DRAFT

**Guidelines for Waste
Accumulation Areas (WAAs)**

**Revision 0
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MASTER

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A Waste Accumulation Area

Guidelines for Waste Accumulation Areas (WAAs) at LBL

Section 1: Introduction

1.1 Purpose

The purpose of this document is to set conditions for establishing and maintaining areas for the accumulation of hazardous waste at LBL. Areas designed for accumulation of these wastes in quantities greater than 100 kg (220 lb) per month of solid waste or 55 gallons per month of liquid waste are called Waste Accumulation Areas (WAAs). Areas designed for accumulation of wastes in smaller amounts are called Satellite Accumulation Areas (SAAs). This document provides guidelines for

- employee and organizational responsibilities for WAAs,
- constructing a WAA,
- storing waste in a WAA,
- operating and maintaining a WAA, and
- responding to spills in a WAA.

1.2 Background

Hazardous waste, by definition, can cause serious injury to human health and the environment. Everyone connected with a WAA or SAA must exercise great care to ensure that hazardous wastes are handled safely and correctly at all times.

A casual attitude toward environmental pollution is no longer socially or legally acceptable. Environmental regulators have been using criminal prosecutions against polluters, and the courts are subjecting convicted polluters to heavy fines and even prison terms. Thus, it is vitally important that everyone concerned with hazardous waste understand his/her responsibilities with regard to that waste.

Because of their potential danger to humans and to the environment, WAAs and SAAs must provide storage areas that are secure and that will safely contain any wastes that are spilled or otherwise accidentally released.

Section 2: Governing Documents and References

2.1 Governing Documents

1. Title 22, California Code of Regulations, Chapter 30, Articles 9 and 11.
2. Environmental Protection Agency, Title 40, Code of Federal Regulations, Parts 260–265.
3. LBL Master Emergency Plan, Pub-237 revised.

2.2 References

1. *Guidelines for Generators of Hazardous Waste at LBL*, PUB-3092
2. *Occurrence Reporting*, LBID-1694.
3. *Aldrich Catalog of Fine Chemicals*
4. *NIOSH Registry of Toxic Effects of Chemical Substances*
5. *The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals*

Section 3: Definitions

Waste Accumulation Area (WAA): An officially designated and secured area where large quantities (greater than 100 kg [220 lb] per month of dry hazardous wastes, more than 1 kg [2.2 lb] of dry extremely hazardous wastes, or more than 55 gallons of liquid hazardous waste) are collected and stored until they can be picked up for disposal. Waste must be stored in WAAs at LBL for no more than 60 days.

Satellite Accumulation Area (SAA): An area in an individual laboratory, shop, or other facility officially set aside for the accumulation of waste not to exceed 100 kg/month (220 lb/month) of dry hazardous waste, one kg/month (2.2 lb/month) of dry extremely hazardous waste, or 55 gallons of liquid hazardous waste.

Hazardous Wastes: Hazardous wastes are

- wastes listed in the California Code of Regulations (22 CCR 66680) and the Code of Federal Regulations (40 CFR Part 261)
- wastes that exhibit one or more of the criteria for identification of "hazardous waste" (22 CCR 66693–66723). These criteria are
 - toxicity
 - persistent and bioaccumulative effect
 - ignitibility
 - reactivity
 - corrosivity

- radioactive mixed wastes (materials that contain both hazardous chemical and radioactive wastes)
- wastewater that exceeds sanitary-sewer discharge limits.

Extremely hazardous substance: any of 406 chemicals identified by EPA on the basis of toxicity and listed under SARA Title III.

Ignitable wastes: liquids with a flash point of less than 140°F, solids that ignite spontaneously through absorption of moisture or through friction and burn vigorously, flammable gases, and oxidizers.

Storage Time Limit (WAAs only): According to California and Federal codes, the storage time limit for accumulation of waste in a WAA is 90 days, but this time period includes the time needed for transfer of waste to the HWHF and eventual shipment off site. Therefore, the LBL HWHF procedures place a time limit of 60 days at the WAA. This time limit must be adhered to.

WAA Receipt or Accumulation Start Date (WAAs only): The date the first drop of waste enters a container. Each container in a WAA may have a different WAA receipt or accumulation start date.

Workplace Start Date, Workplace End Date (WAAs only): These dates are for use in SAs and do not apply to WAAs.

Waste Container: For the purposes of WAAs, a waste container is anything that collects waste in the quantities covered. Waste containers include, in addition to drums and cans, sludge collection traps and underground storage tanks. Containers in WAAs must be DOT-approved.

Secondary Containment: A container designed to hold one or more waste containers for spill containment of liquid waste. Each secondary containment structure must be able to contain 10% of the total volume of all containers or the volume of the largest container, whichever is greatest.

Waste Generator: A waste generator is the individual or operation responsible for actually generating the hazardous waste within an organization. LBL as a whole is viewed as a waste generator by environmental regulatory agencies. Within LBL, each researcher, laboratory, shop, and facility, as a potential point of origin for hazardous waste, is a waste generator.

Waste-Generating Organization: the program, facility, or group that generates the waste.

Waste Stream: Waste generated from an industrial process or application, laboratory experiment, or routine laboratory procedure, with roughly constant and unchanging hazardous and/or radioactivity characteristics.

Cradle-to-Grave Tracking: The system whereby carefully detailed records are maintained documenting the generation, storage, treatment, and disposal of all hazardous waste generated at a facility. These records essentially cover hazardous waste from the point of origin (generation) to its final offsite destination and disposal.

Controlled Area (for radiation protection): an area where radioactive materials or elevated radiation fields may be present.

Segregate in this document means "do not mix" chemically unrelated or incompatible materials in the same container; each container in a WAA must contain waste of only one hazard category.

Separate means "set apart physically" in this document.

Section 4: Responsibilities

4.1 Waste-Generating Organization

- assures that the waste is properly segregated, identified, packaged, and stored while in the area of generation (including the WAA)
- transports waste from the area of generation to the WAA
- ensures that all generators in their area receive proper training and are familiar with PUB-3092, *Guidelines for Generators of Hazardous Waste at LBL*.

4.2 Waste Generator

- identifies hazardous waste produced by an operation or experiment
- places all waste in the WAA
- notifies the HWHF Technician of the amount, type, and concentration of waste taken to the WAA by entering the information on the accumulation sheet or the Hazardous Waste Label
- contacts the Environmental Specialist or HWHF Technician to ensure that the waste preparation procedures being used meet current environmental standards.

4.3 Organizational Manager for WAA (and alternate)

These individuals are designated by management of the waste-generating organization as being responsible for all activities associated with that organization's WAA, including, but not limited to,

- the daily walkthrough
- maintenance of all logs
- maintenance of all required labeling
- training of individual generators on procedures for use of their WAA

4.4 HWHF Manager (EH&S Division)

- provides management and staff of the waste-generating organization with current guidelines for preparing and storing hazardous waste
- provides technical support and training to the waste-generating organization and the HWHF Technicians on proper ways to segregate, identify, package, store, and transport hazardous waste
- advises and assists generators in preparing hazardous waste for transfer from work area to WAA, accumulation, and storage at WAA
- sends copies of weekly inspections to Organizational Managers of WAAs
- keeps all documents related to WAAs
- reviews all waste-related activities

4.5 Environmental Specialist (EH&S Division)

- is responsible for interpreting environmental legal requirements for waste generators and for providing guidance on compliance issues
- advises on the establishment of all WAAs and coordinates approval with the HWHF Manager
- conducts QA surveillance, including inspections and reviews of the waste-handling process, for those WAAs found to be repeat violators of these guidelines.

4.6 Senior HWHF Technician (EH&S Division)

- works with the Environmental Specialist and HWHF Manager in support of waste-related activities
- assists organizations in managing hazardous wastes and in operating WAAs
- assists, when called upon, in the packaging, labeling, and sampling of hazardous waste
- verifies that the waste has been removed from the WAA
- conducts the weekly inspections

Section 5: Guidelines and Rules Specific to WAAs

5.1 Responsibilities for Constructing a WAA

5.1.1 Organizational Manager

- consults with the Environmental Specialist and HWHF Manager during the planning, design, and construction of the WAA
- reviews with other EH&S members, as appropriate, the construction plans from the perspectives of the members' technical disciplines
- identifies the waste that will be generated in the WAA and the containers that will be needed. (All potential waste should be identified before construction of a WAA can begin.)

5.1.2 HWHF Manager (EH&S Division)

- assists the Organizational Manager and the Environmental Specialist by gathering information on the types, amounts, and locations of hazardous waste being generated
- works with the Environmental Specialist to provide information to the Organizational Manager on design and construction regulations
- approves construction design and location to ensure that all equipment requirements and all containment, enclosure, and siting criteria have been met
- reviews the final plans for vehicle accessibility during waste pickup.

5.1.3 Environmental Specialist (EH&S Division)

- works with the HWHF Manager to provide information to the Organizational Manager on design and construction regulations
- reviews and interprets applicable environmental regulations
- surveys, with the Organizational Manager, the types and amounts of waste being generated
- advises construction design and location to ensure that all equipment requirements and all containment, enclosure, and siting criteria have been met
- coordinates WAA approval with HWHF Manager.

5.2 Constructing a WAA

A WAA should be constructed in the area of any organization that routinely generates significant amounts of hazardous waste. The actual need for a WAA is

best determined by consultation between the management of the waste-generating organization, the HWHF Manager, and the Environmental Specialist. A WAA cannot be established without prior EH&S approval.

Sometimes only a temporary WAA is needed, such as in construction areas or in areas where waste generation is irregular or infrequent. However, a temporary WAA must still satisfy the minimum legal requirements for a hazardous-waste storage area. These minimum requirements, which are specific to the particular types of waste being generated, will be determined by the Environmental Specialist.

Once the need has been established for a WAA, whether temporary or permanent, the waste-generating organization is responsible for constructing the WAA.

5.2.1 Construction Criteria

During the planning and design stages for a WAA, the responsible organization must work with the HWHF staff and the Environmental Specialist to ensure that appropriate safety and environmental criteria are incorporated into the final design. For details of construction requirements, see the Environmental Specialist. The physical requirements for WAAs are summarized below.

- secondary containment
- shelter from the elements
- limited access
- appropriate signs
- conditions for separation of incompatibles
- at least 50 feet from the nearest drainage system (sanitary sewer, storm drains)
- sufficient access to allow pickup of waste
- washable surface (concrete or asphalt)

5.2.2 Safety Equipment

The following safety equipment must be maintained at all WAAs:

- fire extinguisher
- emergency spill kit
- emergency eyewash
- telephone
- protective equipment (e.g., gloves, safety glasses)
- hazard warning signs (e.g., Flammables, Hazardous Waste Area)
- posted procedures for collection (identification, segregation, dating)

- posted contingency plan for dealing with spills and other accidental releases of hazardous wastes
- posted names and telephone numbers (day and night) of responsible individuals (WAA supervisor)

5.3 Storing Waste in a WAA

Hazardous waste that has been properly segregated, identified, and packaged may be stored in a WAA at LBL for up to 60 days. Within that time period, the waste will be removed by HWHF personnel for disposal.

The main elements of waste storage in a WAA include

- segregation of wastes
- separation of wastes
- containers for separation and segregation of wastes
- chemical identification and characterization
- labeling
- packaging in a WAA
- storage time limits
- transfer of waste to a WAA
- transport of waste to the HWHF
- spill prevention

These subjects are discussed below.

5.3.1 Segregation of Wastes

The generator must segregate hazardous wastes into individual containers according to the type of material. **Segregation** is important for three reasons: **safety, disposability, and recyclability.**

Safety. When chemicals are mixed without regard to their compatibility, safety hazards can result: for example, the resulting mixture could explode or produce toxic gases. A safe rule for mixing chemicals is **When in doubt, DON'T MIX.** Call the EH&S Environmental Specialist, x 4644, for help.

Disposal requirements. Certain chemicals can be disposed relatively cheaply. But that same chemical, if contaminated with certain other chemicals, becomes very expensive or difficult to dispose. The classic example is any hazardous chemical contaminated with radioactive wastes, no matter how low the radioactivity level. Radioactive mixed wastes, as these types of wastes are called, are not currently disposable anywhere.

Recyclability. As with disposability, certain chemicals can be recycled at great savings to LBL, but small amounts of other chemicals mixed into these chemicals render the original chemical unrecyclable. For example, waste oil is recyclable, but a few tablespoons of halogenated solvent in a 55-gallon barrel of waste oil will render that barrel of oil unrecyclable.

5.3.2 Separation of Wastes

Separate your chemicals into the classes designated on the Hazardous Waste Disposal Requisition (Appendix B). Each secondary containment must contain only compatible chemicals. Separation of chemicals is important to avoid cross-contamination of incompatible chemicals in the event of spills.

Note that WAAs are for nonradioactive wastes only. Radioactive wastes must be kept in areas separate from WAAs.

5.3.3 Containers for Separation and Segregation of Wastes

Obtain and set up your waste containers based on the following rules:

Waste Type	Approved Container	How to Obtain
Liquid wastes (large quantities)	55-gal DOE 17E drum	Contact EH&S
Solid wastes (large quantities)	55-gal DOE 17H drum	Contact EH&S
Small individual waste containers	Plastic tote box	Stores item 8115-66258
Asbestos	Double plastic bags labeled ASBESTOS	Stores item 8105 series (depending on size)
Mercury	Keep in original containers	
PCB-containing wastes	Call EH&S for details	

5.3.4 Chemical Identification and Characterization

The waste-generating organization is responsible for identifying and characterizing wastes. When necessary, the HWHF Technician will assist the program by taking samples and arranging for appropriate analyses of waste. See PUB-3092, *Guidelines for Generators of Hazardous Waste at LBL*, for details.

Waste can be identified in three ways:

- chemical name and structural formula, with volume and concentrations
- manufacturer and specific product
- complete generic description of the material

The generator is also responsible for requesting chemical analyses on all unknown materials to determine their hazardous components before these materials are picked up by the HWHF. A copy of the laboratory report must accompany the HWHF Hazardous Waste Disposal Requisition. For assistance in having unknown materials identified, contact the Environmental Specialist. Further details on chemical identification and analysis of wastes is provided in PUB-3092, *Guidelines for Generators of Hazardous Waste at LBL*.

5.3.5 Labeling

Once determined, the identity of the waste in each container must be recorded on the Hazardous Waste label (Figure 1) attached to the container. In accordance with current environmental regulations, the label must provide the following information (the numbers are correlated with the numbers in Figure 1):

- *Generator (1):* Enter the name and building of the person generating the waste.
- *Phone number (5):* Enter the generator's LBL telephone number.
- *Contents (2):* Give the chemical names, material names, or waste stream of the waste, and describe the composition of the waste.

Samples of chemical or material names include

- Petroleum-based motor oil, 1010 ("1010 motor oil" would not be adequate)

Samples of waste streams include

- Aqueous wash water, 10% acetone
- Machine and grinding coolant (MasterChem Trimsol) with zinc particles

- *WAA Receipt or Accumulation Start Date (4):* Enter the date on which waste is first placed in the container.

HAZARDOUS WASTE	
HANDLE WITH CARE!	
1 Generator _____	5 Phone # _____
2 Contents _____ _____	6 Hazardous properties <i>Check all that apply</i>
3 Workplace start date _____	☐ Toxic
4 Workplace end date _____	☐ Corrosive
WAA receipt or accumulation start date* _____	☐ Ignitable
HWH receipt date _____	☐ Reactive
Sample analysis # _____	☐ Other _____
Disposal requisition # _____	7 Waste form
☐ Solid	
☐ Liquid	
☐ Gas	
*Receipt Date from Workplace or Accumulation Start Date in the WAA	
Lawrence Berkeley Laboratory #1 Cyclotron Rd., Berkeley, CA 9	

- 1 **Generator:** Enter name and building of person generating the waste.
- 2 **Contents:** Give chemical name, material name, or waste stream description. Describe composition of waste.
- 3 **Workplace start date, workplace end date:** Leave blank for WAAs.
- 4 **WAA receipt or accumulation start date:** Enter date waste is first placed in container.
- 5 **Phone Number:** Enter generator's LBL phone number.
- 6 **Hazardous properties:** Check appropriate boxes.
- 7 **Waste form:** Check appropriate box.

Figure 1. LBL Hazardous Waste label

- *Workplace Start Date, Workplace End Date (3):* Enter "NA" for "not applicable." These dates are for use in SAAs.
- *Hazardous Properties (6):* Check appropriate boxes.
- *Waste Form (7):* Check the appropriate box (solid, liquid, or gas).

Add other labels (e.g., carcinogenic, PCBs) as appropriate. If you have any questions regarding appropriate labeling, call the HWHF Technician, x 7625.

Please note that the dating requirements on the Hazardous Waste label differ for WAAs and SAAs. The following short table summarizes the dating requirements on the Hazardous Waste label for WAAs.

Term	WAA Definition	WAA Usage
WAA receipt or accumulation start date	Date when waste is first added to container	Fill in current date when waste is first added to container
Workplace start date	Does not apply to WAAs	Enter "NA" (for "not applicable")
Workplace end date	Does not apply to WAAs	Enter "NA" (for "not applicable")

5.3.6 Packaging in a WAA

The generator is responsible for packaging the waste so that it may be safely transported and stored pending disposal. HWHF personnel will remove waste from the WAA only if it is packaged in tightly closed, properly labeled, approved containers that show no signs of damage, deterioration, rusting, or leaking.

5.3.7 Storage Time Limits

Hazardous waste may be accumulated in a WAA at LBL for a maximum of 60 days and stored at LBL for no more than 90 days, unless special permits are obtained from environmental regulatory agencies. The beginning of the 90-day storage period is called the WAA receipt or accumulation start date, which is the date when waste is first placed in the container. This date is recorded on the Hazardous Waste label attached to the container.

5.3.8 Transfer of Waste to a WAA

Transfer of hazardous waste from the point of generation to a WAA must be by a method agreed on between the generator and the HWHF staff. In most cases, the generator may take waste to the WAA and add it to the appropriate labeled containers, which will remain at the WAA until filled or until the 60-day limit is reached. When placing waste in the container, the generator must enter on the Record of Waste Accumulation form (see Figure 2) the date, generator's initials, and type and amount of waste being added at that time.

5.3.9 Transport of Waste to the HWHF

Waste is transported from the WAA to the HWHF by HWHF staff and contract vendors. Before HWHF staff or contract vendors will pick up waste containers from a WAA, the HWHF Technician must inspect the waste package and sign the Hazardous Waste Disposal Requisition (Appendix B), verifying that the package is safe to transport. HWHF will review the requisition and, if it is approved, schedule a pickup date. No waste will be accepted without complete labels and an accurately completed Requisition.

5.3.10 Spill Prevention

A properly designed WAA must have secondary containment to prevent accidental release of hazardous substances to the environment. Secondary containment can be either a concrete berm surrounding the perimeter of the WAA or a specially designed fiberglass hazardous-waste containment tray, equipped to hold up to 60 gallons of liquid, placed under each pallet of hazardous waste materials. The containment tray is available for purchase through an outside vendor; HWHF staff can advise the generator on spill-prevention equipment.

Spill prevention methods include the following, which are also regulatory requirements:

- Keep all containers closed except when adding waste.
- Generators must assure that loose funnels are removed from the openings of liquid waste drums and that caps or lids are secured after each addition of waste. If screw-in funnels are used, the lid must be closed except when adding waste.
- The written contingency plan and emergency kit must be readily accessible.
- Emergency equipment (for example, safety shower and eyewash) must be accessible and in good working order.

5.4 Operating and Maintaining a WAA

5.4.1 General

The waste-generating organization is responsible for operating and maintaining the WAA in such a way that hazardous waste is properly handled and is not released to the environment.

The waste-generating organization must designate an Organizational Manager to operate and maintain the WAA. This designated individual, along with appropriate technicians, as noted below, will make formal inspections of the WAAs, prepare containers for pickup by the HWHF, and maintain a current contingency plan.

5.4.2 Inspections

Two types of inspections are required: a daily walkthrough, and a weekly survey. The daily walkthrough, performed by the Organizational Manager or his/her designee, should be able to identify potential problems within 24 hours of occurrence. Problems identified during the daily walkthrough must be logged on the Daily Inspection Checklist and corrected immediately, if possible. It is a regulatory requirement that deficiencies be corrected in a timely manner and that records be kept documenting all repairs and other corrections made. Figure 3 shows the Daily Inspection Checklist. Daily Inspection Checklists must be kept for at least three years in binders labeled "WAA Daily Inspection Checklists." These binders must be readily available at all times for inspection by EH&S staff and other regulatory personnel.

The weekly inspection must be performed by one of the HWHF Technicians. The inspections are to be logged on the Hazardous Waste Accumulation Area Weekly Inspection Checklist, shown in Figure 4. These records must be kept by EH&S for at least three years and must be available for inspection by regulatory agencies.

Weekly inspections of WAAs are required by both Federal and state regulations, which are designed to ensure environmental protection and safe operation. The following items must be checked:

- Use of appropriate containers and proper packaging of waste in containers. Lids on containers must be securely closed. Containers must be checked to ensure that they are compatible with the waste and that the waste has been packaged correctly.
- Separation of incompatible wastes. There should be adequate separation in the WAA between any incompatible wastes and between ignitable wastes and sources of ignition. Aisle space between pallets

LAWRENCE BERKELEY LABORATORY
WASTE ACCUMULATION AREA
DAILY* INSPECTION CHECKLIST

Bldg./Location: <u>99 West Side</u>		Time A.M.: <u>7:15</u>		Time P.M.: <u>3:05</u>	
Inspector: <u>K. Nesbitt</u>		WEEK OF <u>7/1/91</u>		THRU <u>7/5/91</u>	

<i>MORNING CHECKLIST</i>		M	T	W	Th	F
1.	Check all drum tops for standing water	KN	KN	KN	KN	KN
2.	Check all pallets for standing water	KN	KN	KN	KN	KN
3.	Check all drums for closed/sealed lids	KN	KN	☒	KN	KN
4.	Check all drums for correct/readable labels	KN	KN	KN	KN	KN
5.	Are aisles and doorways free of obstructions?	KN	KN	KN	KN	KN
6.	Are berm areas and containment systems free of leaks and spills?	KN	KN	KN	KN	KN
7.	Are all start dates in compliance with the 60-day limitation?	KN	KN	☒	KN	KN

<i>EVENING CHECKLIST</i>		M	T	W	Th	F
1.	Check that all drum covers are on tight	KN	KN	KN	KN	KN
2.	Check that all drums are labeled	KN	KN	KN	KN	KN
3.	Check that all areas are secured and gates are locked	KN	KN	KN	KN	KN
4.						
5.						

Date Corrected	Corrected By	COMMENTS/CORRECTIVE ACTION
7/3/91	FM	3. Flammable solid only partially covered. New label put on, container closed.
7/8/91	CC	7. Caustic liquid in caustic shed over 90 days. Moved to 1 year storage.

(HWHF 5/2/91)

*Daily refers to day of operation

Figure 3. Waste Accumulation Area Daily Inspection Checklist. See Appendix D for full-sized form.

**LAWRENCE BERKELEY LABORATORY
HAZARDOUS WASTE ACCUMULATION AREA
WEEKLY INSPECTION CHECKLIST**

Bldg./Location: 99 Machine ShopDate: 7/1/91 Time: 9:00 amInspector: Rita Cummings/Reggie Martinez

(If NO is checked, document the details in the comments section on reverse side.)

	YES	NO
1. Area posted with appropriate hazard and cautionary signs?	☐	☒
2. Area free of spills?	☐	☒
3. All liquids stored in proper secondary containment?	☒	☐
4. Secondary containment basin free of liquid and debris?	☒	☐
5. Containers compatible with waste being stored?	☒	☐
6. Containers properly sealed (lids on, rings in place, caps on funnels, etc.)?	☒	☐
7. Pallets in good condition?	☒	☐
8. Emergency and safety equipment (spill kits, eyewash, etc.) accessible and in operating condition?	☐	☒
9. Current contingency plan visibly posted?	☒	☐
10. All containers properly labeled?	☒	☐
11. Labels easily visible for inspection?	☐	☒
12. Accumulation start date present on label?	☒	☐
13. All accumulation start dates within the 60-day limit?	☐	☒
14. Information on labels legible, not faded, and all required information is present?	☒	☐
15. Adequate aisle space (minimum 22 inches)?	☒	☐
16. Containers free of leaks, dents or deterioration including structural defects and rusting?	☒	☐
17. Adequate separation of incompatible materials?	☒	☐

Date Corrected	Corrected By	COMMENTS/CORRECTIVE ACTION
7/12/91	CC	1. Hazardous waste warning sign missing
7/1/91	RAM	2. Water on top of drum
7/2/91	RAM	8. Eyewash hasn't been flushed in 4 weeks
7/1/91	RAM	11. Corrosive drum labels facing in
		See reverse side

MORE COMMENTS AND CORRECTIVE ACTION ON REVERSE SIDE

(HWHF 7/12/91 CC/RC/SB)

Figure 4. Hazardous Waste Accumulation Area Weekly Inspection Checklist (front side)

- should be adequate to conduct routine maintenance and inspection activities and for any necessary emergency response.
- All safety equipment must be in its proper location, easily accessible, and in good operating condition.
- A Hazardous Waste label, completely filled out, must be affixed to each container.
- Drums and containers must be off the ground, on pallets, racks, or counters.
- Containers must show no signs of deterioration, rusting, dents, or leaking. *All spills must be identified and acted on immediately.*
- The date, time, building, and name of the person conducting the inspection must be written on the inspection sheet.

5.4.3 Record-keeping

The Organizational Manager must keep the following records relating to the WAA:

- WAA Daily Inspection Checklists (described above)
- Copies of all Hazardous Waste Disposal Requisitions
- Copies of all Record of Waste Accumulation forms
- Waste profiles, with profile numbers, for their facility.

All records must be kept for at least three years. They should be kept in the Organizational Manager's office, and they should be organized well enough that regulatory personnel would have no trouble reviewing the records for the WAA for at least three years.

5.4.4 Preparing Containers for Pickup

The Organizational Manager must arrange for waste to be picked up from the WAA within 60 days of the Accumulation Start Date by faxing the completed Hazardous Waste Disposal Requisition and other supporting documentation as necessary (Waste Profile Worksheet, Laboratory Waste Analysis Request Form, Record of Waste Accumulation Form) to EH&S, x 4838. In order to allow time to transfer the waste to the HWHF, it is recommended that the Requisition be submitted two weeks ahead of the deadline. When inspecting and approving containers for pickup by the HWHF, the HWHF Technician must ensure that the containers meet appropriate safety criteria. In case of error, the generator will repack the waste under the direction of the HWHF Technician.

5.4.5 Maintaining a Current WAA Contingency Plan

The Organizational Manager, working with the Environmental Specialist, must develop a contingency plan for dealing with spills or other accidental releases of hazardous waste in the WAA. This contingency plan must be based on the types of hazardous wastes accumulated in the WAA and must be updated as necessary to reflect any changes in the waste streams. The contingency plan, and all updates, must be approved by the Environmental Specialist. Originals of WAA contingency plans are filed with the HWHF Manager.

The contingency plan must include the following:

- a list of emergency equipment (spill kit inventory, eyewash and safety shower, fire extinguisher)
- a map showing the location of each item of emergency equipment
- a list of wastes specific to the WAA, listing generic and brand name, hazard class, average and maximum quantities, and spill response category associated with each type of waste,
- a description of the proper response procedure to a spill of each type and quantity of waste
- a map of evacuation routes out of the building (away from the WAA)
- a map of evacuation routes from LBL to the nearest hospital.

The following must be posted prominently within the WAA, in clear waterproof plastic protective sleeves, in a manner so that they are easily visible from outside the WAA:

- the contingency plan itself in its entirety
- a list of emergency equipment
- a map showing the location of each item of emergency equipment
- a map of evacuation routes out of the building (away from the WAA)
- a map of evacuation routes from LBL to the nearest hospital.

The contingency plan must not conflict with any elements of LBL's Master Emergency Plan (Pub-237 Rev.) or the Building Emergency Plan for the building or area in which the WAA is located.

5.5 Responding to Spills in a WAA

If a spill does occur, the primary aim of the response must be to protect human health and the environment. Spills are categorized as either small spills or large spills.

5.5.1 Small Spills

A small spill is defined as one in which

- the nature and hazards of the spilled material are known,
- the material does not have a perceived threat to human health or the environment, and
- the spill is small enough to be cleaned up quickly and safely by one or two people within one hour.

If a small spill does occur, the responsible program individual should immediately determine the source, type, and amount of leaking material and then follow the procedure outlined in the contingency plan for cleaning up a spill of that type of waste. If there is any uncertainty about safely managing the spill, the responsible individual should call the following number immediately:

- ICS phones: 7911 (LBL Fire Department)
- Offsite locations: 9-911 (City of Berkeley Emergency Services)

The Senior HWHF Technician and the Environmental Specialist should be informed of all spills on the day they occur. The Environmental Specialist will investigate the incident, confirm the type and amount of material spilled, and determine if the spill is a reportable incident, as defined by environmental regulatory agencies. DOE reporting rules for all spills are detailed in LBL's *Occurrence Reporting* document, LBID-1694.

Should the spill be reportable, EH&S personnel will assist the responsible organization in handling all notification and reporting requirements of the appropriate environmental agencies. The Environmental Specialist will

- verify cleanup,
- conduct follow-up sampling, if necessary, and,
- in consultation with the generator, recommend actions to be taken by the waste-generating organization to correct the problem and avoid similar incidents in the future.

The HWHF Technician should record the spill incident in his/her logbook.

5.5.2 Large Spills

A large spill is defined as one in which

- the nature of the material and the potential hazards are not known or are in question,
- the spill is perceived as an immediate actual or potential threat to public health or the environment, and
- the spilled material requires more than one or two people to clean up the spill safely within one hour.

In the event of a large spill or fire, the Fire Department or City of Berkeley Emergency Services should be called immediately at the emergency number:

- **ICS phones: 7911 (LBL Fire Department)**
- **Offsite phones: 9-911 (City of Berkeley Emergency Services)**

Provide the Fire Department or Emergency Services with the following information:

- location of spill
- source of spill
- type of material
- amount of spilled material
- any exposure to personnel.

For Hill spills, the Emergency Dispatcher at the LBL Fire Department will notify the HWHF, whose staff will respond to the spill and assist the Fire Department in stabilization of the incident. EH&S emergency response staff, taking direction from the Incident Commander (LBL Fire Department), will assess the threat to the environment and advise on cleanup procedures. EH&S will also respond and coordinate appropriate disposal activities. The Division Director of the affected division will be informed of the incident so that he or she can determine the need and level of the occurrence for reporting purposes.

The Environmental Specialist will write an internal Environmental Incident Report for the EH&S Division Director and the Division Director of the affected organization.

Approved By:

Date:

7/17/91

Manager
Hazardous Waste Handling Facility
Hazardous Waste Management Department
Environment, Health and Safety Division

Approved By:

Date:

7/17/91

David McGraw
Division Director
Environment, Health and Safety Division

Approved By:

Date:

7/17/91

Leroy T. Korth
Associate Laboratory Director
Scientific and Technical Resources

Appendix A. Location of Waste Accumulation Areas (WAAs)

Building	Location	Division	Contact	Phone
25	West side of bldg.	Engineering	Al Kanzaki	5562
27	South side of bldg.	Administration	Mac Morgan	6011
51	Northwest door	AFRD	Bob Berninzoni	5387
58	North side of bldg.	AFRD	Ralph Hipple	6372
62	East side of bldg.	MSD, CSD	Peter Ruegg	5395
76 W	West side of bldg.	Administration	Tom Hill	5339
76 Paint	East side of bldg.	Administration	Paul Stonas	6026
76 Motor Pool	South side of bldg., lower level	Administration	Harry Moitoza	5475
77A Plating	South side of bldg.	Engineering	Al Harcourt	7660
77 Paint	West side at Paint Shop	Engineering	Leszek Lewicki	5907
88	West side of bldg.	Nuclear Science	Don Stiver	7823

Lawrence Berkeley Laboratory Revised 7/2/91
Hazardous Waste Disposal Requisition
FAX 4838 • Questions: HWHF 6146

HWHF Requisition No. _____

EH&S USE ONLY

GENERATOR INFORMATION

Operating Account No. _____ Payroll Account _____ Has this information been FAXED before? ☐ Yes ☐ No

Name (printed) _____ Department _____

Project _____

Phone _____ Date _____ Material Location (Bldg., Rm., etc.) _____

INSTRUCTIONS: Please provide all information requested. List no more than one container per line (use additional lines to describe container contents, if needed). Use separate packing lists for each box of containerized material. Your signature is required and certifies that to the best of your knowledge, the chemical composition provided for each item is correct. Complete all entries or your request will be returned for clarification.

	Chemical Characterization of Waste (Do not use abbreviations)	Number of Containers	Chemical Compatibility Code (see reverse)	Size of Container	Liquid, Solid or Gas	Supporting Document Code/Profile Number	% generated from DOE-funded activities
1							
	Is this waste radioactive? (Circle one) Y or N						
2							
	Is this waste radioactive? (Circle one) Y or N						
3							
	Is this waste radioactive? (Circle one) Y or N						
4							
	Is this waste radioactive? (Circle one) Y or N						
5							
	Is this waste radioactive? (Circle one) Y or N						

*CODE: 1 MSDS 2a Waste Profile ID Number 3b Waste Profile Worksheet 4 Laboratory Analysis Report 5 Radioactive Tag

Based upon my knowledge of the waste, and/or chemical/physical analysis, I certify that the information provided regarding the waste specified on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature _____

EH&S USE ONLY

HWHF Representative(s) _____

Date _____

Appendix B

LBL HAZARDOUS WASTE DISPOSAL PACKAGING REQUIREMENTS

The following requirements must be met as a condition for pick-up and disposal of chemicals by Environment, Health and Safety (EH&S). If you have questions or unusual problems, please call EH&S at extension 5251 for assistance.

1. It is Laboratory policy not to flush any hazardous substances down the LBL sewer system. EH&S must review and approve the disposal of all hazardous substances to the sanitary sewer for compliance, as well as for safety issues. Washing contaminated glassware is an example. Highly toxic, malodorous, or lachrymatory chemicals should not be disposed of down the drain. Laboratory drains are generally interconnected; a substance that goes down one sink may well come up as a vapor in another. There is a very real hazard of chemicals from two sources contacting one another; the sulfide poured into one drain may contact the acid poured into another, with unpleasant consequences for all in the building. Some simple reactions can even cause explosions (e.g., ammonia plus iodine, silver nitrate plus ethanol, or picric acid plus lead salts).
2. Chemicals must be separated into compatible groups. A compatibility guide is provided below and a more detailed version is attached for reference.
3. Leaking containers of any sort will not be accepted.
4. Dry materials (gloves, wipes, pipettes, etc.) must be securely contained in double plastic bags and overpacked in a cardboard box. Packages that are wet or have sharp protruding objects will not be accepted.
5. Unknown chemicals cannot be accepted by the Hazardous Waste Handling Facility (HWHF). The responsible department must make every effort to identify the material designated for disposal. If all the user's attempts to identify the waste chemicals have failed, EH&S will aid in the sampling of said waste and will charge the user's account for analysis. For more information call the HWHF Manager at extension 5146.
6. Each breakable container must be properly boxed. Place all bottles in plastic bags. Then place the bags in a sturdy container and use an absorbent cushioning material that is compatible with the chemicals.
7. Each primary container must be labeled with content, amount, physical state, and the percentage breakdown when dealing with a mixture.
8. Each container must have a complete list of contents or description written on an official LBL Hazardous Waste Disposal Requisition form. Blank forms are available from your division office.
9. Containers must be of a reasonable size and weight so that one person is able to handle them safely. Containers that exceed 45 pounds or 18 inches on a side cannot be safely handled by one person and will not be accepted. Arrangements must be made with HWHF for transportation of large items.
10. Avoid accumulating laboratory chemicals! Request frequent chemical pick-up.
11. Do not accumulate any wastes for over 60 days at a Waste Accumulation Area (WAA) or over 275 days at a Satellite Accumulation Area (SAA).

SUPPORTING DOCUMENTATION REQUIREMENTS

Each waste container must have the contents described on the hazardous waste label, and supporting documentation must be attached to the container in a plastic pouch OR on file at HWHF. Supporting documentation can be one of the following:

(A) Process knowledge of wastes whose composition is documented by the procedures generating them; (B) records of accumulation - a log that contains an entry each time waste is added to a container; (C) an MSDS for all chemicals/materials used in an experiment or process; (D) an MSDS for spent or unused materials; (E) a generic description when the material has a well-known standard composition (e.g., waste batteries or waste mercury-contaminated glassware); (F) analytic results from a certified laboratory; or (G) radioactive tag.

Waste Profiling. If the paperwork submitted supports the description of the waste stream adequately, and the waste stream will not change over time, HWHF will assign a waste stream profile number. If not, HWHF will contact the generator for clarification and/or to arrange for laboratory analysis of the waste stream. Once a profile number is assigned, the generator enters it under the supporting document code/profile number column on the requisition form.

PICKUP AND TRANSPORTATION

An LBL Hazardous Waste Disposal Requisition form must be "FAXed" to HWHF. Extension 4838 is dedicated to this purpose.

Keep two copies of the requisition form: attach one copy to the containers to be picked up and put the other in your file or work binder as a generator record.

CHEMICAL COMPATIBILITY GUIDE

Separating chemicals into compatible groups can be a complicated procedure. There are several in-depth guides available. For the purposes of packaging chemicals for removal from the Laboratory, EH&S provides the following simplified guide on the following page. Additional information on proper segregation of chemicals can be found in references such as the Material Safety Data Sheets (MSDSs), Aldrich Catalog Handbook of Fine Chemicals, the NIOSH Registry of Toxic Effects of Chemical Substances, or the Merck Index. Laboratory personnel will be able to segregate most chemicals into safe, compatible groups for shipping or short-term storage. For potentially explosive chemicals, contact Industrial Hygiene at extension 5829 for assistance. Contact HWHF for questions about separation and segregation of waste.

CHEMICAL COMPATIBILITY CODES

I. Solvents - Flammable Liquids, Combustible Liquids	V. Poisons - Organics, Metalics, Inorganic Cyanides
II. Flammable Solids - Organic, Metals, Solids that are dangerous when wet, Sulfides, Phosphorous Allotropes, Organometallic Compounds, Inorganics	VI. Potential Reactives (Explosive) - Trinitros, Azides, Amides, Monomeric Isocyanates
III. Oxidizers - Nitrates, Chlorates, Perchlorates, Oxides, Oxidizing Acids	VII. Other Chemical Waste - Separate organics from inorganics. Separate liquids from solids.
IV. Corrosives - Acids (Mineral, Organic, Reactive Corrosives); Bases (Inorganics, Organics, Hydrating Solutions)	VIII. Debris - Separate organics from inorganics and label packaging with all contaminants present.

Chemical Compatibility Guide

Identifying and recognizing the hazards of each chemical is critical in order to handle these materials safely.

To meet safety and environmental requirements, the following **basic categories** must be used for segregating and separating your waste.

I. Solvents

- A. Flammable Liquids
 - 1. Aliphatic:
 - Acetone, Isopropanol, Methyl Ethyl Ketone, Methanol
 - 2. Aromatic:
 - Toluene, Xylene, Benzene, Propyl Benzene
 - 3. Monohalogenated Solvents:
 - Chlorobenzene, Ethyl Chloride, Acetyl Chloride
 - 4. Monomers:
 - Styrene, Ethylene, Vinyl Acetylene, Vinyl Pyridine
 - 5. Reactives:
 - Isopropyl Ether, Phenyl Manganese Chloride, Hydrazine Anhydrous, Ethyl Ether, Divinyl Ether
- B. Combustible Liquids
 - 1. Glycols:
 - Ethylene Glycol Dibutyl Ether, Ethylene Glycol Monomethyl Ether
 - 2. Mineral Spirits
- C. Halogenated Solvents
 - Carbon Tetrachloride, 1,1,1-Trichloroethane Ethyl Chloroacetate

II. Flammable Solids

- A. Organic Flammable Solids:
 - Cellulose Acetate, Nitrocellulose (At least 20% wet)
- B. Flammable Metals:
 - Manganese, Magnesium, Yttrium, Zirconium
- C. Flammable Solids (Dangerous when wet):
 - Sodium, Lithium, Calcium, Lithium Hydride
- D. Flammable Sulfides:
 - Sodium Sulfide, Potassium Sulfide, Ammonium Sulfide
- E. Phosphorous Allotropes:
 - Phosphorus (Yellow, Red, White), Aluminum Phosphide, Phosphorus Sulfide, Phosphorus Pentasulfide
- F. Organometallic Compounds:
 - Lithium Butoxide, Lithium Metoxide, Sodium Ethoxy, Sodium Butylate, Potassium Methylate
- G. Inorganic Flammable Solids:
 - Sodium Phosphide, Aluminum Hydride, Sodium Borohydride, Boron Lithium Aluminum Alloy

III. Oxidizers

- A. Nitrates:
 - Potassium Nitrate, Calcium Nitrate, Sodium Nitrate, Zinc Nitrate, Thallium Nitrate
- B. Chlorates:
 - Potassium Chlorate, Lithium Chlorate, Calcium Chlorate, Strontium Chlorate
- C. Perchlorates:
 - Lithium Perchlorate, Magnesium Perchlorate
- D. Oxides:
 - Manganese Dioxide, Magnesium Dioxide, Chromium Trioxide, Lead Oxide (Brown)
- E. Oxidizing Acids:
 - Nitric Acid (greater than 40%), Perchloric Acid, Periodic Acid

Chemical Compatibility Guide

continued...

IV. Corrosives

A. Acids

1. Mineral Acids:
Hydrochloric Acid, Sulfuric Acid, Nitric Acid (Less than 40%), Phosphoric Acid
2. Organic Acids:
Acetic Acid, Acetic Anhydride, Acetyl Bromide, Formic Acid, Isopentanoic Acid
3. Reactive Corrosives:
Phosphorus Trichloride, Phosphorus Pentachloride, Antimony Trichloride, Phosphoric Anhydride

B. Bases

1. Inorganics:
Sodium hydroxide, Potassium Hydroxide, Ammonium Hydroxide, Sodium Hypochlorite
2. Organics:
Amino Propyl Diethanolamine, Amino Ethyl Piperazine, Acetyl Iodide, Benzoyl Chloride, Dimethyl Sulfonyl Chloride
3. Hydrazine Solutions

V. Poisons

A. Organics:

Phenol, Acrylamide, Benzoin, Benzidine, Aniline

B. Metallics:

Arsenic, Lead, Beryllium, Mercury, Selenium

C. Inorganic Cyanides:

Potassium Cyanide, Sodium Cyanide, Cyanogen Bromide

VI. Potential Reactives (Explosive)

A. Trinitros:

Trinitrophenol (Picric Acid), Trinitrobenzene, Trinitrotoluene (TNT), Trinitromethane

B. Azides:

Hydrogen Azide, Ammonium Azide, Barium Azide, Chlorine Azide, Silver Azide

C. Amides:

Trinitroaniline (Picramide), Sodamide, Potassium Amide

D. Monomeric Isocyanates:

Hydrocyanic Acid, Isothiocyanuric Acid

VII. Other Chemical Waste

A. Separate Organics from Inorganics*

B. Separate Liquids from Solids

VIII. Debris

A. Separate Organics from Inorganics* and label packaging with all contaminants present.

*Inorganic materials contaminated with organic components should be segregated as organic.

Appendix C: Who to Call for Further Information

<u>Number</u>	<u>Item</u>	<u>Person</u>
5251	EH&S general number	
5829	Industrial Hygiene Department general number	
4644	Environmental Specialist	Rita Cummings
7625	HWHF Technician	Reggie Martinez
6146	HWHF Manager	Charlie Carr
7623	Environmental Monitoring	Gary Schleimer
4644	Help in locating WAAs	Rita Cummings
7625	Help in locating WAAs	Reggie Martinez
6146	Help in locating WAAs	Charlie Carr
7625	Absorbant for spill cleanup	Reggie Martinez
6242	Chemicals, solvents, surplus	Materiel Management
4644	Compatibility, chemical (what can be stored next to what and where)	Rita Cummings
7625	Compatibility, chemical (what can be stored next to what and where)	Reggie Martinez
6146	Containers for hazardous waste (what type to use)	Charlie Carr
4838	Fax number, hazardous waste disposal	
4776	Fax number, EH&S	
6015	Grounding and bonding wires	Fire Department
6146	WAA Daily Inspection Checklist	Charlie Carr
6146	WAAs, establishing or deactivating	Charlie Carr
6146	WAA site record-keeping requirements	Charlie Carr
6146	WAA site guidelines for maintenance	Charlie Carr
5829	Hazardous material, information prior to ordering	Industrial Hygiene Department
6146	Hazardous waste not picked up in 3 days	Charlie Carr
5303	Lead, scrap, not contaminated	Salvage
6146	Labeling "empty" hazardous waste containers	Charlie Carr
7625	Labeling "empty" hazardous waste containers	Reggie Martinez
6146	Labeling hazardous waste containers	Charlie Carr
7625	Labeling hazardous waste containers	Reggie Martinez
7615	Liquid destined for EBMUD sewer	Charles Smith

<u>Number</u>	<u>Item</u>	<u>Person</u>
5829	MSDSs, copies of	Industrial Hygiene Department
4644	MDSs, interpretation of	Rita Cummings
7609	Mercury, spill	Glenn Garabedian
7625	Mercury, spill	Reggie Martinez
5303	Metal, precious, recycling of	Salvage
5303	Metal, scrap, for recycling	Salvage
4644	<i>Minimizing hazardous waste in your area</i>	<i>Rita Cummings</i>
4644	Mixing waste (what's safe to mix?)	Rita Cummings
7625	PCBs, disposal of	Reggie Martinez
5829	PPE (Personal Protective Equipment)	Industrial Hygiene
7603	Radioisotope safety	Jim Haley
7621	Radioisotope transportation	Dick Harvey
4644	Regulations, hazardous waste, clarification of	Rita Cummings
4644	Regulations, hazardous waste, copies of	Rita Cummings
7625	Spill cleanup supplies	Reggie Martinez
5251	Training, to sign up for	EH&S front desk
5258	Training, hazardous waste, course content	Jack Bartley
4644	Training, medical and biological waste, course content	Rita Cummings
6266	Chemical exposure (skin, hair, eyes, swallowed, inhalation)	Medical Services (normal working hours)
7911	Chemical exposure (skin, hair, eyes, swallowed, inhalation)	Fire Department (off hours)
7911	Hazardous Material Spills	
1-800-523-2222	Poison Control Hotline for help with chemical exposures	
1-415-476-6600	Poison Control Hotline for help with chemical exposures	

Appendix D

Forms

LAWRENCE BERKELEY LABORATORY
WASTE ACCUMULATION AREA
DAILY INSPECTION CHECKLIST

Bldg./Location: _____

Time A.M.: _____ Time P.M.: _____

Inspector: _____

WEEK OF _____ THRU _____

MORNING CHECKLIST

	M	T	W	Th	F
1. Check all drum tops for standing water					
2. Check all pallets for standing water					
3. Check all drums for closed/sealed lids					
4. Check all drums for correct/readable labels					
5. Are aisles and doorways free of obstructions?					
6. Are berm areas and containment systems free of leaks and spills?					
7. Are all start dates in compliance with the 60-day limitation?					

EVENING CHECKLIST

1. Check that all drum covers are on tight					
2. Check that all drums are labeled					
3. Check that all areas are secured and gates are locked					
4. _____					
5. _____					

Date Corrected	Corrected By	COMMENTS/CORRECTIVE ACTION

(HWHF 4129191RC/RM)