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ARGONNE NATIONAL LABORATORY
9700 South Cass Avenue, Argonne, Illinois 60439

ANL/EES-TM-264, Rev. 1

**ENVIRONMENTAL PROTECTION APPRAISALS:
A SUGGESTED GUIDE FOR U.S. DEPARTMENT
OF ENERGY FIELD ORGANIZATIONS**

ANL/EES-TM--264-Rev.1

DE85 014297

by

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Energy and Environmental Systems Division
Integrated Assessments and Policy Evaluation Group

March 1985[§]

work sponsored by

U.S. DEPARTMENT OF ENERGY
Assistant Secretary for Policy, Safety, and Environment

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§Initial publication date: August 1984

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PREFACE

This report has been issued in looseleaf form to accommodate anticipated updates and revisions. Copies of replacement pages will be mailed directly to holders of the report who received their copies directly from Argonne National Laboratory or the Department of Energy's Environmental Protection Division. Replacement pages also will be made available through the National Technical Information Service.

The report was initially published in August 1984. The first revision was issued in March 1985.

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ACKNOWLEDGMENTS

The authors would like to thank T. Frangos, Director, Environmental Protection Division, Office of Operational Safety, U.S. Department of Energy (DOE), for directing and critiquing this work. To better understand the operations office and facility perspective of the environmental appraisal process, visits were made to the DOE Savannah River Operations Office, the San Francisco Operations Office, and Lawrence Livermore Laboratory. The authors wish to express their appreciation for the time and cooperation that was extended to them by: G. Smithwick, S. Wright, R. Jansen, R. Geiger, and L. Goidell, Savannah River Operations Office; R. Salazar and M. Auyong Gonzalez, Lawrence Livermore Laboratory; and F. Krieger, San Francisco Operations Office. The authors would also like to thank J. Mathur and C. Welty, Office of Operational Safety, and H. Hollister, Office of the Deputy Assistant Secretary, Environment, Safety, and Health, U.S. DOE, for their comments and suggestions during the development of this document. Support for this project is provided by the DOE Assistant Secretary, Policy, Safety and Environment, Office of Operational Safety.

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1 INTRODUCTION

The U.S. Department of Energy (DOE) Order, DOE 5482.1A, Environmental, Safety, and Health (ES&H) Appraisal Program establishes the basic requirements for conducting ES&H appraisals, of which environmental protection is a key discipline. The three levels of appraisals outlined in DOE 5482.1A are summarized below.

1. Internal audits should be conducted by each DOE facility* by persons not directly responsible for performance of activities being audited. The internal audit system should function in an advisory capacity so that corrective actions can be taken, provide an appraisal of the overall operation of each facility to assure adequate ES&H coverage, and provide objective and independent review of ES&H functions.
2. Management and functional appraisals should be conducted by field organizations or program secretarial officers (where they directly manage field activities or where DOE contractor activities are not assigned to a field organization for implementation). The appraisal process should include the use of written guidance and criteria to assure relevance and continuity of appraisals, and objective evidence should be examined and evaluated for compliance with ES&H program requirements.
3. Appraisal of operations offices and other DOE line organizations should be conducted by DOE headquarters. The appraisal process should include the use of written guidance and criteria. The appraisals should be conducted in a multidisciplinary manner so that each appraisal report will provide a comprehensive evaluation of the ES&H program.

*The word facility is used throughout this guide to refer to the operating-level organization, that is, the organization performing the actual work or job-related tasks. A facility may be a contractor performing work for DOE or it may be an element of DOE itself, such as an energy technology center or power marketing administration.

This suggested appraisal guide is consistent with the policy and objectives of DOE Order 5482.1A, Section 7. Specifically, Sec. 7 states that the Environmental, Safety, and Health appraisal program should consist of internal audits by the operating-level staff, confirmatory appraisals by staff in the second organizational level, program reviews and assessments by the responsible program Secretarial Officer, and independent overviews and appraisals by the Deputy Assistant Secretary for Environment, Safety, and Health.

A suggested guide to assist DOE contractors in conducting internal environmental protection audits was published in August, 1983.* This guide, which was prepared for the DOE Office of Operational Safety, consists of 17 modules covering distinct environmental areas. Each module consists of a comprehensive checklist based on U.S. Environmental Protection Agency (EPA) regulations. Where appropriate, each module includes questions designed to identify, anticipate, or avoid future environmental problems. Finally, the modules are designed to identify good management practices.

Use of Manual

This manual has been prepared to assist DOE field organizations in conducting environmental protection appraisals of activities at DOE operating-level facilities. Its primary use will be by DOE operations offices in their appraisal of facilities operating under the authority of the Atomic Energy Act. However, the manual can also be used by other DOE field organizations. This manual is organized in modules that parallel those in the internal environmental audit checklist. It is assumed that the contractor is using the guide previously described (*Internal Environmental Protection Audits*) and that operations office staff members will have the opportunity to review or be cognizant of the contractor's completed internal audit, and other material generated within the facility, in preparation for the appraisal.

This manual was developed to facilitate the appraisal process by providing operations office staff with a choice of modules that can be used independently or as a unit. The manual gives guidelines for reviewing information submitted to the operations office before the site visit and for conducting an on-site operating-level appraisal.

Each module in the manual includes the following sections:

1. **Regulatory Overview** -- References laws and regulations pertaining to the topic of that module. The overview includes a general summary of environmental requirements. The operations office staff members conducting the appraisal are assumed to be familiar with all applicable federal and state environmental regulations. For additional regulatory information, see *Environmental Compliance Guide* (DOE/EV-0132, February 1981).

*Barisas, S., et al., *Internal Environmental Protection Audits: A Suggested Guide for U.S. Department of Energy Facilities*, Argonne National Laboratory Report ANL/EES-TM-237 (August 1983).

2. **Request for Information** -- Identifies information the facility can forward to the operations office for review before any site visit. In most cases, the information requested is assumed to supplement data already in the operations office records. Information already in operations office files should be included in the review.
3. **Review of Requested Information** -- Tells appraisers what to review in the documents requested in Item 2 above. This review is conducted at the operations office.
4. **Follow-Up Inquiry** -- Keyed to the responses in the internal audit checklist. This inquiry may be conducted in part at the operations office. After the initial review, a site visit will be set up for reviewers to visually inspect the facilities, especially key areas.
5. **Document Review** -- Helps reviewers analyze written records to confirm that environmental compliance activities are properly documented.

Figure 1 displays the suggested procedures by which operations office staff can appraise DOE operating-level facilities. The following paragraphs describe how this appraisal process can be successfully implemented.

Step 1: Review Scope

The operations office should decide the review scope at a given facility and select the corresponding modules for appraisal. To cover all areas in depth may be impractical, particularly at facilities where the appraisal frequency is once a year. This selection should follow guidelines given in DOE 5482.1A with regard to scope and frequency. Consideration should also be given during this selection process to the following:

- Perceived problems related to facility. This perception should be based on new regulations, any violations, potential problem areas noted in previous appraisals, reviewer's knowledge of the site and of existing problems or areas of concern, and information received by the operations office as part of routine reporting and informal visits to sites.
- Appraisal frequency for a particular modular area.
- Expertise of the operations office staff in specific areas.

FIGURE 1 Suggested Procedure for Operations Office Appraisal

An initial review of materials submitted to the operations office (Steps 2 and 3) for preappraisal planning may result in a decision to review other modular areas.

Step 2: Requesting Information

Once the operations office staff has decided which areas will be appraised, it should contact the operating-level facility at least eight weeks before the scheduled date of the appraisal. The operations office should (1) inform the contractor of the appraisal date and the area or areas to be reviewed and (2) request background information. This request for information should be in writing. Each module in the manual includes a list of the information that should be obtained as part of the formal request. This list is titled "Request for Information."

The information requested generally consists of documents, reports, plans, completed checklists of internal environmental protection audits, and audit reports. All information should be received no later than four weeks before the scheduled field appraisal to allow sufficient time for an office review. During this time, the operations office staff can also prepare for the appraisal by reviewing previous appraisal reports and other documents already in the office.

Step 3: Reviewing Information Sent to the Operations Office

Information sent to the operations office is reviewed to (1) determine if the response is complete and if additional information is needed, (2) identify possible problems in the area being appraised, (3) identify possible problems in related areas, and (4) plan the lines of inquiry to be followed during the on-site appraisal.

Additional information can be requested if the information submitted is incomplete. The review of the contractor's internal environmental audit could lead to a decision to appraise additional modular areas. Such a decision would require a reexamination of the proposed appraisal (Step 1) and another request for additional information (Step 2).

Following receipt of all requested and necessary information, the operations office staff can review the submitted materials and prepare for the appraisal. The staff can develop a plan that will focus on-site appraisal activities on problem areas. Thus, time spent on site will be used more effectively.

Each module includes sections on reviewing these requested materials. These are entitled "Review of Requested Information" and "Follow-Up to the Internal Audit Checklist." The "Follow-Up" section is keyed to the questions and responses in the contractor's internal environmental protection audit.

Following completion of the initial review, the operations office can:

- Conduct an on-site management appraisal (Step 4),

- Conduct an on-site intensive appraisal of selected areas (Step 5),
- Conduct an on-site review of documentation, procedures, and practices in selected areas (Step 6), or
- Conduct any combination of the above three reviews.

Step 4: Conducting the On-Site Management Appraisal

The on-site management appraisal should focus exclusively on environmental management policies and practices of the contractor's overall environmental protection program. Areas appraised should include: documentation of responsibilities and authority, management support of environmental programs, implementation of DOE orders and operations office directives, staffing, training, budget, information transfer, organizational structure, and internal environmental protection audits. Module 2, General Facility Information, gives guidelines for operations office staff to use in planning and implementing the management appraisal.

Several other modules call for a review of the same areas (i.e., staffing, training) that are reviewed in the management appraisal. These questions within the individual modules apply only to the specific areas being appraised.

Step 5: Conducting the On-Site Appraisal of Specific Environmental Areas

The on-site appraisal should start with plans developed in Step 3, which can be used as the basis for on-site discussions with facility personnel. These discussions should focus on the questions that were developed during the review of information sent to the operations office. Additionally, any material or information not received as a result of the information request (Step 2) should be reviewed on site. The basis for this appraisal should be the section of the module entitled "Follow-Up to the Internal Audit Checklist."

During the on-site appraisal, the facilities and equipment associated with the area being appraised should be inspected. For example, if the Spill Prevention Control and Countermeasure Plan were being appraised, the following items would be inspected: dikes and drainage control for storage and unloading areas, emergency response equipment and equipment storage, and drainage patterns from storage facilities. The operations office staff should decide which items to inspect -- all or just a selected number -- on the basis of the materials reviewed in Step 3.

Step 6: Conducting the On-Site Document Review

While Step 5 is primarily an interview process, the document review involves an in-depth analysis of written records to confirm that the facility's policies and programs are being correctly implemented and documented. This step can supplement the on-site discussions (Step 5), or it can be conducted independently.

Each module includes a section titled "Document Review." Using this guide, the operations office staff can choose specific documents to review. The staff's choice should be based on perceived problem areas. The results of the office review (Step 3), as well as the staff's knowledge of the site, will dictate which questions should be addressed and which documents should be reviewed. In contrast to the Review of Requested Information, the Document Review is an on-site examination of a facility's files and records. Its purpose is to confirm that specific incidents (for example, a hazardous waste spill) are properly documented from beginning (the spill) to end (cleanup and reporting).

Step 7: Preparing the Appraisal Report

The appraisal process should culminate in a report discussing the appraisal findings and recommendations. This report should address all of the steps outlined in this appraisal guide -- from Step 1 (Selecting Areas to Review) through Step 6 (Reviewing Documentation). Decisions and conclusions reached after each step should be summarized and the factual basis for such decisions and conclusions presented. Figure 2 displays the suggested contents for a report on an operations office appraisal of an operating-level facility.

Step 8: Following Up on Corrective Actions

As noted in Fig. 2, a section in the report covers agreements and commitments for corrective action. The procedures for this activity, which are left to the discretion of the operations office, require follow-up activities to confirm that the agreements are kept and corrective actions taken.

The operations office should determine the status of corrective actions with relation to the appraisal findings and resultant agreements and commitments. The staff can follow up on these actions through (1) written communications, (2) review of revised documents, or (3) reevaluation after reported implementation. Documentation must be maintained to confirm that corrective actions were taken and that the operations office staff was aware of and approved these actions.

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2 GENERAL FACILITY INFORMATION (MANAGEMENT APPRAISAL)

REGULATORY OVERVIEW

The assessment of general facility information in this module is not based on any specific federal laws or regulations. However, DOE 5482.1A requires that field organizations conduct management appraisals of ES&H programs of subordinate field activities. The overall environmental management program is the framework used to assure that regulations are adhered to, policies and procedures are followed, and overall environmental concerns are managed. There are no set standards for evaluating this type of program because both the formality and complexity of the program may vary widely. However, regardless of the particular structure, most environmental management programs incorporate several key interrelated functions including organizing, communicating, planning, and reviewing.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Although a management appraisal should be conducted on site, reviewing certain documents before the site visit will help the appraiser focus on key areas and formulate additional questions. Certain aspects of a facility's internal management system, however, may not be documented or described in writing. When this is the case, the appraiser should have facility personnel describe those procedures or protocols that are not documented in writing during the site visit. The information to be requested falls into four general categories: organization and administration, communication, planning, and review. The following list describes what documents to request.

Organization and Administration

1. Organizational charts or narrative materials that outline the structure of the environmental management program.
2. Documents that assign staff members responsibility for specific environmental management functions.
3. List of environmental protection staff members, their qualifications, and percentage of time spent on environmental protection functions.
4. Memoranda or directives that establish staffing priorities.
5. List of training courses that environmental protection staff members have attended in the last three years.

Communication

6. Directives or memoranda that describe communication and reporting procedures.
7. Directives that describe facility procedures for communication with the operations office; federal, state, or local agencies. the public.

Planning

3. Procedures or directives for implementing DOE orders, as well as operations office directives and any other policy statements and requirements established by facility management for the environmental protection program.
9. Directives or memoranda for proposing environmental protection program needs (e.g., staffing, training) and incorporating them into the planning process.
10. Directives or memoranda for proposing and evaluating pollution control projects.
11. List of environmental protection programs or projects that are needed to achieve compliance with new and emerging regulations.

Review

12. Directives or memoranda describing the facility's system for developing, reviewing, and updating any environmental protection procedures.
13. Last two internal audit checklists.
14. Memoranda or directives describing the facility's system for reviewing and keeping up-to-date on regulations and DOE orders.
15. Documents describing the facility's system for tracking and handling repeated permit violations.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

Organization and Administration

1. Review organizational charts and narrative material to determine the following: who delegates the authority and responsibility for developing and implementing environmental protection programs, who has the major responsibility for environmental programs, what are the environmental protection responsibilities of division managers and project leaders, who does the environmental protection group report to if it is a separate group or division, and who acts as environmental protection manager or coordinator for environmental affairs.
2. Review documents that assign responsibility and authority for environmental protection functions to determine if responsibilities for the following are clearly defined: compliance with air quality, water quality, and hazardous waste regulations; liaison with the DOE operations office and federal, state, and local agencies; effluent monitoring, sampling, and analysis; maintenance of pollution control or testing equipment; and quality assurance.
3. Review the list of environmental protection staff members and their qualifications to determine if the number of staff members is adequate and if they have the appropriate experience.
4. Review memoranda or directives that establish staffing priorities to determine if there are defined criteria for establishing priorities when assignments conflict or overlap. During the site visit, the appraiser should determine whether frequent transfers of personnel and changing responsibilities make it difficult to maintain environmental protection staff and the continuity of environmental programs.
5. Review the list of training courses to determine if staff members have attended courses or received on-the-job training.

Communication

6. Review directives or memoranda describing communication or reporting systems to determine if procedures for communicating or reporting horizontally among environmental protection staff and vertically to management are clearly defined. Documents should also be reviewed to determine if specific written procedures exist for communicating information about environmental incidents such as oil spills, unusual discharges, or excess emissions, and if existing procedures ensure appropriate consideration of and follow-up on environmental compliance incidents or problems.

7. Review documents to determine if procedures are established for (1) communicating with the operations office, regulatory agencies, and public; and (2) reviewing and controlling public statements, particularly after an environmental release has occurred.

Planning

8. Review copies of procedures or directives to determine if (1) the environmental protection program is responsive to DOE's needs and requirements and (2) environmental protection activities are comprehensive and clearly defined.
9. Review memoranda or directives to determine how environmental protection program needs are incorporated into the planning process.
10. Review the protocol for pollution control projects to determine if criteria are established for evaluating projects and establishing funding and implementation priorities. At the site visit, follow up with questions on the effectiveness of the criteria for obtaining the desired funding.
11. Review the list of programs and projects to identify areas with needs and problems. At the site visit, follow up with questions on specific funding needs and scheduling requirements.

Review

12. Review protocol to determine if a mechanism is in place by which the facility can review and update procedures on reporting to facility management, maintaining equipment and facilities, and evaluating monitoring data.
13. Review the audit checklist to determine if internal audits are being conducted and if the checklists are complete. Determine whether positions on compliance status can be supported by documentation. At the site visit, follow up with questions on who conducts the audits, how audit results are reviewed, how recommendations are implemented, and how time schedules are established.
14. Review documents to determine if a system is in place to review and update information on federal, state, and local regulations; DOE orders; and supplemental memoranda on compliance with environmental protection regulations. Determine if the

responsibility for these tasks is clearly defined and if procedures are established for transmitting this information to appropriate staff members.

15. Review documents to determine if a system is established for tracking and handling permit violations. Also, determine if there are procedures for insuring that findings receive appropriate review, corrective action is taken where directed, and such action is verified. Determine who has responsibility for the process.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The follow-up inquiry is keyed to the responses on the contractor's internal environmental protection checklist. The General Facility Information module in the internal audit checklist differs from the other modules in that it provides general background information rather than information on environmental compliance or activities. Because of this difference, follow-up questions have not been included here.

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Written job descriptions for each individual. Resumes and position descriptions should be spot-checked to determine if individuals have appropriate experience. If the staff is weak in a particular environmental area, facility personnel should describe the steps that are being taken to create a new position or train existing staff.
2. Records of staff training and certification documents that are part of the training programs.
3. Reports or memoranda that document the internal reporting process for environmental releases or other problems. Determine if corrective actions have been recommended and implemented.
4. Files on federal, state, and local regulations and on DOE orders. Files should be well maintained, easily retrievable, and up-to-date.
5. Reports of site visits or inspections by regulatory agencies. Determine if any recommended corrective actions have been implemented.

6. Reports or memoranda that document investigations of past problems (e.g., a completed site inventory of hazardous waste or interviews with employees who are familiar with past waste-handling practices). Determine if all findings have been documented and if corrective actions have been recommended.

3 COMPLIANCE SCHEDULE

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to a facility's compliance with environmental protection standards. Although it summarizes certain requirements, it is not an all-inclusive analysis of the regulations. To fully understand the regulations, the appraiser must refer to the specific DOE and executive orders mentioned here.

Most of the material in this module emphasizes record keeping, tracking systems, and adherence to DOE orders. As such, no particular federal or state environmental regulations are cited here. The reporting requirements examined in this module should be consistent with DOE and executive orders and best management practices in responding to potential problems.

Both DOE orders and executive orders form the basis for most facility compliance schedules. Executive Order 12088, "Federal Compliance with Pollution Control Standards," orders federal facilities and activities to comply with applicable pollution control standards and procedures. The Office of Management and Budget (OMB) Circular A-106, entitled "Reporting Requirements in Connection with the Prevention, Control, and Abatement of Environmental Pollution at Existing Federal Facilities" (December 1974), is also applicable. This OMB circular specifies procedures for federal agencies to follow in carrying out Executive Order 12088.

Several other DOE orders also pertain to facility compliance schedules. These include DOE 5480.1, which sets forth standards and requirements to ensure control of pollution sources and compliance with federal environmental protection laws; DOE 5484.1, which delineates levels of investigation for different occurrences, standards for such investigations, and necessary corrective actions to be taken by DOE; DOE 5480.2, which establishes procedures for hazardous and mixed waste management; DOE 5440.1B, which sets forth departmental procedures for compliance with the National Environmental Policy Act (NEPA); DOE 5820.2, which establishes policies and guidelines for radioactive waste management; and DOE 5484.2, which specifies reporting requirements for unusual occurrences that could affect the environment. Finally, DOE 5500.4 addresses steps to be taken for public interactions during events that could have environmental impacts on the general public.

If a facility has some environmental problems, maintaining an efficient tracking and record-keeping system is important to ensure that pollution control goals are met. Such a system represents good management practice and provides a documented record of compliance efforts. This module also examines other aspects of good management practices; for example, interacting with the public about environmentally-related complaints. Finally, much activity at DOE sites relates to the development of innovative technology. Best management practices for bringing these innovative technologies on line are also addressed.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Current programs, documents, or plans prepared to meet federal compliance standards. These documents should include pertinent correspondence on internal budgetary matters and external regulatory requirements.
2. Current memoranda of understanding or compliance schedule orders from regulatory agencies.
3. Current consent decrees from regulatory agencies.
4. Current agreements with regulatory agencies about alterations of environmental controls at the facility.
5. Summary of compliance orders, consent decrees, and agreements with regulatory agencies that were in effect at any time during the last three years.
6. Summary of any ongoing correspondence or discussions with regulatory agencies about specific noncompliance situations at the facility.
7. Summary of ongoing or planned projects that involve, at least in part, environmental control systems. These projects would include those that incorporate innovative technologies. This summary should exclude any activities under way as a result of consent decrees, compliance orders, and agreements with regulatory agencies as requested in items 1-4 above.
8. Procedures for handling and documenting complaints from the public.
9. Summary of all public complaints received in the past three years.
10. Latest annual environmental report.
11. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review compliance plans or programs to ensure that:
 - Proper protocol has been followed; that is, all cognizant parties have signed the program. These parties should include appropriate staff members from the facility, the operations office, and DOE headquarters.
 - Proper materials have been prepared for budgetary approvals with the involvement of appropriate DOE staff members as above.
 - The plan or program is consistent with documented agreements with regulatory agencies.
- 2-4. Review copies of compliance schedules, consent decrees, and regulatory agreements to determine progress in meeting the terms of these agreements and any potential problems.
5. Examine the summary of compliance orders, consent decrees, and regulatory agreements in effect during the past three years to ensure that:
 - Goals listed in these documents have been met.
 - Follow-up documentation shows that issues have been resolved.
6. Review the summary of discussions and correspondence with regulatory agencies to determine the magnitude of any specific noncompliance situation's potential impact on the facility in terms of cost and control needs.
7. Review the summary of innovative projects to ensure that:
 - Mechanisms for dissemination of data are in place.
 - Proper contact is maintained with regulatory agencies.
 - Proper accounting systems are maintained and DOE and other agency funds for research and development are appropriated correctly.

- 8-9. Review complaint procedures and summaries of complaints to ensure that proper procedures are in place and that the public has been dealt with courteously and efficiently.
10. Review the latest annual report to determine if it adequately portrays compliance status to the public.
11. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 3 of the internal audit checklist, Compliance Schedule. Follow-up questions are directly related to questions in the checklists (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
1	Yes	What is the nature of the violation?
1.1	No	What program is under way to develop a plan? Have the operations office and regulatory agencies been notified of the plan status? If no plan is to be developed, provide documentation as to why not.
1.3	No	What steps are being taken to ensure that funds are budgeted for this activity?
2.2 3.2 4.2 7.2	No	What is used in lieu of a formal tracking system?
9.5	No	Are files kept on public complaints? Are any data kept on the frequency of repeat complaints? Are any data kept that document corrective actions?
10	No	How does the facility keep track of and properly adhere to DOE environmental orders?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Compliance orders, consent decrees, and regulatory agency agreements for the last three years. Spot-check to ensure that the terms of the documents were met, the proper documents were filed, and the appropriate level of environmental control was achieved.
2. Program plans for innovative technology activities. Review to ensure that (1) a tracking system has been developed and is up-to-date, (2) DOE and other funding agencies are kept up-to-date on program developments, and (3) all necessary environmental permits are obtained.
3. Complaint procedures and files. Spot-check to ensure that response to the public is appropriate and courteous and that no major problems remain. The spot-check should also ensure that correspondence to the public and the DOE operations office is complete.
4. Files of DOE and executive orders and DOE operations office directives. Review to ensure that files are complete and up-to-date.

4 NONRADIOACTIVE AIR POLLUTION

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to nonradioactive air pollution. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

The current federal and state structure for regulating air pollutants was established by the Clean Air Act Amendments of 1970 and 1977. This structure maintains state and local governments as the focus of regulatory activity but gives the federal government, through the U.S. Environmental Protection Agency (EPA), the responsibility for establishing minimum air quality and regulatory goals that must be achieved. If these goals, which include compliance deadlines, are not achieved by the states, the U.S. EPA will take specific regulatory action to ensure compliance. State and local air-quality regulations may be more stringent than those of the U.S. EPA. The major components of the current Clean Air Act that establish this federal and state structure are described below.

National Ambient Air Quality Standards and State Implementation Plans

On the basis of published data on the health effects of designated pollutants, the National Ambient Air Quality Standards (NAAQS) established minimum standards for ambient air quality that must be attained by the states within prescribed schedules. Standards have been promulgated for sulfur dioxide, particulates, carbon monoxide, ozone, hydrocarbons, nitrogen oxides, and lead. Strategies for limiting mobile and stationary emission sources to attain and maintain the NAAQS are defined in State Implementation Plans (SIPs), which are developed by each state and must be approved by the EPA.

New Source Performance Standards

Emissions standards have been established by the EPA for certain categories of major new or modified emission sources as a means of preventing future air quality problems. Facilities testing innovative technologies can obtain waivers for these New Source Performance Standards (NSPS).

National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAPs) are set for pollutants such as beryllium, asbestos, mercury, and vinyl chloride; that is, pollutants that present a serious health risk, but for which no ambient air quality standard is applicable. The NESHAPs limit emissions of these designated pollutants from both existing and new stationary sources.

Prevention of Significant Deterioration

Prevention of Significant Deterioration (PSD) regulations are intended to maintain air quality to within a specified increment of a base existing value, even if the base value is significantly below the NAAQS. Areas covered by PSD regulations are designated as allowing only minor (Class I), moderate (Class II), or significant (up to NAAQS limit, Class III) degradation of air quality.

The PSD regulations require preconstruction review of new or modified sources if the source (1) has the potential to emit 100 tons/yr of the pollutant in question and is within one of 26 designated source categories or (2) has the potential to emit 250 tons/yr and is not in one of the 26 categories.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Most recent inventory of pollutants from point sources.
2. Summary of the most recent fugitive emission or nonpoint source survey.
3. Correspondence with regulatory agencies that relates to specific noncompliance situations at the facility.
4. Summary of ambient-air monitoring data collected from surrounding areas (within 10 km) within the last three years.
5. Summary of the estimated contribution of facility emissions to air pollutant concentrations in the surrounding area.
6. Summary of plans for construction or modification of facility operations that will affect air pollutant emissions, or related plans sent to DOE within the last three years.
7. Emergency or episode plans that outline procedures to protect the public in case of high-level releases of air pollutants.
8. Reports describing any accidental releases of atmospheric pollutants during the last three years that could have significantly affected the public or the off-site environment.

9. Reports submitted to regulatory agencies to meet the reporting requirements of NESHAPs.
10. Public complaints in the last three years that relate to facility atmospheric emissions.
11. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review the pollutant point-source inventory to determine if it contains: permit or compliance status, if applicable; date of inventory of all criteria pollutants or designated hazardous pollutants; control procedures; and major recent changes in inventory.
2. Review the fugitive and nonpoint emission survey to determine if it covers all major storage and processing facilities and equipment for volatile organic compounds or other gaseous emission sources. Determine the procedures used in the survey (e.g., walk-through with mobile sensors, continuous stationary monitors, or engineering analysis of potential sources).
3. Review correspondence with regulatory agencies on noncompliance situations to identify concerns that must be addressed further. Determine if plans are under way to resolve the noncompliance status. Determine if all reporting and interaction with regulatory agencies is going through the operations office.
4. Review the summary to determine if the facility is in an existing or potential NAAQS nonattainment area, or if PSD increments are being exceeded.
5. Review the summary to determine if the facility's contribution to ambient air quality problems requires any corrective action.
6. Review facility construction and modification plans to determine if they include detailed evaluations of impact on emissions, control procedures to be used, alternatives considered, cost, and permit application status.
7. Review emergency or episode plans to determine if they cover all possible situations, define responsibilities, and provide detailed, easily understood explanations of procedures.

8. Review reports on accidental releases to determine if they include extent and nature of release, public or off-site environmental impact, factors or incidences leading to release, and corrective action taken or planned to prevent reoccurrence.
9. Review reports to determine if all reporting requirements are being consistently met.
10. Review public complaints to determine if they relate to situations requiring corrective action to meet regulatory constraints.
11. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 4 of the internal audit checklist, Nonradioactive Air Pollution. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
2	No	Determine why point source emissions have not been inventoried. Has a lack of qualified personnel or management support hindered such an investigation? Has the facility determined that an inventory is not required? If the facility has determined that an inventory is not required, this decision should be verified by checking the responses to questions 3, 6, 11, 13, 16, 20, and 24.
2.1		A completed data sheet for all major sources should be available. If data sheets are not available, determine why. For any source indicated as being out of compliance, or if compliance status is unknown, determine cause, nature of non-compliance, and corrective actions being taken or planned.

Audit Question Number	Facility Response	Follow-up Questions
2.2	No	Determine why hazardous air pollutants have not been inventoried. Has a lack of personnel or management support hindered such an investigation? Determine the problem and steps needed to correct it. If the facility has determined that an inventory is not required, can this position be documented?
3.2.1 3.2.2 3.3.2	No	Determine why reclaimed oil has not been tested for PCBs or other hazardous constituents.
3.4	No	What is the regulatory or other basis for not monitoring stacks? Have stacks been tested and do the results indicate compliance?
3.4.3		What actions are being taken or planned to correct deviations from monitoring or reporting requirements?
3.5	Yes	Disposal of ash, flue-gas desulfurization sludge, or other boiler operations waste must be addressed in either Module 9, Non-hazardous Solid Waste, or Module 13, Hazardous Waste.
4	No	Does the facility plan to institute a preventive maintenance program? If not, determine if plans have been hindered by a lack of personnel or management support and what steps are needed to correct such problems.
6.1 6.2	No	What is the regulatory or other basis for not requiring vapor recovery or monitoring?
6.5 7.2		What actions are being taken or planned to correct deviations from control, monitoring, or reporting requirements for fugitive emissions such as emissions from storage tanks?
8	No	What is the regulatory or other basis for not conducting a survey of fugitive emissions? If the facility processes or stores substantial quantities of volatile organics or other toxic materials, the site should be surveyed to ascertain proper maintenance of storage tanks, valves, compressors and pump seals, and other in-line equipment with the potential for leaks. Determine whether any corrective actions are planned for problem areas.
12		On what basis are schedules established for ambient monitoring of criteria pollutants and other nonradioactive pollutants?
13	No	Why was the contribution of facility emissions to surrounding ambient air quality not estimated?

Audit Question Number	Facility Response	Follow-up Questions
15	No	Are procedures planned for filing copies of regulations, standards, and DOE orders?
16	No	Is a formal compliance tracking procedure planned? When will it be operational?
17 18	Yes	What caused the delays in resolving noncompliance issues? What steps are under way to resolve the issues?
19	Yes	What is the planned compliance date? Will this schedule be met? If not, what corrective actions are being taken?
22.1	No	What steps are being taken to develop the plan? When will the plan be complete? What additional actions are necessary to expedite development of the plan?
23.3	No	What caused the delay in filing the required notification? What corrective actions are required or are being taken to prevent future delays in notification?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Source monitoring data for the last three years. Determine if the data indicate procedures used, persons responsible, monitoring frequency, and clearly summarized results.
2. Permits. Determine whether all sources identified in the pollutant point-source inventory are covered by appropriate permits. Any discrepancies between the documented inventory and actual emissions should be identified and resolved.
3. Directives or memoranda that assign responsibility and authority for air pollutant management, including management of source monitoring, ambient monitoring, record keeping, emission inventories, maintenance, and corrective actions.

4. Written job descriptions for each individual. Spot-check resumes and position descriptions to determine if individuals have the appropriate experience.
5. Records of staff training and examples of certification documents that are part of training programs.
6. Documentation, plans, and procedures that pertain to the facility's program on accidental releases, maintenance, inspection, and reporting to management. Determine whether all procedures, responsibilities, and authorities are clearly defined.
7. Documentation, plans, and procedures that pertain to the air-quality monitoring program. Determine if the program adequately addresses the requirements of DOE 5484.1, Chapter III.
8. Reports or memoranda that document the reporting process for accidental releases and responses. Verify that corrective actions have been taken.
9. Stack monitoring records. Determine if they cite dates, test equipment and procedures used, monitor calibration, and responsible individual. Determine if the files are well organized and well maintained.
10. Maintenance logs. Determine if they cite inspection frequency, responsible person, problems identified, and maintenance performed. Determine if the files are well organized and well maintained.

5 ASBESTOS

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to asbestos. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

Both EPA and the Occupational Safety and Health Administration (OSHA) have published regulations to reduce exposure to asbestos. The EPA rules have focused on two aspects of asbestos in buildings: (1) the application of asbestos-containing materials in new or remodeled buildings; and (2) the identification of friable asbestos in schools. The EPA has also regulated (1) the emission of asbestos fibers from the handling of asbestos in manufacturing operations and (2) the disposal of asbestos-containing waste. The OSHA regulations address worker protection in asbestos work places.

The EPA regulates the removal and disposal of asbestos materials from ceilings, walls, pipes, and other surfaces in buildings under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations. The regulations require wetting of the asbestos material before, during, and after stripping to prevent dust emissions. The regulations define "stripping" as taking asbestos off ceilings, walls, pipes, and other structures. "Removal" refers to taking stripped asbestos material out of the building for disposal. If material cannot be removed because of freezing temperatures or damage to equipment by water, the EPA must be notified. In some cases, removal of dry asbestos material requires written permission from EPA.

Stripped asbestos material must be placed in leak-proof containers while still wet before removal from the building. Containers of asbestos material may not be dropped out of windows or down from one floor to the next. Asbestos material must be transported within the building in containers or dust-tight chutes.

Containers must be marked with a warning label and buried in a waste disposal site meeting the requirements of Section 61.25 of the EPA regulations. A state-approved sanitary landfill is an acceptable disposal site.

Before any asbestos removal begins, written notification, containing specific information, must be forwarded to the EPA NESHAP coordinator. The EPA NESHAP coordinator will notify the OSHA office for that area where removal is planned.

The OSHA regulates work place practices and the airborne concentrations to which asbestos workers can be exposed. These OSHA concentrations apply to removal, encapsulation, and enclosure operations involving asbestos materials. The OSHA has also established limits on the amount of airborne asbestos to which a worker may be exposed on a daily basis.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Studies and investigations conducted to identify asbestos insulation or asbestos-containing materials.
2. List of demolition and renovation projects that involve friable asbestos and have been completed in the last three years or are under way.
3. List of off- and on-site disposal operations where asbestos has been disposed of within the last ten years.
4. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Although no regulatory requirement directs the identification of asbestos materials in buildings other than schools, the facility should have conducted an investigation to identify where asbestos materials exist. Review the study to confirm that laboratory analysis was used to identify asbestos. If removal of asbestos material is warranted, determine whether a time schedule and procedure have been established for asbestos removal.
2. Review the list of demolition and renovation projects to determine if proper procedures were followed. Were notification letters submitted to the EPA; were removal, containment, and labeling requirements followed; and was a state-approved disposal site used?
3. Review the list of disposal operations to determine if the disposal sites have been properly closed and maintained or if active sites are following proper disposal practices.

4. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLISTS

The following tabulation is keyed to the responses in Module 5 of the internal audit checklist, Asbestos. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
1	Yes	Where and how is asbestos used? Review possible sources of emissions; is there a potential for release of airborne emissions? If yes, what controls have been provided to prevent visible emissions to the outside air? Is there is a routine maintenance program for emissions control equipment? Is there an active monitoring program for asbestos? How are waste products (nonairborne emissions) from the manufacturing operation handled?
2	Yes	Does the facility have a written plan for removal of all friable asbestos or an active maintenance program that fully encloses the asbestos material and eliminates airborne particulates? Does the plan include specific procedures for removal and disposal of asbestos-containing materials?
4	Yes	Does the facility have written procedures on the handling and disposal of asbestos at the on-site landfill? Does the facility have a state permit for the disposal operation? If the disposal site is inactive, are there written procedures on inspection and maintenance of the closed site?
4.1 4.2	Yes	For any of the subquestions that are answered no, determine why and what plans or programs are under way to correct the situation. Determine status and expected completion date.

Audit Question Number	Facility Response	Follow-up Questions
5	Yes	What records are available that document asbestos disposal procedures, including labeling of containers? What disposal sites were used? Does the facility have documentation that the disposal sites had valid permits? Have these sites been assessed to determine if any residual problems exist?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Inspection and maintenance records. Do the files indicate that a routine inspection program is in place? If the inspection logs indicate that a problem was found, are subsequent repairs documented?
2. Letters to the state and EPA notifying them of the facility's intent to demolish or renovate a building or equipment that is covered or located with friable asbestos material. Are letters filed for all demolition or renovation projects that have been completed or are under way?
3. Records of asbestos waste disposal. Determine whether the records include documentation of proper labeling, containment, and use of a disposal site with a valid permit.
4. Policies and procedures for identification, inspection, removal, and disposal of asbestos materials. Determine whether the procedures, responsibilities, and authorities are clearly defined.

6 WATER POLLUTION CONTROL

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to water pollution control. Although it summarizes certain requirements, it is not an all-inclusive analysis of the regulations. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

The Federal Water Pollution Control Act of 1956 was amended by the Water Quality Act of 1965, the Clean Water Restoration Act of 1966, and the Water Quality Improvement Act of 1970. These acts required the states to set ambient water quality standards and develop implementation plans to achieve these standards. The Federal Water Pollution Control Act Amendments of 1972 replaced the language of the original act and its amendments entirely. These changes emphasized a new approach to regulating water pollution -- that of combined water quality standards and effluent limitations. A strong federal enforcement program was created and substantial funds were made available to help municipalities implement the more stringent discharge standards.

The Federal Water Pollution Control Act was amended in 1977 by the Clean Water Act (CWA). The CWA regulates five sources of discharges: direct (point sources discharging into surface water); indirect (nonpoint sources including runoff from residential and farm land and discharges into publicly owned treatment works); sources of oil and hazardous substances; disposal of dredged or fill materials; and ocean-related discharges. These sources are controlled and administered through various agency programs. The programs overlap to some degree, as do the CWA and other federal statutes and acts.

Point Source Control

The National Pollutant Discharge Elimination System (NPDES) Permit Regulations (40 C.F.R. 122) provide the administrative and legal basis for controlling direct (point) discharges into the nation's waterways. Technology-based effluent guidelines and standards have been promulgated for 34 classifications of industries. These standards establish direct discharge limits for conventional pollutants (biochemical oxygen demand, total suspended solids, pH, fecal coliform bacteria, and oil and grease) as well as toxic pollutants (65 priority pollutants and classes of compounds, or 129 specific pollutants). Limits for conventional pollutants are to be met with the use of Best Conventional Pollutant Control Technology (BCT) by July 1984. The BCT limits consider the costs of treatment versus the benefits derived. Limits for the toxic pollutants are to be met with the use of the Best Available Technology Economically Achievable (BAT) by July 1984. Effluent guidelines and limits for nontoxic, nonconventional pollutants must be met with the use of BAT by July 1987. Because publication of the NPDES regulations for some industrial classifications was significantly delayed, some of these deadlines have been extended.

Dischargers who use, manufacture, store, handle, or discharge any toxic pollutant are required to develop and employ a management practices plan that prevents or minimizes the potential for the release of toxic or hazardous pollutants to the waters of the United States.

Discharges to Publicly Owned Treatment Works

Standards for pretreatment of wastewater discharges to publicly owned treatment works (POTWs) are covered in 40 C.F.R. 403. Regulations control and monitor discharges of nonconventional and toxic pollutants that pass through, disrupt, or in other ways adversely affect the operation, performance, or by-product sludge disposal of public treatment works. Specific pretreatment limits for existing and new industrial sources are defined for each respective industry in 40 C.F.R. 405-461. Regulation of the 129 toxic pollutants is emphasized. State and local pretreatment programs are required for any community with more than 50,000 people or a sewage flow over 5×10^6 gal/d and must have been approved by the federal EPA by July 1, 1983.

Oil Spill and Hazardous Materials Control

Because oil spills and hazardous materials are controlled by other plans, acts, orders, and regulations and are covered within Module 8, Spill Prevention Control and Countermeasure Plan, they are not discussed in this section.

Discharge of Dredged or Fill Material

The discharge of dredged or fill material is primarily a concern when new construction or modification of collection, treatment, or discharge facilities involves encroachment or modifications to shorelines, outfall structures, intake structures, pipelines, and other similar structures. The major responsibility for regulating the discharge of dredged and fill material resides with the U.S. Army Corps of Engineers. The EPA's role in this area is primarily one of review and assistance as necessary.

Ocean Disposal

The Marine Protection, Research, and Sanctuaries Act of 1972 and the Clean Water Act require EPA to (1) regulate ocean disposal (ships, outfalls, and dumping), (2) designate disposal sites, (3) develop ocean-related policies, and (4) help develop interagency programs for use and control of ocean resources. Currently, most ocean-disposed material comes from dredging operations by the Corps of Engineers. The EPA primarily identifies and surveys potential disposal sites. In addition, it works with other government agencies to insure that EPA participation is maintained in continuing and future uses of the ocean resources.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Correspondence with regulatory agencies that relates to specific noncompliance situations at the facility.
2. Description of any recent significant changes in manufacturing processes or equipment, new sewer connections or construction, major changes in raw materials used, or other similar indications of activities that could signal a significant change in quantity or characteristics of raw wastes.
3. Studies of wastewater disposal, wastewater treatability, waste characterization, or other similar tests, investigations, or studies involving facility wastewaters.
4. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review correspondence on noncompliance to identify problems that must be addressed further. Also review correspondence to determine if all reporting and interaction with regulatory agencies is going through the operations office.
2. Review documentation on process changes and new equipment to determine if the resulting impact on wastewater treatment was considered. Determine if the impact on wastewater treatment was studied or if wastewater was characterized.
3. Review reports to determine if any deficiencies, potential noncompliance situations, or other problem areas have been identified.
4. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if

appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLISTS

The following tabulation is keyed to the responses in Module 6 of the internal audit checklist, Water Pollution Control. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
1	Yes	Request a summary of three years of monitoring data for each effluent requiring a discharge permit, and determine if any violations occurred.
1	No	Is a water distribution and sewer collection map for the facility available? Determine where the used water (domestic, cooling, fire, process, storm) goes, and if permits are necessary.
3	Yes	Why was water use surveyed? Was anything done as a result of these efforts?
4	Yes	When was the sewer map last updated and how often is it updated? Has the map been spot-checked in the field for accuracy?
4	No	Why does no sewer map exist and what plans does the facility have to prepare one?
6	Yes	Are process and sanitary flows treated or discharged separately? Confirm that valid permits exist for each discharge.
9	No	What limits are exceeded and how often are they exceeded? Have any corrective actions been implemented?
10	No	On what basis has noncompliance been predicted?

Audit Question Number	Facility Response	Follow-up Questions
11		What laboratory performs the required analyses? Is the laboratory certified? Who collects samples for compliance testing? How often, how, and where are samples collected? How are samples preserved? What analyses are performed? What parameters are monitored in the field?
12	Yes	Where do wastewater discharges go? Do such discharges violate any limits or regulations or create any other problems?
13		Determine what alternatives the wastewater treatment plant operator has during abnormal operating conditions. Have the wastewater treatment plant operator and manufacturing personnel communicated about potential problem discharges to the wastewater treatment plant? What tests does the operator run during abnormal operating conditions?
15 16	No	Determine if permits for residual solids disposal need to be obtained. On what basis are residual solids classified as hazardous or nonhazardous? Are any studies or programs under way that address residual solids classification and disposal alternatives?
18	Yes	Determine the cycles of concentration for the recycled cooling systems. What inorganic chemical constituents and concentrations are present?
19	No	On what basis has the facility forgone a cooling-water discharge permit?
20	Yes	What are recovered oils used for? Have the recovered oils been analyzed for polychlorinated biphenyls (PCBs)?
21	No	What standby or backup is provided to maintain integrity of operation during emergency outages? Is it sufficient to meet state design and safety criteria? Are key spare parts kept on site?
23	Yes	Is biomonitoring of the discharge stream required? What are the monitoring frequency and results to date? Do any outfalls have a diffuser? Has the U.S. Army Corp of Engineers approved the structure?
25	Yes	Do categorical effluent standards and guidelines apply to manufacturing activities conducted at the facility? If so, is pretreatment required? Determine if the publicly owned treatment facility has a permit program. Are monitoring and reporting required? What do the current monitoring results show?

Audit Question Number	Facility Response	Follow-up Questions
29	Yes	Are wastewaters analyzed with procedures defined in 40 C.F.R. 136? Is an approved quality assurance or quality control program in place? Determine the disposition of on-site laboratory wastes.
30	Yes	Determine results of effluent screening. Were any corrective actions implemented as a result of the screening?
30	No	Are any such tests planned?
31	Yes	Determine the principal pollutants addressed in the wastewater treatability study. What were the effluent quality or performance objectives? Were the study recommendations implemented or are they under way?
32 33	Yes	Determine if the specific provisions of the Safe Drinking Water Act-Underground Injection Control Program (40 C.F.R. 146) and RCRA 40 C.F.R. 265 Subpart K (Surface Impoundments) and Subpart R (Underground Injection) apply.
37	Yes	What are the procedures for documenting and acting on public complaints about wastewater handling?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Policies, procedures, and practices regarding employee training, equipment inspection, equipment and process operation, preventive maintenance, and housekeeping and general cleanup. Spot-check logs and other records to determine if policies and procedures are being followed.
2. Documentation, plans, and procedures that pertain to the water quality monitoring program. Determine if the program adequately addresses the requirements of DOE Order 5484.1 Chapter III.
3. Sampling and sample preservation procedures. Check logs to determine if procedures are followed and sampling frequency and location are adequate. Visually review sampling procedure during site appraisal.

4. Job descriptions for personnel involved in water pollution control and operation of the wastewater treatment plant. Determine if responsibilities are clearly defined and assigned.
5. Training records for each individual with responsibilities in water pollution control and certification documents that are part of the training program.
6. Documents that define staff responsibilities and reporting requirements for water pollution control. Determine if lines of communication, reporting procedures, and responsibilities are clearly defined.

7 ENVIRONMENTAL RELEASES OF RADIONUCLIDES

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to the environmental release of radionuclides. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

Department of Energy Order DOE 5480.1A, entitled Environmental Protection, Safety, and Health Protection Program for DOE Operations, states DOE policy on protection of the environment and safety and health of the public. Protection from radioactive releases is specifically covered in Chapter XI, Requirements for Radiation Protection. Chapter XI establishes radiation protection standards for DOE and DOE contractor operations on the basis of recommendations of the EPA and the National Council on Radiation Protection and Measurement. Chapter XI requires that radiation exposures to the public from DOE operations be as low as reasonably achievable (ALARA) within the applicable dose limits. Under the primary radiation standards, annual dose to the maximally exposed member of the public shall not exceed 0.5 rem to the whole body, gonads, or bone marrow, or 1.5 rem to any other organ of the body. The average dose to an exposed population group is limited to one-third of these. These dose limits impose ceilings for any planned or expected releases. Since radiation protection guides for the general public are based upon averages over a period of one year or longer, the evaluation of long-term average exposures considers reasonable annual occupancy factors as well as the variability of the exposure rates. Current DOE radiation standards cover exposure to the human population only. Although radiation effects on local biota may be postulated, no standards exist for their evaluation and it is generally accepted that human dose limits will be more than adequate to protect other biota. Compliance with Chapter XI limits is not in itself sufficient, unless a facility can demonstrate that actual doses to the public meet ALARA criteria. Chapter XI requirements are currently being revised by DOE.

Although the basic environmental standards are expressed as dose or dose commitment, routine environmental protection is obtained through effluent measurement and control. Thus DOE 5484.1 requires DOE to monitor, evaluate, and report on-site discharges, liquid and airborne effluents, and environmental conditions near DOE sites and to assess the levels of radioactive and nonradioactive pollutants and their impacts on the public and the environment. Chapter III of this order outlines the reporting requirements for effluent and environmental monitoring, which include requirements for monitoring new sites, processes, and facilities as well as existing sites. Monitoring must be conducted to comply with the requirements of DOE 5480.1, Chapters I, XI, and XII. An environmental monitoring report must be prepared annually to summarize and interpret the levels of radioactivity. The facility must also report to the DOE Headquarters emergency operations center any accidental release of pollutants that could have a significant effect on the public or off-site environment, or any discovery of significant radioactive or nonradioactive contamination in the environment attributable to current or past DOE operations.

The Environmental Protection Agency, pursuant to Section 112 of the Clean Air Act, has recently proposed standards for sources of emissions of radionuclides to air from DOE facilities. When these standards are finalized, DOE may develop additional guidance documents that reflect these new requirements.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. DOE Form 5821.1, Radioactive Effluent/Onsite Discharges/Unplanned Releases, submittals for the last three years.
2. Reports to management during the last three years on unmonitored planned effluents.
3. Reports (including those required by DOE 5484.1, Chapter I, Notification of Occurrences) on unplanned effluents that were discharged during the last three years, including reports on unmonitored, unplanned effluents.
4. Environmental assessments, reports, and memoranda on new or increased sources of radionuclide releases planned in the next three years.
5. Procedures or plans that describe the environmental monitoring program including groundwater monitoring.
6. Annual environmental monitoring report.
7. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review DOE Form 5821.1 submittals to determine:
 - Processes at the facility that produce planned radioactive releases,

- Magnitude and radioisotope content of the releases,
 - Noticeable trends in releases at the facility, and
 - Releases that exceed the standards in DOE 5480.1A, Chapter XI, Fig. XI-2.
2. Review reports on unmonitored planned effluents to determine:
 - Releases that are routinely not monitored and reasons for the lack of monitoring;
 - Likelihood of unmonitored planned effluents in the future; and
 - Trends in the occurrence of unmonitored planned releases.
 3. Review reports on unplanned effluents to determine:
 - Processes that have a history of unplanned releases,
 - Quantities of radionuclides released and resulting maximum human exposure, and
 - Relevant information in the Notification of Occurrence documentation.
 4. Review environmental assessments, reports, and memoranda on increased or new sources of radiological releases to determine if appropriate plans are being made to comply with the standards in DOE 5480.1A, Chapter XI, Fig. XI-2.
 5. Review the monitoring program plan to determine if it meets any permit requirements and the requirements of DOE 5481.1, Chapter III.
 6. Review annual environmental monitoring report to identify any problem areas that were noted and to determine if all radionuclide monitoring issues are adequately addressed.
 7. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 7 of the internal audit checklist, Environmental Releases of Radionuclides. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
4.1	Yes, No	Do any exposures exceed the standards in DOE 5480.1A, Chapter XI, Fig. XI-2? Is the plant being modified to correct the problem?
4.2.1- 4.2.9	No	Why were these methods of estimating uncontrolled area exposure not used? Which methods of estimation were used?
4.3	Yes	What plans or programs are under way to decrease exposure trends in uncontrolled areas?
5	No	What criteria are being used to control radioactivity exposures of the public in uncontrolled areas? Are these criteria consistent with DOE 5480.1A, Requirements for Radiation Protection?
6.2	Yes	By how much do current exposure rates in uncontrolled areas exceed the maximum levels of DOE 5480.1A? How long have excess levels occurred? Determine the immediate cause of these excessive releases and the length of time before exposures are brought below the maximum level through the use of a new facility.
6.3		What percentage reduction in releases will result from the facility upgrade? Would other alterations to the currently planned facility upgrade result in greater percentage reductions? If so, why were these alternatives not incorporated into the planned facility upgrade? Will they be considered in the future?
6.5	Yes	Do budget requests include the funds necessary to meet environmental pollution control standards? Do existing pollution abatement plans for radionuclide releases meet Executive Order 12088 and all regional, state, and local standards?
	No	Determine why a plan has not been prepared.

Audit Question Number	Facility Response	Follow-up Questions
7	Yes	Has the documented plan for protecting individuals in uncontrolled areas during unplanned releases been approved by the DOE operations office staff?
	No	What plans or programs are under way for protecting individuals in those areas? Determine status and projected completion date.
8.2	No	Was the maximum public exposure from unplanned releases too small to be measured? Was the release unmonitored at the source? If so, were technical or human failures responsible for the release being unmonitored? Would changes in equipment or procedures improve the facility's capability to monitor this type of release if it occurs again? Can radiation monitoring of uncontrolled areas be improved so that exposure from similar unplanned releases can be measured?
8.3.1	No	Why was DOE Headquarters not notified within 24 hours? What plans or procedures are being considered to assure more timely reporting?
8.3.2	No	Why was a DOE investigation not completed?
9	No	Determine how the facility selects, tests, and calibrates equipment. Are procedures based on the recommendation of any national or international organization?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Policies and procedures relating to reporting, testing, radiological monitoring, dose assessment, and record keeping. Determine if procedures, responsibilities, and authorities are clearly defined. If any releases have occurred, review all correspondence documenting that the release was reported according to the guidelines of DOE 5484.1, Chapter I, Notification of Occurrences.
2. Written job descriptions for each individual. Spot-check resumes and position descriptions to determine if individuals have the appropriate experience. Specifically, are health physics personnel

adequately trained to perform radiological monitoring and calculate doses?

3. Training records for each individual involved in the radionuclide area and examples of certification documents that are part of the training program.
4. Files on planned and unplanned releases. Determine if files include the required information, are in order, and are well maintained.
5. Reports or memoranda that document how management is informed of unplanned releases or deviations in expected planned releases. Verify that corrective actions have been taken.
6. Reports of memoranda that document the reporting of unplanned releases to the DOE Field Office, the EPA, and the NRC.
7. Facility records of the monitoring of planned and unplanned releases. Check facility records against those of state, local, or regional authorities whenever possible.
8. Instrument maintenance and calibration procedures. Review as part of laboratory quality assurance (see Module 17).

8 SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

REGULATORY OVERVIEW

This section provides an overview of those laws and regulations applicable to spill prevention control and countermeasure plans. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

Regulations promulgated by the EPA focus on preventing oil spills that could reasonably be expected to discharge into surface waters. The regulations' main thrust is the preparation and implementation, by each facility, of a Spill Prevention Control and Countermeasure (SPCC) plan, which must be certified by a registered professional engineer.

Although SPCC plan requirements specifically deal with oil storage, several other federal regulations require or suggest the need for expanding SPCC plans to encompass toxic and hazardous substances and hazardous wastes. Some states have also enacted regulations that require spill control plans for toxic and hazardous substances. A brief summary of these requirements and how they interact with the SPCC plan follows.

- Federal Regulation 40 C.F.R. 112, Oil Pollution Prevention, outlines the requirements for SPCC planning as it pertains to oils. At present, 40 C.F.R. 116, Designation of Hazardous Substances, and 40 C.F.R. 117, Determination of Reportable Quantities for Hazardous Substances, specify particular hazardous substances and reportable quantities that would result in liability and fines for any discharger. The requirement for spill prevention planning for these listed substances is implicit in these regulations.
- Federal Regulation 40 C.F.R. 264, Regulations for Owners and Operators of Permitted Hazardous Waste Facilities, requires that any facility with an SPCC plan and permits for hazardous waste storage, treatment, or disposal must amend its SPCC plan to incorporate management provisions for prevention and control of hazardous waste spills.
- Federal Regulation 40 C.F.R. 761, Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions, regulates the use, storage and ultimate disposal of dielectric oils containing PCBs and implicitly requires spill planning control.
- Federal Regulation 40 C.F.R. 125, Criteria and Standards for the National Pollutant Discharge Elimination System, requires facilities with NPDES discharge permits to establish spill prevention and control measures for hazardous and toxic pollutants.

- Some states have adopted more-comprehensive regulations that cover accidental discharges of any polluting substance into the waters of the state. These regulations include requiring spill plans as part of more-comprehensive contingency plans for oils, hazardous and toxic substances, and any other pollutants that could threaten human health or the environment.

The purpose of an SPCC plan is to document procedures for handling and storing oils, and possibly hazardous substances and other materials of concern, and to prevent their uncontrolled discharge into the waters of a state. Consequently, the plan should focus on the potential release of oils and other substances by two routes: (1) storm sewers or other overland routes that flow into surface water or groundwater; and (2) industrial or sanitary sewers carrying materials that, by nature, are incompatible with that system or removal mechanisms at downstream treatment works.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. SPCC plan.
2. Summary of facility's spill history for last five years, including correspondence, memoranda, notices, analysis of cause, and remedial actions taken.
3. List of proposed or ongoing projects that affect oil storage, piping, or spill response.
4. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review the SPCC plan to determine if the following areas are adequately addressed: spill response procedures, secondary containment or diversionary structures, inspection procedures (especially for buried and above-ground tanks and pipes), maintenance and corrosion protection, unloading, spill prevention,

and training. Determine if the plan has been certified by a registered professional engineer within the last three years.

2. Review spill history records to determine if (1) spills were reported, (2) causes of spills were identified, and (3) corrective actions were implemented.
3. Review the proposed and ongoing projects to determine the required changes to the SPCC plan.
4. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine whether appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLISTS

The following tabulation is keyed to the responses in Module 8 of the internal audit checklist, SPCC plan. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
1.3	Yes	What specific circumstances result in reasonable chances for a spill?
2.0	No	What plans or programs are under way to correct this deficiency? Determine status and expected completion date.
3.1 4.1	No	What plans or programs are under way to incorporate these requirements and have the plan recertified?
6.0	Yes	Determine the cause of spill and the cleanup measures that were implemented. Has the facility taken adequate steps to prevent similar accidents?
7.2 8.1 8.3	No	What steps are being taken to meet these requirements? Determine status and expected completion date.

Audit Question Number	Facility Response	Follow-up Questions
7.2 8.1	Yes	Presence of these structures should be confirmed as part of the site appraisal.
8.2	No	What steps are being taken to meet these requirements? Determine status and expected completion date.
8.3	Yes	Presence of these materials should be confirmed as part of the site appraisal.
9.0	No	If the adequacy of the response procedures remains uncertain, the appraiser should request an emergency drill and witness the response as part of the site appraisal.

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Inspection logs. Determine if inspection procedures, documentation, and frequency of log entries follow the inspection program guidelines as written in the SPCC plan. These guidelines should cover the inspection of tanks, piping, rainwater releases, and repairs and corrective actions.
2. Job descriptions of personnel involved in handling, inspection, and spill cleanup, as described in SPCC plan. Determine if responsibilities for implementing the SPCC plan are clearly defined and assigned.
3. Training records for each individual with responsibilities for implementing the SPCC plan and certification documents that are part of training program.
4. Documentation of last two emergency response drills if such drills have been implemented. Determine if corrective actions were identified and implemented.
5. Documents that define staff responsibilities and procedures for implementing the SPCC plan. Determine if lines of communications, response procedures, and responsibilities are clearly defined. If any spills have occurred, review all correspondence that documents proper implementation of SPCC plan procedures.

9 NONHAZARDOUS SOLID WASTE

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to nonhazardous solid waste. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

Management of nonhazardous solid waste is regulated through individual state programs as required under 40 C.F.R. 256, EPA Guidelines for State Solid Waste Management Plans. If nonhazardous solid waste is disposed of in landfills, the waste is also subject to control under Subtitle D of the Resource Conservation and Recovery Act (RCRA) of 1976. Consequently, only general comments are provided in this section because specific regulatory requirements are the responsibility of each state.

Nonhazardous solid waste can include garbage, refuse and sludge, and other solid, liquid, semisolid, or contained gaseous material that is discarded, has served its intended purpose, or is a mining or manufacturing by-product. Most industrial and commercial by-products can qualify as solid waste. Domestic sewage, irrigation return flows, materials defined by the Atomic Energy Act, in-situ mining waste, and NPDES point sources are generally excluded from the nonhazardous solid waste category.

All states have an authorized permit program for nonhazardous solid waste disposal facilities, including incinerators and landfills. Most states also have regulations that cover storage, collection, transportation, and recycling. Federal guidelines, issued by the EPA, have been developed to help states provide a uniform minimum control level throughout the United States. These guideline regulations are listed below.

- 40 C.F.R. 240-241, Guidelines for the Thermal Processing of Solid Wastes and for the Land Disposal of Solid Wastes;
- 40 C.F.R. 243, Guidelines for Solid Waste Storage and Collection;
- 40 C.F.R. 244, Guidelines for Beverage Containers;
- 40 C.F.R. 245, Guidelines for Resource Recovery Facilities;
- 40 C.F.R. 246, Guidelines for Source Separation for Materials Recovery;
- 40 C.F.R. 247, Guidelines for Procurement of Products that Contain Recycled Material;
- 40 C.F.R. 254, Regulations on Prior Notice of Citizen Suits;
- 40 C.F.R. 255, Regulations for Identification of Regions and Agencies for Solid Waste Management;

- 40 C.F.R. 257, Regulations on Criteria for Classification of Solid Waste Disposal Facilities and Practices; and
- 40 C.F.R. 249, Guidelines for Procurement of Cement and Concrete Containing Fly Ash.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Studies or plans for the management or disposal of nonhazardous solid waste.
2. State inspection reports.
3. Correspondence with state and local agencies within the last three years about specific noncompliance situations at the facility.
4. Procedures or plans that describe the environmental monitoring program at the facility disposal site.
5. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review management or disposal studies or plans for nonhazardous solid waste to determine if they cover the following topics: identification of all nonhazardous solid waste generated at the site; recovery or recycling; material substitution to eliminate or minimize waste generation; storage and collection procedures and equipment; segregation of hazardous or radioactive waste from nonhazardous solid waste; evaluation of disposal alternatives, including energy recovery and resource recovery; and a plan or program for long-term management of nonhazardous solid waste.
2. Review inspection reports to identify any problem areas and operational limits or practices the facility must comply with.

3. Review correspondence with state and local agencies, including inspection reports on noncompliance situations, to identify problems that must be addressed further. Determine if plans are under way to resolve the noncompliance status.
4. Review the monitoring program plan to determine if it meets permit requirements and requirements of DOE Order 5484.1, Chapter III.
5. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLISTS

The following tabulation is keyed to the responses in Module 9 of the internal audit checklist, Nonhazardous Solid Waste. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
2	Yes	Determine the nature of the complaint or violation notice. Is a specific response required? What course of action has been implemented by the facility? If the complaint is associated with a nuisance (odors, dust, noise), what has been done to resolve the complaint? Does a follow-up file track the complaints until the problem is resolved?
4	Yes	What procedures were used to select the collection service? Is the collection service a licensed solid-waste transporter? Does the transporter have a valid license or permit to transport the type of solid waste generated by the facility?
5	Yes	What procedures were used to select the disposal service? Is the service a licensed solid-waste disposal facility? Has anyone from the facility visited the disposal site? Were any concerns noted? What were the concerns and what follow-up measures were implemented?

Audit Question Number	Facility Response	Follow-up Questions
6	Yes	Are trucks and equipment used only on on-site roads? If the trucks and equipment cross or travel public roads, are the trucks and equipment licensed? How are trucks cleaned? Where do cleaning residues (wash water, solid waste left in containers and truck bodies) go and how are they handled? Visually inspect storage containers, trucks, and other equipment to determine if they are in good condition and well maintained. Do containers have tight-fitting lids or covers? How is litter prevented from blowing away during transport?
7	Yes	What specific operating limits have been imposed? Does the facility have any groundwater or other monitoring programs in place? Are wastes monitored to insure that no hazardous or radioactive wastes are disposed of on site? Are acceptable operating practices used, including daily cover, run-off control, run-on diversion, and cover maintenance?
7.4	No	Is a program in place to correct the noncompliance situation? Is a specific time schedule established to correct the deficiency, and if so, are the milestones being met?
10	No	By what criteria does the facility classify a waste as nonhazardous?
11	No	What procedures are used for segregating hazardous waste from solid waste?
12	Yes	What wastes are used as supplemental fuel? Have these wastes been tested to ensure that no hazardous constituents are present (e.g., PCBs in waste oil)? Are the wastes retested at least annually?
13	Yes	Do test results indicate that emission limits are being met? How is incinerator residue (ash and fly ash) handled? Does the residue go to a disposal site with a valid permit?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Inspection records for nonhazardous solid waste disposal operations. Is pertinent information recorded, including name of

inspector, observations, date, problems noted, and names of persons informed of problems? Is follow-up documentation on correction of problems adequate?

2. Training records for personnel involved in the handling, transportation, or disposal of nonhazardous solid waste. Is training adequate?
3. Current licenses and permits of services currently under contract, if such services are used. Review the licenses and permits to check that the types of nonhazardous solid waste being handled are covered.
4. Policies and procedures for nonhazardous waste handling and disposal. Determine whether the procedures, responsibilities, and authorities are clearly defined.

10 DRINKING WATER

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to drinking water. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

The Public Health Service Act first established drinking water standards in 1914 to protect the health of the traveling public. After several revisions of the Public Health Service Act, the Safe Drinking Water Act (SDWA) was adopted in December 1974. The National Primary Drinking Water Regulations were developed as required by the act in 1975. The act was again modified with the addition of Total Trihalomethanes and Secondary Drinking Water Standards in 1979. In 1980 the Ground Water Protection Program was added to control underground injection and recharge of wastes and treated effluents. Future regulations are planned to control organic chemicals from pipe joint sealants and construction materials as well as impurities in water treatment chemicals. Additionally, more-specific limits are being investigated for a broader range of synthetic organic contaminants discharged to the environment and potentially present in surface water and groundwater.

The EPA regulations implementing the SDWA are presented in 40 C.F.R. 141, 142, 143, 144, 146, and 149. The regulations apply to any public water system that collects, treats, stores, and distributes water for human consumption if such system (1) has at least 15 service connections or (2) regularly serves an average of at least 25 individuals on a daily basis for at least 60 days of the year. These regulations do not apply if the system obtains all its water from, but is not owned or operated by, a public water system that falls under control of these regulations; does not sell water to any person; is not a carrier that conveys passengers in interstate commerce; and comprises only a distribution and storage network.

State Responsibilities

Each state is responsible for implementing and controlling water treatment systems. The SDWA enables the states to grant variances from applicable national primary drinking water regulations if the best technology treatment techniques are unable to produce the required water quality for raw water sources that are reasonably available to the supplier. Additionally, a variance may be granted by the state if the public water system can demonstrate that the use of the specified treatment technology to comply with primary drinking water regulations is not necessary to protect the health of persons because of the nature of the raw water source.

The SDWA also allows states to exempt public water systems under state jurisdiction from maximum contaminant levels or treatment technique requirements to meet the national primary drinking water regulations. Such exemptions can be granted if compelling factors (economics) prevent the public water system from complying, the

public water system was in operation on or before the effective date of the contaminant level or treatment technique requirement, and the granting of such exemption will not result in an unreasonable health risk.

Primary Drinking Water Standards

The primary drinking water regulations specify mandatory maximum levels for bacteria, turbidity, inorganic chemicals, pesticides, chlorinated organics, and radionuclides that adversely affect the health and safety of the consuming public.

Secondary Drinking Water Standards

The secondary drinking water regulations control contaminants in drinking water that primarily affect aesthetic qualities and influence public acceptance of the drinking water. These regulations are intended as guidelines to help the responsible states ensure provision of a palatable, potable water supply but are not federally enforceable. Water systems may deviate from recommended levels for these contaminants, depending upon local conditions or other compelling factors, as long as public health and welfare are not adversely affected.

Reports, Records, and Notifications

Water systems must report any required test measurement or analysis within ten days after the specified reporting month or monitoring period, whichever is shortest. Records of biological analyses must be kept for not less than five years, whereas records of chemical analysis must be kept for not less than ten years. Reports or other information relating to system inspection or sanitary surveys must be kept for not less than ten years. States can issue exemptions to the reporting requirements, given justifiable cause.

If test results show failure to meet any of the primary drinking water standards, such results must be reported to the responsible agency within 48 hours after such test results are known. Furthermore, system users must be notified of such noncompliance in the first set of water bills issued after the noncompliance or within three months, whichever is shorter. Also, notice of noncompliance must be published on at least three consecutive days in a public periodical that receives general circulation in the area served by the system. Such notification must be completed within two weeks after the noncompliance has been determined. Copies of mailed, published, posted, or otherwise distributed notices of noncompliance must be sent to the responsible agency within 10 days of such notification. Also, a copy of the published notice must be furnished to local radio and television stations serving the area within seven days after determination of noncompliance.

Groundwater Protection Program

To protect the underground water supply, the EPA has issued permit regulations for underground injection control (UIC) of waste. Authority is granted under the SDWA. However, since UIC can involve hazardous waste, treated wastewater, or toxic substances, it overlaps and must be coordinated with the provisions of the Resources Conservation and Recovery Act, the Clean Water Act, and the Toxic Substances Control Act. Permits are required for all injection wells. Certain wells are prohibited due to location, content, or proximity of underground drinking water sources. Underground injection control is really a control and regulation activity that is established to protect and preserve underground sources of drinking water. Therefore, unless such wells exist on the facility site, UIC need not be of concern in ascertaining compliance with drinking water standards.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Correspondence with state and local agencies about specific noncompliance situations at the facility.
2. Inspection manuals for the water storage and distribution system.
3. Appraisal reports on the water collection, treatment, storage, and distribution system. Such reports should discuss capacity versus use; inadequacies; performance and reliability; excessive operation and maintenance problems and costs; priorities and time tables for planned upgrading, replacements, or expansions; and other areas where surveys, costs, or operating results indicate a need for corrective action.
4. Records of causes and corrective actions for the following situations: interruptions of service, loss of water pressure or low water pressure, low groundwater table or low receiving stream flow, major maintenance events requiring a system shutdown, and other similar instances where water supply was interrupted or reduced.
5. Copy of last annual report filed with the state if the facility is a designated public drinking water supply.

6. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review correspondence and any supporting documentation about noncompliance situations to determine that causes for noncompliance were identified and corrective actions taken.
2. Review inspection manuals to determine if the inspection procedures include tests of pipes and fittings and any other tests that would identify unauthorized connections.
3. Review appraisal reports to determine if any deficiencies, potential noncompliance situations, or other problem areas have been identified. Determine if any corrective action is under way or proposed.
4. Review records on service losses and interruptions to determine what corrective actions were initiated and what steps were used to ensure that potable water was supplied at all times. Determine how the facility maintains potable water during such periods and how the distribution system is checked or maintained to prevent backflow or infiltration.
5. Review the annual report to determine if any drinking water standards were exceeded.
6. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 10 of the internal audit checklist, Drinking Water. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
3.3	Yes	Is chlorine used for disinfection? What is the total population served by this system? Is water analyzed for total trihalomethanes? Do sampling frequency and locations meet regulatory requirements?
3.4	Yes	Is fluoride added to the system? If so, is fluoride content monitored?
4.1-4.4	Yes	Do sampling frequency and location meet the regulatory requirements?
7	Yes	Was such noncompliance for primary drinking-water parameters reported to the regulatory agency within 48 hours?
7.2	Yes	Were retest requirements for the indicated parameters completed? Did they meet the regulatory requirements for parameters and frequency?
7.3		Was noncompliance reported to the regulatory agency within 48 hours? Were all public notice requirements met?
8	No	Why are radioactivity (gross alpha particle or radium-226, 228) chlorinated hydrocarbons, and chlorophenoxys not measured according to regulatory requirements?
	Yes	What analyses are conducted? Is screening complete and does it meet regulatory requirements for parameters and frequency?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Inspection and maintenance records. Do the records indicate that a routine inspection program is in place? If the inspection logs indicate that a problem has been found, are repairs documented?
2. Policy and procedures documents for the inspection and maintenance of the treatment and distribution system. Review the inspection logs to determine if the practices used comply with written policy and procedures.

3. Summary monitoring reports. Spot-check to determine if any noncompliance is noted. Review subsequent documentation that follows up on the noncompliance situation. Determine if analytical testing was completed within the required period and that all required notifications were made.
4. Files of analytical results and noncompliance situations. Determine if files are complete (all backup documentation present) and maintained for the minimum required periods.

11 TOXIC SUBSTANCES

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to toxic substances. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

The Toxic Substances Control Act (TSCA) of 1976 enables EPA to develop adequate data on the effects of chemicals on health and the environment and to regulate the use of toxic chemicals to reduce unreasonable risk of injury to health or the environment. It grants EPA the authority to (1) require industry to provide information on chemicals used and manufactured; (2) require industry to test the health and environmental effects of chemicals used and manufactured; and (3) control production, distribution, use, and disposal of certain chemicals that cause unreasonable risk of injury to health and the environment.

Regulations published to date cover two major areas: reports to EPA and restrictions on the production, use, and disposal of specific substances. Under the reporting requirements, facilities must notify EPA of any chemicals exported and report their inventory of imported and manufactured chemicals. In addition, facilities must submit safety, health, and environmental data on specific substances. The restrictions on production, use, and disposal cover polychlorinated biphenyls (PCBs), asbestos, polybrominated biphenyls (PBBs), 2,3-dibromopropyl phosphate, fully halogenated chloro-fluoroalkanes, and waste material containing tetrachlorodibenzo-p-dioxin (TCDD). PCBs are treated separately in Module 12.

Prenotification reporting is required for any new chemicals not included in EPA's initial inventory, as well as chemicals in the initial inventory with specifically defined criteria that categorize their level of use as a "Significant New Use." The initial inventory was published in a four-volume set by the EPA. Some chemicals in that inventory have had "Significant New Use" criteria established periodically via notification in the Federal Register since early 1983. These chemicals and the respective Federal Register citations, along with any other information about the regulatory status of specific chemicals, can be obtained from the EPA TSCA Assistance Hotline at (800) 424-9065.

The list of chemical reporting requirements under 40 C.F.R. 712 is updated periodically in the Federal Register. A manufacturer, importer, or processor has 90 days to comply with the reporting requirement from the date of notification in the Federal Register.

Because of the length and dynamic nature of the various reporting requirements, they are not included in this document. The TSCA Assistance Hotline will answer specific questions on chemicals.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Reports or submittals forwarded to the EPA in fulfillment of the TSCA reporting requirements.
2. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review reports or submittals to the EPA for content and completeness. If any health or environmental impact studies are planned or under way, determine their status.
2. Review last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 11 of the internal audit checklist, Toxic Substances. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
1	No	What controls are used to monitor and limit the chemicals purchased by and delivered to the facility? Who has authority to monitor and control indiscriminate use of chemicals at the facility?
8	No	How does the facility obtain hazard information on chemicals? How is the information disseminated to workers? How are other control procedures for spills, fires, and explosions developed?
10	Yes	Are reporting, testing, and record-keeping requirements under TSCA being met?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. TSCA-related policies and procedures on purchase, use, and hazard information dissemination. Spot-check documentation for an individual chemical, from purchase through disposal, to determine if these procedures are being followed.
2. File of support information for any report required by TSCA, if the facility has submitted such reports. Determine if all supporting records are in place, the file is periodically updated, and any additional required filing has also occurred.

12 PCB MATERIALS

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to polychlorinated biphenyl (PCB) material. Although it summarizes certain requirements it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

In 1976, Congress passed the Toxic Substances Control Act (TSCA), which applies primarily to manufacturers, distributors, processors, and importers of chemicals. While other provisions of TSCA direct EPA to regulate chemicals that present an "unreasonable risk of injury to health and the environment," Section 6(e) directly controls the manufacture, processing, commercial distribution, use, and disposal of specific chemical substances. Section 6 rules currently regulate several chemicals including PCBs.

The EPA banned some uses of PCBs in 1977 and all production and use in April 1979. The statute sets forth two exceptions under which EPA may allow limited use of PCBs. The EPA may allow PCBs in a totally enclosed system or in uses where they will not present an unreasonable risk of injury to health or the environment. The PCB regulations, 40 C.F.R. 761, apply to any chemical substance that contains 50 parts per million (ppm) or more PCBs. Substances that are covered by these regulations include, but are not limited to, dielectric fluids, contaminated solvents, oils, waste oils, heat transfer fluids, hydraulic fluids, paints, sludges, slurries, soils, and materials contaminated as a result of spills.

The PCB regulations include a ban on the manufacture of PCBs; a ban on limitation on specific uses considered hazardous; requirements for marking and labeling; requirements for inspections; requirements for record keeping and annual reports; restrictions on the amount of time PCBs may remain in storage for disposal; requirements for storage areas; requirements for temporary storage areas; controls and restrictions on disposal; requirements for testing, draining, and servicing equipment; and requirements for spill cleanup and disposal.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Last three annual documents on PCB use, storage, and disposal.
2. Summary of the PCB spill history for the last three years, including correspondence and reports to regulatory agencies.
3. Summary of PCB inspections for the last three years. If a summary is not available, then a sample record sheet should be sent.
4. Summary of servicing records on PCB-containing equipment for the last three years. If a summary is not available, then a sample record sheet should be sent.
5. Correspondence with regulatory agencies, including inspection reports, about specific noncompliance situations at the facility.
6. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following section describes what to review in each document.

1. Review the annual documents to determine if they include the following information:
 - Dates when PCBs or PCB items were removed from service, stored for disposal, and transported for disposal. The quantities of the PCBs and PCB items should be indicated according to the following breakdown: total weight of any PCBs and PCB items in PCB containers, total number of PCB transformers and total weight of any PCBs contained in the transformers, and total number of PCB large high- or low-voltage capacitors.
 - For PCBs and PCB items removed from service, the dates the items were removed from service, the dates the items were shipped for disposal, the location of the initial disposal or storage facility and the name of the owner or operator of the facility.
 - Total quantities of PCBs and PCB items remaining in service using the breakdown outlined above.
2. Review PCB spill history records, including correspondence and reports to regulatory agencies, to determine if spills were reported and, if so, what recommendations were made by regulatory

personnel. Determine if these suggestions were implemented. If so, do the records indicate the type of cleanup and containment procedures implemented and where the material was stored or disposed of?

3. Review the summary of PCB inspections to determine whether inspections are conducted every three months for transformers with more than 60,000 ppm PCBs and at least annually for transformers with 500-60,000 ppm PCBs. If the facility uses a temporary storage area, records should indicate inspections every 30 days.
4. Review records on PCB servicing to determine if they include information on testing and draining of any heat transfer or hydraulic systems. Records should indicate PCB concentrations before and after draining, material used to refill the system, and dates of any testing or servicing.
5. Review correspondence with regulatory agencies and inspection reports to identify problems that must be addressed further. Determine if plans are under way to resolve noncompliance situations.
6. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 12 of the internal audit checklist, PCB Materials. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed to obtain a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
2	No	Determine why an inventory has not been conducted. Is there a shortage of qualified personnel available to conduct the inventory or a lack of management support for the investigation? Has the facility determined that an inventory is not required? If so, can this decision be documented? Does the documentation include records indicating fluid concentration, fluid volume, quantity, and status of each PCB item?
4.2 4.4	Yes	Determine if the inspection records include the following: location, date of each visual inspection and the date a leak was discovered if different from the inspection date; name of inspector; location of any leaks; estimate of amount of fluid released from any leak; date of cleanup, containment, repair or replacement; description of any cleanup, repair, or containment performed; and results of any containment and daily inspection required for uncorrected active leaks. If the records are not complete, what steps are being taken to provide the required information?
	No	What steps are being taken to implement an inspection program or provide containment?
4.5	Yes	Determine how the material was cleaned up, stored, and disposed of. Have all spills been reported according to CERCLA and the Clean Water Act?
4.6	Yes	Have any PCB transformers been reclassified to PCB-contaminated electrical equipment or non-PCB transformers by draining, refilling, or other servicing? If so, do testing records show that PCB concentration levels have been reduced to less than 500 ppm (less than 50 ppm if reclassified to a non-PCB transformer)?
4.7	Yes	Is dielectric fluid used to top off existing transformers? If so, does the dielectric fluid storage meet the same requirements as PCB storage?
5	Yes	Are the PCB large capacitors used in contained and restricted-access indoor installations or restricted-access outdoor electric substations? If not, what program is under way to either phase out or properly contain these capacitors before the October 1, 1988, deadline?
6	Yes	Does the facility have 25 or more PCB small capacitors? If so, has the facility voluntarily established a collection and disposal program to dispose of capacitors in an EPA-approved incinerator or chemical waste landfill?

Audit Question Number	Facility Response	Follow-up Questions
7.1 8.1	No	Determine why testing was not completed by November 1, 1979. Determine what steps are being taken to test heat transfer and hydraulic systems.
7.3	No	What steps are being taken to annually test and flush equipment until PCB concentrations are less than 50 ppm?
7.3 7.5 8.3	Yes	Do records document that PCB levels have been brought down to 50 ppm or less? Do they include date, concentrations, material used for refilling, and disposition of the drained material?
7.5 8.3	No	What program is under way to document the testing and draining of all equipment that once contained more than 50 ppm PCBs?
12	Yes	Were these stored items properly disposed of before the January 1984 deadline? If not, have federal and state agencies been notified? What program is under way to properly dispose of these items? Are the milestones being met?
13.1	No	What steps are being taken to develop a plan or program for disposal of PCBs within one year of the date they are first placed in stored? Will the plan include a system to verify that PCBs do not remain in storage longer than a year?
14.1- 14.4	No	What steps are being taken to meet these requirements? Determine status and expected completion date.
15.1- 15.5	No	What steps are being taken to bring the temporary storage area into compliance? Determine status and expected completion date?
15.1- 15.5	Yes	Facility responses to these questions should be visually confirmed during the site visit. Any visual inspection should also determine whether the items are marked and dated correctly.
16	Yes	What cleanup procedures were used? Were cleanup procedures documented? Have procedures been incorporated into an SPCC plan? Was spilled material stored and disposed of according to PCB regulations?
18	Yes	Has the facility determined if any of these disposal sites are either on the EPA Superfund site list or being reviewed for inclusion on that list? Has the facility determined if any of the sites are among the 517 hazardous waste sites identified by EPA as owned or operated by the federal government?

Audit Question Number	Facility Response	Follow-up Questions
19	Yes	What program is under way to document that PCBs and PCB items not in service or storage have been transferred to proper disposal sites? Are these records accurate and well documented? Determine if the program includes provisions for the following: inspection of all areas where PCBs may be stored (warehouses, disposal sites); sampling and testing of all suspect items, wastes, and disposal sites; record searches; and current and retired employee interviews on past practices.
21.1	No	What documentation shows that the oil does not contain PCBs?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Policies and procedures relating to servicing, testing, inspections, record keeping, storage, spill control, and disposal of PCB items. Determine if procedures, responsibilities, and authorities are clearly defined and assigned. Spot-check documentation for a PCB item to determine if these procedures are being followed. If any spills have occurred, review all correspondence documenting that SPCC plan procedures were followed.
2. Written job descriptions for individuals involved in PCB management. Spot-check resumes and position descriptions to determine if individuals have the appropriate experience.
3. Training records for each individual in the PCB management area and certification documents that are part of training program.
4. Files on maintenance, inspections, and servicing. Are the files in order, well-maintained, and complete?
5. Inspection logs and other documents on PCB movement and disposal. Spot-check items in storage and use to confirm that PCBs are stored for one year or less. Review tracking systems that monitor how long PCBs remain in storage.

- 6. SPCC plan. If the facility uses a temporary storage area, determine if the SFCC plan makes provisions for PCB materials.**

13 HAZARDOUS WASTE

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to hazardous waste. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

On May 19, 1980, EPA issued regulations under the Resource Conservation and Recovery Act of 1976 (RCRA) for a national hazardous waste management program. These regulations govern hazardous waste from the time it is created to the time of its disposal. This cradle-to-grave monitoring is achieved by a manifest system. Any waste that is transported off site for treatment, storage, or disposal must be accompanied by a manifest that:

- Identifies who generated the waste,
- Provides a full description of the contents and quantity of the waste, and
- Designates the facility to which the waste must be shipped.

Under RCRA, EPA holds the generator of a waste responsible for the ultimate safe disposal of that waste. In addition, regulations governing the transportation of hazardous materials over public roads were published on May 22, 1980, by the U.S. Department of Transportation (DOT).

The regulation of hazardous waste and radioactive mixed waste at facilities operated by DOE under the authority of the Atomic Energy Act is still being negotiated. This module refers to requirements under RCRA.

Regulatory Framework

Under RCRA, 40 C.F.R. 261 defines four characteristics of waste that present an environmental threat if the waste is disposed of improperly: ignitability, corrosivity, reactivity, and toxicity. A solid waste is hazardous if it exhibits any of these four characteristics, or if it is specifically listed in Part 261 as hazardous. In the latter case, EPA evaluated the hazard associated with unregulated disposal of particular wastes for which information was available. If warranted, the EPA then determined that a given waste should be listed as hazardous.

The EPA considers that a generator storing hazardous waste on site for more than 90 days is an operator of a storage facility. Such facilities were required to apply for a permit before November 19, 1980, to continue such operations. Storage for less than 90 days does not require a permit, but certain standards specified in the regulations must be met.

Facilities with NPDES permits for wastewater treatment need not apply for a treatment and storage facility permit or comply with the RCRA interim status standards. Some state agencies administering the RCRA program, however, have not adopted the permit-by-rule exclusion.

Small generators, or those producing less than 2200 lb per month (1000 kg per month) of hazardous waste have also been declared exempt from any RCRA requirements. This upper limit on waste applies to the total mass of waste and includes water and other nonhazardous constituents. The waste must still be disposed of in authorized facilities for hazardous waste management or facilities approved by a state agency for municipal or industrial waste disposal. The small generator need not comply with the associated record keeping, reporting, and waste manifest requirements. Lacking an EPA identification number and waste manifest, however, the generator may have difficulty finding a disposal facility that will accept its waste. Moreover, by March 31, 1986, EPA is to set standards for these small-quantity generators.

The EPA has established an appeals procedure by which a generator can petition EPA to exclude from the regulatory controls a waste that is classified as hazardous. The EPA can grant a temporary exclusion if the appeal is likely to be successful. A facility seeking to have its waste excluded from controls must prove that the waste is nonhazardous. To do so, the waste must be tested for each characteristic assumed to be present. Sufficient tests (at least four) for each characteristic must be conducted to ensure representative results. The test results are an essential step in the appeals procedures; every reason for a waste being judged hazardous must be refuted. Even after testing, EPA may still rule that sufficient hazard exists to warrant denying the appeal.

Transporters of Hazardous Waste

Under RCRA, the role of the hazardous waste transporter is to provide transportation services to the generator. The transporter delivers the waste to the hazardous waste management facility that is designated by the generator on the manifest. Any person transporting hazardous waste within the United States must obtain an EPA identification number and comply with EPA and DOT regulations for transporters of hazardous wastes. The EPA regulations are adopted from the regulations developed by DOT. They include vehicle specifications; requirements for reporting hazardous material incidents; and requirements for handling, loading, unloading, and segregating hazardous materials. The requirements for transporters apply to both inter- and intrastate transportation and are enforceable by EPA or DOT. A transporter must not accept a hazardous waste from a generator unless both parties have an EPA identification number and the waste is accompanied by a signed manifest. The transporter must sign the manifest and return a copy to the generator before leaving the generator's property. When the shipment is transferred to another transporter, or to the designated facility for hazardous waste management, the original transporter must obtain the signature of the next party on the manifest and keep one copy. The second transporter retains one copy of the manifest and transmits the remaining copies to the next party. The designated treatment, storage, or disposal facility is required to send one copy, with all the signatures, back to the generator. Special requirements exist for bulk shipments by rail or water.

Treatment, Storage, and Disposal Facilities

Facilities that treat, store, or dispose of hazardous waste are also regulated under RCRA. Interim operating permits were granted to all such facilities provided they had:

- Been in operation or under construction before November 19, 1980;
- Notified EPA of their hazardous waste activities by August 18, 1980; and
- Applied for a permit by November 9, 1980.

Treatment, storage, and disposal facilities are required to develop a comprehensive management program that includes emergency contingency plans, preparedness and preventive programs, personnel training, record keeping and reporting, and closure and post-closure care.

The EPA has also developed financial requirements to ensure that funds will be available to close treatment, storage, and disposal facilities and to monitor and maintain closed disposal facilities. The proposed requirements also include liability coverage for injuries resulting from operation of a facility for hazardous waste management. Hazardous waste treatment, storage, and disposal facilities owned by federal agencies are exempt from these financial requirements.

RCRA Reauthorization Bill

On November 8, 1984, the RCRA Reauthorization Bill was signed into law. The bill requires that EPA promulgate several new regulations controlling hazardous waste. Key portions of the bill include: land disposal bans, small-quantity generators, underground storage tanks, management of used oil, and minimum technological requirements for TSD facilities. The EPA will be developing these regulations over the next 60 months.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. The facility's contingency plan, preparedness and prevention plan, and personnel training program.

2. Information about whichever aspects of the hazardous waste requirements apply to the facility:
 - Generation;
 - Storage for less than 90 days;
 - Storage for more than 90 days;
 - Type of storage — container (drums), tanks, surface impoundments, waste piles;
 - Facility-owned vehicles used for transporting hazardous waste over public roads;
 - Facility-owned or facility-operated treatment or disposal operation; and
 - Commercial service (contracted service) for transportation or disposal.
3. Documentation of emergency responses to any unplanned release or spill of hazardous waste within the last three years.
4. State and EPA inspection reports on hazardous waste management, and any related documents or correspondence about specific noncompliance situations and corrective actions at the facility.
5. List of commercial transporters and disposal sites used and the type of waste disposed of if commercial (contract) services are used.
6. Procedures or plans that describe the groundwater or other environmental monitoring program.
7. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. EPA regulations under 40 C.F.R. 264 and 265 specify areas that must be included in a written plan for preparedness, emergencies, and personnel training. Review these plans to determine if the following are addressed:

- Program for detailed chemical and physical analysis of hazardous waste;
 - 24-hour surveillance, fences, and warning signs;
 - Comprehensive inspection program with written logs;
 - Comprehensive training program with written logs;
 - Procedures for handling ignitable, reactive, or incompatible wastes;
 - Emergency response and safety equipment -- its description, use, inspection, and maintenance;
 - Contingency program with procedures for fire, explosion, or unplanned release of hazardous waste; emergency coordination with appropriate state, local, and other agencies; list of emergency equipment and evacuation plans.
2. Review information from the facility to determine what aspects of hazardous waste management are appropriate to appraise.
 3. Review documents to determine what situations resulted in an unplanned release and if the state and EPA were notified. Determine if the contingency plan was used and if any corrective actions were implemented to eliminate the cause of the release.
 4. Review state and EPA inspection reports to provide background information on the facility operations and any problem areas or concerns. Determine if any recommendations were made about compliance status and operations; if so, were these recommendations implemented?
 5. Review the list of commercial transporters and disposal sites to determine if any known problems exist. The list can be checked against the Environmental Remedial Response Inventory System (ERRIS) list, which is maintained by the EPA, to determine if any potential concerns about these operations have been identified.
 6. Review the monitoring program plan to determine if it meets permit requirements and the requirements of DOE 5484.1, Chapter III.
 7. Review the last two internal audit checklists to identify deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 13 of the internal audit checklist, Hazardous Waste. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
14 15	Yes	Have a facility representative explain or discuss the procedures used to determine whether wastes are classified as hazardous or nonhazardous. If EPA procedures were used (40 C.F.R. 260 and 261), have the facility representative describe the sampling and analytical program used. Was EPA protocol followed? Are the procedures documented? Determine the frequency of resampling and analysis.
	No	Is any program or study under way to classify wastes? If so, determine its status and expected completion date. If a waste formerly classified as nonhazardous is reclassified as hazardous, are past storage, handling, and disposal practices reviewed to assess their impact?
16	Yes	Review documentation showing that the contractor has applied for or received a small-quantity exemption.
17	Yes	All subquestions 17.1 through 17.7 should also be answered Yes. If not, determine why. Are any corrective actions under way?
18	Yes	Determine the type and quantity of hazardous waste either received or shipped to foreign countries. Why does the facility receive or ship waste? Do containers used for shipment conform to DOT requirements and are such containers properly labeled? Do manifest forms or shipping records exist for each shipment?
19 19.1 19.2	No	Are procedures for tracking manifest forms documented? Are the reasons for not receiving the manifest copies within 35 days documented? Was corrective action to prevent reoccurrence implemented? If exception reports were not filed, determine why not.
19.2	Yes	Has the state or EPA made any recommendations on the basis of the exception filing(s)? Have corrective actions been implemented by the facility?

Audit Question Number	Facility Response	Follow-up Questions
21.1	Yes	What are the additional requirements? Have these requirements been incorporated into the facility's hazardous waste management plan? If not, are any programs under way?

Hazardous Waste Storage for Less Than 90 Days

23	No	Why are containers or tanks not dated and marked? Are any plans or programs under way to correct this situation?
	Yes	Does a visual inspection of the storage area show that all hazardous waste has been there less than 90 days and is properly marked?
24-26	Yes	All the criteria or requirements discussed in these questions should be included in the documents requested for preappraisal review. If these documents were not available and reviewed before the site appraisal, they should be reviewed now.
	No	Are any plans or programs under way to develop the required documents? If so, determine their status and expected completion dates. If not, determine why.

Hazardous Waste Storage for 90 Days or More

Drums

30-37	No	If any of the questions are answered no, determine why and what plans or programs are under way to correct the situation. Determine their status and expected completion date.
	Yes	Does a visual inspection of the drum storage area show that all criteria addressed in these questions are being met?

Tanks

40.1	Yes	Does the containment system retain the complete tank contents? If not, does a diversionary system direct any spills to secondary containment? Determine how the secondary containment system functions and if it will prevent a release to the environment. How is the secondary containment system monitored or inspected? Will the monitoring or inspection system indicate whether a spill or release from the tank has occurred?
	No	Is a plan or program under way to contain releases? Determine its status and expected completion date. What interim procedures are in place (e.g., daily inspection) to ensure that spills or releases are quickly identified?

Audit Question Number	Facility Response	Follow-up Questions
41.1	No	How are the tanks inspected? How is the level in the tanks monitored? Are steel tanks protected from corrosion?
42	Yes	How does the facility determine whether the waste is compatible with the tank construction? If tanks are lined, how is the tank lining inspected to insure integrity?
42.1 42.2	Yes	What waste is stored in the tanks? What procedure or testing is followed to ensure that different types of waste are compatible?
43 43.1	No	What controls or procedures are used to prevent overflowing from precipitation or wave action?
44	No	Why does no written inspection program exist? Is a plan or program under way? Determine its status and expected completion date.

Surface Impoundments

47 48	No	If either question is answered no, what corrective action is under way or planned to meet these requirements? Determine its status and expected completion date.
	Yes	Visually inspect surface impoundments to determine if these requirements are being met.
49	No	Determine the inspection schedule and what procedures are followed.
49.1	Yes	Are records maintained in a central location? Do the records comply with written inspection procedures? If a need for maintenance or follow-up action is discovered during an inspection, how is such action handled?
50	Yes	Was the cause of the unplanned release determined and corrective action taken? Was the release reported to any regulatory agency? Describe cleanup or sampling efforts to determine impact of release.
51 52	Yes	What wastes are placed in the surface impoundment? How does the facility determine if the wastes are compatible, and what procedures or tests are used to ensure waste compatibility?

Audit Question Number	Facility Response	Follow-up Questions
53	Yes	Review the groundwater monitoring program as well as sampling and analytical schedule. Does groundwater monitoring include up-gradient and down-gradient sampling? Determine frequency of sampling and the analytical schedule (samples should be gathered and tested at least quarterly) and what parameters are tested. Has the state or EPA reviewed the groundwater monitoring program? If recommendations were made, were they implemented? Have pollutants been detected in the groundwater samples? If so, determine their concentrations and impact. Are any corrective actions under way or planned? Have the analytical results been reported to the state and EPA?
53.1	No	Is a program or study under way to document low potential for hazardous waste migration? Determine its status and expected completion date.
Waste Piles		
56	Yes	Is the waste pile covered or sprayed with a coating chemical? If chemicals are used, determine what chemicals are used and their concentrations. How does the facility protect the pile from wind? How is the pile inspected or monitored? Does visual inspection show adequate protection?
	No	Is a plan or program under way to correct the situation? Determine status and expected completion date.
57	Yes	Determine the quantity and quality of leachate or runoff. Is sampling and analytical testing performed? Determine where leachate or run-off goes. Is the leachate or run-off a hazardous waste?
58	No	What plan or program is under way to correct the situation? Determine its status and expected completion date. Has sampling and analytical testing of run-on been performed to evaluate impact of run-on?
	Yes	Upon visual inspection, does run-on diversion control appear adequate?
59	Yes or No	How does the facility determine the compatibility of different wastes? Are testing records available?

Audit Question Number	Facility Response	Follow-up Questions
Emergency Procedures and Preparedness		
61-70	Yes or No	All the criteria or requirements discussed in these questions should be included in the documents requested for preappraisal review. If these documents were not available or reviewed before the site appraisal, they should be reviewed now. If no plans or documents exist, determine if any plans are under way and their expected completion date. The items listed in Questions 61, 64.3, and 65 can be visually inspected during the site appraisal.
82-86	No	Why are these specific requirements not being met? Determine if a plan or program is under way and its expected date of completion.
88	No	Why was the designated treatment or disposal facility not used? What alternate facility was used and on what basis was it chosen? Did the alternate treatment or disposal site have a permit to handle wastes?
89	Yes	Determine the cause of the spill, the response, and cleanup efforts. Do any residual wastes remain at the spill site? Has the state or EPA been notified? Was anyone injured? Was the spill investigated by the state or EPA, and if so, what is the status of the investigation? Were any reports or recommendations issued? If so, what is their status? What procedures have been initiated to prevent a recurrence of the spill?
90	No	What training has been provided? Are drivers trained to respond to emergencies, report accidents and spills, and handle manifest forms?

Facility Treatment and Disposal of Hazardous Waste

92-102 and 112-114	Yes or No	All the criteria or requirements discussed in these questions should be included in the documents requested for preappraisal review. If these documents were not available or reviewed before the site appraisal, they should be reviewed now. If no plans or documents exist, determine what plans are under way and their expected completion date. Several areas (see Questions 93, 94, 96, and 97) should be visually inspected as part of the site appraisal.
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Audit Question Number	Facility Response	Follow-up Questions
103	Yes	What problems or shortcomings were noted with the contingency plan during the emergency? Were corrective actions initiated?
104-108	No	What steps are being taken to meet these requirements? Determine status and expected completion date.
	Yes	Facility responses to these questions should be confirmed during the site appraisal.

Commercial Transportation of Hazardous Waste

116	No	Have hazardous waste shipments been halted until a licensed transporter is found? Determine the quantity of wastes and the period over which the wastes were shipped via unlicensed transporter. What disposal site was used? Were manifest forms used? If not, was an unmanifested waste report filed?
117-119	No	Why are these criteria not being met?
120-124	Yes	What corrective actions have been initiated?

Commercial Treatment and Disposal of Hazardous Waste

126	No	Only facilities with RCRA interim status (Part A) or completed Part B permits should be used. If another site has been used, determine which site and the dates and quantities of wastes disposed of at that site. Has the state or EPA been notified and have they initiated any studies? Determine the status of investigations and if any recommendations by the state or EPA have been made.
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DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Directives or memoranda that assign responsibility for various functions of hazardous waste management including waste characterization and testing; inspections; record keeping; waste handling; employee training; operation of storage, treatment, or disposal facilities; and corrective actions. Are these responsibilities clearly defined and assigned?

2. Written job descriptions for all staff involved in hazardous waste management. Spot-check resumes and position descriptions to determine if individuals have the appropriate experience.
3. Records of staff training and examples of certification documents that are part of the training program. Training records should describe the type and amount of both introductory and continuing training that will be given each person in a position related to hazardous waste management. The records should document that the required training has been given to and completed by facility personnel.
4. Manifest file. Are the files in order and well maintained? Are manifests appropriately signed? Generators must keep a copy of each manifest for three years or until they receive a signed copy from the designated facility that received the waste. This signed copy must be retained for three years from the date the waste was accepted by the initial transporter. A transporter must keep a copy of the manifest signed by the generator, the transporter, and the next designated transporter or the owner or operator of the designated facility for three years from the date the hazardous waste was accepted by the initial transporter.
5. Operating record file. Request this file if the facility is a treatment or disposal facility or if it stores waste for more than 90 days. The operating record should include a description and the quantity of each hazardous waste received and the method and date of its treatment, storage, or disposal at the facility. The record should also include the location of each hazardous waste within the facility and the quantity at each location. For disposal facilities, location and quantity must be recorded on a map.
6. Procedures for hazardous waste determination. Determine if recommendations for testing and analysis of waste streams are appropriate and if a system is established to periodically review waste for its hazard potential.

14 SUPERFUND (INACTIVE SITES)

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), which is generally referred to as Superfund. Although it summarizes certain requirements, it is not an all-inclusive analysis. To more fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

The Superfund gives EPA the authority to clean up uncontrolled hazardous materials that pose significant threat to public health and the environment. It also provides for (1) the determination of liable parties, (2) the development of procedures and standards for responding to releases of hazardous materials, and (3) the establishment of a "trust fund" to be financed by hazardous waste generators and used for remedial measures specifically defined in the law. In addition to emergency cleanup of spills and sites that pose imminent threat to human health, Superfund covers longer-range planning for the cleanup of uncontrolled hazardous materials at former disposal sites that pose a less-immediate hazard.

For long-term planning, the EPA and states have launched a comprehensive effort to identify and establish priorities for cleanup of spills. In addition, they have begun the planning and cleanup of contaminated sites. The regulatory investigative process can be summarized as follows:

1. A comprehensive inventory of disposal sites has been developed by state and regional EPA offices. This inventory is called the Emergency Remedial Response Inventory System (ERRIS).
2. Sites included in this inventory are visited to establish the presence of contamination and to gather preliminary information. The sites are ranked according to their need for further investigation.
3. Investigative teams examine the ERRIS sites and monitor surface and subsurface conditions and ambient air.
4. Sites are given a numerical rating from which the national Superfund list is established.

Liability for cleanup rests with the owner of the disposal site. If a commercial operation is unable to fulfill its financial obligations and uncontrolled contamination exists, generators who have used that disposal site are also held liable.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Reports or documents pertaining to sites that have been inventoried by regulatory agencies with regard to remedial action and cleanup.
2. List of chemicals or substances used on site that would be subject to Superfund requirements if spilled or released.
3. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review reports and documents to identify problems and concerns that should be addressed during the site appraisal.
2. Review the list of materials to identify chemicals that require special procedures for handling, storage, use, disposal, and response to spills.
3. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 14 of the internal audit checklist, Superfund. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
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1.1	No	Determine why release was not reported. Determine if any response or clean-up activities are under way and what their status is.
1.2	No	Determine what plans or programs are under way and what their status is.
2	Yes	Determine if the facility has investigated what wastes went to the site. Are other generators involved with this site? What is the status of any remedial investigations, feasibility studies, groundwater monitoring programs, or other EPA actions?
3	Yes	Determine if past waste management or disposal practices have been studied or investigated. Have all past disposal sites been identified? Has any monitoring been initiated? What procedures were used to identify past disposal sites and handling or storage areas where spills could have occurred? Do these procedures include interviews with current and retired employees?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. Documents pertaining to Superfund that could be reviewed include files on investigations of any past or current disposal site. The appraiser should determine if the file contains all supporting information and documentation.

15 RADIOACTIVE WASTE

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to radioactive waste. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

The DOE Order DOE 5820.2, dated February 6, 1984, is the principal guide for all DOE facilities, contractors, and subcontractors performing work that involves management of radioactive waste, waste by-products, and radioactively contaminated surplus facilities. The order establishes requirements to assure that radioactive waste management adequately protects the public health and safety and is conducted in accordance with radiation protection standards specified in DOE 5480.1A, Chapter XI.

The DOE Order 5820.2 establishes requirements for interim storage, treatment, and disposal of high-level radioactive waste; classification, certification, storage, and disposal of transuranic (TRU) waste; and disposal and acceptance of low-level waste. It also regulates the selection, design, operation, closure, and post-closure maintenance of facilities that handle low-level waste. Separate requirements are established for the management of wastes contaminated with naturally occurring radionuclides.

A memorandum of understanding (MOU) signed by EPA and DOE and dated February 22, 1984, sets forth procedures for hazardous waste and radioactive mixed waste management at facilities operated by DOE under the authority of the Atomic Energy Act of 1954. This MOU establishes a hazardous waste and radioactive mixed waste management program that is comparable to the design and performance criteria, other technical requirements, and record-keeping and reporting requirements of the regulations adopted by EPA to implement RCRA. The EPA and DOE can modify these standards by agreement when necessary to ensure protection from radiological hazards, but any modification of standards must continue to provide protection of human health and the environment equivalent to the level achieved under the RCRA regulations. The MOU also covers access to DOE documents and information, inspections, and coordination with states and community relations. Negotiations between EPA and DOE are still under way to resolve all issues pertaining to hazardous and radioactive mixed waste management.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous

to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Last three annual nuclear waste management plans prepared in accordance with DOE 5820.2.
2. Summary of the radioactive leak and spill history for the last three years, including copies of correspondence and reports to DOE, the Nuclear Regulatory Commission, and state regulatory agencies. This summary should cover actions taken by the facility in response to the leaks or spills.
3. Summary of nuclear process and waste management inspections for the last three years.
4. Documents describing alternate approaches to storage, generation, processing or disposal.
5. Environmental impact assessments or statements about the facility's radioactive waste and processes.
6. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review the annual reports to determine if they include:
 - Process flow diagrams indicating current and projected (three years) waste sources; volume and radioactive content of waste; and physical and chemical characteristics of high-level, low-level, and transuranic waste and waste by-products.
 - Quantity, radioactive content, and physical and chemical characteristics of waste in storage or in a disposal site.
2. Review the leak and spill history to determine if leaks or spills were reported, what type of cleanup and containment procedures were implemented, and what recommendations were made by regulatory agencies. Determine if the cleanup, containment, and remedial actions taken were consistent with the human or engineered barrier failures that caused the leaks or spills.

3. Review the summary of nuclear waste management inspections for evidence of checks on waste system integrity by both human inspectors and engineered safeguards.
4. If nuclear wastes currently stored or disposed of on site do not conform to the standards in DOE 5820.2, determine the exact circumstances of such storage and disposal. Review the suitability of the facility's alternate approach to storage or generation. This review can be expanded to include previous annual inspection reports and environmental impact assessments or statements if available.
5. Review environmental assessments or impact statements to determine and compare the environmental impacts of proposed and existing procedures for waste management.
6. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 15 of the internal audit checklist, Radioactive Waste. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
6	No	Why are radioactive waste management plans not submitted according to guidelines in DOE 5820.2, Radioactive Waste Management, App. I?
8	Yes	Characterize the waste that is received as high-level, low-level, or TRU. Estimate the type and amount of radioactive waste that will be shipped to the facility for the next three years. Are facility plans consistent with the receipt of these shipments?

Audit Question Number	Facility Response	Follow-up Questions
10	No	Does available documentation support the decision not to expand in the next three years?
10.2	No	Why will the new facility not be doubly contained? What documentation is available for this exemption of DOE 5820.2?
10.3.1	Yes	Why is waste being removed from the current system? Are any leaks anticipated from the current system?
10.4	No	When will plans be submitted to the DOE line organization?
11.1	Yes	What steps are being taken to comply with RCRA?
12.1	No	What plans or programs are under way to comply with U.S. Department of Transportation Hazardous Material Regulations (49 C.F.R. 100-179)?
13	Yes	What criteria were in effect when radioactive wastes were disposed of?
13.1	No	Has the absence of leaks been documented by studies or monitoring?
	Yes	Are wastes leaking to groundwater or air? If to groundwater, has the probability of reaching potable or irrigation water supplies been determined? Determine the magnitude and radionuclide composition of these leaks.
14	No	Determine what plan or program is under way to develop a quality assurance plan. Determine its status and expected completion date.
16.1	No	What special arrangements have been made to exempt the facility from requirements for monitoring and leak detection equipment? What precautions are taken in lieu of monitoring and leak detection?
16.2	No	What arrangements have been made to exempt the facility from requirements for spare capacity? What precautions are taken in lieu of spare capacity to contain a tank farm leak?
16.3	No	Determine the exact nature of the waste. What stabilization methods and engineered barriers are used to protect public safety and the environment?

Audit Question Number	Facility Response	Follow-up Questions
17.2	No	Why are waste by-products not separated and recovered from the high-level waste? Are the reasons economic, environmental, or based on requirements for handling radioactive mixed waste?
19	No	Why is the material not assayed as soon as practicable?
20	No	Why does the facility not have a certification program? What assurances have been made that the transuranic waste can be safely disposed of?
21.1	No	Will disposal or treatment plans be developed for TRU wastes that cannot be certified? What processes and disposal sites are being considered? Are any long-range environmental problems envisioned with the uncertified TRU waste?
22	No	Does the facility plan to implement administrative controls to reduce the volume and radioactivity of TRU waste? Determine the expected completion date.
23.1	No	Why are TRU wastes in shallow land sites or soil columns not monitored?
24.1	No	When will acceptance criteria be developed and implemented for low-level waste? Until criteria are accepted, on what basis is low-level waste accepted? Are special facilities available for interim storage until permanent storage facility criteria can be developed? Is it possible that interim storage will become permanent storage after the criteria are developed?
24.2.1	No	What criteria are used for site selection? On what basis do the criteria deviate from DOE field organization criteria?
24.2.2	No	What criteria are used for site design? On what basis do the criteria deviate from DOE field organization criteria?
24.2.3	No	What criteria are used for site operation? On what basis do the criteria deviate from DOE field organization criteria?
25.1	No	Is a site-specific closure plan being developed? If not, why? Does the facility plan to use the inactive site for other purposes?
26	Yes	Has an environmental impact assessment or statement been written on the liquid releases of low-level waste? Under what guidelines are these releases allowed? Are there any written procedures on the release process?

Audit Question Number	Facility Response	Follow-up Questions
26.1	Yes	Have these plans been reviewed by DOE management?
	No	Have the environmental and economic impacts of possible treatment or immobilization alternatives been studied? Why are there no plans for using treatment systems to eliminate liquid low-level waste streams to the environment?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Policies and procedures on transportation, disposal, spill and leak management, and process control. Review to determine if procedures are clearly defined. A procedure for estimating environmental effects should be included here if it is not available elsewhere. Spot-check logs and other records to determine if policies and procedures are being complied with. Determine if any additional requirements of DOE 5820.2 must be met or if any facility procedures deviate from the order.
2. Directives or memoranda that assign responsibility and authority for radioactive waste accountability and inventory management procedures, including inspections, record keeping, compliance documents, and corrective actions. Determine if procedures and responsibilities are clearly defined and assigned.
3. Written job descriptions for each individual involved in radioactive waste management. Spot-check resumes and position descriptions to determine if individuals have the appropriate experience. Specifically, determine if individuals have experience in radiological health physics.
4. Records of staff training and examples of certification documents that are part of the training program.
5. Files on maintenance, inspections, and servicing. Are the files in order, well-maintained, and complete?

6. Reports or memoranda to DOE or regulatory agencies that document the reporting process for spills and leaks and verify that corrective actions have been taken.
7. Facility communications (letters, reports) with regulatory agencies about specific noncompliance situations at the facility.
8. Data on off-site releases. Spot-check to determine if the facility keeps radiation exposure limits as low as reasonably achievable, consistent with the objectives of DOE 5820.2 and 5480.1A.

16 ENVIRONMENTAL AND CONSERVATION POLICY

REGULATORY OVERVIEW

This section provides an overview of the laws and regulations applicable to environmental and conservation policy. Although it summarizes certain requirements, it is not an all-inclusive analysis. To fully understand the regulations, the appraiser must refer to the specific regulations mentioned here.

A variety of acts, executive orders, and EPA regulations deal with environmental and conservation policy. Some of these are summarized below.

1. The National Environmental Policy Act (NEPA) establishes a broad national environmental policy and promotes environmental consideration in federal agency decision making. All federal agencies are required to prepare an environmental impact statement (EIS) detailing the environmental impact of, and alternatives to, every proposal for a major federal action significantly affecting the quality of the human environment. The DOE has adopted the Council on Environmental Quality (CEQ) regulations for implementing NEPA procedures (40 C.F.R. 1500-1508), and has issued its own guidelines (45 Fed. Reg. 20,894, as amended). These guidelines detail procedures DOE will use in implementing the CEQ regulations. The U.S. DOE Order that covers implementation of NEPA, DOE 5440.1B, establishes internal departmental procedures for complying with NEPA.
2. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires registration of all pesticides, restricts use of certain pesticides, grants experimental-use permits, recommends standards for pesticide applicators, and regulates the disposal and transportation of pesticides. Pesticides are registered for five years and classified for either general or restricted use. Pesticides must be labeled with ingredients, uses, warnings, registration number, and any special use instructions. A few pesticides are also regulated as toxic pollutants under Section 307(a) of the Clean Water Act and by Primary Drinking Water Standards under the Safe Water Drinking Act.
3. The Surface Mining Control and Reclamation Act of 1977 (SMCRA) establishes nationwide environmental controls for strip mining. It prohibits the damaging mining techniques of the past and requires reclamation of the land after mining. Responsibility for regulation is delegated to the states. When states cannot enforce the environmental standards, however, the Department of the Interior will do so.

4. The Archeological and Historic Preservation Act of 1974 amends the Reservoir Salvage Act of 1960, expanding its application for preserving scientific, prehistoric, historic, and archeological data to include all federal, federally assisted, or federally licensed construction projects rather than being limited to federal dam and reservoir sites. It authorizes all federal agencies to seek future appropriations, obligate available monies, or reprogram existing appropriations for the recovery, protection, and preservation of prehistoric, historic, or archeological data.
5. Executive Order 11593 requires that federal agencies administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations. Federal agencies are to inventory archaeological and historical resources under their control or affected by their programs, give them appropriate consideration during planning, and do whatever is possible with regard to protecting and, when necessary, recovering those resources.
6. The Historic Preservation Act of 1966 provides for an expanded National Register of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, and culture. Section 106 of this act requires that the President's Advisory Council on Historic Preservation be given the opportunity to comment on any undertaking that could adversely affect properties on the National Register. However, because no survey can locate all significant sites, the National Register cannot be viewed as the sole source of information. Potentially significant sites should be evaluated before or during land alteration or during preparation of an environmental impact statement.
7. Executive Order 11988, Floodplain Management, requires each federal agency to issue or amend existing regulations and procedures to ensure that (1) the potential effects of any action it may take in a floodplain are evaluated and (2) planning programs and budget requests reflect consideration of flood hazards and floodplain management. Executive Order 11990, Protection of Wetlands, requires all federal agencies to issue or amend existing procedures to ensure consideration of wetlands protection in decision making. Both executive orders intend for federal agencies to implement the floodplain and wetland requirements through existing procedures such as those established to implement NEPA. Federal regulations (10 C.F.R. 1022) establish DOE policy and procedures for implementing Executive Orders 11988 and 11990.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Studies or surveys conducted to determine the presence of wetlands, endangered species, landmarks, archeological and historic sites, natural landmarks, or sites of importance to native Americans.
2. Site maps that indicate cultural resources, landmarks, or areas of importance to native Americans.
3. Site maps that indicate special habitat areas and nesting areas.
4. Map of any unique communities located off site that might require special attention.
5. List and location of any general facility projects (e.g., construction of parking areas, digging for utility lines) that have been conducted in the last year or are planned for the next year.
6. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review studies to determine if they are complete and if any further investigations or evaluations are required.
- 2-4. Review maps to determine if sites have been plotted.
5. Review lists to determine if past or planned projects could affect sensitive areas.
6. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate corrective actions were recommended and implemented. A deficiency shown in two successive internal audits

should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 16 of the internal audit checklist, Environmental and Conservation Policy. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
1	Yes	What type of contact or negotiations are under way or planned with either the field office or Office of Environmental Compliance at DOE headquarters? What studies, either completed, under way, or planned, will provide information for environmental assessments or environmental impact statements?
2	No	How did the facility conclude that these projects do not have the potential to affect sensitive areas? Was the DOE Office of Environmental Compliance informed of or involved in the decision that an environmental assessment or environmental impact statement was not required?
	Yes	What studies have assessed the potential effect of these projects? Who conducted the studies? What, if any, mitigating measures were recommended?
2.1	Yes	Who is responsible for notifying and coordinating with the operations office or Office of Environmental Compliance at DOE headquarters? What negotiations have taken place? What recommendations have been made about an environmental assessment or additional studies?
	No	Why has DOE not been notified? Who is responsible for notification?
4.1	Yes	Was the research design tailored to the environmental conditions typical of the area? Who completed the survey? If any wetland environmental zones were identified, what management methods are being used to protect them?

Audit Question Number	Facility Response	Follow-up Questions
4.2	Yes	If coastal zone areas are present, what kind of guidelines is the facility providing for implementation of the Coastal Zone Management Act?
4.3	Yes	Is the research design tailored to the environmental conditions and species typical of the area? Are any habitats suitable for endangered species? Were field studies done to determine the presence or absence of species? Has the Department of Interior been consulted? If endangered species are or have been present, what monitoring programs are in place?
4.4	Yes	Are any properties or districts eligible for or nominated to the National Register of Historic Landmarks? If so, describe. Has the State Historic Preservation Officer been consulted? Has a cultural resource survey for prehistoric, historic, and ethnohistoric sites been completed? For what actions were these surveys conducted? Has a survey or study for cultural resource sites, natural resources, or subsistence areas of importance to native Americans been completed? If any of these types of sites have been found, determine what program is in place to manage and protect them. Are the sites being monitored for direct and indirect impacts?
4.5		
4.1-4.5	No	Why have these studies or surveys not been completed. Are plans under way to complete any of these studies or surveys in areas where ground is disturbed as part of current maintenance programs? How will direct and indirect impacts be mitigated in areas of construction, maintenance, and operation?
7	Yes	Is any mining occurring on prime farmland or in alluvial valley floors in the west? If so, does such mining adversely affect agricultural uses or damage water supply? How are rules and regulations of SMCRA being met?
8	Yes	What reclamation techniques are being used to manage these areas?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Policies and procedures relating to review of new projects and major modifications to existing projects. Determine if procedures,

responsibilities, and authorities are clearly defined and assigned. Spot-check documentation of project impact evaluations to determine that these procedures are being followed.

2. Cultural resource studies or surveys that show any historic, national heritage, and archaeological sites within the facility boundaries. Spot-check a number of these sites in the field for map accuracy and to determine if the sites are being maintained and protected.

17 LABORATORY QUALITY ASSURANCE

REGULATORY OVERVIEW

The DOE mandate for quality assurance is given in DOE 5700.6A, Quality Assurance. The order outlines DOE policy for implementing and maintaining plans and actions to assure quality achievement in DOE programs. The policy places primary emphasis on achieving a high degree of operational success with due consideration to health and safety, environmental protection, performance, reliability, and other concerns. In the area of environment, safety, and health, DOE 5700.6A states that quality requirements should be defined and activities implemented that are consistent with DOE orders covering that area.

The other modules in this manual have emphasized compliance with environmental regulations and support of environmental protection. This module for DOE facility laboratories focuses on laboratory practices that support and confirm the status of environmental protection activities and has no specific environmental regulations as its basis. As such, this module is closer to a true quality assurance review. However, a laboratory's activities are so intertwined with the needs of environmental protection that it is logical to include a quality assurance module in this appraisal guide.

There are published standards for quality assurance, for example, 40 C.F.R. 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants. The EPA has published a number of these standards, some of which are referenced in regulations. These include:

- QAMS-001/80, Strategy for the Implementation of the EPA's Mandatory Quality Assurance Program;
- QAMS-005-80, Interim Guidelines and Specifications for Preparing Quality Assurance Plans;
- EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes (which includes sampling, collection, and preservation guidelines); and
- EPA-600/2-80-018, Samplers and Sampling Procedures for Hazardous Waste Streams.

Many other groups, such as the American Society for Testing and Materials, American Public Health Association, American Water Works Association, and the Water Pollution Control Federation, also publish standard testing procedures. The most-cited of these is "Standard Methods for the Examination of Water and Wastewater," whose 15th edition was jointly published in 1980 by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation. The 16th edition is due to be published in 1984.

The DOE Environmental Measurement Laboratory (EML) conducts a quality assurance program (QAP) for radiochemical analysis. It prepares samples, thoroughly characterizes them, and distributes them to participants. Participation in this program is not a DOE requirement. The EML reviews the results submitted by the laboratories and identifies problem areas encountered by QAP program participants so that corrective action can be taken.

REQUEST FOR INFORMATION

At least eight weeks before the site visit, the operations office staff should request that the facility forward documents that can be reviewed in the operations office before the on-site appraisal. Facilities may not have all of the information requested, and in some cases the information may already be on file at the operations office. Usually correspondence about permits or noncompliance will already be at the operations office, but it should be reviewed as part of the appraisal. Any material too voluminous to send through the mail should be examined during the site visit. The following list describes what documents to request.

1. Environmental sampling and analysis program plan.
2. Quality assurance or quality control (QA/QC) program for collection and analysis of environmental samples.
3. Chain-of-custody procedure for environmental samples.
4. Sampling procedures manual.
5. Manual for calibration, maintenance, and analytical procedures.
6. Purchase agreements for services of outside laboratories that include arrangements for chain-of-custody procedures and QA/QC audits.
7. Last two internal audit checklists.

REVIEW OF REQUESTED INFORMATION

After the requested documents have been received, they should be reviewed in the operations office. The following list describes what to review in each document.

1. Review the environmental sampling and analysis plan to ensure that:
 - Major effluent streams are being monitored in compliance with the required permit. (This activity may require a review of other internal audit modules to determine which effluent streams must be monitored.)

- Appropriate references illustrate that this program is consistent with accepted EPA practice.
- 2. Review the laboratory QA/QC program to determine if any major areas have been omitted.
- 3. Review the chain-of-custody procedure to ensure that proper mechanisms for the transfer of samples and data exist and that responsibility for the samples and data is assigned at all times.
- 4. Review the sampling procedures manual to ensure that EPA-approved procedures are referenced and followed.
- 5. Review the manual of maintenance, calibration, and analytical procedures to ensure that maintenance and calibration procedures are documented for all analytical instruments and that analytical procedures are documented for all parameters that must be tested.
- 6. Review purchase agreements to determine if chain-of-custody procedures and QA/QC audits ensure valid analytical results.
- 7. Review the last two internal audit checklists to identify any deficiencies or problem areas that were noted and determine if appropriate actions were recommended and implemented. A deficiency shown in two successive internal audits should be explored to determine why corrective action was not implemented.

FOLLOW-UP TO INTERNAL AUDIT CHECKLIST

The following tabulation is keyed to the responses in Module 17 of the internal audit checklist, Laboratory Quality Assurance. Follow-up questions are keyed to questions in the checklist (question number) and to the facility's response (yes, no, or blank). This follow-up inquiry focuses only on specific questions; the complete internal audit checklist must be reviewed for a comprehensive understanding of environmental compliance at the facility.

Audit Question Number	Facility Response	Follow-up Questions
4	No	What mechanisms are used to ensure precision and accuracy of the laboratory data?
4.1	No	What guidelines or documents were used to develop the program?

Audit Question Number	Facility Response	Follow-up Questions
5	No	Who is responsible for ensuring the quality of data?
7	No	What procedures are used to ensure sample integrity?
9	No	How does the facility maintain records?
18	No	What methods are followed in sample collection? Adherence to these methods can be visually confirmed during a site visit.
18.1	No	What documents were used to develop sampling procedures?
25	No	What analytical procedures are used?
28	No	How does the laboratory discard unstable reagents?
32 33	No	How does the laboratory ensure that results in a report are the same as those actually observed?
35 36	No	How does the laboratory ensure precision? How does the laboratory ensure that no systematic errors affect accuracy?
40	No	How does the laboratory conclude that a new staff person is capable of properly analyzing a sample?
45	No	How does the laboratory ensure that samples are not altered by contamination or reaction?
47	No	How does the laboratory ensure that correct laboratory practice is followed and that the accuracy and precision of results can be verified?

DOCUMENT REVIEW

The Document Review involves an in-depth analysis of written records and documentation to confirm that policies and programs are being correctly implemented and documented. The following list describes documents that could be reviewed.

1. Records of a randomly selected sample that was collected and analyzed at the facility. Follow the records from collection through analysis and report results to ensure that the chain-of-custody procedure is being properly followed and documented.

2. Sample log books. Check at least three to ensure that pertinent data (sampling time and location, dates, identification, number and name of analyst) are being recorded.
3. Sampling procedures. Spot-check to ensure that they are up-to-date and consistent with approved protocols.
4. Instrument maintenance and calibration procedures. Examine at least three instruments to verify that they are being properly maintained and calibrated.
5. Laboratory analytical procedures. Spot-check several to verify that they are consistent with standard methods and updated as necessary.
6. Procedures for preparing standard solutions. Spot-check to verify that proper reagents are used, reagent purity is correct, and the date of preparation is listed.
7. Analysts' laboratory notebooks. Check at least three to verify that proper methods are used and cited, date of analysis is given, samples are properly identified, and an internal QA procedure is established to check calculations.
8. Records of participation in various outside sampling programs. Compare results obtained in the laboratory with the results expected for the standard sample.
9. Written job descriptions. Spot-check resumes and position descriptions to determine if individuals have the appropriate experience.
10. Training records and copies of certification documents that are part of the training program.
11. Laboratory certification records. Review records to determine if the laboratory has been certified by a regulatory agency and to identify any specific operating conditions.