIDS and advanced symptomatic HIV infection was 200 mg every 4 hours. On January 16, 1990, FDA approved a change in the labeling that now recommends administering the drug at 600 mg/day (100 mg every 4 hours) after a patient has received 1 month of zidovudine therapy at a dose of 1,200 mg/day (200 mg every 4 hours).
Later studies (National Institute of Allergy and Infectious Diseases (NIAID) AIDS Clinical Trial Group Protocols #016 and #019) have indicated that zidovudine can delay disease progression in patients with less advanced HIV infection (patients with an absolute CD4 count of less than 500/mm3, whether symptomatic or asymptomatic) (NIAID Administrative Report: "AIDS Clinical Trials Alert," August 29, 1989).

Toxicity

Among patients who have AIDS or symptomatic HIV infection and who are treated with zidovudine, the most frequently reported adverse events are granulocytopenia and anemia. Other adverse events that affect greater than or equal to 5% of zidovudine recipients include one or more of the following: headache, nausea, insomnia, myalgia, diaphoresis, fever, malaise, anorexia, diarrhea, dyspepsia, vomiting, dyspnea, rash, and taste abnormalities (17). Occurrences less commonly reported in the published literature include polymyositis, peripheral neuropathy, and seizures.

Among 3,200 patients with asymptomatic HIV infection treated in NIAID protocol #019 with placebo or with zidovudine doses of either 1,500 mg or 500 mg daily (either 300 mg or 100 mg given every 4 hours, five times daily), investigators have reported the following toxicity after a median of 44 weeks of therapy: in the 1,500-mg/day group, approximately 12% of the subjects developed moderate to severe hematologic toxicity, defined as hemoglobin of less than 8 g/dl, granulocytes of less than 750/mm3, or platelets of less than 50,000/mm3. In the 500-mg/day group, this toxicity occurred at a rate of about 3%, compared with approximately 2% in the placebo group. Nausea was rarely reported in the placebo group; however, 3%-5% of zidovudine recipients, irrespective of dose group, experienced moderate to severe nausea. No statistically significant difference was observed between zidovudine dose and placebo for any other moderate to severe clinical adverse experiences (NIAID Administrative Report: "AIDS Clinical Trials Alert," August 29, 1989).

Preliminary data from a study sponsored by the Burroughs-Wellcome Company of health-care workers who received 200 mg of zidovudine or placebo every 4 hours for 6 weeks after occupational exposure to HIV indicate that adverse effects most frequently consisted of nausea and vomiting. In no instance did the prescribing physician discontinue a participant’s study drug or placebo because of hematologic or other serious toxicity; however, during the therapy period, 14 (28.6%) of 49 participants who received zidovudine had a hemoglobin concentration between 9.5 and 12 g/dl, compared with one (2.9%) of 35 placebo recipients in the placebo group. Seven (14.3%) of the 49 participants who received zidovudine, compared with one (2.9%) of the 35 placebo recipients, elected to discontinue therapy because of subjective, reversible symptoms, including nausea, vomiting, fatigue, headache, myalgia, or cough. Several anecdotal reports of short-term toxicity among health-care workers receiving zidovudine have been received by PHS. Symptoms include fever, myalgia, fatigue, nausea, and vomiting. Single reports have been received of severe anemia, reversible peripheral neuropathy, and transient clinical hepatitis.

Although the risk of acute zidovudine toxicity for exposed health-care workers cannot be determined from this limited information, data from the NIAID protocol #019 trial and from the Burroughs-Wellcome study of exposed health-care workers suggest that the risk of acute toxicity associated with short-term use of the drug is lower than the risk observed during long-term therapy of symptomatic HIV-infected individuals.

For healthy persons not infected with HIV, the risk of long-term toxicity, including teratogenic and carcinogenic effects, related to a course of zidovudine is not known. It is not known whether zidovudine can cause fetal harm when administered to a pregnant woman or whether it can affect reproductive capacity (17). To assess the safety of zidovudine use during pregnancy, the Burroughs-Wellcome Company has developed a registry to evaluate pregnancy outcomes of women who took zidovudine during pregnancy. Physicians are encouraged to register such persons by telephoning the pregnancy registry, (919) 248-8465 (collect) or 1-800-722-9292. It is also not known whether zidovudine is excreted in human milk. However, because of the potential for adverse side effects among breast-fed infants, as well as the potential for transmission of HIV if the mother is infected, mothers should be instructed to discontinue breast-feeding whether or not they are receiving zidovudine (17).

In other studies conducted by the Burroughs-Wellcome Company (Appendix I), vaginal tumors, including carcinomas, were observed in mice and rats receiving zidovudine at doses that the FDA has determined...
OSHA Instruction CPL 2-2.44C (cont.)

resulted in plasma levels in mice approximately equal to human plasma levels at the dose originally approved for treatment of persons with symptomatic HIV infection (200 mg every 4 hours). In rats, the plasma levels were determined by the FDA to be about 10 times higher than human plasma levels achieved with the originally approved dose. The results of these rodent carcinogenicity studies are of uncertain predictive value for humans.

Studies of Zidovudine Postexposure Prophlaxis Involving Animals

Data involving studies of laboratory animals (Appendix II) are limited and must be interpreted with caution, as they have most often been derived by using nonhuman retroviruses having pathogenic mechanisms different from the pathogenesis of HIV infection in humans. In one study using HIV in a mouse model, zidovudine prophylaxis was begun 24 hours before intrathymic injection of a large inoculum of HIV and continued for 2 weeks thereafter. HIV infection was not prevented in any of the animals studied, although the course of infection was modified. It is not known whether prophylaxis would be effective in conditions that more closely resemble occupational exposures, i.e., zidovudine begun after exposure, with the exposure consisting of a percutaneous injection of a lower inoculum of HIV. Data from animal studies are inadequate to support or reject the hypothesis that zidovudine may be effective prophylaxis for persons who have been occupationally exposed to HIV.

Studies of Zidovudine Postexposure Prophylaxis Involving Humans

The efficacy of zidovudine prophylaxis for humans after exposure to HIV cannot be assessed because of insufficient data. The Burroughs-Wellcome Company recently sponsored a double-blind, placebo-controlled study to evaluate 6 weeks of zidovudine prophylaxis (200 mg orally every 4 hours) involving health-care workers who had experienced occupational percutaneous, mucous-membrane, or nonintact-skin exposures to HIV-infected blood. Of 84 workers who initially enrolled in the study (49 of whom were given zidovudine), none developed HIV infection after at least 6 months of follow-up. The risk of transmission of HIV per episode of percutaneous exposure to HIV-infected blood is, on the average, approximately 0.4% (7). Thus, the absence of seroconversions in this small group of participants is not unexpected, regardless of whether they took zidovudine. Enrollment in this study was terminated in June 1989.

NIAID has enrolled three persons in an ongoing open trial of zidovudine prophylaxis after a "massive exposure" to HIV. The first person received a blood transfusion from an HIV-infected donor, was started on zidovudine 7 days after exposure, and was culture-positive for HIV 4 months after completing 6 weeks of chemotherapy. The second person was exposed to a high concentration of HIV on abraded skin in a research laboratory, was started on zidovudine within 24 hours postexposure, and remains HIV-seronegative after 11 months. The risk of seroconversion after this type of laboratory exposure is unknown. The third person was exposed to a high concentration of HIV on broken skin in a research laboratory, was started on zidovudine within 24 hours after the exposure, and is HIV-seronegative 3 months after the exposure. The risk of seroconversion after this type of laboratory exposure also is unknown. All individuals were able to complete a 6-week course of therapy (200 mg orally every 4 hours) without clinically significant adverse effects. Information regarding enrollment in this study can be obtained by calling the NIAID study coordinator at (800) 537-9978.

Prophylaxis Schedules Currently Used After Occupational Exposure

Various regimens have been prescribed for zidovudine prophylaxis after occupational exposure. No data are available to enable investigators to determine the efficacy or compare the toxicity of these or other regimens. At the National Institutes of Health Clinical Center, workers who elect to receive zidovudine are treated with 200 mg every 4 hours (six times daily) for 6 weeks (6). At San Francisco General Hospital, workers who elect to receive zidovudine are treated with 200 mg every 4 hours (five times daily; no dose is given at 4:00 a.m.) for 4 weeks (6). Some clinicians have used an initial dose of 400 mg, and others have prescribed treatment courses ranging from 4 days to 4 months. At several institutions, attempts are made to begin prophylaxis within 1 hour after exposure for workers who elect to receive the drug.

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DISCUSSION

Data from animal and human studies are inadequate to establish the efficacy or safety of zidovudine for prophylaxis after occupational exposure to HIV. However, some physicians believe that zidovudine should be offered as prophylaxis to persons after certain occupational exposures for the following reasons: the severity of the illness that may result from HIV infection, the documented antiviral effect of zidovudine in the treatment of persons with established HIV infection, the apparent reversibility of acute toxicity in persons taking zidovudine for a brief period, and the suggestion that in some animal studies, zidovudine postexposure may modify the course of some retroviral infections. Other physicians believe that zidovudine should not be recommended for uninfected persons after occupational exposures because of the lack of data demonstrating efficacy in postexposure prophylaxis, the limited data on toxicity in uninfected individuals, and the fact that zidovudine has been shown to be carcinogenic in rats and mice.

At this time, prophylaxis with zidovudine cannot be considered a necessary component of postexposure management. However, workers who might be at risk of occupational exposure to HIV should be informed, as part of job orientation and ongoing job training, of the considerations pertaining to the use of zidovudine for postexposure prophylaxis. The PHS recommends that if a physician decides to offer zidovudine to a worker after an exposure incident, that decision by the physician and the decision by the worker to take zidovudine should take into account the following considerations.

Considerations Regarding Use of Zidovudine After an Occupational Exposure

Risk of HIV infection after exposure

Evaluation of the risk of HIV infection after exposure should take into account existing knowledge from prospective studies of exposed workers, which demonstrate that on the average the risk of transmission of HIV per episode of percutaneous exposure (e.g., a needlestick or cut with a sharp object) to HIV-infected blood is approximately 0.4%. These studies also suggest that the risk of HIV transmission per episode of mucous-membrane or skin exposure to HIV-infected blood is less than that after a percutaneous exposure (7,18-21). The risk of HIV transmission after occupational exposure to body fluids other than blood, for which universal precautions are recommended, is unknown. The risk of HIV infection for persons who take zidovudine postexposure prophylaxis cannot be determined at present because of the small number of persons studied.

Risk evaluation should also include an assessment of factors that may increase or decrease the probability of HIV transmission after an individual occupational exposure. These factors are not well understood, but include the likelihood that the source fluid contained HIV and probably also the concentration of HIV in the source fluid, the route of exposure, and the volume of fluid involved. For example, a percutaneous exposure to concentrated HIV in a research laboratory is probably more likely to result in transmission of infection than a similar exposure to HIV-infected blood in a clinical setting. A percutaneous exposure to HIV-infected blood is probably more likely to result in transmission than a mucous-membrane exposure to the same blood. Finally, an exposure to a larger quantity of HIV-infected blood, such as injection of several milliliters, is probably more likely to result in HIV transmission than an exposure to a smaller quantity of the same blood, such as in a needlestick exposure.

Interval between exposure and initiation of prophylaxis, if given

Data from animal studies suggest that prophylaxis against certain retroviral infections other than HIV may be more effective when started within hours after exposure (22,23). Because in vitro studies indicate that human HIV infection may be established in human lymphocytes within hours after exposure (24), and epidemiologic studies of exposed health-care workers indicate that acute retroviral illness may occur as early as 2 weeks after exposure (7), it appears that if the decision is made to use postexposure prophylaxis, prophylaxis should be initiated promptly.
Counseling and informed consent

If zidovudine prophylaxis is being considered, the worker should be counseled regarding a) the theoretical rationale for postexposure prophylaxis, b) the risk of occupationally acquired HIV infection due to the exposure, c) the limitations of current knowledge of the efficacy of zidovudine when used as postexposure prophylaxis, d) current knowledge of the toxicity of zidovudine (including the data from animal and human studies) and the limitations of this knowledge in predicting toxicity in uninfected individuals who take the drug after occupational exposures, and e) the need for postexposure follow-up (including HIV serologic testing), regardless of whether zidovudine is taken. The worker should also be informed that there are diverse opinions among physicians regarding the use of zidovudine for postexposure prophylaxis, and the PHS cannot make a recommendation for or against the use of zidovudine for this purpose because of the limitations of current knowledge.

The duration of follow-up needed to detect evidence of HIV transmission or delayed toxicity among workers who take zidovudine is presently unknown. Workers taking zidovudine postexposure may require follow-up to detect HIV seroconversion for a longer period than that recommended for workers who do not take zidovudine. Regardless of the length of follow-up, mechanisms should be developed to permit workers taking zidovudine to be contacted if future information indicates the need for additional evaluation.

If a physician offers zidovudine as prophylaxis after an occupational exposure and the exposed worker elects to take the drug, the physician or other appropriate health-care provider should obtain written informed consent from the worker for this use of this drug. The consent document should reflect the information presented in the counseling session, as outlined above, emphasizing the need for follow-up medical evaluations and for precautions to prevent the transmission of HIV infection during the follow-up period, including refraining from blood, semen, or organ donation, refraining from breast-feeding, and either abstaining from sexual intercourse or using latex condoms during sexual intercourse, as discussed below.

Considerations regarding sexual intercourse for exposed workers taking zidovudine include 1) the possible risk of teratogenesis associated with zidovudine use, and 2) the risk of transmission of HIV to a sexual partner. The risk of teratogenesis among offspring of either men or women taking zidovudine is unknown. Therefore, men and women of reproductive age who are receiving zidovudine should abstain from, or use effective contraception during, sexual intercourse throughout the time zidovudine is being taken. In addition, to prevent HIV transmission to sexual partners, all exposed workers, including pregnant women, should abstain from, or use latex condoms during, sexual intercourse throughout the follow-up period.

Research Needs

Further data are needed to determine risk factors for occupational exposure to HIV, to evaluate measures for preventing these exposures, and to identify risk factors for HIV transmission after occupational exposure. Appropriate animal models of HIV infection are needed, and animal studies should be conducted under experimental conditions that mimic the circumstances of occupational exposure affecting humans. Studies involving humans should be conducted to determine whether postexposure prophylaxis with zidovudine or other agents is effective, and, if effective, should define the optimal time that postexposure prophylaxis should be initiated and the optimal duration of prophylaxis. Studies should also assess the toxicity of candidate prophylactic agents, establish the optimal dosage for healthy individuals and for persons with preexisting hepatic or renal dysfunction, and define the duration of follow-up needed to detect evidence of HIV infection in persons receiving prophylaxis. Strains of HIV isolated from treated workers should be monitored to detect development of drug resistance.

Expanded Surveillance of Workers with Occupational Exposures to HIV

CDC has expanded its ongoing surveillance of workers with occupational exposures to HIV (7) to collect additional information on postexposure chemoprophylaxis. No names or other personal identifiers of workers are collected. Information is collected on the following:
OSHA Instruction CPL 2-2.44C (cont.)

* circumstances associated with exposures
* extent to which zidovudine and other antiretroviral agents are prescribed for postexposure chemoprophylaxis, including dosage and timing
* incidence of associated toxicity
* rate of HIV seroconversion among workers who do and do not receive postexposure chemoprophylaxis

All physicians who provide care to a worker within 1 month after an occupational exposure to HIV, regardless of whether an antiretroviral agent is prescribed, are encouraged to enroll the worker in the CDC surveillance system. Enrollment and follow-up requirements have been simplified; in particular, it is no longer necessary to send blood specimens to CDC for HIV serologic testing unless the enzyme immunoassay (EIA) performed by a licensed local laboratory is reactive or equivocal. CDC will continue, however, to offer EIA testing at no charge on specimens from surveillance participants on request. Additional information and enrollment materials can be obtained from the Hospital Infections Program, Center for Infectious Diseases, Centers for Disease Control, Mail Stop C-10, Atlanta, GA 30333; telephone (404) 639-1644.

CONTACTS FOR PHYSICIANS AND FOR INFECTION CONTROL AND OCCUPATIONAL HEALTH PROFESSIONALS

* To enroll persons who have had a "massive exposure" to HIV in NIAID study of zidovudine prophylaxis, telephone (800) 537-9978.

* To report adverse effects associated with zidovudine to FDA, use "Adverse Reaction Report" forms (FDA #1639), obtainable from:

  Food and Drug Administration
  Office of Epidemiology and Biostatistics
  HFD-730
  Rockville, MD 20857
  (301) 443-4580.

* To enroll an exposed worker in the CDC prospective surveillance system, telephone (404) 639-1644.

* To enroll pregnant women who receive zidovudine during pregnancy, contact:

  Zidovudine in Pregnancy Registry
  Epidemiology, Information, and Surveillance Division
  Burroughs-Wellcome Company
  3030 Cornwallis Road
  Research Triangle Park, NC 27709
  (919) 248-8465 (collect) or (800) 722-9292.

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OSHA Instruction CPL 2-2.44C (cont.)

APPENDIX B

CENTERS FOR DISEASE CONTROL - ATLANTA, GEORGIA


INTRODUCTION

The term "viral hepatitis" is commonly used for several clinically similar diseases that are etiologically and epidemiologically distinct (1). Two of these, hepatitis A (formerly called infectious hepatitis) and hepatitis B (formerly called serum hepatitis), have been recognized as separate entities since the early 1940s and can be diagnosed with specific serologic tests. A third category, currently known as non-A, non-B hepatitis, includes two epidemiologically distinct types of hepatitis: parenterally transmitted and enterically transmitted non-A, non-B hepatitis. Parenterally transmitted non-A, non-B hepatitis is associated with both posttransfusion and sporadic cases of acute hepatitis and may be caused by at least two different agents. Part of the genome for one of these agents has recently been cloned, and a candidate serologic assay for antibody to this virus (proposed as hepatitis C virus) has been developed (2,3). Enterically transmitted non-A, non-B hepatitis, which is spread by the fecal-oral route and is different from the types seen in the United States, has been reported in parts of Asia, Africa, and Mexico (4). Another distinct type of hepatitis, delta hepatitis, is an infection dependent on the hepatitis B virus. It may occur as a coinfection with acute hepatitis B infection or as superinfection of a hepatitis B carrier (5).

HEPATITIS SURVEILLANCE

Approximately 28,500 cases of hepatitis A, 23,200 cases of hepatitis B, 2,620 cases of non-A, non-B hepatitis, and 2,470 cases of hepatitis type unspecified were reported in 1988 in the United States. Most cases of each type occur among young adults. Since reporting from many localities is incomplete, the actual number of hepatitis cases occurring annually is thought to be several times the reported number.

IMMUNE GLOBULINS

Immune globulins are important tools for preventing infection and disease before or after exposure to hepatitis viruses. Immune globulins used in medical practice are sterile solutions of antibodies (immunoglobulins) from human plasma. They are prepared by cold ethanol fractionation of large plasma pools and contain 10%-18% protein. In the United States, plasma is primarily obtained from paid donors. Only plasma shown to be free of hepatitis B surface antigen (HBsAg) and antibody to human immunodeficiency virus (HIV) is used to prepare immune globulins.

Immune globulin (IG) (formerly called immune serum globulin, ISG, or gamma globulin) produced in the United States contains antibodies against the hepatitis A virus (anti-HAV) and the HBsAg (anti-HBs). Hepatitis B immune globulin (HBIG) is an IG prepared from plasma containing high titers of anti-HBs.

There is no evidence that hepatitis B virus (HBV), HIV (the causative agent of acquired immunodeficiency syndrome [AIDS]), or other viruses have ever been transmitted by IG or HBIG commercially available in the United States (6). Since late April 1985, all plasma units for preparation of IGs have been screened for antibody to HIV, and reactive units are discarded. No instances of HIV infection or clinical illness have occurred that can be attributed to receiving IG or HBIG, including lots prepared before April 1985. Laboratory studies have shown that the margin of safety based on the removal of HIV infectivity by the fractionation process is extremely high (7). Some HBIG lots prepared before April 1985 have detectable HIV antibody. Shortly after being given HBIG, recipients have occasionally been noted to have low levels of passively acquired HIV antibody, but this reactivity does not persist (8).
Serious adverse effects from IGs administered as recommended have been rare. IGs prepared for intramuscular administration should be used for hepatitis prophylaxis. IGs prepared for intravenous administration to immunodeficient and other selected patients are not intended for hepatitis prophylaxis. IG and HBIG are not contraindicated for pregnant or lactating women.

HEPATITIS A

Hepatitis A is caused by the hepatitis A virus (HAV), a 27-nm ribonucleic acid (RNA) agent that is classified as a picornavirus. Patients with illness caused by HAV characteristically have abrupt onsets of symptoms including fever, malaise, anorexia, nausea, abdominal discomfort, dark urine, and jaundice. Severity is related to age. Among children, most infections are asymptomatic, and illness is usually not accompanied by jaundice. Most infected adults become symptomatically ill with jaundice. The case-fatality rate among reported cases is about 0.6%.

Hepatitis A is primarily transmitted by person-to-person contact, generally through fecal contamination and oral ingestion. Transmission is facilitated by poor personal hygiene, poor sanitation, and intimate (intragrasshould or sexual) contact. In recent years, cases of hepatitis A among intravenous drug users, most likely due to person-to-person contact, have been reported with increasing frequency (9). Common-source epidemics from contaminated food and water also occur. Sharing utensils or cigarettes or kissing is not believed to transmit the hepatitis A virus.

The incubation period of hepatitis A is 15-50 days (average 28). High concentrations of HAV (108 particles/g) are found in stool specimens from infected persons. Virus in the feces reaches its highest concentration late in the incubation period and early in the prodromal phase of illness, and it diminishes rapidly once jaundice appears. Greatest infectivity is during the 2-week period immediately before the onset of jaundice. Viremia probably occurs during the period that the virus is shed in feces. Virus has not been found in urine. A chronic carrier state with HAV in blood or feces has not been demonstrated. Transmission of HAV by blood transfusion has been reported but is uncommon (10). The diagnosis of acute hepatitis A is confirmed by finding IgM anti-HAV in serum collected during the acute or early convalescent phase of the disease. IgM anti-HAV, which appears in the convalescent phase of the disease and remains detectable in serum thereafter, confers enduring protection against the disease. Commercial tests are available to detect IgM anti-HAV and total anti-HAV in serum.

Although the incidence of hepatitis A in the United States in the 1980s was lower than that in the 1970s, a 26% increase in incidence was observed between 1983 and 1988. It is still a common infection among older children and young adults. In 1988, 50% of reported cases of hepatitis in this country were attributable to hepatitis A.

Recommendations for IG Prophylaxis for Hepatitis A

Numerous field studies conducted in the past 4 decades confirm that IG given before exposure or during the incubation period of hepatitis A is protective against clinical illness (11-13). Its prophylactic value is greatest (80%-90%) when given early in the incubation period and declines thereafter (13). Recent tests have shown slightly decreased titers of anti-HAV in current IG lots compared with lots tested 8 years previously; however, no differences in IG efficacy have been noted.

Preexposure Prophylaxis

The major group for whom preexposure prophylaxis is recommended is international travelers. The risk of hepatitis A for U.S. citizens traveling abroad varies with living conditions, length of stay, and the incidence of hepatitis A infection in areas visited (14-16). In general, travelers to developed areas of North America, western Europe, Japan, Australia, and New Zealand are at no greater risk of infection than they would be in the United States. For travelers to developing countries, risk of infection increases with duration of travel and is highest for those who live in or visit rural areas, trek in back country, or frequently eat or drink in settings of poor sanitation. Nevertheless, recent studies have shown that many cases of travel-related hepatitis A occur in travelers with "standard" tourist itineraries, accommodations, and food and beverage consumption behaviors (16 and CDC unpublished data). In developing countries, travelers should
minimize their exposure to hepatitis A and other enteric diseases by avoiding potentially contaminated water or food. Travelers should avoid drinking water (or beverages with ice) of unknown purity and eating uncooked shellfish or uncooked fruits or vegetables that they did not prepare.

IG is recommended for all susceptible travelers to developing countries (17). IG is especially important for persons who will be living in or visiting rural areas, eating or drinking in settings of poor or uncertain sanitation, or who will have close contact with local persons (especially young children) in settings with poor sanitary conditions. Persons who plan to reside in developing areas for long periods should receive IG regularly.

For travelers, a single dose of IG of 0.02 ml/kg of body weight is recommended if travel is for &lt;3 months. For prolonged travel or residence in developing countries, 0.06 ml/kg should be given every 5 months. For persons who require repeated IG prophylaxis, screening for total anti-HAV before travel is useful to define susceptibility and eliminate unnecessary doses of IG for those who are immune. IG produced in developing countries may not meet the standards for purity required in most developed countries. Persons needing repeat doses overseas should use products that meet U.S. license requirements.

**Postexposure Prophylaxis**

Hepatitis A cannot be reliably diagnosed on clinical presentation alone, and serologic confirmation of index patients is recommended before contacts are treated. Serologic screening of contacts for anti-HAV before they are given IG is not recommended because screening is more costly than IG and would delay its administration. For postexposure IG prophylaxis, a single intramuscular does of 0.02 ml/kg is recommended. IG should be given as soon as possible after last exposure; giving IG more than 2 weeks after exposure is not indicated.

Specific recommendations for IG prophylaxis for hepatitis A depend on the nature of the HAV exposure.

1. **Close personal contact.** IG is recommended for all hepatitis A.
2. **Day-care centers.** Day-care facilities attended by children in diapers can be important settings for HAV transmission (18-20). IG should be administered to all staff and attendees of day-care centers or homes if a) one or more children or employees are diagnosed as having hepatitis A, or b) cases are recognized in two or more households of center attendees. When an outbreak (hepatitis cases in three or more families) occurs, IG should also be considered for members of households that have children (center attendees) in diapers. In centers not enrolling children in diapers, IG need only be given to classroom contacts of an index patient.
3. **Schools.** Contact at elementary and secondary schools is usually not an important means of transmitting hepatitis A. Routine administration of IG is not indicated for pupils and teachers in contact with a patient. However, when an epidemiologic investigation clearly shows the existence of a school- or classroom-centered outbreak, IG may be given to persons who have close contact with patients.
4. **Institutions for custodial care.** Living conditions in some institutions, such as prisons and facilities for the developmentally disabled, favor transmission of hepatitis A. When outbreaks occur, giving IG to residents and staff who have close contact with patients with hepatitis A may reduce the spread of disease. Depending on the epidemiologic circumstances, prophylaxis can be limited or can involve the entire institution.
5. **Hospitals.** Routine IG prophylaxis for hospital personnel is not indicated. Rather, sound hygienic practices should be emphasized. Staff education should point out the risk of exposure to hepatitis A and should emphasize precautions regarding direct contact with potentially infective materials (21). Outbreaks of hepatitis A occur occasionally among hospital staff, usually in association with an unsuspected index patient who is fecally incontinent. Large outbreaks have occurred from contact with infected infants in neonatal intensive care units (10). In outbreaks, prophylaxis of persons exposed to feces of infected patients may be indicated.
6. **Offices and factories.** Routine IG administration is not indicated under the usual office or factory conditions for persons exposed to a fellow worker with hepatitis A. Experience shows that casual contact in the work setting does not result in virus transmission.
7. **Common-source exposure.** IG use might be effective in preventing foodborne or waterborne hepatitis A if exposure is recognized in time. However, IG is not recommended for persons...
exposed to a common source of hepatitis infection after cases have begun to occur, since the 2-week period during which IG is effective will have been exceeded. If a food handler is diagnosed as having hepatitis A, common-source transmissions is possible but uncommon. IG should be administered to other food handlers but is usually not recommended for patrons (22). However, IG administration to patrons may be considered if all of the following conditions exist: a) the infected person is directly involved in handling, without gloves, foods that will not be cooked before they are eaten, and b) the hygienic practices of the food handler are deficient or the food handler has diarrhea, and c) patrons can be identified and treated within 2 weeks of exposure. Situations in which repeated exposures may have occurred, such as in institutional cafeterias, may warrant stronger consideration of IG use.

HEPATITIS B

Hepatitis B infection is caused by the hepatitis B virus (HBV), a 42-nm, double-shelled deoxyribonucleic acid (DNA) virus of the class hepadnaviridae. Several well-defined antigen-antibody systems are associated with HBV infection (Table 1). HBsAg is found on the surface of the virus and is also produced in excess amounts, circulating in blood as 22-nm spherical and tubular particles. HBsAg can be identified in serum 30-60 days after exposure to HBV and persists for variable periods. Anti-HBs develops after a resolved infection and is responsible for long-term immunity. Antibody to the core antigen (anti-HBc) develops in all HBV infections and persists indefinitely. IgM anti-HBc appears early in infection and persists for >6 months. It is a reliable marker of acute or recent HBV infection. A third antigen, hepatitis B e antigen (HBeAg), may be detected in samples from persons with acute or chronic HBV infection. The presence of HBeAg correlates with viral replication and high infectivity. Antibody to HBeAg (anti-HBe) develops in most HBV infections and correlates with the loss of replicating virus and with lower infectivity.

TABLE 1. Hepatitis nomenclature

<table>
<thead>
<tr>
<th>ABBREVIATION</th>
<th>TERM</th>
<th>DEFINITION/COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Hepatitis A</td>
<td>HAV</td>
<td>Etiologic agent of virus &quot;infectious&quot; hepatitis; a picornavirus; single serotype.</td>
</tr>
<tr>
<td></td>
<td>Anti-HAV</td>
<td>Antibody to HAV; Detectable at onset of symptoms; lifetime persistence.</td>
</tr>
<tr>
<td></td>
<td>IgM anti-HAV</td>
<td>IgM class; Indicates recent antibody to infection with HAV hepatitis A; detectable for 4-6 months after infection.</td>
</tr>
<tr>
<td>B. Hepatitis B</td>
<td>HBV</td>
<td>Etiologic agent of virus &quot;serum&quot; hepatitis; also known as Dane particle.</td>
</tr>
<tr>
<td></td>
<td>HBsAg</td>
<td>Surface antigen(s) of HBV detectable antigen in large quantity in serum; several subtypes identified.</td>
</tr>
<tr>
<td></td>
<td>HBeAg</td>
<td>Soluble antigen; e antigen correlates with HBV replication, high titer HBV in serum, and infectivity of serum.</td>
</tr>
<tr>
<td></td>
<td>HBeAg</td>
<td>No commercial test coreavailable antigen</td>
</tr>
<tr>
<td></td>
<td>Anti-HBs</td>
<td>Indicates past infection with and immunity to HBV, antibody from HBIG, or immune response from HB vaccine.</td>
</tr>
<tr>
<td></td>
<td>Anti-HBe</td>
<td>Presence in serum of HBsAg carrier indicates lower titer of HBV.</td>
</tr>
</tbody>
</table>
OSHA Instruction CPL 2-2.44C (cont.)

Anti-HBc Antibody to HBcAg Indicates prior infection with HBV at some undefined time.
IgM anti-HBc IgM class HBcAg Indicates recent antibody to infection with HBV; detectable for 4-6 months after infection.

C. Delta HDV Hepatitis D Etiologic agent of hepatitis virus delta hepatitis; can cause infection only in presence of HBV.
HDag Delta Detectable in early antigen acute delta infection.
Anti-HDV Antibody to delta Indicates present or past infection with delta virus.

D. Non-A, PT-NANB Parenterally non-B hepatitis Diagnosis by transmitted exclusion. At least two candidate viruses, one of which has been proposed as hepatitis C virus; shares epidemiologic features with hepatitis B.
ET-NANB Enterically transmitted Diagnosis by exclusion. Causes large epidemics in Asia, Africa and Mexico; fecal-oral or waterborne

E. Immune IG Immune globulins Contains antibodies globulin to HAV, low-titer (previously antibodies to HBV
HBIG Hepatitis B immune globulin Contains high-titer antibodies to HBV.

The incubation period of hepatitis B is long (45-160 days; average = 120), and the onset of acute disease is generally insidious. Clinical symptoms and signs include anorexia, malaise, nausea, vomiting, abdominal pain, and jaundice. Extrahepatic manifestations of disease—such as skin rashes, arthralgias, and arthritis—can also occur. The case-fatality rate for reported cases is approximately 1.4%. A variable proportion of individuals infected with HBV will become chronically infected with the virus. The HBV carrier is central to the epidemiology of HBV transmission. A carrier is defined as a person who is either Hbsag-positive on at least two occasions (at least 6 months apart) or who is HBsAg-positive and IgM anti-HBc negative when a single serum specimen is tested. Although the degree of infectivity is best correlated with HBeAg-positivity, any person positive for HBsAg is potentially infectious. The likelihood of becoming chronically infected with HBV varies inversely with the age at which infection occurs. HBV transmitted from HBsAg-positive mothers to their newborns results in HBV carriage for up to 90% of infants. Between 25% and 50% of children infected before 5 years of age become carriers, whereas only 6%-10% of acutely infected adults become carriers.

Carriers and persons with acute infection have the highest concentrations of HBV in blood and serous fluids. A lower concentration is present in other body fluids, such as saliva and semen. Transmission occurs via percutaneous or permucosal routes, and infective blood or body fluids can be introduced at birth, through sexual contact, or by contaminated needles. Infection can also occur is settings of continuous close personal contact (such as in households or among children in institutions for the developmentally disabled), presumably vi inapparent or unnoticed contact of infective secretions with skin lesions or mucosal surfaces. Transmission of infection by transfusion of blood or blood products is rare because of routine screening of blood for HBsAg and because of current donor selection procedures. Transmission of HBV from infected health-care workers to patients is uncommon but has been documented during types of invasive procedures (e.g., oral and gynecologic surgery) (23,24). HBsAg-positive health-care workers need not be restricted from patient contact unless they have been epidemiologically associated with HBV transmission. Rather, they should be educated about the potential

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mechanisms of HBV transmission. Adherence to aseptic techniques minimizes the risk of transmission. HBV is not transmitted via the fecal-oral route.

Worldwide, HBV infection is a major cause of acute and chronic hepatitis, cirrhosis, and primary hepatocellular carcinoma. The frequency of HBV infection and patterns of transmission vary markedly in different parts of the world. In the United States, Western Europe, and Australia, it is a disease of low endemicity, with infection occurring primarily during adulthood and with only 0.2%-0.9% of the population being chronically infected. In contrast, HBV infection is highly endemic in China and Southeast Asia, most of Africa, most Pacific Islands, parts of the Middle East, and in the Amazon Basin. In these areas, most persons acquire infection at birth or during childhood, and 8%-15% of the population are chronically infected with HBV. In other parts of the world, HBV infection is moderately endemic, with 2%-7% of the population being HBV carriers. Prevention strategies for population in which HBV infection is highly endemic are directed at vaccinating infants with hepatitis B vaccine, usually beginning at birth, to prevent both perinatal and childhood transmission of infection (25). Recommendations for hepatitis B prophylaxis in other areas should be designed to maximize the interruption of HBV transmission in accordance with local patterns of transmission. The recommendations that follow are intended for use in the United States.

Hepatitis B Virus Infection in the United States

Each year, an estimated 300,000 persons, primarily young adults, are infected with HBV. One-quarter become ill with jaundice, more than 10,000 patients require hospitalization, and an average of 250 die of fulminant disease. The United States currently contains an estimated pool of 750,000-1,000,000 infectious carriers. Approximately 25% of carriers develop chronic active hepatitis, which often progresses to cirrhosis. Furthermore, HBV carriers have a risk of developing primary liver cancer that is 12-300 times higher than that of other persons. An estimated 4,000 persons die each year from hepatitis B-related cirrhosis, and more than 800 die from hepatitis B-related liver cancer.

Serologic surveys demonstrate that, although HBV infection is uncommon among adults in the general population, it is highly prevalent in certain groups. Those at risk, based on the prevalence of serologic markers of infection, are described in Table 2. Persons born in areas of high HBV endemicity and their descendants remain at high risk of infection, as do certain populations in which HBV is highly endemic (Alaskan Natives and Pacific Islanders). Certain lifestyles (e.g. homosexual activity, intravenous drug abuse) result in early acquisition of HBV infection and high rates of infection. Persons who have heterosexual activity with multiple partners are at significant risk of infection.

Inmates of prisons have a high prevalence of HBV markers, usually because of parenteral drug abuse before or during imprisonment. Patients in custodial institutions for the developmentally disabled are also at increased risk of having HBV infection. Household contacts and sexual partners of HBV carriers are at an increased risk, as are hemodialysis patients and recipients of certain plasma-derived products that have not been inactivated (e.g., anti-hemophilic factor). Those at occupational risk of HBV infection include medical and dental workers, related laboratory and support personnel, and public service employees who have contact with blood, as well as staff in institutions or classrooms for the mentally retarded.

Hepatitis B Prevention Strategies in the United States

The incidence of reported acute hepatitis B cases increased steadily over the past decade and reached a peak in 1985 (11.50 cases/105/year), despite the introduction of hepatitis B vaccine 3 years previously. Incidence decreased modestly (18%) by 1988, but still remains higher than a decade ago. This minimal impact of hepatitis B vaccine on disease incidence is attributable to several factors. The sources of infection for most cases include intravenous drug abuse (28%), heterosexual contact with infected persons or multiple partners (22%), and homosexual activity (9%). In addition, 30% of patients with Hepatitis B deny any of the recognized risk factors for infection.

The present strategy for hepatitis B prevention is to vaccinate those individuals at high risk of infection. Most persons receiving vaccine as a result of this strategy have been persons at risk of acquiring HBV infection through occupational exposure, a group that accounts for approximately 4% of cases. The major deterrents to vaccinating the other high-risk groups include their lack of knowledge about the risk of

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disease and its consequences, the lack of public-sector programs, the cost of vaccine, and the inability to access most of the high-risk populations.

For vaccine to have an impact on the incidence of hepatitis B, a comprehensive strategy must be developed that will provide hepatitis B vaccination to persons before they engage in behaviors or occupations that place them at risk of infection. Universal HBsAg screening of pregnant women was recently recommended to prevent perinatal HBV transmission. The previous recommendations for selective screening failed to identify most HBsAg-positive pregnant women (27). As an alternative to high-risk-group vaccination, universal vaccination of infants and adolescents needs to be examined as a possible strategy to control the transmission of disease.

TABLE 2. Prevalence of hepatitis B serologic markers in various population groups

<table>
<thead>
<tr>
<th>POPULATION GROUP</th>
<th>HBsAg (%)</th>
<th>Any marker (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrants/refugees from areas of high HBV endemicity</td>
<td>13</td>
<td>70-85</td>
</tr>
<tr>
<td>Alaskan Natives/Pacific Islanders</td>
<td>5-15</td>
<td>40-70</td>
</tr>
<tr>
<td>Clients in institutions for the developmentally disabled</td>
<td>10-20</td>
<td>35-80</td>
</tr>
<tr>
<td>Users of illicit parenteral drugs</td>
<td>7</td>
<td>60-80</td>
</tr>
<tr>
<td>Sexually active homosexual men</td>
<td>6</td>
<td>35-80</td>
</tr>
<tr>
<td>Household contacts of HBV carriers</td>
<td>3-6</td>
<td>30-60</td>
</tr>
<tr>
<td>Patients of hemodialysis units</td>
<td>3-10</td>
<td>20-80</td>
</tr>
<tr>
<td>Health-care workers-frequent blood contact</td>
<td>1-2</td>
<td>15-30</td>
</tr>
<tr>
<td>Prisoners (male)</td>
<td>1-8</td>
<td>10-80</td>
</tr>
<tr>
<td>Staff of institutions for the developmentally disabled</td>
<td>1</td>
<td>10-25</td>
</tr>
<tr>
<td>Heterosexuals with multiple partners</td>
<td>0.5</td>
<td>5-20</td>
</tr>
<tr>
<td>Health-care workers-no or infrequent blood contact</td>
<td>0.3</td>
<td>3-10</td>
</tr>
<tr>
<td>General population (NHANES II)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blacks</td>
<td>0.9</td>
<td>14</td>
</tr>
<tr>
<td>Whites</td>
<td>0.2</td>
<td>3</td>
</tr>
</tbody>
</table>

* Second National Health and Nutrition Examination Survey (26).

Hepatitis B Prophylaxis

Two types of products are available for prophylaxis against hepatitis B. Hepatitis B vaccines, first licensed in 1981, provide active immunization against HBV infection, and their use is recommended for both preexposure and postexposure prophylaxis. HBIG provides temporary, passive protection and is indicated only in certain postexposure settings.

HBIG

HBIG is prepared from plasma preselected to contain a high titer of anti-HBs. In the United States, HBIG has an anti-HBs titer of >100,000 by radioimmunoassay (RIA). Human plasma from which HBIG is prepared is screened for antibodies to HIV; in addition, the Cohn fractionation process used to prepare this product inactivates and eliminates HIV from the final product. There is no evidence that the causative agent of AIDS (HIV) has been transmitted by HBIG (6).

Hepatitis B Vaccine

Two types hepatitis B vaccines are currently licensed in the United States. Plasma-derived vaccine consists of a suspension of inactivated, alum-adsorbed, 22-nm, HBsAg particles that have been purified from human plasma by a combination of biophysical (ultracentrifugation) and biochemical procedures. Inactivation is a threefold process using 8M urea, pepsin at pH 2, and 1:1000 formalin. These treatment steps have been shown to inactivate representatives of all classes of viruses found in human blood, including HIV (28). Plasma-derived vaccine is no longer being produced in the United States, and use is
now limited to hemodialysis patients, other immunocompromised hosts, and persons with known allergy to yeast.

Currently licensed recombinant hepatitis B vaccines are produced by Saccharomyces cerevisiae (common baker’s yeast), into which a plasmid containing the gene for the HBsAg has been inserted. Purified HBsAg is obtained by lysing the yeast cells and separating HBsAg from yeast components by biochemical and biophysical techniques. These vaccines contain more than 95% HBsAg protein. Yeast-derived protein constitutes no more than 5% of the final product. Hepatitis B vaccines are packaged to contain 10-40 mg HBsAg protein/ml and are adsorbed with aluminum hydroxide (0.5 mg/ml). Thimerosal (1:20,000 concentration) is added as a preservative.

The recommended series of three intramuscular doses of hepatitis B vaccine induces an adequate antibody response* in >90% of healthy adults and in >95% of infants, children, and adolescents from birth through 19 years of age (29-31). The deltoid (arm) is the recommended site for hepatitis B vaccination of adults and children; immunogenicity of vaccine for adults is substantially lower when injections are given in the buttock (32). Larger vaccine doses (two to four times normal adult dose) or an increased number of doses (four doses) are required to induce protective antibody in a high proportion of hemodialysis patients and may also be necessary for other immunocompromised persons (such as those on immunosuppressive drugs or with HIV infection) (33,34).

*An adequate antibody response is >10 milliInternational Units (mIU)/ml, approximately equivalent to 10 sample ration units (SRU) by RIA or positive by enzyme immunoassay (EIA), measured 1-6 months after completion of the vaccine series.

Field trials of the vaccines licensed in the United States have shown 80%-95% efficacy in preventing infection or clinical hepatitis among susceptible persons (31,35). Protection against illness is virtually complete for persons who develop an adequate antibody response after vaccination. The duration of protection and need for booster doses are not yet fully defined. Between 30% and 50% of persons who develop adequate antibody after three doses of vaccine will lose detectable antibody within 7 years, but protection against viremic infection and clinical disease appears to persist (36-38). Immunogenicity and efficacy of the licensed vaccines for hemodialysis patients are much lower than in normal adults. Protection in this group may last only as long as adequate antibody levels persist (33).

Vaccine Usage

Primary vaccination comprises three intramuscular doses of vaccine, with the second and third doses given 1 and 6 months, respectively, after the first. Adults and older children should be given a full 1.0 ml/dose, while children ≤11 years of age should usually receive half (0.5 ml) this dose. See Table 3 for complete information on age-specific dosages of currently available vaccines. An alternative schedule of four doses of vaccine given at 0, 1, 2, and 12 months has been approved for one vaccine for postexposure prophylaxis or for more rapid induction of immunity. However, there is no clear evidence that this regimen provides greater protection than the standard three-dose series. Hepatitis B vaccine should be given only in the deltoid muscle for adults and children or in the anterolateral thigh muscle for infants and neonates.

For patients undergoing hemodialysis and for other immunosuppressed patients, higher vaccine doses or increased numbers of doses are required. A special formulation
TABLE 3. Recommended doses and schedules of currently licensed HB vaccines

<table>
<thead>
<tr>
<th>GROUP</th>
<th>Heptavax-B*</th>
<th>Recombivax HB*</th>
<th>Engerix-B*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants of HBV-carrier mothers</td>
<td>10 (0.5)</td>
<td>5 (0.5)</td>
<td>10 (0.5)</td>
</tr>
<tr>
<td>Other infants and children &lt;11 years</td>
<td>10 (0.5)</td>
<td>2.5 (0.25)</td>
<td>10 (0.5)</td>
</tr>
<tr>
<td>Children and adolescents 11-19 years</td>
<td>20 (1.0)</td>
<td>5 (0.5)</td>
<td>20 (1.0)</td>
</tr>
<tr>
<td>Adults &gt;19 year</td>
<td>20 (1.0)</td>
<td>10 (1.0)</td>
<td>20 (1.0)</td>
</tr>
<tr>
<td>Dialysis patients and other immunocompromised persons</td>
<td>40 (2.0)*</td>
<td>40 (1.0)**</td>
<td>40 (2.0)c,tt</td>
</tr>
</tbody>
</table>

* Usual schedule: three doses at 0, 1, 6 months.
** Alternative schedule: four doses at 0, 1, 2, 12 months.
| Usual schedule: two 1.0-ml doses given at different sites. |
| Special formulation for dialysis patient. |
| Four-dose schedule recommended at 0, 1, 2, 6 months. |

(text missing) of one vaccine is now available for such persons (Table 3). Persons with HIV infection have an impaired response to hepatitis B vaccine. The immunogenicity of higher doses of vaccine is unknown for this group, and firm recommendations on dosage cannot be made at this time (34).

Vaccine doses administered at longer intervals provide equally satisfactory protection, but optimal protection is not conferred until after the third dose. If the vaccine series is interrupted after the first dose, the second and third doses should be given separated by an interval of 3-5 months. Persons who are late for the third dose should be given this dose when convenient. Postvaccination testing is not considered necessary in either situation.

In one study, the response to vaccination by the standard schedule using one or two doses of one vaccine, followed by the remaining doses of a different vaccine, was comparable to the response to vaccination with a single vaccine. Moreover, because the immunogenicities of the available vaccines are similar, it is likely that responses in such situations will be comparable to those induced by any of the vaccines alone. The immunogenicity of a series of three low doses (0.1 standard dose) of plasma-derived hepatitis B vaccine administered by the intradermal route has been assessed in several studies. The largest studies of adults show lower rates of developing adequate antibody (80%-90%) and twofold to fourfold lower antibody titer than with intramuscular vaccination with recommended doses (39 and CDC unpublished data). Data on immunogenicity of low doses of recombinant vaccines given intradermally are limited. At this time, intradermal vaccination of adults using low doses of vaccine should be done only under research protocol, with appropriate informed consent and with postvaccination testing to identify persons with inadequate response who would be eligible for revaccination. Intradermal vaccination is not recommended for infants or children.

All hepatitis B vaccines are inactivated (noninfective) products, and there is no evidence of interference with other simultaneously administered vaccines. Data are not available on the safety of hepatitis B vaccines for the developing fetus. Because the vaccines contain only noninfectious HBsAg particles, there should be no risk to the fetus. In contrast, HBV infection of a pregnant woman may result in severe
Vaccine storage and shipment

Vaccine should be shipped and stored at 2 C-8 C but not frozen. Freezing destroys the potency of the vaccine.

Side effects and adverse reactions

The most common side effect observed following vaccination with each of the available vaccines has been soreness at the injection site. Postvaccination surveillance for 3 years after licensure of the plasma-derived vaccine showed an association of borderline significance between Guillain-Barre syndrome and receipt of the first vaccine dose (40). The rate of this occurrence was very low (0.5/100,000 vaccinees) and was more than compensated by disease prevented by the vaccine even if Guillain-Barre syndrome is a true side effect. Such postvaccination surveillance information is not available for the recombinant hepatitis B vaccines. Early concerns about safety of plasma-derived vaccine have proven to be unfounded, particularly the concern that infectious agents such as HIV present in the donor plasma pools might contaminate the final product.

Effect of vaccination on carriers and immune persons

Hepatitis B vaccine produces neither therapeutic nor adverse effects for HBV carriers (41). Vaccination of individuals who possess antibodies against HBV from a previous infection is not necessary but will not cause adverse effects. Such individuals will have a postvaccination increase in their anti-HBs levels. Passively acquired antibody, whether acquired from HBIG or IgG administration or from the transplacental route, will not interfere with active immunization (42).

Prevaccination serologic testing for susceptibility

The decision to test potential vaccine recipients for prior infection is primarily a cost-effectiveness issue and should be based on whether the costs of testing balance the costs of vaccine saved by not vaccinating individuals who have already been infected. Estimation of cost-effectiveness of testing depends on three variables: the cost of vaccination, the cost of testing for susceptibility, and the expected prevalence of immune individuals in the group. Testing in groups with the highest risk of HBV infection (HBV marker prevalence >20%, Table 2) is usually cost-effective unless testing costs are extremely high. Cost-effectiveness of screening may be marginal for groups at intermediate risk. For groups with a low expected prevalence of HBV serologic markers, such as health professionals in their training years, prevaccination testing is not cost-effective.

For routine testing, only one antibody test is necessary (either anti-HBc or anti-HBs). Anti-HBc identifies all previously infected persons, both carriers and those who are not carriers, but does not differentiate members of the two groups. Anti-HBs identifies persons previously infected, except for carriers. Neither test has a particular advantage for groups expected to have carrier rates of &lt;2%, such as health-care workers. Anti-HBc may be preferred to avoid unnecessary vaccination of carriers for groups with higher carrier rates. If RIA is used to test for anti-HBs, a minimum of 10 sample ratio units should be used to designate immunity (2.1 is the usual designation of a positive test). If EIA is used, the positive level recommended by manufacturers is appropriate.

Postvaccination testing for serologic response and revaccination of nonresponders

Hepatitis B vaccine, when given in the deltoid, produces protective antibody (anti-HBs) in >90% of healthy persons. Testing for immunity after vaccination is not recommended routinely but is advised for persons whose subsequent management depends on knowing their immune status (such as dialysis patients and staff). Testing for immunity is also advised for persons from whom a suboptimal response may be anticipated, such as those who have received vaccine in the buttock, persons >50 years of age, and persons known to have HIV infection. Postvaccination testing should also be considered for persons at occupational risk who may have needle-stick exposures necessitating postexposure prophylaxis. When
necessary, postvaccination testing should be done between 1 and 6 months after completion of the vaccine series to provide definitive information on response to the vaccine. Revaccination of persons who do not respond to the primary series (nonresponders) produces adequate antibody in 15%-25% after one additional dose and in 30%-50% after three additional doses when the primary vaccination has been given in the deltoid (36). For persons who did not respond to a primary vaccine series given in the buttock, data suggests that revaccination in the arm induces adequate antibody in >75%. Revaccination with one or more additional doses should be considered for persons who fail to respond to vaccination in the deltoid and is recommended for those who have failed to respond to vaccination in the buttock.

Need for vaccine booster doses

Available data show that vaccine-induced antibody levels decline steadily with time and that up to 50% of adult vaccinees who respond adequately to vaccine may have low or undetectable antibody levels by 7 years after vaccination. Nevertheless, both adults and children with declining antibody levels are still protected against hepatitis B disease. Current data also suggest excellent protection against disease for 5 years after vaccination among infants born to hepatitis B-carrier mothers. For adults and children with normal immune status, booster doses are not routinely recommended within 7 years after vaccination, nor is routine serologic testing to assess antibody levels necessary for vaccine recipients during this period. For infants born to hepatitis B-carrier mother, booster doses are not necessary within 5 years after vaccination. The possible need for booster doses after longer intervals will be assessed as additional information becomes available.

For hemodialysis patients, for whom vaccine-induced protection is less complete and may persist only as long as antibody levels remain above 10 mIU/ml, the need for booster doses should be assessed by annual antibody testing, and booster doses should be given when antibody levels decline to <10 mIU/ml.

Groups recommended for preexposure vaccination

Persons at substantial risk of HBV infection who are demonstrated or judged likely to be susceptible should be vaccinated. They include the following:

1. Persons with occupational risk. HBV infection is a major infectious occupational hazard for health-care and public-safety workers. The risk of acquiring HBV infection from occupational exposures is dependent on the frequency of percutaneous and permcosal exposure to blood or blood products. Any health-care or public-safety worker may be at risk for HBV exposure depending on the tasks that he or she performs. If those tasks involve contact with blood or blood-contaminated body fluids, such workers should be vaccinated. Vaccination should be considered for other workers depending on the nature of the tasks (43). Risks among health-care professional vary during the training and working career of each individual but are often highest during the professional training period. For this reason, when possible, vaccination should be completed during training in schools of medicine, dentistry, nursing, laboratory technology, and other allied health professions before workers have their first contact with blood.

2. Clients and staff of institutions for the developmentally disabled. Susceptible clients in institutions for the developmentally disabled should be vaccinated. Staff who work closely with client should also be vaccinated. The risk in institutional environments is associated not only with blood exposure but may also be consequent to bites to bites and contact with skin lesions and other infective secretions. Susceptible clients and staff who live or work in smaller (group) residential settings with known HBV carriers should also receive hepatitis B vaccine. Clients discharged from residential institutions into community settings should be screened for HBsAg so that the community programs may take appropriate measures to prevent HBV transmission. These measures should include both environmental controls and appropriate use of vaccine. Staff of nonresidential day-care programs (e.g., schools, sheltered workshops for the developmentally disabled) attended by known HBV carriers have a risk of HBV infection comparable to that among health-care workers and therefore should be vaccinated (44). The risk of HBV infection for clients appears to be lower than the risk for staff. Vaccination of client in day-care programs may be considered. Vaccination of classroom contacts is strongly encouraged if a classmate who is an HBV carrier behaves aggressively or has special medical problems that increase the risk of exposure to his/her blood or serous secretions.
3. Hemodialysis patients. Hepatitis B vaccination is recommended for susceptible hemodialysis patients. Although seroconversion rates and anti-HBs titers are lower than those for healthy persons, for those patients who do respond, hepatitis B vaccine will protect them from HBV infection and reduce the necessity for frequent serologic screening (45). Some studies have shown higher seroconversion rates and antibody titers for patients with uremia who were vaccinated before they required dialysis (46). Identification of patients for vaccination early in the course of the renal disease is encouraged.

4. Sexually active homosexual men. Susceptible sexually active homosexual men should be vaccinated regardless of their age or the duration of their homosexual practices. Persons should be vaccinated as soon as possible after their homosexual activity begins. Homosexual and bisexual men known to have HIV infection should be tested for anti-HBs response after completion of the vaccine series and should be counseled accordingly.

5. Users of illicit injectable drugs. All users of illicit injectable drugs who are susceptible to HBV should be vaccinated as early as possible after their drug abuse begins.

6. Recipients of certain blood products. Patients with clotting disorders who receive clotting-factor concentrates have an increased risk of HBV infection. Vaccination is recommended for these persons, and it should be initiated at the time their specific clotting disorder is identified. Prevaccination testing is recommended for patients who have already received multiple infusions of these products.

7. Household and sexual contacts of HBV carriers. Household contacts of HBV carriers are at high risk of HBV infection. Sexual contacts appear to be at greatest risk. When HBV carriers are identified through routine screening, screening of donated blood, diagnostic testing in hospitals, prenatal screening, screening of refugees from certain areas, or other screening programs, they should be notified of their status. All household and sexual contacts should be tested and susceptible contacts vaccinated.

8. Adoptees from countries of high HBV endemicity. Families accepting orphans or unaccompanied minors from countries of high or intermediate HBV endemicity should have the children screened for HBsAg. If the children are HBsAg-positive, family members should be vaccinated (47).

9. Other contacts of HBV carriers. Persons in casual contact with carriers in setting such as schools and offices are at minimal risk of HBV infection, and vaccine is not routinely recommended for them. At child-care centers, HBV transmission between children or between children and staff has rarely been documented. Unless special circumstances exist, such as behavior problems (biting or scratching) or medical conditions (sever skin disease) that might facilitate transmission, vaccination of contacts of carriers in child care is not indicated.

10. Populations with high endemicity of HBV infection. In certain U.S. populations, including Alaskan Natives, Pacific Islanders, and refugees from HBV-endemic areas, HBV infection is highly endemic, and transmission occurs primarily during childhood. In such groups, universal hepatitis B vaccination of infants is recommended to prevent disease transmission during childhood. In addition, more extensive programs of "catch-up" childhood vaccination should be considered if resources are available. Immigrants and refugees from areas with highly endemic HBV disease (particularly Africa and eastern Asia) should be screened for HBV markers upon resettlement in the United States. If an HBV carrier is identified, all susceptible household contacts should be vaccinated. Even if no HBV carriers are found within a family, vaccination should be considered for susceptible children &lt;7 years of age because of the high rate of inter-familial HBV infection that occurs among these children (48). Vaccination is recommended for all infants of women who were born in areas in which infection is highly endemic.

11. Inmates of long-term correctional facilities. The prison environment may provide a favorable setting for the transmission of HBV because of the use of illicit injectable drugs and because of male homosexual practices. Moreover, it provide an access point for vaccination of percutaneous drug abusers. Prison officials should consider undertaking screening and vaccination programs directed at inmates with histories of high-risk behaviors.

12. Sexually active heterosexual persons. Sexually active heterosexual persons with multiple sexual partners are at increased risk of HBV infection. Risk increases with increasing numbers of sexual partners. Vaccination is recommended for persons who are diagnosed as having recently acquired other sexually transmitted disease, for prostitutes, and for persons who have a history of sexual activity with multiple partners in the previous 6 months.
OSHA Instruction CPL 2-2.44C (cont.)

13. International travelers. Vaccination should be considered for persons who plan to reside for more than 6 months in areas with high levels of endemic HBV and who will have close contact with the local population. Vaccination should also be considered for short-term travelers who are likely to have contact with blood from or sexual contact with residents of areas with high levels of endemic disease. Ideally, hepatitis B vaccination of travelers should begin at least 6 months before travel to allow for completion of the full vaccine series. Nevertheless, a partial series will offer some protection from HBV infection. The alternative four-dose schedule may provide better protection during travel if the first three doses can be delivered before travel (second and third doses given 1 and 2 months, respectively, after first).

Postexposure Prophylaxis for Hepatitis B

Prophylaxis treatment to prevent hepatitis B infection after exposure to HBV should be considered in the following situations: perinatal exposure of an infant born to an HBsAg- positive mother, accidental percutaneous or permucosal exposure to HBsAg-positive blood, sexual exposure to an HBsAg- positive persons, and household exposure of an infant &lt;12 months of age to a primary care giver who has acute hepatitis B.

Various studies have established the relative efficacies of HBIG and/or hepatitis B vaccine in different exposure situations. For in infant with perinatal exposure to an HBsAg-positive and HBeAg-positive mother, a regimen combining one dose of HBIG at birth with the hepatitis B vaccine series stated soon after birth is 85%-95% effective in preventing development of the HBV carrier state (35,49-51). Regimens involving either multiple doses of HBIG alone, or the vaccine series alone, have 70%-85% efficacy (52,53).

For accidental percutaneous exposure, only regimens including HBIG and/or IG have been studied. A regimen of two doses of HBIG, on given after exposure and one a month later, is about 75% effective in preventing hepatitis B in this setting (54,55). For sexual exposure, a single dose of HBIG is 75% effective if given within 2 weeks of last sexual exposure (56). The efficacy of IG for postexposure prophylaxis is uncertain. IG no longer has a role in postexposure prophylaxis of hepatitis B because of the availability of HBIG and the wider use of hepatitis B vaccine. Recommendations on postexposure prophylaxis are based on available efficacy data and on the likelihood of future HBV exposure of the persons requiring treatment. In all exposures, a regimen combining HBIG with hepatitis B vaccine will provide both short- and long-term protection, will be less costly than the two-dose HBIG treatments alone, and is the treatment of choice.

Perinatal Exposure and Recommendations

Transmission of HBV from other to infant during the perinatal period represents one of the most efficient modes of HBV infection and often leads to severe long-term sequelae. Infants born to HBsAg-positive and HBeAg-positive mother have a 70%-90% chance of acquiring perinatal HBV infection, and 85%-90% of infected infants with become chronic HBV carriers. Estimates are that &gt;25% of these carriers will die from primary hepatocellular carcinoma (PHC) or cirrhosis of the liver (57). Infants born to HBsAg-positive and HBeAg-negative mother have a lower risk of acquiring perinatal infection; however, such infant have had acute disease, and fatal fulminant hepatitis has been reported (58,59). Based on 1987 data in the United States, an estimated 18,000 births occur to HBsAg-positive women each year, resulting in approximately 4,000 infants who become chronic HBV carriers. Prenatal screening of all pregnant women identifies those who are HBsAg-positive and allows treatment of the newborns with HBIG and hepatitis B vaccine, a regimen that is 85%-95% effective in preventing the development of the HBV chronic carrier state. The following are perinatal recommendations:

1. All pregnant women should be routinely tested for HBsAg during an early prenatal visit in each pregnancy. This testing should be done at the same time that other routine prenatal screening test are ordered. In special situations (e.g., when acute hepatitis is suspected, when a history of exposure to hepatitis has been reported, or when the mother has a particularly high-risk behavior such as intravenous drug abuse), and additional HBsAg test can be ordered later in the pregnancy. No other HBV marker tests are necessary for the purpose of maternal screening, although HBsAg-
positive mother identified during screening may have HBV-related acute or chronic liver disease and should be evaluated by their physicians.

2. If a woman has not been screened prenatally or if test results are not available at the time of admission for delivery, HBsAg testing should be done at the time of admission, or as soon as possible thereafter. If the mother is identified as HBsAg-positive >1 month after giving birth, the infant should be tested for HBsAg. If the results are negative, the infant should be given HBlG and hepatitis B vaccine.

3. Following all initial positive tests for HBsAg, a repeat test for HBsAg should be performed on the same specimen, followed by a confirmatory test using a neutralization assay. For women in labor who did not have HBsAg testing during pregnancy and who are found to be HBsAg-positive on first testing, initiation of treatment of their infants should not be delayed by more than 24 hours for repeat or confirmatory testing.

4. Infants born to HBsAg-positive mothers should receive HBIG (0.5 ml) intramuscularly once they are physiologically stable, preferably within 12 hours of birth (Table 4). Hepatitis B vaccine should be administered intramuscularly at the appropriate infant dose. The first does should be given concurrently with HBIG but at a different site. If vaccine is not immediately available, the first dose should be given as soon as possible. Subsequent doses should be given as recommended for the specific vaccine. Testing infants for HBsAg and anti-HBs is recommended when they are 12-15 months of age to monitor the success or failure of therapy. If HBsAg is not detectable and anti-HBs is present, children can be considered protected. Testing for anti-HBc is not useful, since maternal anti-HBc can persist for >1 year. HBlG and hepatitis B vaccination do not interfere with routine childhood vaccinations. Breast-feeding poses no risk of HBV infection for infants who have begun prophylaxis.

5. Household members and sexual partners of HBV carriers identified through prenatal screening should be tested to determine susceptibility to HBV infection, and, if susceptible, should receive hepatitis B vaccine.

Table 4. Hepatitis B virus postexposure recommendations

<table>
<thead>
<tr>
<th>EXPOSURE</th>
<th>DOSE</th>
<th>TIMING</th>
<th>DOSE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perinatal</td>
<td>0.5 ml IM</td>
<td>Within 12 hours of birth</td>
<td>0.5 ml IM*</td>
<td>Within 12 hours of birth,t</td>
</tr>
<tr>
<td>Sexual</td>
<td>0.06 ml/kg IM</td>
<td>Single dose within 14 days of last sexual contact</td>
<td>1.0 ml IM*</td>
<td>First dose at time of HBIG treatment,t</td>
</tr>
</tbody>
</table>

* For appropriate age-specific doses of each vaccine, see Table 3.

6. Obstetric and pediatric staff should be notified directly about HBsAg-positive mother so that neonates can receive therapy without delay after birth and follow-up doses of vaccine can be given. Programs to coordinate the activities of persons providing prenatal care, hospital-based obstetrical services, and pediatric well-baby care must be established to assure proper follow-up and treatment both of infants born to HBsAg-positive mothers and of other susceptible household and sexual contacts.

7. In those populations under U.S. jurisdiction in which hepatitis B infection is highly endemic (including certain Alaskan Natives, Pacific Island group and refugees from highly endemic areas accepted for resettlement in the United States), universal vaccination of newborns with hepatitis B vaccine is the recommended strategy for hepatitis B control. HBlG screening of mothers and use of HBIG for infants born to HBV-carrier mother may be added to routine hepatitis B vaccination when practical, but screening and HBIG alone will not adequately protect children from HBV infection in
endemic areas. In such areas, hepatitis B vaccine doses should be integrated into the childhood vaccination schedule. More extensive programs of childhood hepatitis B vaccination should be considered if resources are available.

Acute Exposure to Blood That Contains (or Might Contain) HBsAg

For accidental percutaneous (needle stick, laceration, or bite) or percutaneous (ocular or mucous-membrane) exposure to blood, the decision to provide prophylaxis must include consideration of several factors: 1) where the source of the blood is available, b) the HBsAg status of the source, and c) the hepatitis B vaccination and vaccine-response status of the exposed person. Such exposures usually affect persons for whom hepatitis B vaccine is recommended. For any exposure of a person not previously vaccinated, hepatitis B vaccination is recommended.

Following any such exposure, a blood sample should be obtained from the person who was the source of the exposure and should be tested for HBsAg. The hepatitis B vaccination status and anti-HBs response status (if known) of the exposed person should be reviewed. The outline below and Table 5 summarize prophylaxis for percutaneous or percutaneous exposure to blood according to the HBsAg status of the source of exposure and the vaccination status and vaccine response of the exposed person.

For greatest effectiveness, passive prophylaxis with HBIG, when indicated, should be given as soon as possible after exposure (its value beyond 7 days after exposure is unclear).

1. Source of exposure HBsAg-positive
   a. Exposed person has not been vaccinated or has not completed vaccination. Hepatitis B vaccination should be initiated. A single dose of HBIG (0.06 ml/kg) should be given as soon as possible after exposure and within 24 hours, if possible. The first dose of hepatitis B vaccine (Table 3) should be given intramuscularly at a separate site (deltoid for adults) and can be given simultaneously with HBIG or within 7 days of exposure. Subsequent doses should be given as recommended for the specific vaccine. If the exposed person has begun but not completed vaccination, one dose of HBIG should be given immediately, and vaccination should be completed as scheduled.
   b. Exposed persons has already been vaccinated against hepatitis B, and anti-HBs response status is known.
      (1) If the exposed person is known to have had adequate response in the past, the anti-HBs level should be tested unless an adequate level has been demonstrated within the last 24 months. Although current data show that vaccines-induced protection does not decrease as antibody level wanes, most experts consider the following approach to be prudent.
         a) If anti-HBs level is adequate, no treatment is necessary.
         b) If anti-HBs level is inadequate,* a booster dose of hepatitis B vaccine should be given.
      (2) If the exposed persons is known not to have responded to the primary vaccine series, the exposed person should be given either a single dose of HBIG and a dose of hepatitis B vaccine as soon as possible after exposure, or two doses of HBIG (0.06 ml/kg), one given as soon as possible after exposure and the second 1 month later. The latter treatment is preferred for those who have failed to respond to at least four doses of vaccine.

   *An adequate antibody level is >10 milliinternational Units (mIU)/ml, approximately equivalent to 10 sample ratio units (SRU) by RIA or positive by EIA.
### TABLE 5. Recommendations for hepatitis B prophylaxis following percutaneous or percutaneous exposure

**Treatment when source is found to be:**

<table>
<thead>
<tr>
<th>EXPOSED PERSON</th>
<th>HBsAg-positive</th>
<th>HBsAg-negative</th>
<th>Source not tested or unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unvaccinated</td>
<td>HBIG x 1* and initiate HB vaccine,t</td>
<td>Initiate HB vaccine,t</td>
<td>HBIG x 2 or HBIG x 1 plus 1 dose HB vaccine</td>
</tr>
<tr>
<td>Previously vaccinated</td>
<td>Test exposed for anti-HBs</td>
<td>No treatment</td>
<td>Test exposed for anti-HBs</td>
</tr>
<tr>
<td>Known responder</td>
<td>1. If adequate, no treatment</td>
<td>2. If inadequate, HB vaccine booster dose</td>
<td>1. If inadequate, HB vaccine dose</td>
</tr>
<tr>
<td>Known nonresponder</td>
<td>HBIG x 2 or HBIG x 1 plus 1 dose HB vaccine</td>
<td>No treatment</td>
<td>2. If adequate treatment, no</td>
</tr>
<tr>
<td>Response unknown</td>
<td>Test exposed for anti-HBs</td>
<td>No treatment</td>
<td>Test exposed for anti-HBs</td>
</tr>
<tr>
<td></td>
<td>1. If inadequate, HBIG x 1 plus HB vaccine</td>
<td>booster dose</td>
<td>1. If inadequate, HB vaccine dose</td>
</tr>
<tr>
<td></td>
<td>2. If adequate treatment, no</td>
<td></td>
<td>2. If adequate, no treatment</td>
</tr>
</tbody>
</table>

* HBIG dose 0.06 ml/kg IM.
  t HB vaccine dose - see Table 3.
  s Adequate anti-HBs is >10 SRU by RIA or positive by EIA.

#### c.
Exposed person has already been vaccinated against hepatitis B, and the anti-HBs response is unknown. The exposed person should be tested for anti-HBs.

1. If the exposed person has adequate antibody, no additional treatment is necessary.
2. If the exposed person has inadequate antibody on testing, one dose of HBIG (0.06 ml/kg) should be given immediately and a standard booster dose of vaccine (Table 3) given at a different site.

#### 2.
Source of exposure known and HBsAg-negative

a. Exposed person has not been vaccinated or has not completed vaccination. If unvaccinated, the exposed person should be given the first dose of hepatitis B vaccine within 7 days of exposure, and vaccination should be completed as recommended. If the exposed person has not completed vaccination, vaccination should be completed as scheduled.

b. Exposed person has already been vaccinated against hepatitis B. No treatment is necessary.

#### 3.
Source of exposure unknown or not available for testing

a. Exposed person has not been vaccinated or has not completed vaccination. If unvaccinated, the exposed person should be given the first dose of hepatitis B vaccine within 7 days of exposure, and vaccination completed as recommended. If the exposed person has not completed vaccination, vaccination should be completed as scheduled.

b. Exposed person has already been vaccinated against hepatitis B, and anti-HBs response status is known.

1. If the exposed person is known to have had adequate response in the past, no treatment is necessary.
(2) If the exposed person is known not to have responded to the vaccine, prophylaxis as described earlier in section 1.b.(2) under "Source of exposure HBsAg-positive" may be considered if the source of the exposure is known to be at high risk of HBV infection.

c. Exposure person has already been vaccinated against hepatitis B, and the anti-HBs response is unknown. The exposed person should be tested for anti-HBs.

(1) If the exposed person has adequate anti-HBs, no treatment is necessary.
(2) If the exposed person has inadequate anti-HBs, a standard booster dose of vaccine should be given.

Sexual Partners of Persons with Acute HBV Infection

Sexual partners of HBsAg-positive persons are at increased risk of acquiring HBV infection, and HBIG has been shown to be 75% effective in preventing such infections (56). Because data are limited, the period after sexual exposure during which HBIG is effective is unknown, but extrapolation from other settings makes it unlikely that this period would exceed 14 days. Before treatment, testing of sexual partners for susceptibility is recommended if it does not delay treatment beyond 14 days after last exposure. Testing for anti-HBc is the most efficient prescreening test to use in this population.

All susceptible persons whose sexual partners have acute hepatitis B infection or whose sexual partners are discovered to be hepatitis B carriers should receive a single dose of HBIG (0.06 ml/kg) and should begin the hepatitis B vaccine series if prophylaxis can be started with 14 days of the last sexual contact, or if ongoing sexual contact with the infected person will occur. Giving the vaccine with HBIG may improve the efficacy of postexposure treatment. The vaccine has the added advantage of conferring long-lasting protection. An alternative treatment for persons who are not from a high risk group for whom vaccine is routinely recommended and whose regular sexual partners have acute HBV infection is to give one dose of HBIG (without vaccine) and retest the sexual partner for HBsAg 3 months later. No further treatment is necessary if the sexual partner becomes HBsAg-negative. If the sexual partner remains HBsAg-positive, a second dose of HBIG should be given and the hepatitis vaccine series started.

Household Contacts of Persons with Acute HBV Infection

Since infants have close contact with primary care givers and they have a higher risk of becoming HBV carriers after acute HBV infection, prophylaxis of an infant ≤12 months of age with HBIG (0.5 ml) and hepatitis B vaccine is indicated if the mother or primary care giver has acute HBV infection. Prophylaxis for other household contacts of persons with acute HBV infection is not indicated unless they have had identifiable blood exposure to the index patient, such as by sharing toothbrushes or razors. Such exposures should be treated similarly to sexual exposures. If the index patient becomes an HBV carrier, all household contacts should be given hepatitis B vaccine.

DELTA HEPATITIS

The delta virus (also known as hepatitis D virus [HDV]) is a defective virus that may cause infection only in the presence of active HBV infection. The HDV is a 35- to 37-nm viral particle, consisting of single-stranded RNA (mw 500,000) and an internal protein antigen (delta antigen [HDAg]), coated with HBsAg as the surface protein (5). Infection may occur as either coinfection with HBV or superinfection of an HBV carrier, each of which usually causes an episode of clinical acute hepatitis. Coinfection usually resolves, whereas superinfection frequently causes chronic HDV infection and chronic active hepatitis. Both types of infection may cause fulminant hepatitis.

HDV infection may be diagnosed by detecting HDAg in serum during early infection and by the appearance of total of IgM-specific delta antibody (anti-HDV) during or after infection. A test for detection of total anti-HDV is commercially available. Other tests (HDAg, IgM anti-HDV) are available only in researched laboratories.

Routes of transmission HDV are similar to those of HBV. In the United States, HDV infection most commonly affects persons at high risk of HBV infection, particularly parenteral drug abusers and persons with hemophilia.
OSHAW Instruction CPL 2-2.44C (cont.)

Since HDV is dependent on HBV for replication, prevention of hepatitis B infection, either preexposure or postexposure, will suffice to prevent HDV infection for a person susceptible to hepatitis B. Known episodes of perinatal, sexual, or percutaneous exposure to serum or exposure to persons known to be positive for both HBV and HDV should be treated exactly as such exposures to HBV alone.

Persons who are HBsAg carriers are at risk of HDV infection, especially if they participate in activities that put them at high risk of repeated exposure to HBV (parenteral drug abuse, male homosexual activity). However, at present no products are available that might prevent HDV infection in HBsAg carriers either before or after exposure.

NON-A, NON-B HEPATITIS

Parenterally Transmitted (PT) Non-A, Non-B Hepatitis

Parenterally transmitted non-A, non-B hepatitis accounts for 20%-40% of acute viral hepatitis in the United States and has epidemiologic characteristics similar to those of hepatitis B (60). Recently, a portion of the genome of a virus thought to be responsible for PT non-A, non-B hepatitis was cloned (2). A candidate serologic assay for antibody to this virus (proposed as hepatitis C virus) has been developed. This assay appears to detect a substantial number of persons with chronic infection and is being evaluated for screening potential blood donors (3). Although PT non-A, non-B hepatitis has traditionally been considered a transfusion-associated disease, most reported cases have not been associated with blood transfusion (61-64). Groups at high risk of acquiring this disease include transfusion recipients, parenteral drug users, an dialysis patients (62,63). Health-care work that entails frequent contact with blood, personal contact with other who have had hepatitis in the past, an contact with infected persons within households have also been documented in some studies as risk factors for acquiring PT non-A, non-B hepatitis (63-65). However, the role of persons-to-person contact in disease transmission has not been well defined, and the importance of sexual activity in the transmission of this type of hepatitis is unclear.

Multiple episode of non-A, non-B hepatitis have been observed among the same individuals and may be due to different bloodborne agents. An average of 50% of patients who have acute PT non-A, non-B hepatitis infection later develop chronic hepatitis (66). Experimental studies of chimpanzees have confirmed the existence of a carrier state, which may be present in 1%-3% of the population (67,68). The risk and consequences of perinatal transmission of PT non-A, non-B hepatitis are not well defined. Only one small study has been published in which infants born of 12 women who had acute PT non-A, non-B hepatitis during pregnancy were followed. Six infants developed transient alanine aminotransferase (ALT) elevations at 4-8 weeks of age (69). The results have been equivocal in several studies attempting to assess the value of prophylaxis with IGs against PT non-A, non-B hepatitis (70-72). For persons with percutaneous exposure to blood from a patient with PT non-A, non-B hepatitis, it may be reasonable to administer IG (0.06 ml.kg) as soon as possible after exposure. In other circumstances, no specific recommendations can be made.

Enterically Transmitted (ET) Non-A, Non-B Hepatitis

A distinct type of non-A, non-B hepatitis acquired by the fecal-oral route was first identified through investigations of large waterborne epidemics in developing countries. This ET non-A, non-B hepatitis, which has occurred in epidemics or sporadically in parts of Asia, North and West Africa, and Mexico, is serologically distinct from other known hepatitis viruses (4,73). Young to middle-aged adults are most often affected, with an unusually high mortality rate among pregnant women. The disease has been transmitted to experimental animals, and candidates viruses have been identified; however, no serologic tests have yet been developed (74). ET non-A, non-B hepatitis has not been recognized as an endemic disease in the United States or Western Europe, and it is unknown whether the causative agent is present in these areas. Cases have been documented, however, among persons returning from travel to countries in which this disease occurs (75).

Travelers to areas having ET non-A, non-B hepatitis may be at some risk of acquiring this disease by close contact with infected persons or by consuming contaminated food or water. There is no evidence that U.S.-manufactured IG will prevent this infection. As with hepatitis A and other enteric infection, the best means of preventing ET non-A, non-B hepatitis is avoiding potentially contaminated food or water.
32. CDC. Suboptimal response to hepatitis B vaccine given by injection into the buttock. MMWR 1985;34:105-13.
45. CDC. Routine screening for viral hepatitis in chronic hemodialysis centers. hepatitis Surveillance Report No.
46. Atlanta: CDC, 1985 5 a.

References 70 through 75 may be obtained by writing to the Hepatitis Branch, Division of Viral and Rickettsial Diseases, Center for Infectious Diseases, Mailstop A33, Centers for Disease Control, Atlanta, Ga. 30333.
APPENDIX C

Biological Safety Cabinets

Biological safety cabinets are among the most effective, as well as the most commonly used, primary containment devices in laboratories working with infectious agents. Each of the three types--Class I, II, III--has performance characteristics which are described in this appendix. In addition to the design, construction, and performance standards for vertical laminar flow biological safety cabinets (Class II), the National Sanitation Foundation has also developed a list of such products which meet the reference standard. Utilization of this standard and list should be the first step in selection and procurement of a biological safety cabinet.

Class I and II biological safety cabinets, when used in conjunction with good microbiological techniques, provide an effective partial containment system for safe manipulation of moderate and high-risk microorganisms (i.e., Biosafety Level 2 and 3 agents). Both Class I and II biological safety cabinets have comparable inward face velocities (75 linear feet per minute) and provide comparable levels of containment in protecting the laboratory worker and the immediate laboratory environment from infectious aerosols generated within the cabinet.

It is imperative that Class I and II biological safety cabinets are tested and certified in situ at the time of installation within the laboratory, at any time the BSC is moved, and at least annually thereafter. Certification at location other than the final site may attest to the performance capability of the individual cabinet or model, but does not supersede the critical certification prior to use in the laboratory.

As with any other piece of laboratory equipment, personnel must be trained in the proper use of the biological safety cabinets. Of particular note are those activities which may disrupt the inward directional airflow through the work opening of Class I and II cabinets. Repeated insertion and withdrawal of the workers' arms in and from the work chamber, opening and closing doors to the laboratory or isolation cubicle, improper placement or operation of materials or equipment within the work chamber, or brisk walking past the BSC while it is in use are demonstrated causes of the escape of aerosolized particles from within the cabinet. Strict adherence to recommended practices for the use of biological safety cabinets is as important in attaining the maximum containment capability of the equipment as is the mechanical performance of the equipment itself.

Biological Safety Cabinets--Continued

Horizontal laminar flow "clean benches" are present in a number of clinical, pharmacy, and laboratory facilities. These "clean benches" provide a high quality environment within the work chamber for manipulation of nonhazardous materials. Caution: Since the operator sits in the immediate downstream exhaust from the "clean bench", this equipment must never be used for the handling of toxic, infectious, or sensitizing materials.

The Class I biological safety cabinet is an open-fronted, negative-pressure, ventilated cabinet with a minimum inward face velocity at the work opening of at least 75 feet per minute. The exhaust air from the cabinet is filtered by a high efficiency particulate air (HEPA) filter. This cabinet may be used in three operational modes: with a full-width open front, with an installed front closure panel not equipped with gloves, and with an installed front closure panel equipped with arm-length rubber gloves.

The Class II vertical laminar-flow biological cabinet is an open-fronted, ventilated cabinet with an average inward face velocity at the work opening of at least 75 feet per minute. This cabinet provides a HEPA-filtered, recirculated mass airflow within the work space. The exhaust air from the cabinet is also filtered by HEPA filters. Design, construction, and performance standards for Class II cabinets have been developed by and are available from the National Sanitation Foundation, Ann Arbor, Michigan.80 The Class III cabinet is a totally enclosed ventilated cabinet of gas-tight construction.

Operations within the Class II cabinet are conducted through attached rubber gloves. When in use, the Class III cabinet is maintained under negative air pressure of at least 0.5 inches water gauge. Supply air is
drawn into the cabinet through HEPA filters. The cabinet exhaust air is filtered by two HEPA filters, installed in series, before discharge outside of the facility. The exhaust fan for the Class III cabinet is generally separate from the exhaust fans of the facility's ventilation system.

Personnel protection provided by Class I and Class II cabinets is dependent on the inward airflow. Since the face velocities are similar, they generally provide an equivalent level of personnel protection. The use of these cabinets alone, however, is not appropriate for containment of highest-risk infectious agents because aerosols may accidentally escape through the open front.

The use of a Class II cabinet in the microbiological laboratory offers the additional capability and advantage of protecting materials contained within it from extraneous airborne contaminants. This capability is provided by the HEP-filtered, recirculated mass airflow within the work space.

The Class III cabinet provides the highest level of personnel and product protection. This protection is provided by the physical isolation of the space in which the infectious agent is maintained. When these cabinets are required, all procedures involving infectious agents are contained within them. Several Class III cabinets are therefore typically set up as an interconnected system. All equipment required by the laboratory activity, such as incubators, refrigerators, and centrifuges, must be an integral part of the cabinet system. Double-doored autoclaves and chemical dunk tanks are also attached to the cabinet system to allow supplies and equipment to be safely introduced and removed.

Personnel protection equivalent to that provided by Class III cabinets can also be obtained with a personnel suit area and Class I or Class II cabinets. This is one in which the laboratory worker is protected from a potentially contaminated environment by a one-piece positive pressure suit ventilated by a life-support system. This area is entered through an airlock fitted with airtight doors. A chemical shower is provided to decontaminate the surfaces of the suit as the worker leaves the area. The exhaust air from the suit area is filtered by two HEPA filter units installed in series.


For Figure 1, "Class I Cabinet", see printed copy of report. For an electronic copy of figure call the OCIS help desk at (801) 524-5366.
APPENDIX D

The information contained in Appendix D was unavailable at the time of printed November 1993 version of the Guide. For information contained in Appendix D call the DOE OSH Standards Interpretations Response Line at 1-800-292-8061, Monday - Friday, 8:00 a.m. - 4:00 p.m. EST.
LABELING REQUIREMENTS

<table>
<thead>
<tr>
<th>Item</th>
<th>NO LABEL REQUIRED</th>
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</thead>
<tbody>
<tr>
<td>Regulated waste container</td>
<td>X or</td>
<td>X</td>
</tr>
<tr>
<td>Reusable contaminated sharps.</td>
<td>X or</td>
<td>X</td>
</tr>
<tr>
<td>Refrigerator/freezer holding blood or other potentially infectious material (opim).</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Containers used for storage, transport, or shipping of blood or opim.</td>
<td>X or</td>
<td>X</td>
</tr>
<tr>
<td>Blood/blood products released for clinical use.</td>
<td>X,1 or X</td>
<td></td>
</tr>
<tr>
<td>Individual specimen containers of blood or opim remaining in facility.</td>
<td>X</td>
<td>or X</td>
</tr>
<tr>
<td>Specimens shipped from the primary facility to another facility.</td>
<td>X</td>
<td>or X</td>
</tr>
<tr>
<td>Individual containers of blood or opim placed in labeled container during storage, transport, shipment, or disposal.</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Contaminated X,2 need servicing or shipping.

Contaminated X,3 or X laundry.

Laundry sent X or X to another X facility that does not use universal precautions.

1 Labels are not be required if universal precautions are used in handling all specimens and container are recognizable as containing specimens.

2 Specifying, in addition, the location of the contamination.

3 Alternative label or color code must be used when facility uses UP in handling all soiled laundry and employees can recognize containers as requiring compliance with UP.

**COMPLIANCE CALENDAR**

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<tr>
<th>ITEM</th>
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<th>120 DAYS</th>
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<td>Exposure Control Plan</td>
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<tr>
<td>Engineering/Work Practice Controls</td>
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<tr>
<td>Housekeeping</td>
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<td></td>
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<tr>
<td>HB Vaccination and Post-Exposure Follow-up</td>
<td>7/6/92</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Labels and Signs</td>
<td>7/6/92</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

1 OSHA Instruction CPL 2-2.44B shall remain in effect for complain inspections until the effective dates of the requirements of 29 CFR 1910.1030.

OSHA Instruction STP 2-1.166

February 3, 1992
Office of State Programs

SUBJECT: Occupational Exposure to Bloodborne Pathogens 29 CFR 1910.1030; Final Rule

A. PURPOSE. This instruction describes a Federal Program Change to the Regions and State designees.

B. SCOPE. This instruction applies OSHA-wide.

C. REFERENCE.

1. OSHA Instruction STP 2-1.117, August 31, 1984, State Standards.

D. FEDERAL PROGRAM CHANGE. This instruction describes a Federal Program Change which affects State programs. Each Regional Administrator shall:

1. Ensure that this instruction is forwarded to each State designee.

2. Provide a copy of the FEDERAL REGISTER notice to the State designee upon request.

3. Explain the technical content of the FEDERAL REGISTER Notice at 56 FR 64004, December 6, 1991, Occupational Exposure to Bloodborne Pathogens; Final Rule, to the State designees upon request.

4. Ensure that each State designee acknowledges receipt of this instruction in writing, within 30 days of notification, to the Regional Administrator. The acknowledgment should include (a) the State's plan to adopt and implement the standard change, (b) the State's plan to develop an alternative change, which is as effective, or (c) the reasons why no change is necessary to maintain a program which is as effective as the Federal program.

5. Inform each State designee that the State must within six months of the date of Federal publication amend its final rule or adopt the final rule to ensure that the State standard is at least as effective as the Final Rule for Occupational Exposure to Bloodborne Pathogens 29 CFR 1910.1030. The State must submit a plan supplement to the Regional Administrator within 30 days of State promulgation.

6. Because of the unique importance of this issue it is important for the States to act quickly and have a standard in place as close to March 6, 1992 as possible. Computer disks of the standard have been provided.

E. DIFFERENT STATE STANDARDS. Section 18(c)(2) of the Act requires that State standards be "at least as effective" as the Federal and, when applicable to products used or distributed in interstate commerce, the standards must be required by compelling local conditions and not unduly burden interstate commerce. In addition to the "at least as effective" criterion, this "product clause test" will be applied to State standards with substantively different requirements from the comparable Federal standard, as described in STP 2-1.117. A State standard expanded in scope from the Federal is considered to be a substantively different standard.

F. INTERIM ENFORCEMENT. Under 29 CFR 1953.23(a) and (b), State plan States are provided up to six months from publication of the Federal standard in the FEDERAL REGISTER to promulgate an identical or "at least as effective" as standard. If a State, for whatever reason, is unable to promulgate a standard in a timely manner (six months for a permanent standard, 30 days for an emergency temporary standard) the State shall be expected to provide assurance that it will enforce the substantive provisions of the new or revised Federal standard through such means as use of its
general duty clause or equivalent, temporary adoption of an identical standard, or an alternative, specified enforcement mechanism. Until such time as a State standard is promulgated, Federal OSHA will provide interim enforcement assistance, as appropriate.

G. EFFECTIVE DATES. The final rule becomes effective on March 6, 1992. The EXPOSURE CONTROL PLAN must be completed on or before May 5, 1992. INFORMATION AND TRAINING and RECORDKEEPING REQUIREMENTS take effect on June 4, 1992. The following OTHER PROVISIONS take effect on July 6, 1992: engineering and work practice controls, personal protective equipment, housekeeping, special provisions covering HIV and HBV research laboratories and production facilities, hepatitis B vaccination and post-exposure evaluation and follow-up, and labels and signs. The initial effective date for an identical or different State standard may be no later than the date of State promulgation or the Federal effective date, whichever is later.

H. EXPLANATION.

1. On December 6, 1991, OSHA issued a final rule to eliminate or minimize occupational exposure to Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV) and other bloodborne pathogens.

2. Based on a review of the information in the rulemaking record, OSHA has made a determination that employees face a significant health risk as the result of occupational exposure to blood and other potentially infectious materials because they may contain bloodborne pathogens, including hepatitis B virus which causes Hepatitis B, a serious liver disease, and human immunodeficiency virus, which causes Acquired Immunodeficiency Syndrome (AIDS). The Agency further concludes that this exposure can be minimized or eliminated using a combination of engineering and work practice controls, personal protective clothing and equipment, training, medical surveillance, Hepatitis B vaccination, signs and labels, and other provisions.

3. Under 29 CFR 1953.23(a) and (b), State are provided up to six months from the publication in the FEDERAL REGISTER for adoption of parallel States standards and amendments.
This interpretation letter addresses the applicability of the Department of Energy (DOE) prescribed Occupational Safety and Health Administration (OSHA) regulation 29 Code of Federal Regulations (CFR) 1910.1030, which covers bloodborne pathogens, to DOE and DOE contractor Security Police Officers. The DOE interprets that the cited standard and the training requirements of that standard do apply to Security Police Officers within the DOE.

INTERPRETATION 29 CFR 1910.1030(a); (g)(2)(i); (g)(2)(vii); (b)

This interpretation is in response to a request regarding the applicability of the Occupational Safety and Health Administration (OSHA) regulation 29 Code of Federal Regulations (CFR) 1910.1030 training requirements for DOE's Security Police Officers (SPOs). Specifically, the requestor asked, "Since DOE Security Police Officers are required to take first aid training, are they required to take bloodborne pathogen training? If so, what should the training entail?"

OSHA regulation 29 CFR 1910.1030(a) applies to all occupations where employees come in contact with blood and other potentially infectious materials while performing their duties. SPOs are covered by all provisions of the standard since their duties may require that they come in contact with blood and other infectious materials.

OSHA regulation 29 CFR 1910.1030(g)(2) requires that all employees with potential occupational exposure to blood and other potentially infectious materials receive initial and annual training on the hazards associated with these materials and protective measures that minimize the risk of occupational exposure. The training must be tailored to the background and responsibilities of the employees, in this case SPOs, and the categories of information listed in OSHA regulation 29 CFR 1910.1030(g)(2)(vii) must be covered at a minimum.
Household bleach is acceptable for the clean-up of contaminated items or surfaces according to the Standard for Occupational Exposure to Bloodborne Pathogens. Quaternary ammonia products are appropriate for use in general housekeeping procedure which do not involve the clean-up of contaminated items or surfaces.

May 19, 1992

Dear Ms. N:

This is in response to your letter of April 17, in which you requested clarification concerning the use of appropriate disinfectants, as required by the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens".

As stated in OSHA Instruction CPL 2-2.44C, "Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens Standard" (copy enclosed), a product must be registered by the Environmental Protection Agency (EPA) as a tuberculocidal disinfectant in order for OSHA to consider it to be effective in the clean-up of a contaminated item or surface.

A solution of 5.25 percent sodium hypochlorite (household bleach) diluted between 1:10 and 1:100 with water is also acceptable for the cleanup of contaminated items or surfaces.

Quaternary ammonia products are appropriate for use in general housekeeping procedures which do not involve the clean-up of contaminated items or surfaces. Please bear in mind, however, that the term "contaminated" is defined as the presence OR REASONABLY ANTICIPATED PRESENCE of blood or other potentially infectious material.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
Gloves must be used where there is reasonable anticipation of employee hand contact with blood, OPIM, mucous membranes or non-intact skin, as dictated by the Standard for Occupational Exposure to Bloodborne Pathogens.

May 18, 1992

Dear Ms. B:

This is in further response to your letter of March 30, in which you requested clarification concerning the use of gloves in allergy testing and treatment procedures under the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens".

As you are aware, the personal protective equipment requirements of the standard are performance oriented. That is, it is the employer's responsibility to evaluate the task and the type of exposure expected and, based on the determination, select the "appropriate" personal protective equipment in accordance with paragraph (d)(3)(i) of the standard.

At a minimum, gloves must be used where there is reasonable anticipation of employee hand contact with blood, other potentially infectious material, mucous membranes, or non-intact skin; when performing vascular access procedures; or when handling or touching contaminated surfaces or items.

In general, OSHA agrees with you that gloves are not necessary when giving allergy immunotherapy injections or when performing allergy skin testing as long as hand contact with blood or other potentially infectious material is not anticipated.

You state in your letter that, following the immunotherapy injections, "there may be a drop of blood which is dabbed with cotton and a band-aid placed over it." If bleeding is anticipated and the employee is required to clean the site following injection, then gloves must be worn when doing so. As an alternative, the patient can be instructed to put pressure on the injection site with an alcohol wipe or cotton ball which the patient would then discard. Such a procedure prevents employee hand contact with blood.

Lastly, as you state in your letter, if the patient's skin is abraded, gloves would be required.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
Dear Dr. J:

This is in further response to your December 3, 1991, letter addressed to Senator P. S. which was referred to the Occupational Safety and Health Administration (OSHA) for response. You inquired about OSHA’s requirements for the collection and handling of extracted teeth for use by dental students.

OSHA views natural teeth which may be used by dental students as specimens under 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens", which must be handled with universal precautions and which are subject to the containerization and labeling requirements of the standard unless they are appropriately decontaminated.

They must be placed in a container which prevents leakage during collection, handling, processing, storage, transport or shipment. The container must be labeled with the biohazard symbol along with the word "Biohazard" in the required contrasting colors or color-coded and closed prior to being stored, transported, or shipped.

When a facility uses universal precautions in the handling of all specimens, the labeling/color-coding is not required provided that the containers are recognizable as containing specimens, that all employees who will have contact with the specimens are trained to handle all specimens with universal precautions, and that the containers remain within the facility. If the specimens leave the facility during transport, shipment, or disposal, a label or color-coding would be required.

OSHA has requested the assistance of the National Institute for Occupational Safety and Health and The Centers for Disease Control in determining the proper means of decontaminating teeth so that they may be used for study without having to resort to these containerization and labeling requirements. When we receive their response, we will be pleased to forward the information to you.

Please bear in mind that while these requirements are sound health policy for any facility, in accordance with the Occupational Safety and Health Act of 1970, OSHA jurisdiction extends only to employees and health and safety in the workplace and does not cover students if they are not considered to be employees.

We hope this information is responsive to your concerns. Thank you for interest in worker safety and health.
Dear Dr. M:

May 28, 1992

This is in response to your letter of March 9, in which you requested a clarification on the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, “Occupational Exposure to Bloodborne Pathogens”. You wrote regarding the coverage of feminine hygiene products, vaginal speculums, bandages, and insulin syringes as regulated waste.

The bloodborne pathogens standard defines regulated waste as liquid or semi-liquid blood or other potentially infectious material (OPIM); contaminated items that would release blood or OPIM in a liquid or semi-liquid state if compressed; items that are caked with dried blood or OPIM and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or OPIM.

OSHA does not generally consider discarded feminine hygiene products, used to absorb menstrual flow, to fall within the definition of regulated waste. OSHA expects the waste containers into which these products are discarded to be lined in such a way as to protect employees from physical contact with the contents.

Bandages which are not saturated to the point of releasing blood or OPIM if compressed would not be considered as regulated waste. Similarly, vaginal speculums do not normally meet the criteria for regulated waste as defined by the standard.

Beyond these general guidelines, it is the employer’s responsibility to determine the existence of regulated waste. This determination is not to be based on actual volume of blood, rather on the potential to release blood or OPIM, e.g., when compacted in the waste container. If OSHA determines, on a case-by-case basis, that sufficient evidence of regulated waste exists, e.g., through such visual factors as a pool of liquid in the bottom of a container or dried blood flaking off during handling, or based on employee interviews, citations may be issued.

Discarded insulin syringes create a potential for exposure for persons emptying the trash whether the insulin is administered by the diabetic herself or by a health care worker and whether the disposal occurs in a health care facility or elsewhere. The employer has the responsibility for protecting custodial workers who are encountering discarded insulin syringes in the trash. This can be accomplished by including those custodial workers in the exposure control plan or by other means such as requiring insulin-using employees to discard their used syringes in special containers.

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We hope this information is responsive to your concerns. If you have further questions on this subject, please feel free to contact Dr. R. R., the Regional Bloodborne Pathogens Coordinator in our Boston Regional Office at 617-565-7164, extension 30.
This letter responded to a request for clarification of the recommendations of when the hepatitis B vaccine schedule is interrupted. The Immunization Practices Advisory Committee recommendations state that "If the vaccination series is interrupted after the first dose, the second dose should be administered as soon as possible. The second and third dose should be separated by an interval of at least 2 months. If only the third dose is delayed, it should be administered when convenient."

May 28, 1992

Dear Dr. H:

Thank you for your recent inquiry regarding clarification of the recommendations when the hepatitis B vaccine schedule is interrupted.

The Immunization Practices Advisory Committee (ACIP) recommendations (MMWR 1991; 40:7) state that "If the vaccination series is interrupted after the first dose, the second dose should be administered as soon as possible. The second and third dose should be separated by an interval of at least 2 months. If only the third dose is delayed, it should be administered when convenient."

Studies have shown that the third dose of vaccine can be delayed for 1 year or longer after the first dose and the response is excellent. There are data that show that the interval between the first and second dose can be as long as 3 months without affecting seroconversion or antibody titers. Beyond that time, there are no data. However, as a result of discussion with ACIP members and other hepatitis experts, a conclusion was reached that in the event of interruption of the series after the first dose, the series did not have to be restarted. Instead, the second dose should be given as soon as possible, followed by the third dose at least two months after the second (as stated above). If the delay between the first and second dose is longer than 3 months and there is concern about the response to vaccine, then post-vaccination testing can be considered to determine that the vaccine recipient responded to the series.

I hope this helps clarify the recommendations. Please feel free to call me if you have further questions.
This letter is in response to a request for clarification of Occupational Exposure to Bloodborne Pathogens regarding coverage of feminine hygiene products as regulated waste. OSHA does not consider discarded feminine hygiene products, used to absorb menstrual flow, to fall within the definition of regulated waste. These products should be discarded into waste containers which are lined in such a way as to prevent contact with the contents.

June 1, 1992

Dear Ms. B:

This is in response to your letter of April 30, in which you requested a clarification on the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens". You wrote regarding the coverage of feminine hygiene products as regulated waste.

29 CFR 1910.1030 defines regulated waste as liquid or semi-liquid blood or other potentially infectious material (OPIM); items contaminated with blood or OPIM and which would release these substances in a liquid or semi-liquid state if compressed; items that are caked with dried blood or OPIM are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or OPIM.

OSHA does not generally consider discarded feminine hygiene products, used to absorb menstrual flow, to fall within the definition of regulated waste. The intended function of products such as sanitary napkins is to absorb and contain blood; the absorbent material of which they are composed would, under most circumstances, prevent the release of liquid or semi-liquid blood or the flaking off of dried blood.

OSHA expects these products to be discarded into waste containers which are lined in such a way as to prevent contact with the contents. Please note, however, that it is the employer's responsibility to determine which job classifications or specific tasks and procedures involve occupational exposure. For example, the employer must determine whether employees can come into contact with blood during the normal handling of such products from initial pick-up through disposal in the outgoing trash. If OSHA determines, on a case-by-case basis, that sufficient evidence exists of reasonably anticipated exposure, the employer will be held responsible for providing the protections of 29 CFR 1910.1030 to the employees with occupational exposure.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
The Standard for Occupational Exposure to Bloodborne Pathogens does not apply to construction work as defined in 29 CFR 1910.12. Maintenance operations with exposure to blood or OPIM are general industry activities, not construction work, and are covered by all provisions of 29 CFR 1910.1030.

INTERPRETATION

29 CFR 1910.1030(a)

May 29, 1992

Dear Mr. A:

This is in response to your letter to the Occupational Safety and Health Administration (OSHA) concerning coverage of construction employees under 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens". Thank you for the opportunity to clarify this important issue.

In response to numerous inquiries, we will be changing OSHA Instruction CPL 2-2.44C, "Enforcement Procedures for the Occupational Exposures to Bloodborne Pathogens Standard", to state that the recently promulgated standard on bloodborne pathogens (29 CFR 1910.1030) does not apply to construction work as defined in 29 CFR 1910.12. Please be advised that maintenance operations with actual or potential exposure to blood or other potentially infectious material are general industry activities, not construction work and, consequently, are covered by all the provisions of 29 CFR 1910.1030.
This letter requests clarification of the applicability of exposure to Bloodborne Pathogens to a nursing personnel service. OSHA considers personnel providers which send their own employees to work at other facilities, to be employers whose employees may be exposed to hazards. There is a shared responsibility for assuring that your employees are protected from workplace hazards. The client employer has the primary responsibility for such protection, the "Lessor Employer" has a responsibility under the OSH Act.

June 3, 1992

Dear Ms. H:

This is in response to your letter of January 31, requesting a clarification regarding the applicability of 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens" to your nursing personnel service. We apologize for the delay in this response.

You state in your letter that your company "provides nursing personnel on an as-needed/ as-available basis to health care facilities. We are not a health care facility ourselves, but rather a personnel service. The temporary nursing employees are on our payroll, and charges for their services billed to the facility."

The Occupational Safety and Health Administration (OSHA) considers personnel providers, such as your company, which send their own employees to work at other facilities, to be employers whose employees may be exposed to hazards. Since it is your company, A. Nurses Inc., which maintains a continuing relationship with its employees, but another employer (your client) who creates and controls the hazards, there is a shared responsibility for assuring that your employees are protected from workplace hazards. The client employer has the primary responsibility for such protection, but the "lessor employer" (A. Nurses) likewise has a responsibility under the Occupational Safety and Health Act.

In the context of OSHA's standard on bloodborne pathogens, A. Nurses would be required to provide generic training in universal precautions and to ensure that employees are provided with the required vaccinations and the proper followup evaluation is provided following an exposure incident. Your clients would be responsible for providing site-specific training and personal protective equipment and would have the primary responsibility to control potential exposure conditions. The client, of course, may specify what qualifications are required for supplied personnel, including vaccination status. It is certainly in the interest of the lessor employer to ensure that all steps required under the standard have been taken by the client employer to ensure a safe and healthful workplace for the leased employees. To that end, your contracts with your clients should clearly describe the responsibilities of both parties in order to ensure that all requirements of the regulation are met.

Please bear in mind that employers in the state of California are regulated by the California Department of Industrial Relations whose occupational safety and health program may have requirements that are more stringent than that of federal OSHA's. Should you wish to contact them, they may be reached at:

California Department of Industrial Relations
395 Oyster Point Boulevard
South San Francisco, California 94080
Telephone: (415) 737-2960
June 3, 1992

Dear Mr. K:

This is in response to your letter of April 29, in which you requested a clarification on the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens". You wrote regarding the coverage of janitorial employees under the standard.

Housekeeping workers in healthcare facilities may have occupational exposure to bloodborne pathogens, as defined by the standard. "Occupational exposure" is defined as "reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious material which may result from the performance of an employee's duties". Individuals who perform housekeeping duties, particularly in patient care and laboratory areas, may be at increased risk for exposure when they perform tasks such as cleaning blood spills and handling infectious wastes.

While OSHA does not generally consider maintenance personnel and janitorial staff employed in non-health care facilities to have occupational exposure, it is the employer's responsibility to determine which job classifications or specific tasks and procedures involve occupational exposure. For example, OSHA expects products such as discarded sanitary napkins, to be discarded into waste containers which are lined in such a way as to prevent contact with the contents. But at the same time, the employer must determine if employees can come into contact with blood during the normal handling of such products from initial pick-up through disposal in the outgoing trash. If OSHA determines, on a case-by-case basis, that sufficient evidence exists of reasonably anticipated exposure, the employer will be held responsible for providing the protections of 29 CFR 1910.1030 to the employees with occupational exposure.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
June 25, 1992

Dear Mr. H:

This is in response to your letter of March 7, requesting clarifications concerning the requirements of the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens". We apologize for the delay in this response.

Your first question concerns OSHA's jurisdiction over non-incorporated business owners. The quotation that you refer to from the preamble to the standard concerns information provided to the public record by the American Dental Association on vaccination and seroconversion rates of dentists. The phrase "employers are not covered by the standard" is intended to suggest that non-incorporated employers themselves are not covered by the benefits of the standard.

Every employer, whether he or she is incorporated or non-incorporated, falls within the jurisdiction of OSHA and is obligated to protect his or her employees as required by all applicable OSHA standards. The individual non-incorporated employer or the corporation is liable for citations if it fails to do so. For purposes of OSHA enforcement, physicians or dentists who are members of professional corporations are generally considered to be employees of that corporation. The corporation may be cited for failure to provide the protections of the bloodborne pathogens standard to the physician or dentist and, for example, for failure to ensure that the physician or dentist wore the appropriate personal protective equipment. If, however, OSHA observed a non-incorporated physician or dentist wearing inappropriate personal protective equipment, a citation would not be issued if that employer were the only person at risk.

Your second question concerns the coverage of discarded feminine hygiene products as regulated waste and whether janitors who clean female restrooms are covered by the standard. OSHA does not generally consider discarded feminine hygiene products to fall within the definition of regulated waste and does not generally consider janitorial staff employed in non-health care facilities to have occupational exposure as defined by the standard. OSHA expects these products to be discarded into waste facilities to have occupational exposure as defined by the standard. OSHA expects these products to be discarded into waste containers which are lined in such a way as to prevent contact with the contents.

Please note, however, that it is the employer's responsibility to determine which job classifications or specific tasks and procedures involve occupational exposure as well as the existence of regulated waste. For example, the employer must determine whether employees can come into contact with blood during the normal handling of such products from initial pick-up through disposal in the outgoing trash. If OSHA
determines, on a case-by-case basis, that sufficient evidence exists of occupational exposure or the presence of regulated waste, citations may be issued.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
ABSTRACT

The question was raised as to the acceptability of the four gallon "Sharps-A-Gator" sharps disposal container under the Standard for Occupational Exposure to Bloodborne Pathogens. There is concern over the possibility of leakage occurring from this product. If all concerns are alleviated, the sharps container would appear to be in compliance with the standard.

INTERPRETATION


July 7, 1992

Dear Mr. P:

This is in response to your April 2 letter in which you inquired about the acceptability of your four gallon "Sharps-A-Gator" sharps disposal container under 29 CFR 1910.1030(d)(4)(iii) (A)(iii) of the Occupational Safety and Health Administration (OSHA) standard, "Occupational Exposure to Bloodborne Pathogens". We apologize for the delay in this response.

As you stated in your letter, the standard requires that containers used to discard disposable sharps be leakproof on the sides and bottom. A concern that we have with your four gallon container is that liquid blood or other potentially infectious materials could seep out through the joint between the upper and lower halves of the container. Certainly used syringes and other sharps are unlikely to carry enough blood to fill the lower half of the container up to the joint. However if leaking or broken containers of liquid blood were to be disposed of in the "Sharps- A-Gator" there is a possibility that blood running down the inside wall could reach the joint and seep out. Additionally, the joint should be secure enough so that it could not spring open during normal transport operations.

While OSHA does not endorse or approve specific products, if your product is designed so that these concerns are alleviated, then this sharps container would appear to be in compliance with the standard. Of course, the final determination regarding compliance with OSHA requirements must be made in the workplace by direct OSHA compliance officer observation of employee work practices while utilizing your product and through employee interviews.

We hope this information is responsive to your concerns.
Physicians who are members of professional corporations are generally considered to be employees of that corporation. A non-incorporated physician who is occupationally exposed, per the Standard for Occupational Exposure to Bloodborne Pathogens, would not demand the issuance of a citation if that individual was the only person at risk.

For purposes of OSHA enforcement, physicians who are members of professional corporations are generally considered to be employees of that corporation. The corporation may be cited for failure to provide the protections of the bloodborne pathogens standard such as failure to make available the Hepatitis B vaccination to the physician who has occupational exposure. The hospital where the physician practices may also be held responsible as the employer who created or controlled the hazard to which the employee was exposed. Hospitals, for example, may be cited for failure to provide the physician with appropriate personal protective equipment and site specific training.

If a non-incorporated physician (who is therefore not an employee) is occupationally exposed, a citation would not be issued if that individual were the only person at risk. There may, however, be cases such as improper disposal of sharps, in which such non-incorporated physicians may create a hazard to which hospital employees are exposed. It would be consistent with current OSHA policy to cite the hospital as the employer of the exposed employees for failure to provide the protections of the bloodborne pathogens standard.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
ABSTRACT This letter is in response to a request for clarification to the interpretation on Occupational Exposure to Bloodborne Pathogens for child care workers. Employers are responsible for determining which job classification are anticipated to result in worker contact with blood or other potentially infectious materials. Child care workers who are designated as responsible for rendering first aid or medical assistance as part of their job duties are covered by all sections of the standard including training, vaccination, and personal protective equipment.

INTERPRETATION 29 CFR 1910.1030(a); (c)(2)(i)(C); (b); (g)(2); (f); (d)(3)

July 21, 1992

Dear Dr. A:

This is in further response to your letter of June 7, which requested clarification regarding the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens". Specifically, you requested an interpretation regarding the coverage of child care workers under the scope of the standard and which provisions of the standard would apply to them.

One of the central provisions of the bloodborne pathogens standard is that employers are responsible for determining which job classifications or specific tasks and procedures are reasonably anticipated to result in worker contact with blood or other potentially infectious materials (OPIM). The standard relates coverage to occupational exposure, regardless of where that exposure may occur, since the risk of infection with bloodborne pathogens is dependent on the likelihood of exposure to blood or OPIM regardless of the particular job title or place of employment. If it is determined that a child care worker has occupational exposure, as defined by the standard, then that employee is covered by all sections of the standard including training, vaccination, personal protective equipment, and so forth.

Child care workers who are designated as responsible for rendering first aid or medical assistance as part of their job duties are covered by the scope of this standard. However, failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid only as a collateral duty will be considered a technical violation carrying no penalties, provided a number of conditions are met. Please refer to the enclosed news release for additional information on the circumstances under which this exception would apply.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.

Vol. 2-564.84
The Standard for Occupational Exposure to Bloodborne Pathogens is not meant solely for employees in health care settings. "Occupational exposure" comprises the reasonable anticipation that the employee will come into contact with blood or OPIM during the course of performing his/her work duties. Employees who perform "Good Samaritan" acts are not, per se, covered by this standard. The key to this issue is whether or not an employee has been designated as responsible for rendering medical assistance.

July 28, 1992

Dear Mr. Y:

This is in response to your letter of March 5, regarding the applicability of 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens", to electric utilities. We apologize for the delay in this response.

The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. Since there is no population that is risk free for human immunodeficiency virus and hepatitis B virus infectivity, any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard.

It is important to note that the definition of "occupational exposure" comprises the reasonable anticipation that the employee will come into contact with these fluids during the course of performing his or her work duties. Therefore, OSHA anticipates that this standard will impact upon all non-health care industries in a similar fashion, i.e., that employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. This is because it is reasonable to anticipate that an employee designated to render first aid will have occupational exposure to blood or other potentially infectious materials.

You are correct in your interpretation that employees who perform "Good Samaritan" acts are not, per se, covered by this standard, although OSHA would encourage an employer to offer follow-up procedures to an employee who experiences an exposure incident as the result of performing a "Good Samaritan" act. This is because such an action does not constitute "occupational exposure", as defined by the standard.

The key to this issue is not whether employees have been trained in first aid, but whether they are also designated as responsible for rendering medical assistance. For instance, while all line workers may be trained in first aid and CPR, not all of these employees would necessarily be designated to render first aid. For example, a six-person crew could have two of the six employees designated to render medical assistance and also to be covered by the benefits of 29 CFR 1910.1030. You are therefore correct in your statement that the standard does not necessarily apply to employees who are trained in first aid (especially when the company only requires that employees perform forms of emergency assistance that do not involve exposure to body fluids) but rather to those employees who are required by the employer to actually administer first aid.

Please note that OSHA has recently issued a policy statement specifying that failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid only as a collateral duty, will be considered a technical violation carrying no penalties, provided that a number of conditions are met. These conditions...
are described in the enclosed proposed change to OSHA Instruction CPL 2-2.44C, "Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens Standard".

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.
RECORD ID 92072802

STANDARD NUMBER 1910.1030(d)(4)(ii)(A)
INFORMATION DATE 19920728

ABSTRACT The Standard for Occupational Exposure to Bloodborne Pathogens allows the use of sodium hypochlorite solutions (bleach) for disinfection of environmental surfaces. Disinfectant products registered by the EPA as tuberculocidal are considered "appropriate" for the cleanup of a contaminated item or surface.

INTERPRETATION 29 CFR 1910.1030(d)(4)(ii)(A)

July 28, 1992

Dear Mr. C:

This is in response to your letter of April 22, in which you requested clarification concerning the use of appropriate disinfectants as required by the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens". Your question specifically relates to the use of sodium hypochlorite solutions (bleach) for disinfection of environmental surfaces. We apologize for the delay in this response.

You correctly note in your letter that OSHA Instruction CPL 2-2.44C, "Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens Standard", states that disinfectant products registered by the U.S. Environmental Protection Agency (EPA) as tuberculocidal are considered "appropriate" for the cleanup of a contaminated item or surface. OSHA recognizes that, although generic sodium hypochlorite (household bleach) solutions are not registered as such, they are generally recommended by the U.S. Public Health Service, Centers for Disease Control (CDC) for disinfection of environmental surfaces.

In response to your request that OSHA clarify its position, we confirm that, in accordance with the recommendations of the CDC, solutions of 5.25 percent sodium hypochlorite diluted between 1:10 and 1:100 with water are also acceptable for disinfection of environmental surfaces and for decontamination of sites following initial cleanup (i.e., wiping up) of spills of blood or other potentially infectious materials. A similar clarifying statement will be included in a subsequent change to OSHA Instruction CPL 2-2.44C.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.

Vol. 2-564.87
This letter responds to a request to waive the requirement of section (d)(2)(v) of the Bloodborne Pathogens for hand washing when a phlebotomist removes gloves between patients and there is no visible contamination of the gloves with blood or other potential infectious materials. Section (d)(2)(v) of the standard very specifically requires handwashing after removal of gloves or other personal protective equipment. OSHA believes the benefits of this practice far outweigh the concerns presented of excessive handwashing and delays in performing procedures.

August 12, 1992

Dear Dr. M:

This is in response to your letter of June 1, regarding the Occupational Safety and Health Administration (OSHA) standard on "Occupational Exposure to Bloodborne Pathogens," 29 CFR 1910.1030, section (d)(2)(v). Specifically, you requested that OSHA "reconsider this section and waive the requirement for hand washing when a phlebotomist removes gloves between patients and there is no visible contamination of the gloves with blood or OPIM."

Section (d)(2)(v) of the standard very specifically requires handwashing after removal of gloves or other personal protective equipment. OSHA believes the benefits of this practice far outweigh the concerns you presented of excessive handwashing and delays in performing procedures. Please note that this requirement was presented to, and supported by, a number of commentors to the public record following publication of the proposed regulation in May, 1989.

Please bear in mind, however, that while it is sound public health policy to do so, OSHA does not have a requirement that gloves be changed between patients. We hope this information is responsive to your concerns.
This letter responded to a request for a review of the hepatitis B consent form and policy statement. OSHA does not review or endorse documents or policies as requested. The final determination of compliance must take into account all factors pertaining to the appropriateness and implementation of such policies at a particular worksite. This must include an evaluation through direct observation of employee work practices as well as an evaluation of employee training.

We can, however, clarify for you that paragraph (f) of the OSHA regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens," addresses requirements regarding hepatitis B vaccination programs. Appendix A of the standard contains mandatory language that must be used for hepatitis B vaccine declination statements.

Further, we note that the reference in your document to Heptavax-B may be inappropriate as it is a plasma-derived vaccine which is no longer being produced in the United States. The Centers for Disease Control (CDC) of the U.S. Public Health Service reports that the use of plasma-derived vaccines is now limited to hemodialysis patients, other immocompromised hosts, and persons with known allergy to yeast. (Reference: Centers for Disease Control. Protection Against Viral Hepatitis: Recommendations of the Immunization Practices Advisory Committee (ACIP). Morbidity and Mortality Weekly Report, 1990; 39 [Suppl. S-2]:1-26.) You are, of course, required to provide information on the specific vaccine offered.

For further information regarding this regulation, you may contact your regional bloodborne coordinator at the following location:

DOL-OSHA, Region III
Gateway Building, Suite 2100
3535 Market Street
Philadelphia, PA 19104
Telephone: 215-596-1201

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
Dear Mr. S:

This is in response to your inquiry of June 30, concerning the Occupational Safety and Health Administration's (OSHA) Hazardous Waste Operations and Emergency Response final rule (HAZWOPER), 29 CFR 1910.120.

You specifically requested clarification on the definition of emergency response in 1910.120 paragraph (a)(3), and asked whether hospital housekeeping staff would be considered "maintenance personnel" in keeping with that definition.

The term "maintenance personnel" as used in the standard was intended to refer to line repair personnel in manufacturing settings who routinely encounter incidental releases of hazardous substances in the course of their normal work activities. Custodial, janitorial, or housekeeping staff are not considered "maintenance personnel" under 1910.120, and may or may not require training under the standard. In determining training requirements for maintenance or housekeeping personnel, the employer must consider the degree of hazard involved, using worst-case clean-up scenarios. Employees will require training under 1910.120 when the potential for an emergency exists.

In determining if the potential for an emergency exists, the key factor is the actual or estimated hazardous exposure or degree of danger to employees and other persons. The fact that housekeeping staff are responding from outside the release area is secondary to the extent of the hazards in determining whether a situation constitutes an emergency or an incidental release. An incidental release is one that does not pose an imminent health or safety hazard requiring immediate clean-up to prevent death or serious injury, and which housekeeping staff can safely clean up without danger to themselves.

If the employer determines that the potential exists for an emergency to develop, then employees must receive, as a minimum, first responder awareness level training in accordance with 1910.120(q)(6)(i). Such training must be designed to enable workers to distinguish a non-emergency incidental release from a release which is beyond their ability to handle without danger to themselves. First responder awareness level training must also instruct employees about how to initiate emergency procedures.

All employees must be adequately trained to perform their assigned job duties in a safe and healthful manner, regardless of their job title. Per your telephone conversation with Ms. K. K. of my staff, housekeeping staff who are expected to handle clean-up of medical waste and infectious materials in health-care settings in non-emergency situations must be trained in accordance with the requirements of 29 CFR 1910.1030, OSHA's Bloodborne Pathogens standard, while clean-up of other hazardous
substances (e.g. mercury from a broken thermometer) would necessitate training under the Hazard Communication Standard, 1910.1200.

We hope this information is helpful. If you have any further questions please contact M. G. at (202) 523-8036.
While housekeeping staff and laundry attendants in non-health care facilities may not be generally considered to have occupational exposure, it is the employer's responsibility to determine which job classifications or specific tasks and procedures involve occupational exposure. If sufficient evidence exists of reasonably anticipated exposure, the employer will be held responsible for providing the protections of this standard to the employees with occupational exposure.

INTERPRETATION

29 CFR 1910.1030(a); (b)

AUG 7 1992

Dear Mr. K:

This is in response to your letter of June 22, in which you requested an interpretation of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Specifically, you asked about the coverage of housekeepers and laundry attendants in a hotel environment.

While housekeeping staff and laundry attendants in non-health care facilities may not be generally considered to have occupational exposure, it is the employer's responsibility to determine which job classifications or specific tasks and procedures involve occupational exposure. Occupational exposure is defined as "reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials (OPIM) that may result from the performance of an employee's duties." Employers in the hotel industry must, then, take into account all circumstances of potential exposure and determine which, if any employees may come into contact with blood or OPIM during the normal handling of laundry in their facility from initial pick-up through laundering.

Employees who do not have occupational exposure as defined above are not covered by the scope of this standard. For example, an employee who handles linens soiled with feces, nasal secretions, sputum, sweat, tears, urine, vomit, or saliva (other than saliva from dental procedures) would not be occupationally exposed during that task as these substances are not "other potentially infectious materials" as defined in the standard, unless they are contaminated with visible blood.

On the other hand, employees that handle, for example, linens soiled with urine that did contain visible blood would be occupationally exposed. An employer may designate specific employees to perform the tasks and procedures, if any, that involve occupational exposure and train other employees to defer such tasks to employees designated to perform them.

For compliance purposes, if OSHA determines, on a case-by-case basis, that sufficient evidence exists of reasonably anticipated exposure, the employer will be held responsible for providing the protections of 29 CFR 1910.1030 to the employees with occupational exposure.

Please bear in mind that employers in the state of California are regulated by the California Department of Industrial Relations whose occupational safety and health program may have requirements that are more stringent than those of Federal OSHA. Should you wish to contact them, they may be reached at:
We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
Dear Mr. F:

This is in response to your letter of June 1 in which you requested clarification concerning the scope of the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." You requested clarification of the applicability of the standard to employees who perform maintenance operations.

Construction work is defined in 29 CFR 1910.12(b) as work for construction, alteration and/or repair including painting and decorating. Maintenance activities can be defined as (making or) keeping a structure, fixture or foundation (substrates) in proper condition in a routine, scheduled, or anticipated fashion.

Workers who are engaged in maintenance operations and who have occupational exposure are covered under the standard. Occupational exposure is defined as reasonably anticipated skin, eye mucous, membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

While trades such as plumbers, pipefitters and others who may at times be engaged in maintenance activities are not generally considered to have occupational exposure as defined by the standard, it is the employer's responsibility to determine which job classifications or specific tasks and procedures may place employees at risk.

For example, plumbers performing repairs on pipes or drains in laboratories, operating rooms, or mortuaries may have occupational exposure to blood or other potentially infectious materials. If OSHA determines, on a case by case basis, that sufficient evidence of reasonably anticipated exposure exists, the employer will be held responsible for providing the protections of the standard to employees with occupational exposure.

Another example of occupational exposure that may occur in such trades is the rendering of first aid by designated employees as part of their job duties. OSHA has recently issued a policy with respect to the hepatitis-B vaccination requirements for such employees exposed under specific circumstances. A copy of that policy is attached for your information.

With respect to the four scenarios proposed in your letter for which you requested an interpretation, a determination could not be made. Determinations of whether a contractor is engaged in maintenance operations rather than construction activities must be made on a case by case basis taking into account all information available upon evaluation or inspection of a particular site.

Vol. 2-564.94
This letter responds to a concern for the necessity for the Bloodborne Pathogens standard and the requirements and costs. The Bloodborne Pathogens standard is designed to protect the Nation's workers, particularly health care workers, from exposure to the Hepatitis B Virus (HBV), the Human Immunodeficiency Virus (HIV), and other bloodborne pathogens. OSHA believes that the relatively modest costs necessary to comply with the standard will neither put small, independent physicians and dentists out of business, nor reduce the availability of health care for American families.

SEP 9 1992

Dear C. V. J.:  

This is in response to your letter of July 17 on behalf of your constituent, Dr. R. G. regarding the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Specifically, your constituent expressed concerns about the necessity for the standard and the standard's requirements and costs.

The Bloodborne Pathogens standard is designed to protect the Nation's workers, particularly health care workers, from exposure to the Hepatitis B Virus (HBV), the Human Immunodeficiency Virus (HIV), and other bloodborne pathogens. Of the diseases caused by these viruses, Hepatitis B is the most common, with 8,700 cases per year among workers in the health care profession. Hepatitis B infection may result in serious illness, long term disability, and death. The HIV causes AIDS, for which there currently is no cure and which eventually results in death. These viruses, as well as other organisms that cause bloodborne diseases, are found in human blood and certain other human body fluids. Therefore, employers have a particular responsibility to ensure that employees do not come into direct contact with blood or other potentially infectious materials while performing their job.

The development of this standard by OSHA took more than five years, beginning with close cooperation on the development of a proposed standard with the Centers for Disease Control (CDC), Department of Health and Human Services. The proposed standard was based on the scientifically sound infection control practice of "universal precautions" originally established by the CDC for handling of body fluids known to transmit HIV.

Following the publication of the proposed standard the public, particularly the dental and medical communities, submitted approximately 3,000 comments to the official record. In addition, OSHA held 5 public hearings, in Washington, D.C., Chicago, New York City, Miami and San Francisco, where 440 individuals and organizations testified. The comments and testimony underwent extensive review and analysis, and many of the suggested changes were adopted in the final rule. In addition, the U.S. Congress held a series of hearings concerning the proposed Bloodborne Pathogens standard. Many individuals and groups testified at these hearings, including the American Medical Association and the American Dental Association.

Furthermore, Congress attached an "appropriations rider" to the FY 1992 OSHA funding bill which required the agency to finalize the Bloodborne Pathogens standard by December 1, 1991. During debate, members of Congress indicated that the risks to workers were significant and that the possibility of illness and death could no longer be ignored; it therefore used the appropriations rider to encourage the agency to expedite the promulgation of the standard.

Vol. 2-564.95
During the development of the standard, compliance costs, those costs incurred to meet the requirements, were extensively analyzed. All OSHA workplace safety and health standards undergo a similar, very stringent, review. A key component of this review was a 3,500-facility survey, which included both large and small physicians' and dentists' offices, funeral homes, nursing homes, and blood banks among others. This survey showed that many offices already were complying with many provisions of the standard, including practicing "universal precautions."

For example, disposable gloves were in use by 96% of the direct patient care workers in dentists' offices before the standard became final. The costs for items already being used and procedures already in place were not included in the cost estimates for full compliance with the final standard. Therefore, the costs which were analyzed were the additional costs to those employers not currently providing their workers with items such as disposable gloves.

We understand your constituent's concerns about the increase in medical costs and the effect on health care availability. The standard was designed to protect the lives and health of workers from serious and deadly diseases, such as Hepatitis B and AIDS. OSHA believes that the relatively modest costs necessary to comply with the standard will neither put small, independent physicians and dentists out of business, nor reduce the availability of health care for American families.

In order to explain the general requirements of the standard, OSHA published five fact sheets and six Bloodborne Pathogens compliance assistance booklets, including booklets for acute care facilities, emergency responders, dentists, and nursing homes. OSHA also produced a motivational video titled, "As It Should Be Done." The enclosed sheet lists titles and ordering information for all of these materials.

OSHA has ten regional offices around the United States, each with a Bloodborne Pathogens Coordinator to respond to inquiries about the standard. A listing of telephone numbers and addresses is enclosed. Since December 1991, the OSHA staff in the National, Regional and Area Offices have been conducting extensive outreach, training and education meetings on the Bloodborne Pathogens standard with a wide range of groups, including physicians and dentists. Over 1,000 individual meetings have been held and over 80,000 individuals have participated. This is the largest, most extensive, training and education effort in the 20 year history of OSHA. This effort is ongoing and will continue. Your constituent should contact the OSHA office in your area to request a speaker or other assistance.

We understand that the cost of complying with this standard is of concern, and that most American health care professionals follow safe practices; however, the risks of illness and death from HBV and HIV for workers are too great to ignore and they mandate the full employee protection and training required by the standard.
This letter responds to a concern about the Bloodborne Pathogens standard being applicable to the oilfield industry and other non-health care industries. The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. It is the employer's responsibility to determine which job classifications involve occupational exposure, and that the employer is required to make the Hepatitis B vaccine available and to provide the other protections of the standard only to those employees having occupational exposure. In workplace facilities such as were described in this industry, only certain designated employees may have duties which involve occupational exposure.

Dear Mr. C:

This is in further response to your letter of July 10, addressed to The Honorable L. M., Secretary of Labor, regarding the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Specifically, you expressed concern that the standard is applicable to the oilfield industry and other non-health care industries. Please accept our apology for the delay in this response.

The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. Since there is no population that is risk free for human immunodeficiency virus and hepatitis B virus infectivity, any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard.

It is important to note that occupational exposure is defined as reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties. OSHA anticipates that this standard will impact upon your industry in a similar fashion as upon other non-health care industries, i.e., that employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. This is because it is reasonable to anticipate that an employee designated to render first aid will have occupational exposure to blood or other potentially infectious materials. Employees who perform unanticipated "Good Samaritan" acts are not covered by the standard since such actions do not constitute occupational exposure as defined by the standard.

OSHA has issued a policy statement specifying that, while designated first aiders are covered under the scope of the standard, failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid only as a collateral duty will be considered a de minimis violation carrying no penalties, provided that a number of conditions are met (see enclosed news release). All other requirements of the standard continue to apply to designated first aid providers.

You also expressed concern that compliance with the requirements of the standard may be burdensome for non-health care employers. You should note, however, that it is the employer's responsibility to determine which job classifications involve occupational exposure, and that the employer is required to make the Hepatitis B vaccine available and to provide the other protections of the standard only to those employees having occupational exposure. In workplace facilities such as you have described in your industry, only certain designated employees may have duties which involve occupational exposure.

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Costs associated with recordkeeping and other requirements may therefore be limited and controlled by the employer.

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.
This letter responds to a request for clarification of the Bloodborne Pathogens standard concerning consumption of beverages at nurses stations. Paragraph (d)(2)(ix) of this regulation prohibits the consumption of food and drink in areas in which work involving exposure or potential exposure to blood or other potentially infectious material exists. The employer/practitioner is free to designate areas in which it is not reasonable to anticipate that occupational exposure will occur and to allow the consumption of food and beverage in those areas. OSHA will evaluate such designations on a case-by-case basis and anticipates that such areas will be separated from contaminated work areas.

This is in further response to your letter of July 21, on behalf of your constituent, Mr. M. B., in which you requested information on the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Specifically, you asked for information about OSHA regulations that prevent nurses from consuming beverages at their nurses stations.

Please accept our apology for the delay in this response.

Paragraph (d)(2)(ix) of this regulation prohibits the consumption of food and drink in areas in which work involving exposure or potential exposure to blood or other potentially infectious material exists, or where the potential for contamination of work surfaces exists. The prohibition against eating and drinking in such a work area is consistent with other OSHA standards and is good industrial hygiene practice.

In addition to contamination of the food itself, one must consider that food and beverage containers may also become contaminated, resulting in unsuspected contamination of the hands. Food and drink may be contaminated by such processes as the leakage or spillage of specimen containers, or the performance of activities that could generate splashes, sprays, or droplets of blood or other potentially infectious materials.

The employer/practitioner is free to designate areas in which it is not reasonable to anticipate that occupational exposure will occur and to allow the consumption of food and beverage in those areas. OSHA will evaluate such designations on a case-by-case basis and anticipates that such areas will be separated from contaminated work areas.

You also asked, "Are there any provisions in this OSHA standard to ease the burden of these regulations on health care providers?" The Bloodborne Pathogens standard is designed to protect the nation's workers, particularly health care workers, from exposure to the hepatitis B virus (HBV) and the human immunodeficiency virus (HIV). Of these two diseases hepatitis B is more common, with 8,700 cases per year among workers in the health care profession. Hepatitis B infection may result in serious illness, potential long term disability and death. The HIV virus causes AIDS, for which there currently is no cure and which eventually results in death. These viruses, as well as other organisms that cause bloodborne diseases, are found in human blood and certain other human body fluids. Therefore, employers have a particular responsibility to ensure that workers do not come into direct contact with blood or other potentially infectious materials while performing their job.

We understand that complying with this standard is a matter of concern, and that most American health care professionals follow safe practices; however, the risks of illness and death from HBV and HIV for
workers are too great to ignore and they mandate the full employee protection and training required by the standard.
Dear S. P.:

This is in response to your letter of July 2, on behalf of your constituent, C. S. W., regarding the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Please accept our apology for the delay in this response.

Mr. W's first concern was whether potential exposure resulting from the administration of first aid to an injured fellow employee is sufficient to invoke the requirements of the standard. His question was in reference to employees working in the construction and maintenance of electric transmission or distribution lines.

The standard does not apply automatically to employees if they are trained in first aid, but rather to those employees who are required by the employer to actually administer first aid in instances where occupational exposure may occur. Occupational exposure is defined as reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties. Therefore, those employees who are designated by the employer as responsible for rendering first aid as part of their job duties are covered by the standard. Employees who perform unanticipated "Good Samaritan" acts are not covered by the standard since such actions do not constitute "occupational exposure" as defined by the standard.

OSHA has issued a policy statement specifying that, while designated first aiders are covered under the scope of the standard, failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid only as a collateral duty will be considered a de minimis violation carrying no penalties, provided that a number of conditions are met (see enclosed news release). All other requirements of the standard continue to apply to designated first aid providers.

Further, OSHA has previously announced that the standard does not apply to construction work as defined in 29 CFR 1910.12. Maintenance operations, however, are general industry activities and, where occupational exposure may occur, are covered by all the provisions of 29 CFR 1910.1030.

Your constituent's second concern was that compliance with the post-exposure evaluation and medical recordkeeping requirements to test and document the HIV or HBV status of source individuals could potentially expose his companies to substantial liability for violating the privacy or other federal rights of source individuals.

Paragraphs (f)(3)(A) and (C) of the standard require testing of the source individual's blood for HIV and HBV, and disclosure of the results to the exposed employee, only where it is permitted and not in conflict with applicable laws or regulations. The standard further requires that the employer inform the exposed
employee of any such laws or regulations concerning disclosure of the identity and infection status of the source individual. The standard does not, therefore, require employers to violate any applicable privacy laws.

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.
This is a response to a letter which requested clarification concerning the use of gloves in administering routine injections under the Bloodborne Pathogens standard. The personal protective equipment requirements of the standard are performance oriented. It is the employer's responsibility to evaluate the task and the type of exposure expected and, select the "appropriate" personal protective equipment in accordance with paragraph (d)(3)(i) of the standard.

Dear Ms. K:

This is in response to your letter in which you requested clarification concerning the use of gloves in administering routine injections under the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens."

The personal protective equipment requirements of the standard are performance oriented. That is, it is the employer's responsibility to evaluate the task and the type of exposure expected and, based on the determination, select the "appropriate" personal protective equipment in accordance with paragraph (d)(3)(i) of the standard.

At a minimum, gloves must be used where there is reasonable anticipation of employee hand contact with blood, other potentially infectious material, mucous membranes, or non-intact skin; when performing vascular access procedures; or when handling or touching contaminated surfaces or items.

In general, OSHA agrees with you that gloves are not necessary when giving routine injections as long as hand contact with blood or other potentially infectious material is not anticipated. If bleeding is anticipated and the employee is required to clean the site following injection, then gloves must be worn. Additionally, if the patient's skin is abraded, gloves would be required.
The "Occupational Exposure to Bloodborne Pathogens" standard is not meant solely for employees in health care settings. Any employee who has "occupational exposure" to potentially infectious materials is covered by the standard. Those rendering first aid are covered by the standard if they are designated to do so as part of their job duties. It is the employer's responsibility to determine which job classifications involve occupational exposure.

The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. Since there is no population that is risk free for human immunodeficiency virus and hepatitis B virus infectivity, any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard.

It is important to note that "occupational exposure" is defined as "reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties." OSHA anticipates that this standard will impact upon the industries represented by your constituents in a similar fashion as upon other non-health care industries, i.e., that employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. This is because it is reasonable to anticipate that an employee designated to render first aid will have occupational exposure to blood or other potentially infectious materials. Employees who perform unanticipated Good Samaritan acts are not covered by the standard since such actions do not constitute "occupational exposure" as defined by the standard.

OSHA has issued a policy statement specifying that, while designated first aiders are covered under the scope of the standard, failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid only as a collateral duty will be considered a de minimis violation carrying no penalties, provided that a number of conditions are met (see enclosed news release). All other requirements of the standard continue to apply to designated first aid providers.

Your constituent's second concern was that compliance with the medical recordkeeping and other requirements may be burdensome for non-health care employers. You should note, however, that it is the employer's responsibility to determine which job classifications involve occupational exposure, and that the employer is only required to offer and make the Hepatitis B vaccine and other protections of the standard available to those employees having occupational exposure. In workplace facilities such as your constituents have described, only certain designated employees may have duties which involve occupational exposure. Employees who do not have occupational exposure are not covered by the standard.
scope of this standard. Costs associated with recordkeeping and other requirements may therefore be limited and controlled by the employer.

We hope this information is responsive to your concerns and the concerns of your constituents. Thank you for your interest in employee safety and health.
Dear Ms. M:

Thank you for your letter of July 7, addressed to the Secretary of Labor L. M., which has been forwarded to this office for response. Your letter requested review of the compliance requirements for your industry with respect to the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Specifically, you expressed concern that the requirements that you anticipate for your industry are burdensome and you requested a variance be granted.

The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in healthcare settings. Since there is no population that is risk free from human immunodeficiency virus and hepatitis B virus infectivity, any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard. Occupational exposure is defined as reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

OSHA anticipates that this standard will impact upon your industry in a similar fashion as upon other non-healthcare industries, i.e., that employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. This is because it is reasonable to anticipate that an employee designated to render first aid will have occupational exposure to blood or other potentially infectious materials. Keep in mind that simply training employees in first aid or CPR does not invoke coverage by this standard; rather, it is the designation of the employee as responsible for rendering medical assistance as part of his or her job duties.

OSHA has, however, issued a policy statement specifying that, while designated first aiders are covered under the scope of the standard, failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid only as a collateral duty will be considered a de minimis violation, provided that a number of conditions are met (see enclosed news release). All other requirements of the standard continue to apply to designated first aid providers.

With respect to your request for variance, OSHA does not grant variance from the requirements of OSHA standards on an industry-wide basis. If your individual members are interested in requesting a variance, they should contact the OSHA Office of Variance Determination at (202) 523-7193. This office can also provide you with information on the variance process.

We hope this information is responsive to your concerns.

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RECORD ID 92082101

STANDARD NUMBER 1910.1030(g)(1)(i)(E)
INFORMATION DATE 19920821

ABSTRACT This letter addresses a question regarding labeling or color-coding of laundry transported to off-site laundries. Paragraph (g)(1)(i)(E) of the standard states that "red bags or red containers may be substituted for labels." Laundry may therefore be placed in red bags in lieu of bags bearing the biohazard symbol.

INTERPRETATION 29 CFR 1910.1030(g)(1)(i)(E)
AUG 21 1992

Dear Dr. A:

This is in further response to your letters of June 1 and June 2, concerning the Occupational Safety and Health Administration's (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." You asked for an explanation of OSHA's reason for the exemption of enforcement of the standard for the construction industry, and what the requirements of the standard are regarding labeling of laundry transported to off-site laundry facilities.

In addressing the OSHA Advisory Committee on Construction Safety and Health on May 19, D. S., Acting Assistant Secretary of Labor, informed the Committee that a determination had been made that the bloodborne pathogen standard does not apply to the construction industry. She explained that this policy decision was based on a concern that the construction industry was not afforded adequate notice and opportunity to participate in the rulemaking process.

With respect to your question regarding labeling or color-coding of laundry transported to off-site laundries, paragraph (g)(1)(i)(E) of the standard states that "red bags or red containers may be substituted for labels." Laundry may therefore be placed in red bags in lieu of bags bearing the biohazard symbol.

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.
A B S T R A C T

This letter responds to a request for clarification on labeling or color-coding of laundry by means of universal precautions. This Standard states that when a facility utilizes universal precautions in the handling of all soiled laundry, alternative labeling or color-coding is allowable. In order to be in compliance with this standard, some form of coding or labeling must be instituted. Also questioned was the OnGard needle recapping device used in psychiatric units, the standard prohibits recapping of needles unless no alternative is feasible or recapping is required by a specific medical procedure. When recapping must be performed, it must be accomplished by the use of a mechanical device or a one-handed technique. The third question was on providing and laundering "uniforms." The standard requires the provision and laundering only of garments that are personal protective equipment (PPE). If a uniform provides an appropriate level of protection for workplace conditions and is worn, relied upon, and/or functions as a protective garment, the uniform would be covered by the standard.

INTERPRETATION

29 CFR 1910.1030(d)(4)(v)(C); (d)(4)(iv)(A); (d)(2)(vii)(A); (d)(2)(vii)(B); (d)(3)(i); (d)(3)(i); (d)(2)(vii)(B); (d)(3)(i); (d)(3)(ii); (d)(3)(iii); (d)(3)(iv); (d)(3)(v)

SEP 15 1992

Dear Ms. H:

This is in response to your letter of April 21, requesting clarification of three issues concerning the requirements of the Occupational Safety and Health Administration (OSHA) standard, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Your specific questions are referenced and addressed in the order of your letter. We apologize for the delay in this response.

Your first question concerns the labeling or color-coding of laundry which is handled by means of universal precautions. This issue is addressed by paragraphs (d)(4)(iv)(A) and (C) of the standard, which state that when a facility utilizes universal precautions in the handling of all soiled laundry, alternative labeling or color-coding is allowable. You state in your letter that you utilize universal precautions and do not red bag or label your laundry. In order to be in compliance with this standard, some form of coding or labeling must be instituted.

Alternative labeling or color-coding is sufficient if it permits all employees to recognize the containers as requiring compliance with Universal Precautions. The alternate label or color-code may also be used if the facility ships contaminated laundry off-site to a second facility which also utilizes universal precautions in the handling of all laundry.

With respect to your second question regarding the OnGard needle recapping device used in your psychiatric units, paragraphs (d)(2)(vii)(A) and (B) of the standard prohibit recapping of needles unless no alternative is feasible or recapping is required by a specific medical procedure. When recapping must be performed, it must be accomplished by the use of a mechanical device or a one-handed technique.

Further, the standard requires each employer to establish an exposure control plan "designed to eliminate or minimize employee exposure." If the medical practices require recapping or removal of sharps or if no alternative, such as immediate discarding into an approved sharps container, is feasible, the exposure control plan must include a provision for the use of mechanical devices in these circumstances. Although OSHA cannot, of course, approve or endorse particular products, the OnGard recapper appears to be an acceptable mechanical recapping device.

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In a psychiatric unit, it may be infeasible to locate a standard sharps container in certain areas. You may consider alternatives, such as using containers which are lockable or are designed to prevent removal of syringes while still maintaining easy accessibility for discarding or having the healthcare worker bring a sharps container to the site, perform the procedure, and then remove the container upon leaving. The final determination regarding compliance with OSHA requirements, however, will be made in the workplace after an OSHA compliance officer observes employees utilizing a particular product and conducts employee interviews.

Your third question concerns providing and laundering "uniforms." The standard requires the provision and laundering only of garments that are personal protective equipment (PPE). If an employee's uniform does not serve as PPE and if the employee has occupational exposure which requires additional PPE to protect the uniform, then the uniform would not be covered by the standard the protective garments would be covered. If, however, a uniform provides an appropriate level of protection for workplace conditions and is worn, relied upon, and/or functions as a protective garment, the uniform would be covered by the standard. In either case, the protective garments must be provided, laundered, repaired and replaced by the employer in accordance with sections (d)(3)(i), (ii), (iii), (iv) and (v) of the standard.

It is the employer's responsibility to determine whether there is occupational exposure and what, if any, personal protective equipment is appropriate. PPE will be considered "appropriate" only if it does not allow blood or other potentially infectious materials (OPIM) to pass through or to reach the employees' work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time when the protective equipment will be used.

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.
OSHA considers personnel providers which send their own employees to work at other facilities to be employers whose employees may be exposed to hazards. The client employer has the primary responsibility for protection of employees under the "Occupational Exposure to Bloodborne Pathogens" standard, but the "lessor employer" likewise has a responsibility under the OSH Act.

Dear Mr. H:

This is in response to your letter of May 1, requesting clarification of the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Your question involves application of the regulation to your nursing personnel service, Cross Country Healthcare Personnel (CCHP), which provides Registered Nurses to hospitals for temporary assignments.

OSHA considers personnel providers which send their own employees to work at other facilities to be employers whose employees may be exposed to hazards. Since it is your company, CCHP, which maintains a continuing relationship with its employees but another employer (your client) who creates and controls the hazards, there is a shared responsibility for assuring that your employees are protected from workplace hazards. The client employer has the primary responsibility for such protection, but the "lessor employer" likewise has a responsibility under the Occupational Safety and Health Act.

In meeting the requirements of OSHA's standard on bloodborne pathogens, the lessor employer would, for example, be expected to provide the generic training required by the standard and to ensure that employees are provided with the required vaccinations and that proper follow-up evaluation is provided following an exposure incident. Client employers would then be responsible for providing site-specific training and personal protective equipment and would have the primary responsibility to control potential exposure conditions. The client, of course, may specify what qualifications are required for supplied personnel, including vaccination status. Likewise, a company such as yours may specify and require similar qualifications for physicians it employs for placement. Your contracts with your client employers and the physicians should clearly describe the responsibilities of both parties in order to ensure that all requirements of the regulation are met.

Your second question addresses what training is required to be performed by CCHP as your recruitment process does not include direct contact with your nursing personnel. Self-study modules, videos and interactive training programs may all be used as a part of the training program. However, the training must be tailored to the language and educational levels of the employees, and the trainees must be given the opportunity for interactive questions and answers. It should be pointed out that the training does not have to be provided by the employer's staff. An employer could arrange with a local hospital to provide the training through its regular in-service educational program or the contract could specify that all training will be done by the client employer. In the latter case, it would be the responsibility of the "lessor employer" to develop some means of ensuring that the required training is, in fact, being given.
Dear Mr. F:

This is in response to your letter of August 10, regarding the Occupational Safety and Health Administration (OSHA) regulation, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Specifically, you expressed concern that the standard is applicable to the oil drilling industry and other non-health care industries.

The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. Since there is no population that is risk free for human immunodeficiency virus and hepatitis B virus infectivity, any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard.

It is important to note that occupational exposure is defined as reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties. OSHA anticipates that this standard will impact upon your industry in a similar fashion as upon other non-health care industries, i.e., that employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. This is because it is reasonable to anticipate that an employee designated to render first aid will have occupational exposure to blood or other potentially infectious materials. Employees who perform unanticipated "Good Samaritan acts" are not covered by the standard since such actions do not constitute occupational exposure as defined by the standard.

OSHA has issued a policy statement specifying that, while designated first aiders are covered under the scope of the standard, failure to offer the hepatitis B vaccine on a pre-exposure basis to persons who render first aid only as a collateral duty will be considered a de minimis violation carrying no penalties, provided that a number of conditions are met (see enclosed news release). All other requirements of the standard continue to apply to designated first aid providers.

You also expressed concern that compliance with the requirements of the standard may be burdensome and divert resources from other safety efforts. You should note, however, that it is the employer's responsibility to determine which job classifications involve occupational exposure, and that the employer is only required to provide the protections of the standard to those employees having occupational exposure. In workplace facilities such as in you have described in your industry, only certain designated employees may have duties which involve occupational exposure. Employees who do not have occupational exposure are not covered by the scope of this standard. Costs associated with recordkeeping and other requirements may therefore be limited and controlled by the employer.

We hope this information is responsive to your concerns and the concerns of your constituents. Thank you for your interest in employee safety and health.
RECORD ID 92100203

STANDARD NUMBER 1910.1030(d)(2)(i); (d)(2)(vii)(B)
INFORMATION DATE 19921002

ABSTRACT OSHA has determined that the StopStix device does not meet the intent of the "Occupational Exposure to Bloodborne Pathogens" standard as it does not adequately protect the hand holding the protector from accidental puncture.

INTERPRETATION 29 CFR 1910.1030(d)(2)(i); (d)(2)(vii)(B)

OCT 2 1992

Dear Ms. F-W:

This is in response to your letter of July 31 requesting clarification of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Specifically, you asked if your StopStix resheathing device meets the intent of the standard.

In general, OSHA does not review products as you have requested. The final determination of compliance must take into account all factors pertaining to the use of such devices at a particular worksite. This must include an evaluation through direct observation of employee work practices as well as an evaluation of the equipment or devices alone.

In this case, however, we must inform you that the StopStix does not meet the intent of the standard as it does not adequately protect the hand holding the protector from accidental puncture. Since the diameter of the StopStix finger protector leaves much of the hand area uncovered, OSHA cannot consider it acceptable protection for use with a two-handed recapping procedure.
This interpretation clarifies the requirement of personal protective equipment with respect to the use of gloves in subculturing microorganisms isolated from blood or other potentially infectious materials. Gloves must be provided and used where there is reasonable anticipation of employee hand contact with blood, other potentially infectious material, mucous membranes, or non-intact skin; or when handling or touching contaminated surfaces or items.

INTERPRETATION

29 CFR 1910.1030(d)(3)(i); (c)(2)(i)

SEP 30 1992

Dear Dr. F:

This is in response to your letter of July 10, in which you requested an interpretation of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." You have subsequently discussed this matter with Mr. D. K. of this office; this letter is to confirm the information he has previously provided to you.

Specifically, you asked about the application of the personal protective equipment requirements of the standard with respect to the use of gloves in subculturing microorganisms isolated from blood or other potentially infectious materials. As you are aware, the personal protective equipment requirements of the standard are performance oriented. That is, it is the employer's responsibility to evaluate the task and the type of exposure expected and, based on the determination, select the "appropriate" personal protective equipment in accordance with paragraph (d)(3)(i) of the standard. In this case, gloves must be provided and used where there is reasonable anticipation of employee hand contact with blood, other potentially infectious material, mucous membranes, or non-intact skin; or when handling or touching contaminated surfaces or items.

OSHA agrees with you that gloves are not necessary when handling subcultures as long as hand contact with blood or other potentially infectious material or contaminated surfaces is not anticipated. It is our understanding that this position is consistent with the U.S. Department of Health and Human Services, the U.S. Public Health Service, Centers for Disease Control (CDC), and National Institute of Health (NIH) guidelines "Biosafety in Microbiological and Biomedical Laboratories" (May 1988, HHS Publication No. (NIH) 88-8395). The guidelines state that at Biosafety Level 2, which you have referred to as applicable to your clinical work, gloves should be worn "...when skin contact with infectious materials is unavoidable...." The required use of gloves is therefore dependent on a determination of whether or not such exposure through skin contact is reasonably anticipated during subculturing and any other task or procedure where occupational exposure may occur. The final determination must take into account all factors pertaining to the tasks and procedures being performed at a particular worksite including an evaluation through direct observation of employee work practices.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
Feminine hygiene products are not generally considered to fall within the definition of regulated waste as spelled out by the "Occupational Exposure to Bloodborne Pathogens" standard. It is up to the employer to determine whether or not an employee can come into contact with blood during the normal handling of such products resulting in occupational exposure.

29 CFR 1910.1030 defines regulated waste as liquid or semi-liquid blood or other potentially infectious material (OPIM); items contaminated with blood or OPIM which would release these substances in a liquid or semi-liquid state if compressed; items that are caked with dried blood or OPIM which are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or OPIM.

OSHA does not generally consider discarded feminine hygiene products, used to absorb menstrual flow, to fall within the definition of regulated waste. The intended function of products such as sanitary napkins is to absorb and contain blood; the absorbent material of which they are composed would, under most circumstances, prevent the release of liquid or semi-liquid blood or the flaking off of dried blood.

OSHA expects these products to be discarded into waste containers which are lined in such a way as to prevent contact with the contents. Please note, however, that it is the employer's responsibility to determine which job classifications or specific tasks and procedures involve occupational exposure. For example, the employer must determine whether employees can come into contact with blood during the normal handling of such products from initial pick-up through disposal in the outgoing trash. If OSHA determines, on a case-by-case basis, that sufficient evidence exists of reasonably anticipated exposure, the employer will be held responsible for providing the protections of 29 CFR 1910.1030 to the employees with occupational exposure.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
OSHA will accept the DOT label "Infectious Substances" in lieu of the OSHA "Biohazard" label for the outermost container for medical waste during off-site transportation. Where DOT regulations do not apply, labeling is still required per the "Occupational Exposure to Bloodborne Pathogens" standard.

Dear Mr. W:

This is in response to your letter of July 17, regarding clarification of the requirements of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens" and to confirm the subsequent discussion between Mr. D. K. of this office and Mr. T. G. of your staff. You specifically requested that OSHA accept the U.S. Department of Transportation (DOT) "Infectious Substances" label in lieu of the OSHA "Biohazard" label for the outermost container for medical waste during off-site transportation. We apologize for the delay in this response.

OSHA representatives have discussed this issue with representatives of the DOT to avoid the imposition of conflicting regulatory requirements. Therefore, OSHA will accept the DOT label in lieu of the OSHA label on outer containers of regulated waste, or containers of other materials which may contain blood or other potentially infectious materials, where the DOT label is required by DOT.

Labelling in accordance with paragraph 29 CFR 1910.1030(g)(1)(i) of the OSHA Bloodborne Pathogens standard is required for such containers where DOT regulations do not apply. Labeling under the OSHA standard is required, for example, while the containers are functioning as collection receptacles within facilities generating the waste or other contaminated material defined above, or for containers of such materials that are exempt from DOT labeling requirements.

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.

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OSHA will accept the DOT "infectious substance" label on outer containers in lieu of the "biohazard" label where the DOT label is required by DOT labeling provisions in 49 CFR 172.401(b). However, where the DOT regulation does not overlap the "Occupational Exposure to Bloodborne Pathogens" standard, OSHA will still require the "biohazard" label.

INTERPRETATION 29 CFR 1910.1030(g)(1)(i)

OCT 21 1992

Dear Mr. M:

This letter requests confirmation of a recent conversation between Ms. E. M. of your staff and Mr. D. K. of this office concerning interpretation of labeling provisions of 49 CFR 172.401(b).

Specifically, we are seeking your concurrence that the presence of an Occupational Safety and Health Administration (OSHA) "biohazard" label, as prescribed in 29 CFR 1910.1030(g)(1) of the Occupational Exposure to Bloodborne Pathogens Standard, on a package offered for transportation or in transport, does not violate the Department of Transportation's (DOT) labeling provisions in 49 CFR 172.401(b). As you are aware through your recent meetings with OSHA representatives, we are accepting the DOT "infectious substance" label on the outer container in lieu of the "biohazard" label referenced above, where the DOT label is required by DOT regulations.

However, where there is not an overlap between the two regulations, OSHA intends to require its "biohazard" label. This would be required for those packages containing blood or other potentially infectious materials but which are not considered to be "infectious substances" under the DOT labeling regulations as well as for containers which serve as collection receptacles within a facility. We understand through Ms. Martin that your office finds no conflict that would violate DOT regulations.

We would appreciate written confirmation of your agency's position on this issue. If you require additional information from OSHA in making your determination or if we can be of further assistance, please contact Ms. R. M., Director, Office of Health Compliance Assistance at (202) 219-8036.

Your assistance in this matter is appreciated.
Lysol Spray, because it is registered with the U.S. Environmental Protection Agency as having tuberculocidal efficacy, is "appropriate" for purposes of compliance with the "Occupational Exposure to Bloodborne Pathogens" standard.

Paragraph 29 CFR 1910.1030(d)(4)(ii)(A) states that "...an appropriate disinfectant..." shall be used for decontamination of work surfaces contaminated with blood or other potentially infectious material. The current OSHA policy regarding acceptability of disinfectants used for this purpose is stated in the Inspection and Citation Guidelines following paragraph M.4.d.(1)(b) on page 34 of OSHA Instruction CPL 2-2.44C, "Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens Standard, 29 CFR 1910.1030." This policy indicates that products registered with the U.S. Environmental Protection Agency (EPA) with claims of tuberculocidal efficacy, such as Lysol Spray, are considered "appropriate" for purposes of compliance with the standard, and would therefore be acceptable for such use in dental facilities.

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.
Dear Dr. S:

This is in response to your recent inquiries regarding requirements in the Occupational Exposure to Bloodborne Pathogens Standard, 29 CFR 1910.1030.

As you are aware, the personal protective equipment requirements of the standard are performance oriented. That is, it is the employer's responsibility to evaluate the task and type of exposure expected and, based on that determination, select the "appropriate" personal protective equipment in accordance with paragraph (d)(3)(i) of the standard.

At a minimum, gloves must be used where there is reasonable anticipation of employee hand contact with blood, other potentially infectious materials, mucous membranes, or non-intact skin; when performing vascular access procedures; or when handling or touching contaminated surfaces or items.

In general, OSHA agrees with you that gloves are not necessary when giving intramuscular injections as long as hand contact with blood or non-intact skin is not anticipated. However, if the employee administering the vaccine is expected to hold pressure over the site of injection (e.g., with a cotton ball) or apply a bandage to the site, gloves are required since it could be reasonable anticipated that the employee's fingers could contact blood. If the patient receiving the immunization is responsible for applying pressure or a bandage (e.g., patient holds cotton ball and applies pressure as needle is withdrawn), the employee administering the vaccine need not wear gloves. It must be understood, however, that if such an employee is expected to provide assistance to the patient should an adverse reaction occur (e.g., the employee holds pressure on site or provides other assistance if patient loses consciousness), then that employee should be prepared for such an occurrence. Part of such preparation would be the donning of gloves before initiating vaccine administration.

Your second inquiry regarded payment for Hepatitis B vaccine required to be offered by employers. The 3 scenarios you presented are as follows:

1. A dental employee has health coverage through a spouse's health plan, and such plan requires the employee's spouse to contribute a portion of the premium. Such a method would not constitute "at no cost" to the employee.

2. A dental employee has health coverage through a spouse's health plan, and such plan does not require any employee contribution. Regardless of monetary aspects of the spouse's contribution to
such a health plan, it is the labor of the spouse which earns the benefits of such a plan, and therefore such a plan cannot be considered noncontributory on the part of the dental employee.

3. A dental employee has health coverage through a health plan which is entirely (100%) paid for by the dentist employer. If the plan is truly non-contributory by the employee (e.g., no premium charge, deductible, copayment, or other form of payment required of the employee), then certainly the dentist employer can use such a plan to cover the vaccination expenses, provided such expenses are part of the plan coverage.

The message in the above examples is clear: It is the employer's responsibility to pay for the Hepatitis B vaccine offered to employees.

Your third concern was the qualifications of trainers for employees under 1910.1030. The language of the standard [section (g)(2)(viii)] is "The person conducting the training shall be knowledgeable in the subject matter covered by the elements contained in the training program as it relates to the workplace that the training will address."

As explained in the Summary and Explanation of the Standard published in the Federal Register along with the Standard, flexibility has been incorporated into the Standard. The National Institute for Occupational Safety and Health submitted a comment that "the trainer should have expertise in the subject area, as documented by objective evidence such as satisfactory completion of relevant training courses or degree programs". However, the Standard does not suggest completion of particular courses since workplaces where exposure can occur are varied. Rather, the trainer should be knowledgeable in the contents of the training program the employer is required to provide. A dentist or nurse in the dental office certainly should be able to train employees provided he or she gains familiarity with the Standard and understands the topics to be covered in a training program.

I have enclosed a recent OSHA News Release regarding Bloodborne Pathogens training programs for your information.

Please bear in mind that the State of Virginia operates its own occupational safety and health program which may promulgate standards which are more stringent than federal OSHA's. We suggest that you contact them as well at the following address:

Virginia Department of Labor and Industry
Powers-Taylor Building
13 South 13th Street
Richmond, VA 23219
telephone (804)786-2376

I hope this information is helpful to you. Thank you for contacting us. We appreciate your efforts on behalf of dentists and dental employees throughout Virginia.
ABSTRACT

It was suggested that for OSHA not to apply the "Occupational Exposure to Bloodborne Pathogens" standard to the construction industry would be a "grave mistake." The Acting Assistant Secretary of OSHA, explained that this exemption from the standard was the result of the construction industry not having been explicitly afforded notice, and because of its lack of participation in the rulemaking process. However, standards 29 CFR 1926.21(b)(2) and 29 CFR 1926.25, as well as section 5(a)(1) of the OSH Act, provide for the safety of construction workers who perform maintenance activities.

INTERPRETATION

29 CFR 1910.1030(a); 1926.21(b)(2); 1926.25(c); Section 5(a)(1)

NOV 6 1992

Dear Mr. W:

This is in response to your inquiries of June 15 to Mr. W. W. of our office in Chicago, and of June 16 to President George Bush regarding the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Please accept our apology for the delay in this response.

Specifically, you expressed your concern that OSHA bloodborne pathogen standard to the construction industry." You felt that such a decision would be "...a grave mistake."

In addressing the OSHA Advisory Committee on Construction Safety and Health on May 19, D.S., Acting Assistant Secretary of OSHA, informed the Committee that a determination had been made that the bloodborne pathogen standard does not apply to the construction industry. She explained that this policy decision was based on a concern that the construction industry was not explicitly afforded notice and, in fact, did not participate in the rulemaking process.

While the bloodborne pathogens standard does not apply to construction work, as defined in 29 CFR 1910.12(b), it does apply to employees performing maintenance activities which involve making or keeping a structure, fixture, or foundation in proper condition in a routine, schedule, or anticipated fashion and, if they experience occupational exposure to blood or other potentially infectious materials.

OSHA expects the construction employer performing such functions listed above to take the following precautions as required by the referenced standards:

Section 29 CFR 1926.21(b)(2) requires that the employer instruct each employee in the recognition and avoidance of unsafe conditions and in the regulations applicable to his or her work environment in order to control or eliminate any hazards or other exposure to illness or injury. Under this provision, the employer is required to train designated first aid providers in the hazards of bloodborne pathogens.

Section 29 CFR 1926.25 requires that containers be provided for the collection and separation of waste. This includes containers for sharps and other hazardous waste which may be generated from rendering medical assistance.

Finally, section 5(a)(1) of the OSH Act, which requires employers to furnish a workplace which is free from recognized hazards which may cause or are likely to cause death or serious physical harm, may be applied, where appropriate, to the industries not covered by the bloodborne pathogens standard. Section 5(a)(1)
citations must, of course, meet the requirements outlined in the Field Operations Manual, Chapter IV, and will only be issued where there is a serious and recognized hazard which cannot be abated by implementing an abatement method required by the above standards.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
While a particular allergist may not experience exposure incidents, procedures performed in their profession do include the reasonable anticipation of contact with blood or other potentially infectious materials. OSHA therefore believes that the standard is applicable to allergists who perform allergen test procedures. The needles used to inject extracts of various allergens are considered to be contaminated, as defined by the standard. Therefore, these needles may not be removed by hand.

This is in response to your memo of August 28 and to confirm information verbally conveyed to Mr. W. W. of your staff. You requested an interpretation of the applicability of the bloodborne pathogens standard to allergists and to the practice of removing needles by hand. We apologize for the delay in this response.

Furthermore, the needles which are used to inject extracts of various allergens either subcutaneously or intradermally are considered to be "contaminated", as defined by the standard. There appears to be some confusion in the correspondence addressed to Ms. Z. concerning the issue of contamination. While the extracts which are injected under the skin are not considered to be contaminated, the needle itself, which actually penetrates the skin, would be reasonably anticipated to involve the presence of blood or other potentially infectious material. The presence of non-visible body fluids would also constitute "contamination." Therefore these needles may not be removed by hand. They may be removed if required by a specific medical procedure or if no alternative is feasible but, in such cases, mechanical recapping and removal devices or a properly performed one-handed technique must be employed.
ABSTRACT Clarification of the Bloodborne Pathogens standard regarding individuals that are allowed into a hospital's restricted areas, namely surgery, where occupational exposure to bloodborne pathogens exists. These manufacturer's representatives are invited into the operating room either by the surgeon or the hospital to test a new piece of equipment or instrument. The hospital would be responsible for providing site-specific training and personal protective equipment and would have the primary responsibility to control potential exposure to its employees or to manufacturer's representatives. The employer (the hospital) is liable for citations if it fails to do so. Additionally, employers who actually create the hazard, employers who are responsible for safety and health conditions at the worksite, and employers who are responsible for actually correcting the hazard normally shall be cited, whether or not their own employees are exposed.

INTERPRETATION 29 CFR 1910.1030(a); (c)(1)

DEC 21 1992

Dear Mr. M:

This is in response to your letter of August 4, addressed to Ms. P.K.C., former Director, Directorate of Compliance Programs. You asked for clarification regarding the applicability of the Occupational Safety and Health Administration's (OSHA) 29 CFR 1910.1030, Occupational Exposure to Bloodborne Pathogens, to various types or classes of individuals. We apologize for the delay in this response.

We note that you also provide services across the country, where OSHA programs are either under exclusive Federal jurisdiction or OSHA approved, State-operated plans. In areas under Federal OSHA jurisdiction, Federal standards are in force, and our responses to your questions will apply.

The situation you describe in your letter involves individuals that are allowed into the hospital's restricted areas, namely surgery, where occupational exposure to bloodborne pathogens exists. These individuals, employees of another company, are invited into the operating room either by the surgeon or the hospital to test out a new piece of equipment or instrument. You reference our letter dated June 3, to Ms. L.H., Amserv Nurses, Inc., regarding "leased" nurses and you ask about the hospital's duty or duties to this class of individuals and documentation required should there be an inspection or incident at the facility.

First of all, the letter to Ms. H. addresses "leased" nurses and that situation differs from that of a manufacturer's representative. In the context of OSHA's standard on bloodborne pathogens, the hospital would still be responsible for providing site-specific training and personal protective equipment and would have the primary responsibility to control potential exposure to its employees, to "leased" nurses, or to manufacturers' representatives. The employer (the hospital) is liable for citations if it fails to do so.

Secondly, you mention multi-employer sites as they relate to the issuance of citations. The OSHA Field Operations Manual (FOM) Chapter V, provides that on multi-employer worksites, citations normally shall be issued to employers whose employees are exposed to hazards. Additionally, employers who actually create the hazard, employers who are responsible for safety and health conditions at the worksite, and employers who are responsible for actually correcting the hazard normally shall be cited, whether or not their own employees are exposed. This policy allows flexibility in the application of responsibility to correct and control hazards to which employees are exposed. It should be noted that physicians who are sole practitioners and partners are not employees and medical facilities are not obligated to protect them; however, those facilities must make sure that such individuals do not endanger employees. Physicians
who work for professional corporations are normally employees and therefore the medical facility must protect them under the standard.

Your suggestion to address the issue of respective employers' obligations under the bloodborne pathogens standard in the facility's exposure control plan is appropriate. Documentation might also consist of any contractual arrangements in which these arrangements are delineated.

Since the risk of infection with bloodborne pathogens is dependent on the likelihood of exposure to blood or other potentially infectious materials, wherever that exposure may occur, obligations under the bloodborne pathogens standard are triggered by "occupational exposure". The agency, therefore, hopes to protect all employees at risk regardless of their job title or place of employment. Again, a citation will only be issued if an employee is exposed to a hazard.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
Dear Ms. M:

This is in response to your letter of January 20, requesting Occupational Safety and Health Administration (OSHA) guidance on the wearing of gloves when handling unopened specimen containers. We apologize for the delay in this response.

The personal protective equipment (PPE) requirements in 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens", are performance oriented. The standard requires that the type and amount of PPE be chosen to protect against contact with blood or other potentially infectious materials based upon the type of exposure and quantity of these substances which can be reasonably anticipated to be encountered during the performance of a task or procedure.

For example, gloves must be worn when it can be reasonably anticipated that the employee may have hand contact with blood or other potentially infectious materials and when handling or touching contaminated items or surfaces.

Your question concerns the handling of specimen containers which contain sera. Because sera is clear, contamination of the containers would not necessarily be visible. We therefore agree with you that gloving is appropriate when handling these containers within the laboratory, although not necessarily required by the standard. When outside contamination of the primary container is suspected or likely to occur, they must be placed in secondary containers which would prevent leakage. This would negate the need for all employees who contact them to don gloves.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
Dear Mr. C:

This is in response to your letter of January 23, in which you requested clarification concerning the training requirements of 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." We apologize for the delay in this response.

Specifically you asked how the training required under this standard should be presented to satisfy the requirements and to protect employers against possible citations and penalties. While the Occupational Safety and Health Administration (OSHA) compliance officers will include an evaluation of the training program in their inspections, it is the responsibility of the employer to verify the competency of the trainers based on the completion of specialized courses, degree programs, or work experience. While the trainer must be familiar with the manner in which the elements in the training program relate to the particular workplace, the standard does not prescribe a specific length of time that would constitute experience. The trainer must be able to address such site-specific issues as the location of the exposure control plan and the procedures to be followed if an exposure incident occurs.

Possible trainers include a variety of health care professionals such as infection control practitioners, nurse practitioners, registered nurses, or physician's assistants. Non-health care professionals such as industrial hygienists, epidemiologists, or professional trainers may also be considered competent if they can demonstrate evidence of specialized training in the area of bloodborne pathogens.

The standard specifically requires that there be an opportunity for interactive questions and answers with the person conducting the training session. Training the employee solely by means of a film or video without the opportunity for a discussion period would constitute a violation of this section. While video training programs are certainly appropriate for use as an aid in training they must be supplemented with the required site-specific information and a person must be accessible for interaction.

Please bear in mind that many of the requirements of this standard are performance-oriented. Compliance officers will determine, on a case-by-case basis, whether the training that has been provided is effective and adequate. This is accomplished through observation of work practices and employee interviews in an effort to determine that the training (including written material, oral presentations, films, videos, computer programs, or audiotapes) is presented in a manner that is appropriate to the employees' education, literacy level, and language.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
An interpretation letter clarifying that while the Agency did announce that the bloodborne pathogens standard would not apply to the construction industry, OSHA did not state that the construction industry was free from the hazards of bloodborne pathogens. The General Duty Clause will be used for failure to provide a workplace free from bloodborne pathogen hazards. Under 29 CFR 1926.21 (b)(2), the employer is required to train designated first aid providers in the hazards of bloodborne pathogens.

March 23, 1993

Dear Mr. W:

This is in further response to your letter of January 14, requesting clarification of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens."

Your letter was written in response to correspondence you received from T. J. G. of the National Electrical Contractors Association, Oregon-Columbia chapter, who felt that because OSHA "exempted construction from the bloodborne pathogen rule," the General Duty Clause should not be used to cite violations of the rule. Please allow us to clear up some misconceptions that both of your letters reflect.

While the Agency did announce that the bloodborne pathogens standard would not apply to the construction industry, OSHA did not state that the construction industry was free from the hazards of bloodborne pathogens. Section 5(a)(1) of the Occupational Safety and Health Act, also known as the General Duty Clause, requires employers to furnish a workplace which is free from recognized hazards which may cause or are likely to cause death or serious physical harm. Therefore, the General Duty Clause will not be used to cite for violations of the bloodborne pathogens rule, but for failure to provide a workplace free from bloodborne pathogen hazards.

You should also be aware that section 29 CFR 1926.21(b)(2) requires that the employer instruct each employee in the recognition and avoidance of unsafe conditions and in the regulations applicable to his or her work environment in order to control or eliminate any hazards or other exposure to illness or injury. Under this provision, the employer is required to train designated first aid providers in the hazards of bloodborne pathogens.

Additionally, Section 29 CFR 1926.25 requires that containers be provided for the collection and separation of waste. This includes containers for sharps and other hazardous waste which may be generated from rendering medical assistance.

OSHA also requires the provision, use, and maintenance of personal protective equipment when there is an exposure to hazardous conditions that could cause injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact. This includes the need to use gloves, gowns, masks, eye protectors, and/or resuscitation equipment when appropriate for rendering first aid or other medical assistance to prevent contact with blood or other potentially infectious materials.

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.
ABSTRACT
An interpretation letter regarding police uniforms as personal protective equipment under the Bloodborne Pathogen regulation. An employee's uniform may or may not qualify as PPE. If the uniform does function as PPE, employees may not wear the uniform home. OSHA will accept dry cleaning of PPE as complying with the requirement to decontaminate such equipment.

INTERPRETATION
29 CFR 1910.1030 (a), (d)(3)(iv)

April 19, 1993

Dear Mr. C:

This is in further response to your letter of February 12, requesting an interpretation of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens."

Your letter asked whether it is a requirement of the employer to clean, maintain, and/or dispose of police uniforms after contamination. Federal OSHA does not have jurisdiction over local and state law enforcement personnel and therefore cannot enforce the requirements of the bloodborne pathogens standard in your workplace. However, in response to your specific inquiry the following information regarding OSHA requirements for the private sector is provided.

The standard requires that the employer determine which, if any, employees have occupational exposure to blood or other potentially infectious materials (OPIM). It is also the employer's responsibility to determine what, if any, personal protective equipment (PPE) is appropriate. PPE will be considered "appropriate" only if it does not allow blood or OPIM to pass through or to reach the employees' work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time when the protective equipment will be used.

An employee's uniform may or may not qualify as PPE. An employee's uniform may even be considered PPE in some instances, but not in others, depending on the circumstances and the duties being performed. If an employee's uniform does not serve as PPE or if, for example, the employer has provided separate garments to protect the uniform, then the uniform would not be covered by the requirements of the standard; the protective garments would be covered. If, however, a uniform provides an appropriate level of protection for workplace conditions and it is worn, relied upon, and/or functions as a protective garment, the uniform would be covered by the requirements of the standard.

In accordance with paragraphs (d)(3)(i-v) of the standard, PPE must be provided, laundered, repaired, and replaced by the employer. Additionally, the standard requires that all PPE be removed prior to leaving the work area, which means that if the uniform does function as PPE, employees may not wear the uniform home. It must be placed in an appropriately designated area or container for storage, washing, decontamination, or disposal.

You may be interested to know that according to the Centers for Disease Control and Prevention, the solvents and heat used in the dry cleaning process are sufficient to destroy bloodborne pathogens. For feasibility reasons and pending information to the contrary, OSHA will accept dry cleaning of PPE as complying with the requirement to decontaminate such equipment.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
This is an interpretation letter regarding the provision of the hepatitis B vaccine to designated first aiders. The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. OSHA has recently issued a policy statement specifying that failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid solely as a collateral duty will be considered a technical violation carrying no penalties, provided a number of conditions are met.

December 15, 1992

Dear Mr. C:

This is in further response to your letter of October 2, addressed to Dorothy L. Strunk, Acting Assistant Secretary. You wrote requesting a permanent variance from the Occupational Safety and Health Administration (OSHA) regulation on Occupational Exposure to Bloodborne Pathogens, 29 CFR 1910.1030.

We believe that a recent policy decision regarding the provision of the hepatitis B vaccine to designated first aiders will obviate your need for a variance request.

The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. Since there is no population that is risk free for human immunodeficiency virus or hepatitis B virus infectivity, any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard.

It is important to note that "occupational exposure" is defined as "reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties". OSHA anticipates that this standard will impact upon all non-health care industries in a similar fashion, i.e., that employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. You should note that employees who are not designated first aiders who perform unanticipated "Good Samaritan" acts are excluded from coverage by the standard since such an action does not constitute "occupational exposure", as defined above.

OSHA has recently issued a policy statement specifying that failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid solely as a collateral duty will be considered a technical violation carrying no penalties, provided that a number of conditions are met. These conditions are described in the enclosed news release. Please note that this policy does not apply to health care workers who are expected to render first aid in the course of their work or to personnel who administer first aid at a first aid station, clinic, or dispensary.
We hope this information is responsive to your concerns and thank you for your interest in worker safety and health.

Sincerely,

Roger A. Clark, Director Directorate of Compliance Programs

SOURCE LETTER

October 12, 1992

Dorothy L. Strunk Assistant Secretary for Occupational Safety and Health U.S. Department of Labor Room 5-2315 Washington, D.C. 20210

Re: The Bloodborne Pathogen Standard 29 C.F.R. 1910.1030

Dear Secretary Strunk:

Pursuant to section 6(D) of the Williams-Steiger Occupational Safety Health Act of 1970, (27 C.F.R. 1905:11); U.S. Holdings, Company and its subsidiaries respectfully requests a permanent variance from the requirements of 29 C.F.R. 1910.1030, known as the Bloodborne Pathogen Standard. We also are requesting an interim order for such an exemption pursuant to C.F.R. 29-1910:11 pending a final determination on this application.

1. Names and addresses of the applicants places of enterprise:

   A. U.S. Foundry & Manufacturing Corporation
   B. U.S. Foundry & Manufacturing Corp.-Fabrication Div.
   C. U.S. Precast Corporation

   all are located at 8351 N.W. 93rd Street, Medley, FL 33166

   D. Florida Lift Stations Corporation is located at 9498 N.W. South River Drive, Medley, FL 33166

   E. Tri-County Concrete Products company is located at 1926 Skees Road, West Palm Beach FL 33411

   F. U.S. Foundry & Manufacturing Corporate Sales / Distribution is located at 4408 W. Martin Luther King Boulevard, Tampa, FL 33614

   G. U.S. Foundry & Manufacturing Corporation 1105 Bolten Road N.W., Atlanta, GA

2. Places of Employment: The request is for all affected employees of the above listed location of our organization. To my knowledge, there are no overriding rules or standards (state or federal) that would affect your ruling on our request.

Vol. 2-564.130
3. Applicant's Proposal Justification:

A. We submit our request based on several factors. Initially our request is based on the fact our organizations are manufacturing firms and or sales/distribution points with support staff as needed and would not under most premises ever be exposed to a microbe borne by blood or other human channels of transmission. If a transmission did occur it would occur due to an act of compassion (such as rendering First Aid or other acts of brotherly love).

Our manufacturing encompasses the following broad areas of humomachinization:

U.S. Foundry: Melt/Process iron to make municipal castings.

U.S. Fabrication: Fabricate/Machine, iron, steel and aluminum for various end results.

U.S. Precast: Pour/Fabricate concrete to make municipal products.

Tri-County Concrete: Pour/Fabricate concrete pipe and other concrete products.

Florida Lift Stations: Build/Install/Maintain municipal lift stations.

B. All of our facilities have First Aid stations, ie: cabinets stocked with O.S.H.A. approved products to render the more mundane or superficial injuries.

C. We have in the past offered and presented Red Cross First Aid and C.P.R. classes to our employees. This has been on a voluntary basis and is thought of as a benefit for them and their families.

D. If and when an employee is injured beyond the mundane or superficial, we will either contact 911, which has response times of 5
minutes or less, or transport the injured to local medical facilities set up for the industrial complex injuries. These facilities are within 3 to 4 road miles of our concerns.

4. Further: It has not been shown that compliance will predispose our concerns to be a safer, healthier alternative. I cite the following:

A. The viral contact for personages that work in the medical and related fields is extremely low even with constant exposure. In our enterprises, if there is exposure, it has got to be by reason, almost non-existent. There is to my knowledge, to records or statistics of exposure on non-health field employees or records of infection from an exposure that is job related.

B. There is (although small), a risk to all employees that opt to receive the Hepatitis B vaccine. This is a real risk, as opposed to at best, a theoretical risk. Some of these risks are: site infection, general and specific rejection syndrome reactions, radiculoneuropathy problems such as Bell's Palsy and/or others.

C. We provide first aid/CPR courses to our employees on a voluntary basis. They use this knowledge on a voluntary basis, if at all. Although we are told (by law) to have first aid training, we go far beyond the one or two people - we train and retrain employees continuously. After training there is no compulsion other than compassion that says it must be used. However, if the employees know they must comply with this health care law they may refuse to render assistance and we must rethink our position on the extraneous training.

D. And finally, this new law flies in the face of the U.S. Government's eight year training program that keeps stating the extremely low incident rate for AID/ARS.

We therefore reiterate our request for a permanent variance from the instant law.

Sincerely Yours,

Vaughn Carnar Risk Manager, U.S. Holdings, Inc.
Dear Mr. K:

This is in response to your letter received May 25, regarding the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens."

Your company operates recycling centers for governmental entities which have implemented procedures to follow when a sorter sights a hypodermic needle among the recycled material. You asked whether, based on your listing of these procedures, the "infrequent and intermittent presence of needles at an automated material recovery facility constitutes reasonably anticipated occupational exposure."

As your letter documents, the following are the procedures normally utilized when a needle or needles are visually sighted by a manual sorter:

A. The conveyor line is immediately stopped.

B. The shift supervisor is notified and assumes responsibility for the removal and disposal of the needle in accordance with procedures agreed upon with the governmental entity.

C. Disposal procedures include requirement for the supervisor to wear protective safety clothing and glasses, and to pick up and place needle in sharps container using tongs.

D. Sharps containers are labeled and handled as biohazard waste.

E. The final disposal of sharps container is contractually the responsibility of the governmental entity.

It appears that these procedures are adequate to prevent exposure incidents to manual sorters, and there does not appear to be reasonable anticipation of contact with blood by these sorters. They therefore would not be considered to have occupational exposure. However, if an exposure incident occurs among the manual sorters, work practices must be analyzed and changed to reduce the exposure potential. Otherwise, contact with blood may be reasonably anticipated, and the manual sorters would be considered to have occupational exposure.

It is the employer's responsibility to evaluate the task being performed and whether employees have occupational exposure. If OSHA determines, on a case-by-case basis, that sufficient evidence exists of
reasonably anticipated exposure, the employer will be held responsible for providing the protections of 29 CFR 1910.1030 to the employees with occupational exposure.

Please bear in mind that all shift supervisors who assume responsibility for the removal and disposal of the needles in accordance with the procedures documented in your scenario must be covered by all requirements of the standard, including vaccination after training and within ten days of assignment.

We hope this information has been responsive to your concerns. Thank you for your interest in worker safety and health.

Sincerely,

Roger A. Clark, Director Directorate of Compliance Programs

SOURCE LETTER

Ms. Ellen Roznowski
Occupational Safety and Health Administration
200 Constitution Ave., N.W.,
Room N3467
Washington, D.C. 20210

RE: Bloodborne Pathogens

Dear Ms. Roznowski,

I appreciate the time you took this past week to discuss with me our problem with the OSHA Bloodborne Pathogen Standard. In conformance with your request, I will describe our business and the difficulty that we are presently having in properly interpreting the OSHA Bloodborne Pathogen Standard.

The essence of our problem centers around what constitutes normal occupational exposure. Below, I will describe our particular situation and request that you provide us with an official interpretation as to level of exposure.

V's subsidiary company, N E CRInc operates Material Recycling Centers for governmental entities. Materials to be recycled are specified by the governmental entity and include post consumer household goods such as paper products, metal, glass and plastics. This partially sorted household refuse is delivered to one of our facilities where it is separated into saleable materials to be recycled, with the residue normally going to landfills. The majority of the sortation occurs through mechanical, gravitational and magnetic means. The last phase of the sortation process is done manually to remove contaminant materials and to separate by color/commodity. Manual sorters are required to wear protective gloves and safety glasses.

On a very infrequent and intermittent basis, hypodermic needles proceed through the automatic sortation process and enter the manual sortation areas. Disposal of needles with household recyclables is a direct violation of governmental regulations and instructions.

The following are the procedures normally utilized when a needle or needles are visually sighted by a manual sorter:

A. The conveyor line is immediately stopped.

B. The shift supervisor is notified and assumes responsibility for the removal and disposal of the needle in accordance with procedures agreed upon with the governmental entity.
C. Disposal procedures include requirement for the supervisor to wear protective safety clothing and glasses and to pick up and place needle in sharps container using tongs.

D. Sharps containers are labeled and handled as BIOHAZARD waste.

E. The final disposal of sharps container is contractually the responsibility of the governmental entity.

The above procedures are designed to minimize the exposure to our employees from needles. These steps are supplemented by education of the public concerning materials, such as used hypodermic needles, that are unacceptable within the recyclable stream.

Should there be an unanticipated event resulting in an exposure, the exposed person who had exposure event will be referred to a physician for appropriate treatment and follow up. Additionally, those first aid responders who are expected to offer first aid to injured employees will be included in our company's bloodborne pathogen program. These first aid responders will be offered the Hepatitis B vaccination series, post exposure, as per the recent Federal OSHA ruling of July 6, 1992.

Based on the above scenario, we are hereby requesting that you provide us a ruling as to whether the infrequent and intermittent presence of needles at an automated Material Recovery Facility constitutes "reasonably anticipated occupational exposure", thus requiring pre-exposure offering to all employees of Hepatitis B vaccination series.

Thank you for the time you gave me discussing this matter. Should you need any additional information concerning the potential of exposure of our procedures in handling an exposure incident, please do not hesitate to contact me. We appreciate your consideration of our request and await your ruling based on the above set of circumstances.

Sincerely,

A. R. K. Safety Director
The bloodborne pathogen standard is applicable to employees of electric cooperatives if there is a reasonable anticipation that the employee will come into contact with these fluids during the course of performing his or her work duties. Employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. Employees who perform "Good Samaritan" acts are not, per se, covered by this standard.

October 23, 1992

Dear Mr. S:

This is in response to your letter of September 17, regarding the applicability of 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens", to employees electric cooperatives. We apologize for the delay in this response.

The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. Since there is no population that is risk free for human immunodeficiency virus and hepatitis B virus infectivity, any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard.

It is important to note that the definition of "occupational exposure" comprises the reasonable anticipation that the employee will come into contact with these fluids during the course of performing his or her work duties. Therefore, OSHA anticipates that this standard will impact upon all non-health care industries in a similar fashion, i.e., that employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. This is because it is reasonable to anticipate that an employee designated to render first aid will have occupational exposure to blood or other potentially infectious materials.

Employees who perform "Good Samaritan" acts are not, per se, covered by this standard, although OSHA would encourage an employer to offer follow-up procedures to an employee who experiences an exposure incident as the result of performing a "Good Samaritan" act. This is because such an action does not constitute "occupational exposure", as defined by the standard.

The key to this issue is not whether employees have been trained in first aid, but whether they are also designated as responsible for rendering medical assistance. For instance, while all line workers may be trained in first aid and CPR, not all of these employees would necessarily be designated to render first aid. For example, a six-person crew could have two of the six employees designated to render medical assistance and also to be covered by the benefits of 29 CFR 1910.1030. The standard does not necessarily apply to employees who are trained in first aid (especially when the company only requires that employees perform forms of emergency assistance that do not involve exposure to body fluids) but rather to those employees who are required by the employer to actually administer first aid.

Please note that OSHA has recently issued a policy statement specifying that failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid only as a collateral duty, will be considered a technical violation carrying no penalties, provided that a number of conditions are met. These conditions are described in the enclosed news release.
You should be aware that the State of North Carolina operates its own occupational safety and health program which may impose more stringent requirements than federal OSHA. You should therefore contact that agency for further guidance at the following address:

North Carolina Department of Labor  
4 West Edenton Street  
Raleigh, North Carolina 27601  
Telephone: (919) 733-0360

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.

SOURCE LETTER

September 17, 1992  
Dear Mr. F:  

Our law firm represents numerous electric cooperatives in their labor and employment law matters. There is a great deal of concern and uncertainty concerning the application of 29 CFR 1910.1030 to these cooperatives.

The electric cooperatives we represent are in the business of transmitting and distributing electrical power. Each cooperative has outside employees occupying positions ranging from equipment operator to lineman. Most cooperatives will also have right-of-way crews that clear trees and brush from power lines. All of the employees work under situations where they are exposed to considerable hazards such as high voltage electric lines or equipment like chainsaws or bushhogs.

Most employees are trained in CPR and rudimentary first aid. Minor cuts and scrapes are frequent, but may require no more than self-administered first aid. Unfortunately, situations may occur every few years where an employee is seriously injured and procedures such as a pole-top rescue and CPR must be administered while waiting for the arrival of an emergency medical team.

The question arises whether any or all of these employees can reasonably anticipate exposure to bloodborne pathogens during the performance of their duties. I am in receipt of a letter prepared by P. K. C., Director of Compliance Programs, that states that OSHA will be changing instruction CPL 2-2.44C, "Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens Standard", to state that the standard does not apply to construction work as defined in 29 CFR 1910.12. If such is the case, it would seem that the standard should not apply to some work done by the cooperative such as the construction of power lines, but might apply to other work such as the maintenance of power lines or the clearing of power line right-of-ways.

The term "reasonably anticipate" may be very useful under some circumstances, but in many industries it provides little, if any, guidance. Any information or guidance that you can provide to me concerning the application of the bloodborne pathogens standard to outside workers for electrical cooperatives would be much appreciated.
ABSTRACT

Four situations are analyzed for the applicability of the bloodborne pathogen standard: first aid responders, employees who clean up contaminated surfaces, hotel housekeeping staff, and "good Samaritans." OSHA does not endorse or approve any type of product, including training programs. OSHA can provide general guidelines for compliance, but it is the employer's responsibility to determine which particular job or tasks constitute occupational exposure in the workplace. If an employee is expected, as part of his or her job duties, to render first aid or medical assistance, that employee is covered by the requirements of the bloodborne pathogen standard. An employee whose job includes the cleaning and decontaminating of contaminated areas or surfaces would be considered to have occupational exposure, to bloodborne pathogens. OSHA does not generally consider housekeeping staff in non-health care facilities to have occupational exposure. However, employers in the hotel industry would have to take into account all circumstances of potential exposure and determine which, if any, employees may come into contact with blood or OPIM during normal cleaning and handling of laundry.

INTERPRETATION

29 CFR 1910.1030 (a), (b), (c)(2), (f)(1), (g)(2); 1910.120(e)

December 4, 1992

Dear Mr. V:

This is in further response to your letter of October 14, which was sent to a number of Occupational Safety and Health Administration (OSHA) Regional and Area Offices. Your letters were referred to this office for response.

The Office of Health Compliance Assistance, in this Directorate, is responsible for developing enforcement policy on health issues and for coordinating guidance to both agency field staff and the general public on a variety of health compliance issues, including the Occupational Exposure to Bloodborne Pathogens Standard, 29 CFR 1910.1030. We were therefore concerned to learn that some apparent misinformation may have been provided concerning this important standard.

Following the issuance of this standard, OSHA mounted an unprecedented outreach effort in an attempt to inform the public of the requirements of the standard. This effort included the publication of six booklets detailing the standard's applicability to acute care facilities, emergency responders, dentists, and nursing homes, as well as five fact sheets and the production of a video entitled "As It Should Be Done".

OSHA conducted a two-day train-the-trainer session for its field staff concurrently with the issuance of the standard and has appointed a bloodborne pathogens coordinator in each of its ten regional offices. These coordinators may be contacted for answers to complex inquiries. A list of OSHA publications and the addresses of our regional offices are enclosed for your information.

Lastly, since December 1991, OSHA staff in national, regional, and area offices have been conducting extensive outreach, training and education meetings of the bloodborne pathogens standard with a wide range of groups. Over 1,000 meetings have been held and over 80,000 individuals have participated. This is the largest, most extensive training and education effort in the twenty year history of OSHA.

You requested in your letter that the agency clarify its position with regard to compliance programs offered by private companies to employers. OSHA does not endorse or approve any type of product, including training programs. Staff at the regional or area office level, may, at the discretion of the Regional Administrator or Area Director, offer some assistance in the development of various products. However
this in no way constitutes approval or endorsement of the product and the agency's name may not be used to market the product. We are also enclosing a copy of a news release which the agency recently issued concerning training programs.

With regard to the specific scenarios for which you requested an interpretation as to the applicability of the standard, we will address them in the order in which you presented them. Please bear in mind that while OSHA can provide general guidelines, it is the employer's responsibility to determine which particular jobs or groups of specific tasks and procedures constitute occupational exposure at his or her facility.

Scenario 1: "In an industrial facility, with a history of accidents and injuries, where employees, not designated nor trained in first aid, are expected to render first aid to an injured employee. Does this constitute occupational exposure?"

Answer: If an employee is expected, as part of his or her job duties, to render first aid or medical assistance, that employee is covered by the requirements of the standard. Such an expectation would constitute a de facto designation of the employee and OSHA, additionally, would require that such an employee receive the appropriate training. Please refer to the enclosed news release for details on a recent policy decision concerning employees who render first aid as a collateral duty and the pre-exposure hepatitis B vaccine.

Scenario 2: "In an industrial manufacturing facility, with a history of accidents and injuries, where injured, however small are treated by outside personnel (ambulance personnel, paramedics, EMT's, etc.) but the accident area or the area where first aid was rendered are left to be cleaned up and expected to be cleaned up and decontaminated by company personnel. Does this constitute "occupational exposure"?

Answer: "Occupational exposure" is defined as the reasonable anticipation of contact with blood or other potentially infectious materials as a result of performing one's job duties and is not limited to employees who experience occupational exposure by virtue of the fact that they render certain health care services. An employee whose job includes the cleaning and decontaminating of contaminated areas or surfaces would be considered to have occupational exposure.

Scenario 3: In a typical hotel or motel operations, where housekeepers routinely clean rooms by handling potentially contaminated laundry, cleaning potentially contaminated surfaces, have the reasonable expectation of coming in contact with potentially contaminated sharps such as syringes or broken glass, and have the reasonable expectation to have to clean up blood, vomitus and other potentially infectious materials. Does this constitute "occupational exposure"?

Answer: OSHA does not generally consider housekeeping staff in non-health care facilities to have occupational exposure. However, in keeping with the above mentioned requirement that the employer evaluate each job classification for occupational exposure, employers in the hotel industry would have to take into account all circumstances of potential exposure and determine which, if any, employees may come into contact with blood or OPIM during normal cleaning and handling of laundry. Employees who handle linens soiled with feces, nasal secretions, sputum, sweat, tears, urine, vomitus, or saliva (other than saliva from dental procedures) would not be occupationally exposed during that task as these substances are not included in the standard's definition of "other potentially infectious materials".

An employer may choose to designate specific employees to perform any tasks and procedures (e.g., handling linens soiled with urine that did contain visible blood) that involve occupational exposure and train other employees to defer such tasks to employees designated to perform them.

For enforcement purposes, if OSHA determines on a case-by-case basis that sufficient evidence exists of reasonably anticipated exposure, the employer will be held responsible for providing the protections of 29 CFR 1910.1030 to the employees with occupational exposure. For example, if it can be reasonably anticipated that an employee in a particular hotel will come into contact with contaminated sharps, that employee must be extended the protections of the standard.

Please note that the definition of "contaminated" applies to dry as well as wet material since, as you correctly stated, the hepatitis B virus remains viable in dried material for up to seven days.
Scenario 4: This applies to every workplace and relates to where the line is drawn between "occupational exposure" and "good samaritan acts". A fact sheet, circulated by OSHA, contains the statement "Good samaritan acts such as assisting a co-worker with a nose bleed would not be considered occupational exposure". My question is: "Would a worker assisting a bleeding co-worker with a work related injury still be considered a good samaritan or does the worker have occupational exposure?"

Answer: "Good Samaritan" acts are not covered under the standard regardless of the particular type of injury involved. The work-relatedness of the injury is not the determining factor; rather coverage is invoked when, as stated above, an employee is expected to render assistance as part of his or her job duties.

We hope this information is responsive to your concerns. We appreciate your bringing your concerns to our attention. Thank you for your interest in worker safety and health.

SOURCE LETTER

October 14, 1992

Dear Ms. N,

I am the President of Federal Compliance & Reporting Service, a company which specializes in the research, development, production and distribution of regulatory compliance material to affected employers.

Having been involved in OSHA regulations for some time and being responsible for establishing and managing a nationwide distribution network, I am in a position of having information which I feel would be of benefit to the Agency. There are two other reasons for writing this letter: to make certain statements which we wish to be on the record and to ask for the Agency's reply to certain questions which would clarify some ambiguous points and help our company better serve our clients.

Having conducted extensive research relative to the Occupational Exposure to Bloodborne Pathogens Standard, the recently enacted OSHA regulation, and because of our participation in the development and production of a compliance system and being responsible for a market research which entailed thousands of contacts in several groups of employers, we believe we have acquired a good feel about how employers perceive the new law and we hope that some of the information we have might be of help to the Agency. Some of the information we have secured in the field is also disturbing and perplexing.

I am referring to certain actions and positions adopted by OSHA officials in their contacts with employers which we have found surprising. We would like for you to reply and make clear for us OSHA's official position on these matters.

There are several areas which I would like to cover. Here are the details.

The owner of a manufacturing company told us that the plant was recently inspected by an OSHA official on matters unrelated to the Bloodborne Pathogens Standard, but the subject of the Blood Law came up and the OSHA official indicated that compliance with the new law was a bureaucratic and costly nightmare. Based on that the company made the decision that it would be easier to close their infirmary, which was operating and staffed by a nurse, than to comply with the law.

We understand that there are always questions of interpretations about what someone is saying, but here, there appears to be a situation where the enactment of a new regulation results in a company actually lowering their health and safety measures and increasing the risks to their employees.

A medical group has created a compliance manual for their 200+ plus membership. The individual responsible for creating the program contacted the local OSHA office and visited with an official who looked at the program and stated "It looks fine to me". The board of the medical group choose to interpret
that statement as an official endorsement and has represented that the manual has been approved by OSHA. As a result, it can be assumed that over 200 doctors have purchased the program and are of the opinion that they are "in compliance".

It is ironic that the manual produced by the medical group contains significant errors. An employer who uses this manual to achieve compliance will be given instructions inconsistent with the intent and the meaning of the law.

It would be helpful if you would clarify for me the Agency's position in regard to compliance programs offered by private companies to employers. That is, does the Agency give affirmative approval of private compliance programs?

The next problem appears to be widespread and quite common. It entails OSHA officials convincing employers that they do not have to comply to the law and showing them what is a very questionable loophole. Employers, particularly in the manufacturing sector, are being told that if they avoid giving the designation of first aid provider to workers who in effect are expected to provide first aid in case of an accident or injury, do not have to comply. OSHA officials are advising employers who have employees that perform first aid as collateral duty to the regular job duties to remove from these employees' job classifications the reference to first aid and therefore avoid compliance to the law.

As I have indicated, the above situation is common, in fact, in some states it appears almost rampant. Our research indicated that this is due partly to the word being circulated by the employers of a particular sector that "OSHA says we don't have to comply".

Because of this, the employers are changing their records to eliminate job classifications which entail occupational exposure such as first aid providers. As a result, in these workplaces, the beneficial effect of the law has been nullified.

I have been puzzled by the question of why so many OSHA officials would do something so damaging to the workers as to effect their health and safety by denying the protection and advantages of an exposure control plan, the information, training and all the other elements of an excellent law like the Bloodborne Pathogens Standard.

The actions of these officials are also potentially disastrous to the companies who employ the workers by magnifying the insurance and liability risks of these companies. I understand that the mandate of the Agency is to administer and enforce the law and its primary responsibility is to the worker, however, some form of concern should be shown to the employers, whom, following the advise of these OSHA officials, decide that the law doesn't apply to them and follow a course of action which can have devastating effects on their business.

I am sure you are aware that laws such as these are used by insurance companies to avoid paying claims. Insurance policies contain clauses which can invalidate coverage if the insured fails to "comply with all applicable laws".

The existence of this type of law also greatly increases the employer's risks of employee liability and tort liability to third parties, as in the case of an employee becoming infected and passing on the infection to his/her family members. In such a case, the employer breach of a mandatory health and safety standard, can be the proximate cause of the third party infection, which is a reasonably foreseeable event. The existence of the law can be used as a basis for legal action and therefore transform a complaint into a serious problem.

I believe that these OSHA officials dispense this type of advice without intending to hurt the people they are advising, however, I believe that everyone's best interest would be served if these officials understood and remembered that the frame of mind of a typical employer, upon hearing that a new law has been passed that might effects his/her business, is one of frustration because they identify such news with more government control, more costs, more trouble and other factors which can adversely affect productivity. The employer, understandably, is looking for any good reason not to have to comply.

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When an OSHA official tells him/her that he feels the law doesn't apply, the official is looked upon and regarded as a knowledgeable, authoritative representative of the government. The OSHA official is also saying what the employer wants to hear. This gives the employer a false sense of security as he/she decides there is no need to worry about this law, even though, in the end it could be a very costly decision.

We have related the above because we hope that knowing what takes places in the field might be of help to the Agency. Next, I would like to you to provide an OSHA official opinion on several gray areas in regards to the law:

Scenario one: In an industrial manufacturing facility, with a history of accidents and injuries, where employees, not designated nor trained in first aid, are expected to render first aid to an injured employee. Does this constitute “occupational exposure”?

Scenario two: In an industrial manufacturing facility, with a history of accidents and injuries, where injuries however small are treated by outside personnel (ambulance personnel, paramedics, EMT’s, etc.) but the accident area or the area where first aid was rendered are left to be cleaned up and expected to be cleaned up and decontaminated by company personnel. Does this constitute “occupational exposure”?

Scenario three: In a typical hotel or motel operation, where housekeepers routinely clean rooms by handling potentially contaminated laundry, cleaning potentially contaminated surfaces, have the reasonable expectation of coming in contact with potentially contaminated sharps such as syringes or broken glass, and have the reasonable expectation to have to clean up blood, vomitus and other potentially infectious materials. Does this constitute “occupational exposure”?

Note: We have heard some opinions that in the above case it does not. The explanation was that the HIV virus dies quickly after leaving an infected body and therefore it is reasonable that there will be at least a 30 minute time lapse between potential contamination and the time the housekeeper would begin to clean up the room, therefore eliminating the potential for cross-infection. However, it has been proven that the HBV virus (hepatitis) can survive in a dry stain for as long as one week and still be infectious. HBV does not get the press that HIV does, but it is a very serious disease and many infection control specialists consider it the most serious health threat today.

Scenario four: This applies to every workplace and relates to where the line is drawn between "occupational exposure" and "good samaritan acts". A fact sheet, circulated by OSHA, contains the statement "Good samaritan acts such as assisting a co-worker with a nose bleed would not be considered occupational exposure". My question is: "Would a worker assisting a bleeding co-worker with a work related injury still be considered a good samaritan or does the worker have occupational exposure?"

I would appreciate receiving from you a clarification on the above gray areas.

Federal Compliance & Reporting Service is part of the Hawk Group of Companies which has served business and industry for over 30 years. We have a serious commitment to help employers comply to federal regulations.

Our Bloodborne Pathogens Compliance System was in R&D for over 12 months. During this period we consulted and collaborated with specialists in the field of regulatory compliance, law, infection control, medical, technical, engineering, industrial hygiene, etc. The result, we believe, is one of the most comprehensive, effective and user friendly compliance system available. We are very proud of our product and would welcome the opportunity to present it to you for your review.
A policy decision was made that the bloodborne pathogens standard does not apply to the construction industry. Those employees engaged in construction activities who are occupationally exposed to the hazard of bloodborne pathogens (such as those workers designated as responsible for providing first aid or medical assistance) are afforded protection under several construction standards as well as the General Duty Clause.

INTERPRETATION

29 CFR 1910.1030 (a), (c)(2), (d)(2), (d)(4)(iv)(A), (d)(4)(iv)(A)(1); 1910.12 (b); 1926.21 (b)(2); 1926.25 (c); 1926.28; OSHA Act (5)(a)

January 26, 1993

Dear Ms. T:

This is in further response to your letter of July 20, addressed to L. A., Regional Administrator in the Occupational Safety and Health Administration (OSHA) Philadelphia Regional Office. You wrote regarding the applicability of 29 CFR 1910.1030, the Occupational Exposure to Bloodborne Pathogens standard and the General Duty Clause of the OSH-Act, to the construction industry. You specifically inquired about the provision of the hepatitis B vaccine to employees in the construction industry who have occupational exposure to blood or other potentially infectious materials. Your letter was referred to our office and we apologize for the delay in this response.

In addressing the OSHA Advisory Committee of Construction Safety and Health on May 19, D. L. S., Acting Assistant Secretary, informed the committee that a policy decision had been made that the bloodborne pathogens standard does not apply to the construction industry.

While the standard does not apply to construction work, as defined 29 CFR 1910.12(b), it does apply to employees performing maintenance activities which involve making or keeping a structure, fixture, or foundation in proper condition in a routine, scheduled, or anticipated fashion and who experience occupational exposure to blood or other potentially infectious materials while performing their job.

While trades such as plumbers, pipefitters and others who, at times, may be engaged in maintenance activities are not generally considered to have occupational exposure as defined by the standard unless they are working in health care facilities, it is the employer's responsibility to determine which job classification or specific tasks and procedures involve occupational exposure. If OSHA determines, on a case-by-case basis, that sufficient evidence of reasonably anticipated exposure exists among employees performing maintenance work, the employer will be held responsible for providing the protections of 29 CFR 1910.1030 to those employees with occupational exposure.

Those employees engaged in construction activities who are occupationally exposed to the hazard of bloodborne pathogens (such as those workers designated as responsible for providing first aid or medical assistance) are afforded protection under several construction standards as well as the General Duty Clause.

29 CFR 1910.21(b)(2) requires that the employer instruct each employee in the recognition and avoidance of unsafe conditions and in the regulations applicable to his or her work environment in order to control or eliminate any hazards or other exposure to illness or injury. Under this provision, the employer is required to train designated first aid providers in the hazards of bloodborne pathogens.
29 CFR 1926.25 requires that containers be provided for the collection and separation of waste. This includes containers for sharps and other regulated waste which may be generated from rendering medical assistance.

29 CFR 1926.28 requires the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions or where there is a need to use such equipment to reduce the hazards to employees. This includes the need to use gloves, gowns, masks, eye protectors, and/or resuscitation equipment when appropriate for rendering first aid or other medical assistance.

Lastly, section 5(a)(1) of the OSH Act, which requires employers to furnish a workplace which is free from recognized hazards which may cause or are likely to cause death or serious physical harm, may be applied where appropriate to the construction industry. General duty clause citations must, of course, meet the requirements outlined in the Field Operations Manual, Chapter IV, and will be issued where there is a serious and recognized hazard which cannot be abated by implementing an abatement method required by the above standards. It is under the General Duty Clause that OSHA may require, where appropriate, the provision of the hepatitis B vaccine to those employees who have occupational exposure.

We hope this information is responsive to your concerns and we thank you for your interest in worker safety and health.

SOURCE LETTER

July 20, 1992

Dear Ms. A,

As an occupational health services provider, our clients rely on us for up-to-date information about government regulations. Recently, a client informed us that the construction industry may be exempt from compliance with the Bloodborne Pathogen Law.

Please clarify these issue in writing:

Is the construction industry exempt from the Bloodborne Pathogen Law?

If exempt, would you then suggest that employers in the construction industry need not offer the hepatitis vaccination series to their "occupational exposed" employees -- not even to those who are their employer's designated first aid responders?

Under what circumstances would the industry be required to comply with the bloodborne pathogen law -- especially in regard to offering the hepatitis vaccination series? How would the "General Duty Clause" affect the construction industry's exemption?

The information you send will be used to help our clients determine what they will have to do to comply with OSHA's new law. Your cooperation is appreciated. If you have any questions, please call me at 814/533-0181.
ABSTRACT The bloodborne pathogen standard does not prohibit a linen service sales representative from counting the soiled laundry from health care facilities near or in the vehicle or in a utility/collection area because these are not locations of use. Employees performing these tasks must be provided with the full protections of the standard, including training, personal protective equipment (PPE), and hepatitis B vaccine.


January 26, 1993

Dear Mr. T:

This is in response to your letter of July 7, 1992, regarding the requirements of the Occupational Safety and Health Administration (OSHA) standard, 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." I understand that some of this information has been previously communicated to you in telephone conversations with Mr. D. K. of this office. You specifically requested a clarification and interpretation of paragraph 29 CFR 1910.1030(d)(4)(iv) that would permit the counting of soiled health care textiles by route sales representatives during servicing of accounts. We apologize for the delay in this written confirmation of our response.

We understand that the potential conflict you wish to avoid is with the requirement of paragraph 29 CFR 1910.1030(d)(4)(iv) that contaminated laundry be handled with a minimum of agitation and not be sorted at the location of use. You have also stated the necessity of counting items at small accounts in order to verify charges to the customer and to deliver articles in replacement.

While this provision does not prohibit you from counting the laundry near or in the vehicle or in a utility/collection area because these are not locations of use, employees performing these tasks must be provided with the full protections of the standard, including training, personal protective equipment (PPE), and hepatitis B vaccine. OSHA believes that these requirements may be adequately addressed when this sorting/counting procedure takes place in a service or utility room; however certain provisions, such as those requiring removal of PPE and handwashing, may be difficult to effectively implement when this procedure occurs at the service representative's vehicle. In order to comply with the standard, National Linen Service must assure that all provisions of the standard are adequately addressed by your procedures and that the route sales representatives follow these procedures.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.
SOURCE LETTER

Tuesday, July 7, 1992

Dear Ms. S,

NLS is a commercial laundry operation which services healthcare facilities and doctor's offices. During the servicing of smaller accounts the Route Sales Representative (RSR) must count the soiled linens he is picking up in order to verify his charges to the customer and to know what articles to leave for the physician or clinic.

During this activity our RSR is
1. observing universal precautions;
2. fully outfitted in a barrier gown, surgical or puncture resistant nitrile gloves, an optional mask and eye protection if wet linen is encountered;
3. generally located outside the customer's place of business at the vehicle or in a service or utility room where soiled linen is accumulated and stored;
4. instructed to handle linen for minimal agitation during counting and bagging activity and
5. Washes prior to leaving the facility.

We are requesting a clarification and interpretation of the standard (d), (iv), (A) permitting the counting of soiled healthcare textiles since the aforementioned activities are:
1. Not being conducted in the actual location of use but generally in outside at the vehicle or in a utility/collection area.
2. The employee is trained, vaccinated and performing the above mentioned functions while observing full universal precautions.
3. The employee is performing functions essential to the servicing of the account.

Thank you for your time and consideration of this issue.
February 1, 1993

Dear Mr. F:

This is in response to your letter of September 25, 1992, requesting clarification of the Occupational Safety and Health Administration (OSHA) standard on Occupational Exposure to Bloodborne Pathogens Standard, 29 CFR 1910.1030. Specifically, you inquired as to the extent of the employer's obligation to follow-up with its employees to assure that the hepatitis B vaccination series is administered.

The first issue which we would like to address is the fact that your client's exposure control plan provides for written confirmation by the health care professional within 15 days "after the employee has completed the vaccinations." This is an incorrect interpretation since the standard requires in section (f)(5) that the written opinion be obtained by the employer and provided to the employee "within 15 days of the completion of the evaluation." In most cases of pre-exposure vaccination, therefore, this written opinion would follow the administration of the first shot in the series. On a related note, page 62 of OSHA instruction CPL 2-2.44C, "Enforcement procedures for the Occupational Exposure to Bloodborne Pathogens," is currently being revised to state that the written opinion includes indication for vaccine and whether such vaccination was initiated.

Your basic concern is that employer monitoring of employee compliance with the directions of the administering physician would create an "impractical and overwhelming" administrative burden. OSHA does not require that the employer make extraordinary efforts to ensure completion of the series. However, we would look for good faith efforts on the part of the employer to ensure that employees are reminded about completing the vaccination series. Documentation of written or verbal reminders to the employee would constitute a good faith effort. Since the standard allows the employee to decline the vaccination at any time, a completed declination form would also constitute documentation where an employee's failure to return for the second or third injections constitutes a refusal to complete the series.

Your letter goes on to state that your client goes beyond the requirements of the standard by arranging for the first appointment with the health care professional. Since this appointment/evaluation is included in the term "made available," your client is following the requirements of the standard by doing so; this does not constitute "an obligation beyond what is required."

You also state in your letter that the employer would have to monitor the employees' appointments in order "to assure that employees are following doctors' orders before employees are allowed to return to areas of occupational exposure." This is not accurate as the standard simply requires that the employee be evaluated and receive the first dose of the vaccine within ten days of initial assignment to a job. 

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involving occupational exposure. Employees with occupational exposure may certainly continue to work pending completion of the series.

With regard to the exposure control plan which you submitted, it is not OSHA's practice to review and approve sample plans. The final determination of compliance is made by the compliance officer and takes into account all factors pertaining to the plan at a particular worksite. However, a cursory review of the document found that paragraph #2 under "Hepatitis B Vaccination" is incorrect for the reasons stated above. The same holds true for Section I of your client's agreement with the attending health care professional. Lastly, subsections (c) through (e) of Section II are neither comprehensive nor entirely accurate.

We hope this information is responsive to your concerns. Thank you for your interest in worker safety and health.

______________________________
SOURCE LETTER

September 25, 1992

Dear Mr. C:

This letter seeks a formal opinion from the Occupational Safety and Health Administration ("OSHA") on behalf of my client, one of the leading clinical laboratory companies in the United States. Through a national network of laboratories, the company offers a broad range of testing services used by medical professionals in the diagnosis, monitoring and treatment of disease. It has grown into a nationwide network of laboratories and collecting stations, serving customers in almost every state, and employing thousands of people nationwide, with a substantial annual turnover.

The company has developed an exhaustive Exposure Control Plan (the "Plan") to bring it into compliance with the bloodborne pathogen standard at 29 CFR 1910.1030. While the standard presents many practical implementational questions, the purpose of this letter is to seek OSHA's guidance and approval of one part of the Plan dealing with the employer's obligation to make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure. 29 CFR 1910.1030(f).

One narrow issue that has arisen involves the extent to which an employer is obligated to follow up with its employees to assure that the vaccine and vaccination series are administered. The Plan provides, in part, for written confirmation by the physician administering the hepatitis B vaccination within 15 days after the employee has completed the vaccinations. It also requires that the administering physician maintain records of the vaccination process, including the dates of all injections. See attachments describing the applicable provisions and the draft agreement with the licensed physician. As you know, this vaccination series is administered over a protracted period of time, sometimes as long as six months. The practical question is the extent to which an employer's obligation to make the hepatitis B vaccine available to its employees requires the employer to monitor their appointments and to assure that employees are following doctors' orders before employees are allowed to return to areas of occupational exposure.

The company believes that the standard does not require the monitoring of employee compliance with the directions of the administering physician. Such an administrative burden would be impractical and overwhelming and is not included within the standard's requirement that the hepatitis B vaccination be made available to affected employees. The company's view of its obligation in this regard is supported by OSHA Instruction CPL 2-2.44C Section M6(b)(at p. 56) which states in relevant part: "The term 'made available' includes the health care professional's evaluation and arranging for the administration of the first dose of the hepatitis B vaccination series to begin within . . . ten days." (emphasis added). It would, therefore, appear that OSHA contemplated the logistics of the administration of the hepatitis B vaccination series to be in the hands of the employee and health care professional, rather than the responsibility of the employer. Nevertheless, the company does arrange for the first appointment, an obligation beyond what is required under the OSHA Instruction. Any further obligations would also appear to be unnecessary.

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In sum, we are seeking formal approval by OSHA of the attached Plan provisions respecting the company's limited obligation to make available the hepatitis B vaccination series. In particular, we seek OSHA's concurrence with the company's position that it has no affirmative obligation to monitor the administration of such vaccinations, to ascertain that all appointments are kept by its employees, or otherwise to assure that the health professional is doing his/her job.

I would welcome the opportunity to meet with you to discuss this matter, as well as other issues that have arisen in the company's attempt to comply comprehensively with this complex but necessary regulation. Please call me at (202) 955-8591 in order to arrange such a meeting.
ABSTRACT  In general, OSHA does not believe that spirometry tubing presents a bloodborne pathogens hazard to employees. Saliva that is not the product of a dental procedure or which is not visibly contaminated with blood would not be considered to be a potentially infectious material and would, therefore, not be covered under 29 CFR 1910.1030. Sterilization of the spirometry tubing is sound public health policy but does not fall within OSHA’s jurisdictional mandate to protect the health and safety of employees.

INTERPRETATION  29 CFR 1910.1030(b)

February 16, 1993

Dear Mr. P:

This is in response to your letter of August 31, 1992, requesting clarification of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens". We apologize for the delay in this response.

Specifically, you inquired about the sterilization of spirometry tubing between patients and whether your sterilization procedures were adequate. You, however, are operating under an incorrect belief that "saliva is considered as a potentially infectious material in the bloodborne pathogens law". The definition of "other potentially infectious materials" includes saliva in dental procedures as well as any body fluid that is visibly contaminated with blood. Saliva that is not the product of a dental procedure or which is not visibly contaminated with blood (or for which it would not be reasonable to anticipate that it could be contaminated with blood) would not be considered to be a potentially infectious material and would, therefore, not be covered under 29 CFR 1910.1030.

In general, OSHA does not believe that spirometry tubing presents a bloodborne pathogens hazard to employees. The recommendations of the Joint Council of Allergy and Immunology that the tubing be sterilized between patients is sound public health policy but does not fall within OSHA’s jurisdictional mandate to protect the health and safety of employees. If employees were to handle tubing which was contaminated with blood or other potentially infectious materials, decontamination by means of bleach or an EPA-registered disinfectant would be necessary.

We hope this information is responsive to your concerns and thank you for your interest in worker safety and health.

SOURCE LETTER

August 31, 1992

SA currently sells medical equipment to the hospital, family practitioner, and the occupational health marketplaces. Our product line consists of Resting ECG, Exercise ECG, and Spirometry equipment.

OSHA has recently issued a Bloodborne Pathogen guideline CFR 1910.1030. This information was made public in the Federal Register Dec. 6, 1991 issue.

Several organizations have since interpreted these guidelines in order to help the occupational health setting understand them.
The Joint Council of Allergy and Immunology has released a letter concerning these new guidelines. This letter is included for your review.

One section covers sterilization of the spirometer between patients.

It is a common known fact that all the organizations associated with lung function testing recommend sterilization of the spirometer to eliminate the potential of cross contamination between patients and the operators.

Older style spirometry testing only consisted of the patient blowing air out of their lungs. New technology enables the upper airways to also be tested (throat) by having the patient breathe air back into the lungs.

A recent study by the Infection Control And Hospital Epidemiology group has confirmed that spirometers can become contaminated with microorganisms and should be sterilized between patients (article included). This poses a threat not only to the patient, but to the health care worker as well.

Hepatitis B, Tuberculosis, and HIV are some of the main reasons for the blood pathogen guidelines. A recent article from the Respiratory Care magazine documents the great concern of cross contamination of TB with the health care workers (article included).

SA has taken every precaution necessary to stop the possibility of cross contamination. Our specially designed sensor can be wiped by a germicidal cloth which not only cleans but eliminates diseases (brochure of germicidal wipe included).

Since saliva is considered as a potentially infectious material in the bloodborne pathogen law, does OSHA agree with the letter sent by the Joint Council of Allergy and Immunology that the spirometer tubing should be sterilized between patients to ensure the patient and worker safety?

If your answer is yes, does OSHA agree that the SA sterilization procedure is effective and safe for both the patient and worker?
OSHA has decided that Albumin Human USP cannot be excluded from the bloodborne pathogen standard's definition of blood. Employees who handle this product are covered under the scope of the regulation.

April 13, 1993

Dear Dr. F:

This is in response to you letter of November 10, 1992, in which you requested an interpretation regarding the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Specifically, you requested that Albumin Human USP be excluded from coverage under the standard.

You state that this product "is prepared via a cold ethanol fractionation process, heat treated to kill bloodborne pathogens, tested as per FDA approved procedures and is considered safe for intravenous use." You submitted a package of literature and data intended to support your contention that this product "poses no risk to employees who handle it in our manufacturing facility." You also included a supporting letter from the New Jersey Blood Services.

OSHA has reviewed the material you submitted and has decided that Albumin Human USP cannot be excluded from the standard's definition of blood (i.e., human blood, human blood components, and products made from human blood) on the basis that it is not an infectious material and, therefore, that employees who handle it are covered under the scope of the regulation.

During the public comment period that followed publication of OSHA's proposed standard, the agency received comments from at least two parties stating that some human blood products such as sterile human albumin do not present a risk and recommending that the definition of blood be amended to exclude products that have been treated to render bloodborne pathogens noninfectious. In issuing the final standard, OSHA was concerned with the lack of information in the public record dealing with such treatment and left stand the definition. An allowance was made for an exception to the labeling requirement for these products (see paragraph g(1)(i)(F) of the standard).

Sterility is a process that is determined by lot and/or batch validation. The sterility validation data is scrutinized under the appropriate statistical sampling methodology which ensures the acceptability of a lot being characterized as sterile. It is our understanding that all methods of validation, statistical validation methodologies, and data review fall under the regulatory mandate of the Food and Drug Administration (FDA) and its regional laboratories.

FDA compliance inspections may include validation of sterility for a representative sample of a specific product as well as a records review of overall sterilization procedures. This, however, does not ensure that a specific lot is sterile and/or pyrogen-free.

At the same time, OSHA has decided that failure to provide employees handling only this product with certain protections of the bloodborne pathogens standard (such as personal protective equipment) will be considered a technical "de minimis" violation bearing no penalties provided that an FDA certificate of analysis validating sterility and issued within the preceding two years is available for the product in
question. Such certification was not included in your package and the letter from the New Jersey Blood Services would not suffice for this purpose.

Because training employees in the recognition of products to which universal precautions and other requirements of the standard apply is critical, failure to train even those employees handling only human albumin USP would not be considered a "de minimis" violation and would result in a "serious" citation.

Please bear in mind that if any employee who handles a sterile product also handles any blood products for which the FDA certificate of sterility is not available, the employer will be held responsible for providing all the protections of the standard to the employee.

We hope this information is responsive to your concerns and thank you for your interest in worker safety and health.
The length of training is not specified in the bloodborne pathogen standards. It shall be provided at the time of initial assignment and at least annually thereafter. Additional training shall be provided when changes affect the employee's exposure. The training requirements of this standard are performance oriented.

February 2, 1993

Dear G:

This is in response to your letter of December 22, 1992 to Mr. D in which you requested a clarification of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens." Your letter was referred to us for response.

Specifically, you wrote regarding the concerns of a constituent, Mrs. S, that "OSHA regulations now state that the Red Cross volunteers must have 5 hours of training every 90 days." This statement is incorrect. OSHA's requirements regarding the content and frequency of training are limited to paragraph (g)(2) of the standard.

Section (g)(2)(ii) specifies that training shall be provided at the time of initial assignment to tasks where occupational exposure to blood or other potential infectious materials (OPIM) may take place and at least annually thereafter. Section (g)(2)(v) states that additional training shall be provided when changes such as modification of tasks or procedures, or institution of new tasks or procedures affect the employee's occupational exposure. In this case, the additional training may be limited to addressing the new exposures created.

While the length of training is not specified, section (g)(2)(vii) lists the elements that must be included in the training program, including explanations of symptoms and modes of transmission of bloodborne diseases, location and handling of personal protective equipment, information on the hepatitis B vaccine, and follow-up procedures to be taken in the event of an exposure incident. Your constituent should bear in mind, that the training requirements of this standard are performance oriented. Compliance officers will determine, on a case-by-case basis, whether the training that has been provided is effective and adequate.

We hope this information is responsive to your concerns. If your constituent has any further questions, she may contact OSHA's regional bloodborne pathogens coordinator in Chicago, Illinois at (312) 353-2220.

December 22, 1992

Dear Mr. D:

This letter is on behalf of my constituent, L.S. of Menomonie, Wisconsin regarding the Office of Safety and Health Administration rules affecting the Red Cross.
In talking with Mrs. S it is my understanding that OSHA regulations now state that Red Cross volunteers must have 5 hours of training every 90 days.

Mrs. S informed me that the volunteers never handle the blood and was wondering why OSHA is telling the Red Cross how to run their business. Pretty soon the Red Cross will be unable to get any volunteers because the volunteers don't want to take 5 hours of training every 90 days.

Mr. D, I respectfully request your response to Mrs. S concerns. Please forward your response to my district office.

Thank you for your time and attention on this request. I look forward to your reply.
Home laundering of contaminated laundry is in violation of the bloodborne pathogen standard. Allowing an employee to launder contaminated laundry at a public laundromat may be permitted if adequate procedures are followed. OSHA encourages employers to launder the contaminated items on site, to contract the work out to a professional laundering service, or to use disposable items.

January 26, 1993

This is in response to your memorandum of November 19, in which you requested an interpretation regarding the handling of contaminated laundry under 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens".

Paragraph (d)(3)(iv) of the standard states that the employer shall clean, launder, and dispose of personal protective equipment required by the standard at no cost to the employee. Paragraph (d)(4)(iv)(A) requires that contaminated laundry be handled as little as possible with a minimum of agitation. A number of questions have arisen as to the exact meaning of these sections and whether they preclude either laundering at a public laundromat or home laundering.

OSHA's intent in this area is set forth on pages 64131 and 64132 of the Summary and Explanation as follows:

"The provision ensures that these items remain within the control of the employer and, therefore, will be properly disposed of, cleaned, or laundered consistent with that employer's control program. This will prevent contamination outside of the work area (e.g., non-work areas such as the employee's home). The agency does not believe that washing contaminated personal protective equipment at home is acceptable. Insurance of proper laundering procedures is one of the major reasons why the agency believes that contaminated personal protective equipment must remain under the control of the employer. By permitting home laundering, the employer, obviously, cannot assure himself or herself that proper handling or laundering procedures are being followed. Moreover... home laundering could lead to migration of contaminants to non-work environments. The agency recognizes no distinction between dealing with contaminated institutional linen (e.g., bedsheets, surgical drapes) and the procedures for cleaning, laundering, and disposal of contaminated personal protective equipment."

This interpretation is reiterated on page 29 of OSHA Instruction CPL 2-2.44C, "Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens Standard". OSHA will, therefore, consider home laundering of either contaminated personal protective equipment or contaminated laundry by employees to be in violation of the standard.

Your question also addressed the acceptability of allowing an employee to launder contaminated laundry at a public laundromat. In some cases, where the employee who is assigned this task has been properly trained, is wearing the correct personal protective equipment, and is carrying a properly labeled or red-bagged container of laundry, citations may not be issued if the employer has implemented a method to ensure that the proper procedures are followed. If all of these requirements are not met, citations will be issued for the appropriate paragraph. Furthermore, depending on the particular circumstances of each case, citations may be issued for a violation of paragraph (d)(4)(iv)(A) of the standard which requires that contaminated laundry be handled as little as possible. OSHA strongly encourages employers to follow the
intent of the standard -- either to launder the contaminated items on site, to contract the work out to a professional laundering service, or to use disposable items.

SOURCE LETTER

November 19, 1992

I am requesting an interpretation regarding the handling of contaminated laundry in dental offices covered by the OSHA standard, 29 CFR 1910.1030, Occupational Exposure to Bloodborne Pathogens.

Subsequent to our meeting with the American Dental Association (ADA), on November 13, 1992, in the Region X regional office, the ADA asked if it would be acceptable by OSHA to allow a dental office employee to launder (wash and dry) the contaminated laundry at a laundromat that also would be used by the general public. The ADA recognized the fact that the employee handling contaminated laundry will be provided with training and proper personal protective equipment.

The Region X bloodborne coordinator discussed the issue by phone with J. S. However, since the issue has national implication, a national policy is needed. Please provide me with your interpretation so that I may respond to regional representative of the ADA.
ABSTRACT  The bloodborne pathogen standard is applicable to drilling operations. Any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard. Employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. Employees who perform "Good Samaritan" acts are not, per se, covered by this standard.

INTERPRETATION  29 CFR 1910.1030 (a), (b), (f)(1)

October 22, 1992

Dear Mr. R:

This is in response to your letter of August 31, regarding the applicability of 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens", to drilling operations. We apologize for the delay in this response.

The bloodborne pathogens standard addresses a broad issue of occupational exposure to blood and other potentially infectious materials and is not meant solely for employees in health care settings. Since there is no population that is risk free for human immunodeficiency virus and hepatitis B virus infectivity, any employee who has occupational exposure to blood or other potentially infectious materials is included within the scope of this standard.

It is important to note that the definition of "occupational exposure" comprises the reasonable anticipation that the employee will come into contact with these fluids during the course of performing his or her work duties. Therefore, OSHA anticipates that this standard will impact upon all non-health care industries in a similar fashion, i.e., that employees who are designated as responsible for rendering first aid or medical assistance as part of their job duties are to be covered by this standard. This is because it is reasonable to anticipate that an employee designated to render first aid will have occupational exposure to blood or other potentially infectious materials.

Employees who perform "Good Samaritan" acts are not, per se, covered by this standard, although OSHA would encourage an employer to offer follow-up procedures to an employee who experiences an exposure incident as the result of performing a "Good Samaritan" act. This is because such an action does not constitute "occupational exposure", as defined by the standard. The key to this issue is not whether employees have been trained in first aid, but whether they are also designated as responsible for rendering medical assistance. While many workers may be trained in first aid and CPR, not all of these employees would necessarily be designated to render first aid.

Please note that OSHA has recently issued a policy statement specifying that failure to offer the hepatitis B vaccine pre-exposure to persons who render first aid only as a collateral duty, will be considered a technical violation carrying no penalties, provided that a number of conditions are met. These conditions are described in the enclosed news release.

We hope this information is responsive to your concerns. Thank you for your interest in employee safety and health.
SOURCE LETTER

August 31, 1992

Dear Ms. C:

The Gulf Coast Land Division of Noble Drilling (U.S.) Inc. operates land drilling rigs for hire in Texas and Louisiana. The oil company customer owns the leasehold and surface rights and directs Noble as to where, what kind and to what depth of hole it desires to be drilled.

Noble does not hire any medics, nurses or physicians to work on or about these land rigs. The Noble employees on site consist entirely of drilling operations personnel. The Noble supervisor who is in charge of the drilling operations at the drill site is the toolpusher. The next in command under the toolpusher is the driller.

If there is an industrial accident, then the Noble toolpusher or driller contacts the nearest emergency ambulance service and the injured employee is treated at the nearest appropriate local medical facility. Additionally, while such training is not required for performance of their primary duties, these Noble toolpushers and drillers have had first aid and CPR training. However, they are not licensed healthcare personnel.

Given the facts peculiar to Noble's land drilling operations, it is also conceivable that under the right set of circumstances (i.e., occurrence of industrial accident for which first aid may be helpful due to uncontrolled bleeding, lack of breathing and/or heart stoppage) the Noble toolpusher or driller, having received first aid and CPR training, may (as a collateral assignment) provide first aid and/or CPR while waiting for emergency personnel to arrive.

Noble does not believe that the above captioned regulations were intended to cover its particular land drilling industry under the facts as outlined above. For clarification in this regard, Noble has contacted its industry's trade organization, the IADC, which Noble understands has filed a request for exemption with the Department of Labor. Noble also understands that exemptions have already been granted to the construction, farming and maritime industries.

However, pending the outcome of this request for exemption for the land drilling industry, Noble desires to receive an informal ruling from the Department of Labor as to whether or not Noble is legally required to comply with these regulations, particularly those pertaining to HVB vaccinations and record keeping. The regulations themselves seem to have been intended to apply to the employees of healthcare services and related industries whose normal job responsibilities frequently put them at risk.

As an aside, Noble also understands that there is currently a shortage of the HBV vaccine, with a pressing need to make same available on a priority basis to those first aid providers who work for emergency response services, health care clinics and other workplaces where first aid is rendered as a regular function of their jobs (versus Noble toolpushers and drillers who as collateral assignment providers seldom, if ever, come in contact with these blood pathogens). In any event, Noble awaits the Department of Labors reply.
ABSTRACT
Funeral homes and nursing homes are among the workplaces known to have occupational exposure to blood or other potentially infectious materials. Human remains are not regulated waste under the bloodborne pathogen standard. Human remains are included in the definition of "source individual." With regard to the use of personal protective equipment, the selection and type are performance-based. For the job classifications in which some, but not all, employees have occupational exposure, those designated as "non-exposed," should be trained to identify the circumstances that can lead to exposure and to defer such tasks to employees designated to perform them. The medical records must be retained for 30 years, and need not be kept at the place of employment but must be maintained in a manner that makes them accessible to OSHA.

INTERPRETATION
29 CFR 1910.1030 (a), (b), (c)(2), (d)(2)(xiii), (d)(3)(i), (d)(4)(iii)(B), (d)(4)(iii)(C), (f), (g)(1), (h)(1)(iv), (h)(3)(iii), (h)(1)(ii)

June 1, 1992

The National Funeral Directors Association (NFDA) and the American Health Care Association (AHCA), which represents nursing homes, have requested clarification on certain issues under the bloodborne pathogens standard that concern their industries. The NFDA was concerned about: (1) whether human remains would be regarded as "regulated waste;" (2) the significance of including human remains in the definition of "source individual;" and (3) the extent to which funeral home employers would be required to ensure that their workers wear personal protective equipment. The AHCA asked for clarification on the considerations that enter into the exposure determinations the employer must make under paragraph (c)(2) and on whether the records retention requirement of paragraph (h) required the employer to physically maintain employee medical records at the worksite.

The attached letters from the Acting Assistant Secretary explain OSHA's position on the points raised by NFDA and AHCA and should be consulted for guidance in enforcing the standard with respect to the above issues.
April 29, 1992

Dear Ms. H:

The Occupational Safety and Health Administration's (OSHA) bloodborne pathogens standard, issued on December 6, 1991, applies to all occupational exposure to blood or other potentially infectious materials. As the National Funeral Directors Association acknowledged during the rulemaking proceeding, funeral homes are among the workplaces known to have such exposure.

In a meeting with members of my staff on February 20, you explained that you support the standard but asked for guidance on the manner in which certain of its provisions would apply to funeral homes. Your concerns included whether a dead human body would be considered "regulated waste," as that term is used in the standard, and how the inclusion of human remains in the definition of "source individual" would affect funeral homes. You also expressed concern that OSHA would require funeral home employers to ensure the use of personal protective equipment in situations in which employees' exposure to blood or other potentially infectious materials is not reasonably anticipated.

First, employees handling a body must, as you recognize, be protected against contact with blood and other potentially infectious materials. However, the standard does not include a human body within the term "regulated waste," which is defined as:

liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

Since human remains are not regulated waste under the standard, the requirements governing the containment, disposal, and labeling of regulated waste found in 29 CFR 1910.1030(d)(4)(iii)(B) & (C) and 29 CFR 1910.1030(g)(1) do not apply to a human body or to containers used to store, transport, or ship a human body. Moreover, an intact human body, whether alive or dead, is not a "specimen" of blood or other potentially infectious materials to which the containerization and labeling requirements of 29 CFR 1910.1030(d)(2)(xiii) would apply. Although the standard does not require labeling of a container holding a human body as a biohazard, nothing in this letter should be read as detracting from the need to utilize a means of containment under certain circumstances, such as decay or trauma, to contain blood or other potentially infectious materials and prevent exposure.

Second, the standard defines "source individual" to include:

any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment activities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

By including human remains in this definition, OSHA intended that a specific exposure incident resulting from contact with blood or other potentially infectious materials from human remains would trigger the requirements of 29 CFR 1910.1030(f) regarding evaluation, treatment, and follow-up of an employee who suffers an exposure incident. OSHA considers the inherent risk of exposure from human remains to be similar to that from a living human being. As with living human beings, occupational exposure from human remains arises only from reasonably anticipated contact with blood or other potentially infectious materials. For the purpose of this standard, occupational exposure does not occur if contact with such material is not reasonably anticipated.
Third, with regard to the use of protective equipment, OSHA recognizes that the selection and type of personal protective equipment and the degree to which it must resist penetration are performance-based. The employer must evaluate the task and the type of exposure expected and, based on the determination, select the "appropriate" personal protective equipment in accordance with paragraph (d)(3)(i) of the standard. As OSHA stated in the preamble to the final standard (56 Fed. Reg. at 64125):

It is not the Agency's intent that employees be outfitted in all possible personal protective equipment or a "moon suit" for all tasks or procedures that they perform. The protective equipment utilized is simply to be chosen to protect against contact with blood or other potentially infectious materials based upon the type of exposure and quantity of these substances which can be reasonably anticipated to be encountered during performance of a task or procedure.

I appreciate your interest in working with OSHA to assure that employers in your industry understand their obligations under the standard. I hope this letter clarifies the specific points you have raised. Although OSHA does not now intend to develop training materials that are specific to funeral homes, should the Agency do so in the future it will afford your Association the opportunity to review such materials to assure that they accurately reflect industry practices.

April 29, 1992

Dear Dr. W:

Thank you for your letter of March 24, which Mr. A. has forwarded to me, explaining the American Health Care Association's concerns over the application of the bloodborne pathogens standard to nursing homes. Your letter raises issues concerning the exposure determinations employers must make under paragraph (c)(2) of the standard and the records retention requirements of paragraph (h).

The exposure determinations required by paragraph (c)(2) are intended to identify employees who are occupationally exposed to bloodborne pathogens. "Occupational exposure" is defined as "reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties." The employer must fully comply with the standard with respect to all employees who perform tasks and procedures in which occupational exposure occurs. However, employees who do not perform such tasks and procedures are not considered occupationally exposed under the standard.

Paragraph (c)(2) requires each employer with employees exposed to bloodborne pathogens to make an exposure determination listing:

(A) job classifications in which all employees have occupational exposure;

(B) job classifications in which some, but not all, employees have occupational exposure; and

(C) the tasks and procedures, or groups of closely related tasks and procedures, in which occupational exposure occurs in the job classifications in which some, but not all, employees have occupational exposure.

These determinations must be made without taking into account the use of personal protective equipment.

For the job classifications in which some, but not all, employees have occupational exposure, each employer must designate that employees who perform the specific tasks and procedures that subject them to occupational exposure are within the scope of the standard. Employees within the same job category that the employer designates as "non-exposed," and therefore outside the scope of the standard, should be trained to identify the circumstances that can lead to exposure and to defer such tasks to employees designated to perform them. For example, an employee who handles linens soiled with feces, nasal secretions, sputum, sweat, tears, urine, vomitus, or saliva (other than saliva from dental procedures) that are not contaminated with visible blood would not be occupationally exposed during that
task, for these substances are not "other potentially infectious materials" as defined in the standard unless they are contaminated with visible blood. See 56 Fed. Reg. at 64103 (adopting June 1988 CDC guidelines to determine the body fluids defined as "other potentially infectious materials"). But if that employee were to handle, for example, linens soiled with urine that did contain visible blood or for which the presence of blood would be reasonably anticipated because the particular patient has a medical condition that typically leads to blood in the urine, the employee would be occupationally exposed. The employee should therefore be instructed to defer all tasks involving visible blood contamination or reasonably anticipated blood contamination to employees designated to perform tasks involving exposure to blood or other potentially infectious materials.

Where an employer determines that some employees in a job classification have occupational exposure and others do not, the compliance officer will verify that employees who are designated as exposed are the only ones who perform tasks and procedures that will cause exposure. If the compliance officer does not find evidence demonstrating that employees designated as non-exposed are performing tasks and procedures that cause occupational exposure, the employer shall be deemed in compliance with respect to those employees.

With respect to the standard's recordkeeping provisions, you have asked for a reduction of the 30-year retention requirement and for clarification about whether it is permissible for the records to be kept at a location other than the worksite. OSHA believes that the 30-year retention period is necessary and not overly burdensome. With respect to the location of records, paragraph (h) requires employers to establish and maintain for each employee medical records that include hepatitis B vaccination status and evaluation and follow-up of exposure incidents. The records need not be kept at the place of employment but must be maintained in a manner that makes them accessible to OSHA. See 56 Fed. Reg. at 64169. Some employers may contract with the healthcare professional or professionals that perform the vaccination or post-exposure evaluation and follow-up to maintain the records. If the employer does not retain possession of the records, the employer must assure that the records are available to OSHA and make them accessible by identifying where the records are kept and how they may be accessed by OSHA. One way in which this can be accomplished is by maintaining a statement in each employee's record identifying the location where that employee's records are kept and how OSHA may access the records.
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DOE Interpretations Guide to OSH Standards
March 31, 1994

Vol. 2-524 thru 2-557
This interpretation letter specifies that persons conducting pulmonary function testing shall have completed a NIOSH approved training course in spirometry. The requirement appears at 1910.1043(h)(1)(iii).

This is in response to your inquiry to my staff concerning training requirements for persons who administer the pulmonary function testing required by the cotton dust standard, 29 CFR 1910.1043.

You quoted the opening paragraph in main division IV of Appendix D to the cotton dust standard. You asked whether the only way of becoming certified to administer the pulmonary function testing required by the cotton dust standard was to attend a course presenting the 16 hours of training mentioned in the paragraph. You then requested special consideration for OSHA certification without taking the 16 hours of training.

At the outset, we wish to point out that, contrary to the impression the passage you quoted may leave, OSHA does not certify persons who satisfactorily complete training in pulmonary function testing. Instead, the procedure is to require the institution providing the training to issue a certificate to each trainee who satisfactorily completes the course.

The course must be approved by the National Institute for Occupational Safety and Health (NIOSH). In this regard the cotton dust standard provides at 29 CFR 1910.1043(h)(1)(iii) that, "persons other than licensed physicians, who administer the pulmonary function testing required by this section shall complete a NIOSH approved training course in spirometry."

Although we can appreciate the extensive training, education and experience you have undertaken in order to become a registered respiratory therapist, you must complete a NIOSH approved training course in spirometry if you will be performing the measurements of forced vital capacity (FVC) and forced expiratory volume in 1 second (FEV1) that are required by the cotton dust standard. The NIOSH approved training courses in spirometry are very specialized courses which are designed to develop a high degree of uniformity in pulmonary function test results. The goal of these courses is to assure that any technician testing a particular subject's pulmonary functions would obtain the same results.
This interpretation addresses employers' use of initial medical exams required under the cotton dust standard as a screening device. OSHA has no control over an employer's decision to use initial medical exams required under the cotton dust standard to screen out hiring employees.

The 1978 standard for occupational exposure to cotton dust requires that the employer provide an initial medical examination for new employees. This examination is to include a medical history and the respiratory questionnaire, with an assigned byssinosis grade and pulmonary function measurement, which is the respiratory test referred to by Mrs. X. The standard does not specify whether people may be hired based on the results of these tests, however, it does specify that certain categories of employees must be given more frequent medical examinations. Mrs. X was probably referring to one of these categories in her letter, namely employees who have an FEV1 (forced expiratory volume in one second) of less than 80 percent of the predicted value.

Some employers use the initial medical examination as a screening device to detect individuals whose test results show evidence of respiratory problems. Some of these workers may have never worked in cotton textile mills and some may have worked in the mills for 20 years or more. It is the policy of some companies not to hire or rehire these individuals.

Unfortunately, many of these workers find themselves in Mrs. X's situation with little alternative employment, and we recognize that obtaining work may be difficult. She may be able to work in a textile facility which does not use cotton, and, therefore, under conditions where she is not at adverse risk due to exposure to cotton dust.

The Occupational Safety and Health Administration (OSHA) does require an initial medical examination, but we do not specify whether or not any individual may be hired. The decision to use the results of the test as a device to screen out potential employees rests solely with the individual companies and is not under the control of OSHA.
ABSTRACT

This interpretation letter addresses methods of cotton dust exposure monitoring and required sampling intervals. Employee exposure to cotton dust may be monitored with any methods and procedures with accuracy equal to a vertical elutriator at 7.4 lpm and an analytical balance measuring in 10 microgram increments. Measurements are required every six months regardless of the amount of plant activity. If there is no exposure at the time, measurements can be postponed until exposures recur.

(NOTE: The air monitoring frequency has since changed. The frequency of air monitoring is dependent on the results of initial air monitoring and on whether process, production, or control changes have occurred.)

INTERPRETATION


JAN 17, 1983

This is in response to your letter of November 4, 1982, to Mr. X, requesting an interpretation of the cotton dust standard, 29 CFR 1910.1043.

Except for specifying that employee exposure be determined every six months, the cotton dust standard sets performance requirements for employee exposure monitoring. That is, employers are required to determine each employee's exposure to that fraction of cotton dust that will pass through the vertical elutriator at 7.4 liters per minute air flow. Employers may use any methods and procedures that will accomplish these determinations with acceptable accuracy.

Instrument accuracies must equal those of the vertical elutriator and an analytical balance that can measure mass in 10 microgram increments. If you can meet the performance requirements and the specified six-month sampling frequency requirement for employee exposure monitoring with sequential sampling, then you may use this procedure.

OSHA interprets 29 CFR 1910.1043(d)(3)(ii) to require that employee exposures be measured every six months regardless of the amount of plant activity. If there is no exposure when the time for measurement comes due, then, of course, the measurements are postponed until exposures recur.

Since regulation of workplace exposure to cotton dust in (State) is the responsibility of the State, we are providing a copy of this letter to the State plan officials.
ABSTRACT  This interpretation letter addresses the applicability of the cotton dust standard to tufting operations. The standard, 29 CFR 1910.1043, applies if the cotton has not been washed and is not a waste product. The PEL for the standard is 500 μg/m³. The letter also notes that the U.S. Supreme Court vacated the portion of 1043(f)(2)(v) protecting earnings for employees who are unable to wear a respirator.

INTERPRETATION  29 CFR 1910.1043(c)(1)(ii); 1910.1043(f)(2)(v); 1910.1043(a)

FEB 1, 1983

As you have already been informed, we are responding to your letter addressed to our (City A) Regional Office regarding the applicability of the cotton dust standard, 29 CFR 1910.1043, to the tufting of cotton.

The cotton dust standard applies to the tufting of cotton yarn provided the cotton has not been washed, and is in effect for this process if the cotton is not a waste product. The definition of washed cotton is given in 29 CFR 1910.1043(b), copy enclosed. The permissible exposure limit that applies is the 500 microgram per cubic meter value defined in 29 CFR 1910.1043(c)(3).

Additionally, we would like to take this opportunity to remind you that on June 17, 1981, the U.S. Supreme Court vacated the portion of 29 CFR 1910.1043(f)(2)(v) that required the employer to assure that an employee who is transferred due to an inability to wear a respirator suffers no loss of earnings or other employment rights or benefits as a result of the transfer.
The cotton dust standard does not apply to handling of fabric cuttings and trimmings, or to fiberizing or garnetting of woven cotton or woven blends of cotton and synthetic fibers, 1910.1043(a)(2).

(NOTE: There is mention of a stay in the standard (last paragraph). The effective date was deferred to 3-14-86.)

This is in reply to your most recent inquiry regarding clarification of the OSHA cotton dust standard, 29 CFR 1910.1043. Please accept my apology for the delay in responding.

The cotton dust standard does not apply to a manufacturer whose only involvement with cotton consists of:

1) purchasing fabric cuttings and trimmings,
2) fiberizing these materials, and
3) rebonding the reclaimed fibers into nonwoven products.

However, if this manufacturer uses, handles, or processes any unwashed raw cotton fiber during the above operations, then the standard applies.

As to your last question, the cotton dust standard does not apply to the fiberizing or garnetting of woven cotton or woven blends of

1) purchasing fabric cuttings and trimmings,
2) fiberizing these materials, and
3) rebonding the reclaimed fibers into nonwoven products.

However, if this manufacturer uses, handles, or processes any unwashed raw cotton fiber during the above operations, then the standard applies.

As to your last question, the cotton dust standard does not apply to the fiberizing or garnetting of woven cotton or woven blends of cotton and synthetic fibers. The standard does apply to the fiberizing or garnetting of unwashed raw cotton fiber.

You should be advised that the United States Court of Appeals for the District of Columbia Circuit has stayed the cotton dust standard (29 CFR 1910.1043) as applied to cotton waste processors and users, pending a review of the merits of petitions against the standard.
Some of the questions asked in the inquiry were not answered pending amendment of the standard.

1) Section (h)(1)(ii) states that medical examinations are provided at no cost to the employee.
2) Appendix B describes the minimum medical history that must be obtained.
3) No change.
4) No change.
5) ?
6) No change.
7) The required information is found in (h)(2)(iii).
8) No change.
9) No change.
10) No change.
11) No change.
12) No change.
13) Appendix B addresses this issue.
14) Section (h)(5)(ii) states that a physician can't give an opinion on anything other than occupational exposures.
15) Section (o) addresses the appendices. No change has occurred.
16) No change.)

SOURCE LETTER

JUN 2, 1981

This is in response to your inquiry regarding interpretation of several provisions of the cotton dust standard, 29 CFR 1910.1043. Please accept my apology for the delay in replying.

I should like to bring to your attention the fact that OSHA is currently in the process of reassessing its policies regarding the cotton dust standard. As was announced in a Federal Register notice on March 31, 1981 (Vol. 46, No. 61, pp. 19501-19503, copy enclosed), OSHA will shortly be undertaking a reevaluation and reconsideration of this standard in order to review the economic consequences of the regulation; and in particular to evaluate the feasibility and utility of relying on cost-benefit analysis in setting occupational health standards. Public comment has been invited on the issues raised by such reevaluation, and as to whether other matters relating to the hazards and regulation of cotton dust should be addressed.

Vol. 2-570
Question 1:

"If the medical examinations are not provided at the plant, must the employer pay the employee for his time and travel expenses incurred for taking the examination at another location? What about job applicants whose employment is contingent on the results of the examination?"

Answer:

The standard is currently undergoing review, and we are unable to address these issues at the present time. We appreciate your concerns, however, and your comments will be considered during the review process.

Question 2:

"What are the minimum requirements for the medical history in (h)(2)(i)?"

Answer:

The minimum medical history that must be obtained is:

a. Current medical conditions, including any lung disease.
b. Current therapy, including prescription drugs and over-the-counter medication.
c. Allergies.
d. Smoking history.
e. Significant past medical history, including hospitalization and surgeries.
f. Work history, including information on previous exposure to cotton dust and occupational exposure to other toxic agents.
g. Significant family history.

Question 3:

"Must an exact copy of the respiratory questionnaire in Appendix B be completed for each employee or can employers generate their own forms as long as the format and content of the questions are not changed?"

Answer:

Employers may develop their own respiratory questionnaire forms. No questions may be deleted, added, reworded, or rearranged in order of presentation, however.

Question 4:

"Are the results of the initial examination per (h)(2) used to establish the need for a repeat examination in six months, using the criteria in (h)(3)(ii), or a detailed pulmonary examination according to (h)(3)(iii)? A possible interpretation is that these requirements are imposed on the basis of the first and subsequent annual re-tests following the initial examination. The results of the initial examination establish what the ensuing medical attention must be. That is, the results will establish whether the first periodic examination must be offered within 6 months or need not be offered until 1 year has elapsed. It will also establish whether a detailed pulmonary examination must be made available.

Question 5: "Deleted."

Question 6:
"Does the physician have the authority to waive the requirements for a six-month re-test in cases where the values in (h)(3)(ii) are only slightly exceeded?"

Answer:

No. The standard does not grant the physician this authority.

Question 7:

"In (h)(3)(ii)(a), does the decrement 'on the first working day' refer to
a. the decrement over a work shift as shown by pre-exposure and post-exposure testing;
b. the decrement in either pre-exposure or post-exposure values compared to the previous examination;
c. the decrement compared to normal values for that person?"

Answer:

The decrement on the first working day refers to the decrement over a 4-to 10-hour period of exposure as shown by pre-exposure and post-exposure testing.

Question 8:

"In (h)(3)(ii)(c), does 'significant change' refer to
a. the change between pre-exposure and post-exposure results on the day of testing;
b. the change in these parameters from the previous examination?"

Answer:

Significant change refers to the change from what was obtained in previous examinations regarding questionnaire findings, pulmonary function results, or other diagnostic tests.

Question 9:

"Can the requirement for a detailed pulmonary examination under (h)(3)(iii) be waived if a statement is obtained from a worker's personal physician that the worker is already being treated for a condition related to the impairment in pulmonary function?"

Answer:

This is entirely up to the employee's wishes. If an employee whose FEV1 is less than 60 percent of the predicted value wants his employer to provide him a detailed pulmonary examination, the employer must grant the examination. If the employee does not want to take the examination, the standard does not require him to do so, nor does the standard require the employer to give it, in that circumstance.

Question 10:

"Do the results of the examination have to be provided to the employee prior to the time he begins working in an area where cotton is used, other than for purposes of determining post-shift pulmonary function?"

Answer:

It is expected that the employer will furnish the employee with a copy of the written opinion from the examining physician as soon as possible. It is not necessary that this written opinion, which must include the results of the examination, be provided to the employee prior to the time he begins working in an area where cotton is used. As indicated by 29 CFR 1910.1043(h)(5)(i)(d), the physician
will inform the employee directly of the results of the medical examination and any medical conditions which require further examination or treatment. If the examining physician wants to keep the employee away from exposure to cotton dust until he has had time to complete his evaluation of an employee's health, he should indicate this to the employer, who should abide by the physician's request.

Question 11:

"If a company decides not to hire an applicant on whom the examination is performed, must the physician's opinion be provided to the applicant and the information be retained by the company as in the case of an existing employee?"

Answer:

No. The Occupational Safety and Health Act of 1970 applies only to employees and their employers.

Question 12:

"Must the copy of the physician's opinion given to the worker contain the physician's signature?"

Answer:

Yes. (If there is such a large number of opinions that the physician does not want to sign each one by hand, he could authorize someone to stamp his signature.)

Question 13:

"In the copy of the physician's written opinion that is provided to the employee, what specific items must be included under item (i)(a): 'results of the medical examination and test'?"

Answer:

The results of the medical examination and tests are interpreted to include:

a. The byssinosis grade according to Schilling's system.

b. The forced vital capacity (FVC) prior to exposure to cotton dust on the first day of the workweek.

c. The forced expiratory volume in 1 second (FEV1) prior to exposure to cotton dust on the first day of the workweek.

d. The percentage deviation from predicted FVC and FEV1 values.

e. The FVC and FEV1, 4 to 10 hours after the onset of the employees' exposure to cotton dust on the first day of the workweek.

f. Any significant changes from previous examination results.

g. The dyspnea grade.

h. An identification of any abnormal examination results.

i. Diagnosis of a condition or illness.

Question 14:

"May the physician's written opinion contain a statement that a breathing impairment detected by the examination is, or appears to be, unrelated to occupational exposure to cotton dust?"

Answer:
Yes, if the physician is able to make such a judgment.

Question 15:

"Paragraph (n) states that Appendix D is mandatory; however, Section III of Appendix D states that NIOSH 'recommends' a re-test within a month of the first examination for employees with a 5% or greater drop in FEV1 on Monday. Is this re-test mandatory or merely recommended? If mandatory, does the physician have the authority to waive this requirement in cases where the 5% is only slightly exceeded?"

Answer:

It is only a recommendation that a re-test be provided within a month of the first examination for employees who have a 5% or greater drop in FEV1 on Monday.

Question 16:

"Can someone with training and/or experience which meets or exceeds the requirements of Section IV of Appendix D, e.g., a Registered Respiratory Therapist or Certified Technician meeting the standards of the National Association for Respiratory Therapy, submit evidence of qualifications and be exempted from the requirement to attend a NIOSH-certified course in spirometry in order to administer the pulmonary function tests?"

Answer:

OSHA appreciates the broad education, training, and experience required of respiratory therapists and respiratory therapy technicians in order to be certified by the National Board for Respiratory Therapy. We have no assurances, however, that the training these individuals receive will, in all cases, comprehensively cover the material presented in the very specialized, NIOSH-approved training courses in spirometry.

I suggest that you contact the institutions that provided your respiratory therapists and respiratory therapy technicians with their training in pulmonary function testing, and request them to submit their course in pulmonary function testing to NIOSH for approval. If NIOSH approves a given training course, in the form in which it was taken by one or more of your technicians and therapists, then individuals who hold certificates showing successful completion of the course will have met the training requirements of 29 CFR 1910.1043(h)(1)(iii).

The address and telephone number of the NIOSH Division that approves training courses in pulmonary function testing are as follows:

Director, Division of Training & Manpower Development,
NIOSH
4676 Columbia Parkway
Cincinnati, Ohio 45226

Vol. 2-574
This interpretation letter addresses application of the cotton dust standard to the elastic fabric industry. The cotton dust standard applies to the elastic fabric industry weaving and braiding operations using any unwashed cotton yarn. Exemptions apply if washed cotton only is used.

29 CFR 1910.1043(a)(2); 1910.1043(a)(1)

APR 16, 1986

This is an update to our response of March 5 to your letter of February 4, concerning braided and woven elastic fabrics.

The Occupational Safety and Health Administration (OSHA) is unaware of any reason why the dust from unwashed cotton yarn used in weaving operations in the elastic fabric industry would be any different from the dust from unwashed cotton yarn used in other weaving operations. Also, the Agency is unaware of any reason why the dust from unwashed cotton used in braiding operations would be any different from dust from unwashed cotton used in weaving. If, as you believe, there is less cotton-dust-related occupational disease associated with weaving and braiding in the elastic fabric industry, OSHA must assume that it is due to the lower levels of cotton dust exposure that you noted to exist.

OSHA concludes that the cotton dust standard, 29 CFR 1910.1043, applies to elastic fabric industry weaving and braiding operations using any unwashed cotton yarn. Exemptions apply, however, if washed cotton only is used. We refer you to 29 CFR 1910.1043(n) of the standard for details. Also, please observe that if exposures are below the 375 microgram per cubic meter action level for slashing and weaving given at 29 CFR 1910.1043(c)(2)(iii) of the standard, only a few provisions of the standard will pertain.
This interpretation letter addresses application of the cotton dust standard to various aspects of the cotton waste spinning industry. Questions are answered concerning the applicability of the standard to extended shifts, required annual training, and different processes.

INTERPRETATION

29 CFR 1910.1043(c)(1)(i); 1910.1043(l)(1)(ii); 1910.1043(d)(2); 1910.1043(a)(6)

APR 10, 1983

This is in response to your February 6 letter to Ms. X, concerning the cotton dust standard, 29 CFR 1910.1043. The Occupational Safety and Health Administration (OSHA) interprets the cotton dust standard as prohibiting any daily employee exposure in excess of 1600 ppm hours in yarn manufacturing, 6000 ppm hours in slashing or weaving, and 4000 ppm hours in cotton waste processing. For example, an employee who works a 10-hour, time weighted-average exposure in excess of 1600 ppm hours - 10 hours - 160 ppm. This interpretation is supported by OSHA's notice of respirator-use enforcement policy appearing in the Federal Register, Vol. 45, No. 251, December 30, 1980, pp 85737 and 85738.

If, when disregarding any employee protection afforded by respirators, there are no 8-hour periods during the day when a relevant employee is exposed above the applicable permissible exposure limit, the employer would not have to implement additional engineering or work practice controls to keep the applicable ppm hour limit. Instead, the employer may use respirators to provide the additional required protection. This is so because OSHA believes the permissible exposure limits are set near the lowest values achievable with engineering and work practice controls.

Provision 29 CFR 1910.1043(l)(1)(ii) requires that each employee exposed to cotton dust be provided the training program at least annually. Moreover, the provision requires additional repeating of the training program when job assignment or work processes change, or when employee performance indicates a need for retraining.

With respect to yarn for weaving, the permissible exposure limit of 200 micrograms of respirable cotton dust per cubic meter of air applies for all handling operations up to the slashing stage regardless of where the handling takes place. If the yarn is not for weaving and is for knitting takes place. If the yarn is not yarn connected with knitting operations is exempt from the cotton dust standard.

SOURCE LETTER

FEB 6, 1986

Thank you for your interpretation of the cotton dust standard as it applies to the cotton waste spinning industry. We are proceeding on the basis that it would be classified as waste processing.

I have three other questions to ask concerning this standard which I would like for you or your associates to help us with.

1. With the advent of 10 & 12 hour shifts in the cotton textile mills, we originally adjusted the PEL downward. Shortly thereafter we received the OSHA opinion that PEL's would remain the same regardless of length of shift, but I cannot find any reference to this second decision. Alabama is now reducing the PEL for long shifts while other states do not. What is OSHA's position on this?
2. Some are interpreting (1)(ii), under Employee Education Training as requiring training on initial assignment only and not annually thereafter. It can be read this way if the comma after "cotton dust" is ignored. Should the comma be an "or"?

3. For winding operations not associated with yarn manufacture, as we sometimes find in dye houses, finishing plants, etc., we do not have a clear PEL. If yarns are being wound on dye cones or otherwise repackaged, are these operations exempt?
ABSTRACT

This interpretation addresses sample numbers and measurement duration for compliance with the cotton dust standard for a weaving operation. The number of samples required depends on how many workers are in the area, and how many machines are tended by each worker. As required by section (d)(2), the sampling program shall include at least one determination during each shift for each work area. The sampling shall be representative of exposures of all employees. Exposure levels should be calculated based on the level and duration of exposure in each work area.

INTERPRETATION

29 CFR 1910.1043(c)(3)(iii); 1910.1043(c)(2)

NOV 3, 1986

This is in response to your October 8 letter concerning the results of measurements taken in weaving rooms. In your letter you specifically requested information on the sufficiency of the number of samples taken, adequacy of the duration of measurements, and compliance with the Occupational Safety and Health Administration's (OSHA) permissible exposure limits (PEL) for cotton dust in a weaving operation.

The number of samples required depends on how many workers are in the area, and how many machines are tended by each worker. The number of as measured by a vertical elutriator or an equivalent instrument.

29 CFR 1910.1043 is the OSHA standard for occupational exposure to cotton dust. It applies to the control of employees exposure to cotton dust in all workplaces where employees are engaged in yarn manufacturing, slashing and weaving operations, or work in waste houses for textile operations.
This interpretation addresses tufting of undyed and unwashed cotton. This operation is not covered in the scope of the revised cotton dust standard of December 13, 1985, nor is it included in the scope of the permissible exposure limit for cotton dust in 1910.1000. Furthermore, it is also absent from the list of excluded operations, processes, and industries listed in the cotton dust standard. The operation was not considered because it was overlooked by OSHA and was not considered during the rulemaking procedures.

(NOTE: The standard has since been amended and the amended standard in the 1990 Title 29 of the Code of Federal Regulations does address unwashed cotton.)

This is in response to your letter of March 27 to Dr. X concerning the tufting of undyed and (we presume) unwashed cotton.

This operation is not included in the scope of the revised cotton dust standard of December 13, 1985, nor is it included in the scope of the permissible exposure limit for cotton dust contained in Table Z-1 of 29 CFR 1910.1000. But it is also not in the list of excluded operations, processes and industries listed in the standard.

The operation is not covered because it slipped past the attention of the Occupational Safety and Health Administration (OSHA) and was not considered during the rulemaking procedures. Therefore, no inferences should be drawn about the nature of the health hazard from the fact that it is not covered by OSHA's standard.

The (Institute) is the national trade association of American carpet and rug manufacturers. Included in the members are small rug manufacturers who make throw rugs for bathrooms, children's rooms, etc.

These rugs are made by tufting or inserting a face yarn into a performed back and anchoring these yarns into the back with some type of latex backing compound. The manufacturers purchase undyed yarns and dye the small rugs after the tufting operation.

Since these small rug manufacturers are not engaged in yarn manufacturing, slashing, weaving or involved with waste for textiles, it would appear they would be exempted from the Occupational Exposure to Cotton Dust Rule. Would appreciate your confirming this.
RECORD ID (5)029

STANDARD NUMBER 1910.1043(a)(3)
INFORMATION DATE 830708

ABSTRACT Waste cotton industries are excluded from coverage under the 1978 cotton dust standard.

INTERPRETATION 29 CFR 1910.1043(a)(3)
JUL 8, 1983

These industries were part of a large group of cotton industries covered by the Occupational Safety and Health Administration’s (OSHA) first standard for cotton dust (29 CFR 1910.1000 Table Z-1) which was published in 1971. This standard specified a permissible exposure limit (PEL) of 1000 micrograms per cubic meter (1000 ug/m3) to be achieved by engineering controls. There were no additional provisions such as medical surveillance or exposure monitoring.

OSHA published a second, more stringent standard for cotton dust in 1978 (29 CFR 1910.1043). The PEL for the nontextile industries, including the waste cotton industries, was set at 500 ug/m3. In addition, several other provisions were required such as medical surveillance, exposure monitoring, specified work practices, signs, and employee education.

The cotton waste industries were included under the 1978 standard because OSHA concluded, after reviewing the scientific literature, that adequate evidence of adverse health effects existed to support lowering the standard from 1000 ug/m3 to 500 ug/m3. Additional evidence of adverse health effects due to cotton dust exposure has come to OSHA's attention since publication of the 1978 standard. This evidence supports OSHA's finding that workers in the waste cotton industry are at risk of developing adverse health effects due to their exposure to cotton dust. However, OSHA has concluded that this evidence does not justify lowering the standard from the PEL specified in the 1971 standard (1000 ug/m3) to the PEL specified in the 1978 standard (500 ug/m3). Therefore, OSHA has proposed to exclude the waste processing industry from coverage under the 1978 standard.

We have placed your letter in the cotton dust docket and will consider it along with all the others submitted in response to the Notice of Proposed Rulemaking published in the Federal Register on June 10, 1983.
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**ABSTRACT**

This interpretation letter addresses the requirements relating to spirometry contained in the cotton dust standard at 1910.1043, Appendix D. Section I(g) specifies that if a paper record is made, the paper speed must be at least 2 cm/sec. This provision pertains to volume sensing spirometers that do direct mechanical tracing of volume versus time curves on paper. Section I(j) in Appendix D pertains to field checking of the calibration of spirometers. The Vitalograph 1-liter Precision Syringe satisfies the calibration source volume displacement requirement if two successive injections are made.

**INTERPRETATION**

29 CFR 1910.1043(Appendix D)

MAR 5, 1990

This is in response to your letters of August 4 to Mr. X, Area Director of our (City, State) office and of January 31 to Mr. X of my staff concerning clarification of some of the requirements relating to spirometry contained in Appendix D to standard 29 CFR 1910.1043 for cotton dust.

As you related, Section I(g) in Appendix D specifies that if a paper record is made, the paper speed must be at least 2 cm/sec. This provision pertains to volume sensing spirometers that do direct mechanical tracing of volume versus time curves on paper. For such spirometers, the paper speed establishes the scale for the axis for plotting the time. The provision does not apply for any other type of spirometer where the paper speed does have any effect on the scale used to plot time for a volume versus time curve.

Section I(j) in Appendix D pertains to field checking of the calibration of spirometers. The volume calibration source should provide a volume displacement of at least 2 liters and should be accurate to within plus or minus 30 milliliters. We agree that the Vitalograph 1-liter Precision Syringe satisfies the displacement requirement if two successive injections are made.

Appendix D contains minimum requirements for spirometry. Employers may follow any American Thoracic Society (ATS) guidelines that are the same as or exceed these requirements.

OCT 17, 1989

SUBJECT: Regional Request for Interpretation - Appendix D of 29 CFR 1910.1043

The attached package of information is forwarded to you for response directly to Mr. X, President of (Company). Mr. X is inquiring about the acceptability of an alternative method of pulmonary function testing to that specified in Appendix D of the Cotton Dust Standard. Please supply a copy of your response to the Regions.

SEP 13, 1989


We are forwarding this letter to you for a determination as to the acceptability of an alternate method of pulmonary function testing to that specified in 29 CFR 1910.1043, Appendix D of the Cotton Dust Standard.
SEP 12, 1989

This is in response to your letter of August 4, 1989 Area Director of the (City, State), Area Office. In your letter you requested clarification as to the acceptability of an alternative pulmonary function testing method to the requirements stated in Appendix D of 29 CFR 1910.1043 of the Cotton Dust Standard. Since the standard permits testing methods which can be shown to be superior, your request will be forwarded to our National Office for their determination. You can expect a direct written response from them. If I may be of further assistance to you on this matter, please do not hesitate to contact me at (XXX) XXX-XXXX. We appreciate your concern in the area of Occupational Safety and Health.

AUG 10, 1989

SUBJECT: Clarification of OSHA’s Standards on Spirometers

The letter attached is being forwarded to you for technical assistance and response.

Since the person requesting the interpretation is president of a leading manufacturer of spirometers, we find your input is necessary.

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SOURCE LETTERS
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AUG 4, 1989

I am writing to see if you can assist me in clarification on a number of points regarding the OSHA standards on Spirometry.

(Company) is one of the leading manufacturers of volumetric and flow sensing spirometers and we are based in (State).

The queries I require your ruling on are as follows:

1. CALIBRATION:

   Your standards state, “the volume calibration source should provide a volume displacement of at least 2 liters and should be accurate to + or - 30 ml.”

   (Company) supplies two syringes. One is a 3 liter volume and the second is a 1 liter volume with a built in valve. This has the advantage of enabling the user to check linearity over the full measuring range at one liter intervals.

   Therefore, by pushing in twice you can have a 2 liter calibration. Is this acceptable?

   I enclose a brochure for your perusal

2. CLARIFICATION OF PAPER SPEED:

   Paragraph “g” of the standards state “If a paper record is made it must have a paper speed of at least 2 cm/sec. and a volume sensitivity of at least 10.0 mm of chart per liter of volume.

   Does this apply to only paper records as in our volumetric units (Company) ) and a kymograph type system or does it also apply to strip recorders as used on flow sensing spirometers?

3. COTTON DUST STANDARDS:

   In a recent communication with Dr. X from (City), she stated that on NIOSH certification courses, they are now incorporating the ATS standards. It was her opinion that those directly covered by the Cotton Dust Standards could use the ATS standards as they were, in many cases more stringent than OSHA. However, she could not say how an inspector for OSHA might respond if the ATS standards were adopted.

Vol. 2-582
JAN 31, 1990

I am writing in follow up to our telephone conversation of yesterday. I enclose, as promised, details of our 1 liter syringe and also a copy of the ATS specs.

JAN 23, 1990

The (Company) spirometer, model Alpha-1, utilizing computer software labeled "Snowbird Special 1" was tested in our laboratory on 24-27 November 1988. Both static and dynamic testing were performed. Static testing was performed using slow and rapid injections of a 3 liter syringe and the dynamic testing by injecting the 24 standard waveforms using our waveform simulator.

The results of that testing showed the (Company) Alpha-1 measured FVC, FEV, and FEF(25-75%) within the criteria recommended by the American Thoracic Society. The Alpha-1 measured each of these parameters correctly on all 24 standard waveforms.

Our testing of the (Company) Alpha-1 spirometer therefore indicates that it meets the ATS recommendations for accuracy.

Testing done at the LDS Hospital Pulmonary Laboratory measures spirometer performance against criteria published by the American Thoracic Society. It does not, however, imply any certification or recognition of performance by the ATS.
This interpretation letter provides a review of OSHA regulations for the calibration of spirometers and audiometers. The Cotton Dust Standard outlines requirements that must be met each time spirometry is performed (1910.1043, Appendix D). The Noise Standard outlines requirements for audiometer calibration (1910.95, Appendix E).

(NOTE: Both standards have been amended since the 1984 interpretation letter.)

This is in response to your letter dated November 5 regarding the Occupational Safety and Health Administration's (OSHA) regulations on the regular calibration of equipment, particularly spirometers and audiometers.

The best reference to answer your questions is OSHA's General Industry standards (enclosed).

Specifically, with regard to spirometers, minimum standards can be found in Appendix D of section 1910.1043 -- Cotton Dust standard (copy enclosed). There is no reference to regular calibration but rather the outlined standards must be met each time spirometry is done. Appendix C of this standard contains the predicted values for the FEV-1 and the FVC for males and females. A correction factor of 0.85 is used for blacks to adjust for physiological differences.

Calibration requirements for audiometers can be found in paragraph (h)(5) of section 1910.95 -- Noise standard (copy enclosed). Specifically, the functional operation of the audiometer shall be checked before each day's use, an acoustical calibration shall be done at least annually in accordance with Appendix E of the standard, and finally an exhaustive calibration should be done every two years in accordance with the American National Standard Specifications for Audiometers, S3.6-1969. Specifications for Audiometers can be obtained by writing the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.

I am very interested in obtaining information as to the OSHA regulations for regular calibrations of equipment particularly spirometers and audiometers. We are interested in doing industrial medicine work, however, wanted to get the guidelines prior to beginning this.
ABSTRACT

The permissible exposure limits (PELs) and those portions of the cotton dust standard that apply to cotton waste operations are clarified. The PEL for waste processing is 1 mg/M3, as given in Table Z-1-A in 29 CFR 1910.1000. The sections of the expanded health standard for cotton dust (29 CFR 1910.1043) that apply to waste processing are: 1910.1043(h), Medical Surveillance, 1910.1043(k)(2)-(4), Record keeping—Medical Records, and Appendices B, C, and D. For cotton waste operations that make use of waste cotton after it has been processed, the PEL is made up of the values of particulates not otherwise regulated, as given in Table Z-1-A in 1910.1000, (5 mg/M3 - respirable fraction; 15 mg/M3 - total dust). None of 29 CFR 1910.1043 applies to this latter waste operations category.

INTERPRETATION

29 CFR 1910.1043(b); (h); (k)(2); (k)(3); (k)(4); 1910.1043(Appendix A); (Appendix B); (Appendix C); 1910.1000

MAY 10 1991

MEMORANDUM

Subject: Regulations For Cotton Waste Operations

This is in response to your memorandum of February 11, requesting that the permissible exposure limits (PELs) and the parts of cotton dust standard (29 CFR 1910.1043) applying to cotton waste operations be clarified.

Waste processing:

Waste processing consists of garnetting and waste recycling. The definition at 29 CFR 1910.1043(b) for waste processing lists sorting, blending, cleaning, and willowing as examples of waste recycling, but waste recycling also includes all operations involved in manufacturing yarn from waste cotton, such as, spinning and spooling.

The PEL for waste processing is 1 mg/M3 as given in Table Z- 1-A in 29 CFR 1910.1000. The sections of the expanded health standard for cotton dust (29 CFR 1910.1043) that apply to waste processing are: 29 CFR 1910.1043(h) Medical surveillance, 29 CFR 1910.1043(k)(2)-(4) Record keeping -- Medical records, and Appendices B, C, and D.

Cotton waste operations not included in waste processing:

This category consists of operations that utilize waste cotton after it has been processed. Bedding and upholstery assembly are examples of these types of operations.

The PEL for this category are the values for particulates not otherwise regulated as given in Table Z-1-A in 29 CFR 1910.1000, (5 mg/M3 - respirable fraction; 15 mg/M3 - total dust). None of 29 CFR 1910.1043 applies to this category.

SOURCE LETTERS

FEB 11 1991

MEMORANDUM

SUBJECT: PEL for Yarn Manufactured from Waste Cotton
On January 8, 1991, the (City) area office initiated an inspection at (Name) Yarn Mill located in (City, State). The company utilizes waste cotton from other textile mills to manufacture yarn (ending in a spinning operation) that is used to make the heads of mops. The issue is whether this operation is fully covered by the cotton dust standard (1910.1043).

GB and SH have informed FSO and Technical Support verbally that the cotton dust standard PELs (1910.1043) do not apply to any operations using waste cotton. They indicated that all the comments on the draft OSHA cotton dust standard in 1985 and all of the verbiage in the preamble of the standard infer this. Accordingly, (Company) is required to comply with the 1910.1000 cotton dust PEL (1,000 micrograms per cubic meter).

We feel that a literal reading of 1910.1043(a) contradicts this interpretation and, therefore, a modification of the standard or, at least, a field interpretation be written to clarify what OSHA's position is on the applicability of 1910.1043(b) to all waste cotton operations. The standard 1910.1043(b) defines waste processing operations as "waste recycling (sorting, blending, cleaning, and willowing) and garnetting." The preamble to the standard states, "OSHA has concluded it is appropriate to narrow the definition of waste processing to the operations of waste recycling (sorting, blending, cleaning, and willowing) and garnetting" (50 FR 51138, December 13, 1985). A reasonable interpretation might conclude that the definition of waste processing operations at 1910.1043(b) would be limited to operations that sort, blend, clean, or garnet waste cotton. Thus, yarn manufacturers using waste cotton in spinning operations for example would not be covered by this definition and, therefore, would not be regulated by the cotton exposure limits and all other provisions of 1910.1043.

The agency's position regarding this issue could affect a number of establishments nationwide. We would appreciate your direct response to us.

Attachment:

Dear Mr. T:

Thank you for your letter dated January 29, 1991, requesting an interpretation of the cotton dust standard. Your letter has been forwarded to the National Office, Directorate of Compliance Programs for response. We will forward you a copy of their response once received.

1 January 1991

Dear Mr. L:

I want to express my appreciation for the courtesy and professionalism displayed by you and others in your office with respect to the handling of the controversy regarding the application of the cotton dust standard (29 CFR 1910.1043) to operations involving waste cotton. My client has been operating under an interpretation of the standard which had been provided by the National Office to (Company).

(Company) has been assisting my client for many years with respect to their employee health monitoring programs. The company was quite concerned when it appeared that a different interpretation was to be applied, because a number of decisions regarding significant capital expenditures had been made based upon the earlier interpretation.

All the confusion appears to be resolved now but, by this letter, I would like to respectfully request a written interpretation. Specifically, I would like an interpretation that the spinning of waste cotton, as well as all other operations involving waste cotton, is subject to the permissible exposure level established in 29 CFR 1910.1000, and that the only provisions of 29 CFR 1910.1043 which apply are those regarding medical surveillance and monitoring.
ABSTRACT

According to this interpretation letter, oil present in cotton dust would be included in the total weight of the dust based on the definition of "cotton dust."

(NOTE: Since the 1984 interpretation letter, the standard has been amended to state that lubricating oil mist associated with weaving operations is not considered in the definition of cotton mist. There is no other mention of oil mist being excluded from the definition of cotton dust.)

INTERPRETATION

29 CFR 1910.1043(b)

APR 12, 1984

This is in response to your letter of February 20 regarding the definition of cotton dust, which was forwarded to the National Office of the Occupational Safety and Health Administration (OSHA) for reply.

Your make the point in your letter that oil mist is not dust and technically, you are, of course, correct. Nonetheless, the definition of cotton dust appearing at 29 CFR 1910.1043(b) of the cotton dust standard would include oil mist.

OSHA, however, is currently involved in rulemaking to improve the cotton dust standard. One of the issues under consideration is whether or not to continue to include oil mist in the definition of cotton dust.
This interpretation letter states that reginned cotton is considered raw cotton and that the 200mg/m$^3$, 8hr TWA PEL applies.

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**INTERPRETATION**

29 CFR 1910.1043(b); (c)(1)(i); (c)(1)(iii)

**AUG 17, 1984**

**MEMORANDUM**

**SUBJECT:** Reginned Cotton

You may occasionally encounter reginned cotton being used to manufacture yarn. Reginned cotton is raw cotton, which means that the permissible exposure limit for such an operation is the 200 microgram per cubic meter limit defined at 29 CFR 1910.1043(c)(1) in the Cotton Dust Standard. It therefore also follows that the permissible exposure limit for the processes of slashing and weaving of yarn manufactured from reginned cotton is the 750 microgram per cubic meter limit defined at 29 CFR 1910.1043(c)(1)(iii).

The official definition of reginned cotton may be found in the April 1980 revision of Agriculture Handbook Number 566 entitled “The Classification of Cotton,” published by Agriculture Marketing Services, U.S. Department of Agriculture, Washington, D.C. The definition is repeated here for convenience:

Reginned cotton is cotton that has passed through the ginning process more than once. A bale of cotton is considered reginned when it is opened after the initial ginning and baling for the purpose of putting the lint through machinery to re-gin, clean, blend, or otherwise process the lint, and is then rebaled. Cotton which passes through one or more stages of lint cleaning as a regular part of the initial ginning process is not reginned.

The handbook also relates:

The rules of cotton futures exchanges in the United States provide severe penalties for any person who knowingly offers for inspection or delivery on futures contracts any cotton that has been reginned. Samples from reginned cotton are classified as other samples, but the notation for “Reginned” is entered immediately before the grade on the classification memorandum.
This interpretation letter states that the CAM system appears to be equivalent to the vertical elutriator for measuring cotton dust. Annual calibration may not be enough.

This opinion must be a qualified one, however. This is because an instrument may be capable of equivalency to the vertical elutriator sampling system and gravimetric analysis in measuring cotton dust concentrations, but may not be used properly so as to attain this capability.

We do, however, find value in reviewing the data and giving our opinion on equivalency at the National Office level. This will limit duplication of effort by the OSHA field staff and help you and the textile industry decide on sampling methods. Our opinion on instrument equivalency will provide only general guidance to the OSHA field industrial hygienist. The decision to issue citations will be based upon information obtained during an inspection, and the manner in which monitoring is performed by the employer.

The data you submitted does indicate that the CAM system is capable of providing results equivalent to the vertical elutriator system and gravimetric analysis at the permissible exposure limit and one-half of the PEL when the GC-ERF procedure is used for each process and each area tested. You provided no data to indicate equivalency for measuring cotton dust concentrations at twice the PEL, but we do not consider this lack of data to be critical since we have received data from another source that indicates that the CAM has this capability.

As regards gravimetric certification, we do not believe it has been demonstrated that performing this once annually per process is adequate. That is, we are concerned that the equivalency refinement factor may not be sufficiently stable to permit gravimetric certification only once annually per process. We would like you to stay in contact with us, describing your experiences with the gravimetric certification method and with the stability of the equivalency refinement factors for various processes.
This interpretation letter states that in monitoring the OSHA cotton dust standard, the CAM instrument system is capable of equivalency to the vertical elutriator.

As you requested, this letter contains OSHA's opinion on the equivalency of the CAM instrument to the vertical elutriator for the purposes of the monitoring requirement in the OSHA cotton dust standard, 29 CFR 1910.1043(d)(1)(iii) for (Company). Our opinion is based upon the information and data you submitted to us as discussed in our correspondence to you dated July 30, 1980; the recent report containing data collected in October 1980; and the confidential report describing gravimetric certification and equivalency demonstration protocols.

As we previously discussed, OSHA will not approve instruments nor accept them as equivalent without qualification. Although an instrument may be capable of equivalency, it may not be used properly so as to obtain equivalent readings to the vertical elutriator. In addition, the monitoring provision of the cotton dust standard is not written for a general equivalency determination, but rather for a case-by-case analysis to be handled by normal inspection procedures. We do, however, find value in reviewing the data and giving our opinion on equivalency at the National Office level. This will limit duplication of effort by the OSHA field staff and help you and the textile industry decide on sampling strategies. Our opinion on instrument equivalency will provide only general guidance to the OSHA field industrial hygienist. The decision to issue citations will be based upon information obtained during the inspection, and the manner in which monitoring is performed by the employer.

Bearing this in mind, I am pleased to report that we believe the CAM instrument system, with the gravimetric certification and the equivalency refinement factor procedures as described in the draft paper "Gravimetric Certification and Equivalency Demonstration Protocols for Alternative Samplers to the Vertical Elutriator," is capable of equivalency to the vertical elutriator. We believe the equivalency will hold for all Burlington plants, in all textile areas, opening through weaving. We would like you to stay in contact with us, describing your experiences with the instrument, with the gravimetric certification method, and with the validity of the Equivalent Refinement Factor.
ABSTRACT

The CAM/PCAM Model C instrument is considered equivalent to the vertical elutriator (VE) cotton dust sampler as provided in the cotton dust standard 29 CFR 1910.1043(d)(1)(iv).
SOURCE LETTER

FEB 6, 1986

We are requesting the written opinion concerning the equivalence of the CAM/PCAM Model C instrument to the vertical elutriator from paragraph d i iv in the 29 CFR 1910 Final Rule on the Occupational Exposure to Cotton Dust, December 13, 1985. The enclosed information and data show that the CAM/PCAM Model C cotton dust sampler collects particulates in the same range as the vertical elutriator and satisfies the equivalence protocol published in Appendix E of the amended 1910.1043.

Equivalence data enclosed have been selected from 700 points generated in 22 equivalence demonstrations. We reported that 98% of these samples were between +/-25% of the VE readings in our testimony at the cotton dust hearings (Ex. 203). The enclosed data also supplement a previous submission (Ex. 235) addressing the more statistically rigorous Rockette/Wadsworth equivalence protocol.

The 100 points submitted are the most representative of process areas and range of dust levels in the 700 point base that meet all criterion given in the new protocol. We feel that data from many processing areas and different plants represent the best measure of the general applicability of the alternative method.
This is to inform you of an error in my letter dated March 28, 1979, to Mr. H. Mr. H subsequently sent you a copy of this letter since it pertained to an inquiry dated January 8, 1979, you addressed to him concerning the recently published standard for occupational exposure to cotton dust.

My letter mistakenly stated, "The requirement for a repeated pulmonary function measurement during the shift (29 CFR 1910.1043(h)(2)(iii)) does not apply to the initial testing of new employees."

The standard requires that the employer make initial and repeat measuring of pulmonary function available to new employees on the first day on the job that their exposure to cotton dust occurs.

I wish to stress these points:

1. When the standard (in 29 CFR 1910.1043(h)(2) refers to "new employees" it means employees who are newly exposed to cotton dust on the job. Thus, for the purposes of the standard, a newly hired employee who is assigned to a job at which he/she is not exposed to cotton dust is not a "new employee." On the other hand, an employee who has been working for an establishment at a job at which he/she is not exposed to cotton dust would become a "new employee" upon any reassignment to a job at which he/she is exposed to cotton dust.

2. The initial examination described in 29 CFR 1910.1043(h)(2)(i) through (iv) is not a pre-employment or screening examination that is to be given job applicants before they can be hired.
RECORD ID 2491

STANDARD NUMBER 1910.1043(b); (h)(2); (h)(2)(ii); (h)(2)(iii); (h)(3)(ii)(C)
INFORMATION DATE 860121

ABSTRACT This response provides interpretation of medical surveillance section requirements pertaining to 29 CFR 1910.1043(h)(2)(ii) for pulmonary function testing parameters questionnaire, and other diagnostic tests. The terms "significant change", "recommended vs. mandated requirements", and "physicians opinion" are discussed.

INTERPRETATION 29 CFR 1910.1043(b); (h)(2); (h)(2)(ii); (h)(2)(iii); (h)(3)(ii)(C)
(No Date)
SUBJECT: Interpretation of 1910.1043(h)(2)(ii)

1. Medical surveillance as required in paragraph (h)(3)(i) of the standard, shall be provided every 6 months for all employees with FEV1 values of less than 80 percent of the predicted value (h)(2)(ii). However, if the FEV1 is greater than 80 percent BUT there is a FEV1 decrement of 5 percent (or greater) that is 200 ml (or more) on the first working day (that is the difference between the first test conducted on entering the workplace after an absence of at least 35 hours, and the second test conducted between 4 and 10 hours after beginning the work shift), that will require a re-test in 6 months.

In addition to the above, (h)(2)(ii) mandates that if the physician finds a significant change in the responses to the questionnaire which the worker completes as part of the medical history, or in any aspect of the pulmonary function test (PFT) results or other diagnostic tests he/she will provide another PFT in 6 months.

Because "significant change" depends on findings which are too numerous and varied to list and on the physician's interpretation of those findings based on his/her experience and training, the "significant change" is not defined. The standard relies on the physician's opinion.

2. FEV1/FVC ratios are referred to in Appendix D of the standard as part of NIOSH guidelines. A drop below 0.75 of the FEV1/FVC ratio is suggested as an indicator for a repeat evaluation within 1 month. However, it must be noted these are recommendations, not mandated requirements. The FEV1/FVC ratios do change with age but the test is a relatively reliable indicator of obstructive lung disease.
DATE
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8/22/94
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