PUB-3095
Revision 1

Medical and Biohazardous Waste Generator's Guide

Revision 1
September 1994

Environment, Health and Safety Division
Lawrence Berkeley Laboratory
University of California
Berkeley, CA 94720

Prepared for the U.S. Department of Energy under Contract No. DE-AC03-76SF00098

Medical and Biohazardous Waste Generator's Guide

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Revision 1
September 1994

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Certification

I hereby certify that, to the best of my knowledge and belief, the statements made herein are correct and true.

9/21/94
David McGraw Date
Division Director
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1. Introduction

1.1 Purpose

This Guide describes the procedures required to comply with all federal and state laws and regulations and Lawrence Berkeley Laboratory (LBL) policy applicable to medical and biohazardous waste. The members of the LBL Biological Safety Subcommittee participated in writing these policies and procedures.

1.2 Scope

The procedures and policies in this Guide apply to LBL personnel who work with

- infectious agents or potentially infectious agents
- publicly perceived infectious items or materials (e.g., medical gloves, culture dishes)
- sharps (e.g., needles, syringes, razor blades)

1.3 Background

In the last few years, the public and health professionals have become increasingly concerned about protecting workers and the public from exposure to bloodborne pathogens and infectious body fluids that may spread the human immunodeficiency virus (HIV, or the AIDS virus), the Hepatitis B virus, or other diseases. The United States Environmental Protection Agency (EPA), The United States Department of Labor, and the State of California have written additional laws and regulations to require safe handling and disposal of medical and biohazardous waste. The discovery of used syringes, bandages, culture dishes, etc., in dumpsters, sanitary landfills, and beach washups (debris) contributed to the creation of these new requirements.

1.4 In this Guide

Forms explained in this Guide are available in the appendices.

An extensive definition section is included as part of this Guide. It is intended to specifically address questions that may arise after personnel attend a training course or change an experimental procedure. The definitions incorporate LBL policy.

2. Governing Documents

2.1 Laws

- RCRA Medical Waste Tracking Act of 1988 (Subtitle J)
- California Health and Safety Code, Sections 25015 et seq., also known as the Medical Waste Management Act

2.2 Regulations

- Standards for the Tracking and Management of Medical Waste, 40 CFR 259
- OSHA Blood Borne Pathogens Standard, 29 CFR 1910.1030
- OSHA Instruction CPL 2-2.44A, Universal Precautions

2.3 LBL Publications

- LBL PUB-3092, *Guidelines for Generators of Hazardous Chemical Waste at LBL and Guidelines for Generators of Radioactive Waste at LBL*, latest revision
- EH&S Procedure 810, *Vendor Oversight*, latest revision

3. Definitions

3.1 Medical Waste

According to the California Health and Safety Code (Section 25023.2), the term "medical waste" is all of the following:

- Biohazardous waste or sharps waste
- Waste which is generated or produced, as a result of the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals.

Medical waste may contain infectious agents.

3.2 Biohazardous Waste

According to the California Health and Safety Code (Section 25020.5), biohazardous waste means any of the following:

- Laboratory waste, including, but not limited to, all of the following:
  - human or animal specimen cultures from medical and pathological laboratories
  - cultures and stocks of infectious agents from research and industrial laboratories
  - wastes from the production of bacteria, viruses, or the use of spores, discarded live and attenuated vaccines, and culture dishes and devices used to transfer, inoculate, and mix cultures.
- Waste containing any microbiological specimens sent to a laboratory for analysis.
- Human surgery specimens or tissues removed at surgery or autopsy, which are suspected by attending physician and surgeon or dentist of being contaminated with infectious agents known to be contagious to humans. **(LBL policy is that all surgery specimens or tissues will be disposed of as medical and biohazardous waste.)**

Continued on next page.

3. Definitions (continued)

3.2 Biohazardous Waste (continued)

- Animal parts, tissues, fluids, or carcasses suspected by the attending veterinarian of being contaminated with infectious agents known to be contagious to humans. **[LBL policy is that animal carcasses found dead on site by LBL Protective Services (except for deer carcasses, which go to Animal Services, Berkeley) are disposed of as medical and biohazardous waste.]**

- Waste, which at the point of transport from the generator's site, at the point of disposal, or thereafter, contains recognizable fluid blood, fluid blood products, containers, or equipment containing blood that is fluid or blood from animals known to be infected with diseases which are highly communicable to humans.

- Waste containing discarded materials contaminated with excretion, exudate, or secretions from humans who are required to be isolated by the infection control staff, the attending physician and surgeon, the attending veterinarian, or the local health officer, to protect others from highly communicable diseases or isolated animals known to be infected with diseases which are highly communicable to humans.

At LBL, "biohazardous" will be spelled out in all references to medical waste to remind personnel who work in research laboratories, production shops, and office areas of the broader definition.

3.3 Identified Biohazardous Areas at LBL

All of the following areas:

- Bioresearch laboratories
- Biomedical laboratories
- Patient treatment areas (e.g., Medical Services, and Building 55)
- Specific areas in LBL Buildings 10, 55, 70, 70A, 74, 74B, 83, 934, Calvin (Building 3, UCB), and Donner (Building 1, UCB)
- Medical research laboratories
- Cholesterol Research Center on Telegraph Avenue (Building 940)

Continued on next page.

3. Definitions (continued)

3.4 Sharps

Sharps are any device having acute rigid corners, edges, or protuberances capable of piercing or cutting the skin. This includes, but is not limited to,

- blades
- hypodermic needles
- broken glass items contaminated with other medical waste
- drill bits that are capable of piercing or cutting the skin (thin bits like hypodermic needles)* (LBL policy)
- hypodermic needles
- needles with attached tubing
- Pasteur pipettes, all (LBL policy)
- razor blades*
- scalpel blades*
- glass syringes with needle attached
- glass syringes, without needle attached (LBL policy)
- plastic syringes with needle attached

*Found in production shops, offices, and other areas.

All sharps items, regardless of their use in any area of LBL, must be accumulated in leakproof, rigid, puncture-proof containers and disposed of as medical and biohazardous waste.

3.5 Nonmedical and Nonbiohazardous Wastes

According to the California Health and Safety Code (Section 25023.8), medical waste does **not** include any of the following:

- Waste containing microbiological cultures used in food processing and biotechnology and any containers or devices used in the preparation and handling of these cultures, that is not considered to be an infectious agent pursuant to Section 25022.5.
- Waste which is not biohazardous, such as paper towels, paper products, articles containing nonfluid blood, and other medical solid waste products commonly found in the facilities of medical waste generators.
- Hazardous waste, radioactive waste, or household waste.

Continued on next page.

3. Definitions (continued)

3.6 Nonbiological Work Areas at LBL	Production and maintenance shops, shipping and receiving, cafeterias, office areas, etc., are not LBL-identified biohazardous work areas. **LBL policy is that all sharps will be disposed of as medical and biohazardous waste regardless of their use or location of use.**

Other Definitions (in alphabetical order)

3.7 **Biohazard Bag**	A red disposable bag that is impervious to moisture and with a strength sufficient to preclude ripping, tearing, or bursting under normal conditions of usage and handling of the waste-filled bag. A biohazard bag must be constructed of material of sufficient single-thickness strength to pass the 165-gram dropped dart impact resistant test as prescribed by Standard D 1709-85 of the American Society for Testing and Materials (ASTM) and certified by the bag manufacturer. The bag must be conspicuously labeled with the words BIOHAZARDOUS WASTE or with the international biohazard symbol **and** the word BIOHAZARD. (See Appendix 2 for a list of supplies.)
3.8 **Biohazardous Waste (Storage Area) Warning Sign**	Warning signs must be worded in English (CAUTION — BIOHAZARDOUS WASTE STORAGE AREA — UNAUTHORIZED PERSONS KEEP OUT) and in Spanish (CUIDADO — ZONA DE RESIDUOS — BIOLOGICOS PELIGROSOS — PROHIBIDA LA ENTRADA A PERSONAS NO AUTORIZADAS), or in another language. Warning signs must be readily legible during daylight from a distance of at least 25 feet (8 meters). (California Health and Safety Code 25086) (Appendix 6 contains examples of these signs.)
3.9 **Biologicals**	Preparations made from organisms, or from products of their metabolism, intended for use in diagnosing, immunizing, treating, or doing research on humans or animals.
3.10 **Biological Waste**	Biological material and/or biomedical devices (e.g., culture flasks, Petri dishes, and gloves).
3.11 **Controlled Area**	An area where radioactive materials or elevated radiation fields may be present.

Continued on next page.

3. Definitions (continued)

3.12 Cradle-to-Grave Tracking

According to EPA regulations, all medical waste generators must have carefully detailed records documenting the generation, storage, treatment, and disposal of all medical and biohazardous waste generated at their facility. These records essentially cover medical and biohazardous waste from the point of origin (generation) to its final offsite destination and disposal.

3.13 Double Containment

To prevent leaks that may cause a spill, all medical and biohazardous waste must be double-contained when accumulated and/or stored in a biohazard bag. In order to double-contain the waste, the biohazard bag must be placed inside a rigid, leakproof container (for example, a wastebasket, bucket, barrel, box, or drum, all preferably red) with a tight-fitting lid, with the international biohazard symbol and the word BIOHAZARD affixed to the sides of the outer container and the lid.

3.14 Infectious Agent

"Infectious agent" means a type of microorganism, bacteria, mold, parasite, or virus that normally causes or significantly contributes to the cause of, increased morbidity or mortality of human beings.

3.15 Mixed Medical Waste

Any mixture of medical and nonmedical waste is considered medical waste, with the following exceptions:

- **Waste that is both medical/biohazardous and hazardous is considered to be hazardous waste and is subject to hazardous-waste regulations.** This waste must be handled according to procedures given in the *Guidelines for Generators of Hazardous Chemical Waste at LBL* (part of PUB-3092).

- **Waste that is both medical/biohazardous and radioactive is considered to be radioactive waste and is subject to radioactive waste regulations.** This waste must be handled according to procedures given in the *Guidelines for Generators of Radioactive and Mixed Waste at LBL* (part of PUB-3092).

- **Waste that is medical/biohazardous, hazardous, and radioactive is considered to be mixed waste and is subject to hazardous and radioactive waste regulations.** This waste must be handled according to procedures given in the *Guidelines for Generators of Radioactive and Mixed Waste at LBL* (part of PUB-3092).

Contact EH&S for guidance on the disposal of mixed medical waste.

Continued on next page.

3. Definitions (continued)

3.16 Radioactive Materials Management Area	An area in which the potential exists for contamination due to the presence of unencapsulated or unconfined radioactive material or an area that is exposed to beams or other sources of particles (neutrons, protons, etc.) capable of causing activation.
3.17 Sharps Container	A leakproof, rigid, puncture-resistant container specifically designed for containing sharps for disposal. When this container is sealed, it is leak-resistant and cannot be reopened without great difficulty. In LBL laboratories, these containers must be labeled with the words SHARPS WASTE or with the international biohazard symbol and the word BIOHAZARD. In LBL shop and office areas, sharps containers are labeled SHARPS WASTE. (See Appendix 2 for a list of supplies.)
3.18 Treatment	"Treatment" means any method, technique, or process designed to change the biological character or composition of any medical waste so as to eliminate its potential for causing disease. Medical and biohazardous waste must be sterilized and rendered nonrecognizable and subsequently disposed of in a sanitary landfill. Treatment at the vendor's plant may be incineration or microwaving.
3.19 Universal Precautions	The essence of taking universal precautions is that one must assume that every direct contact with human blood or body fluids is infectious and requires every employee exposed to be protected as though such body fluids were infected with bloodborne pathogens. All infectious/medical material, such as body fluids, must be handled according to universal precautions under the OSHA Instruction CPL 2-2.44A, which means wearing lab coats, gloves, and masks when appropriate, and disinfecting or autoclaving all items that may be contaminated with the body fluids. Note that autoclaving of biohazardous material, when done under universal-precautions guidelines, is **not** considered treatment.

4. Responsibilities

4.1 Biological Safety Subcommittee

- Reviews biological safety guidelines for LBL work with potentially dangerous biological materials upon request from the Safety Review Committee or appropriate Division Director.
- Evaluates systems for containment, sample handling, and disposal of biological hazardous materials upon request from the Safety Review Committee or appropriate Division Director.

4.2 Division or Program

- Provides and maintains the storage and containment locations (pickup sites) for medical and biohazardous waste.
- Assigns a medical and biohazardous waste pickup site coordinator and one alternate.
- Ensures implementation of the requirements described in this Guide.

4.3 Division or Program Supervisor

- Ensure that their staff is trained in proper work practices, in the concept of universal precautions, in personal protective equipment, and in proper cleanup and disposal techniques.
- Ensure that all of their personnel who generate and/or handle medical and biohazardous waste attend a formal training course. See Section 9 of this Guide, *Training Requirements*, for more information.
- Ensure that personnel who work near medical and biological waste accumulation and/or storage areas are informed of the hazards, are able to recognize storage containers, and know what to do and who to call in case of an exposure or spill. In this case, "personnel" includes Construction and Maintenance technicians, contractors, temporary clerical workers, visiting scientists, and students.
- Ensure that personnel who work with bloodborne pathogens are trained in the hazards of potential infection as well as proper handling and disposal methods upon initial assignment. Contact the EH&S Industrial Hygiene Group at extension 5829 for assistance.

Continued on next page.

4. Responsibilities (continued)

4.4 Generator	• Segregates and separates medical and biohazardous waste from other trash and waste. • Follows procedures and policies in this Guide. • Maintains documentation on the process or experiment that generates medical and biohazardous waste. • Attends the training course (EHS-730) on handling and disposal of medical and biohazardous waste. • Characterizes medical and biohazardous waste.
4.5 Pickup Site Coordinator	• Authorizes waste pickup by LBL's contractor, or delegates the responsibility to an alternate. • Maintains all records described in Section 11 of this Guide, *Record Keeping — Cradle-to-Grave Tracking*. • Arranges for nonroutine pickup of waste directly with LBL's contractor who hauls medical waste, if necessary. • Attends a training session (EHS-730) for generators of medical and biohazardous waste. • Attends a training session (EHS-731) that addresses the specific procedures related to the containment and storage locations (pickup sites), and waste-pickup procedures of LBL's contractor. • Ensures that pickup site containers are designated for incineration if they contain animal tissues or carcasses.
4.6 Alternate Pickup Site Coordinator	• Authorizes waste pickup by LBL's contractor. • Files paperwork with the Pickup Site Coordinator. • Attends a training session (EHS-730) for generators of medical and biohazardous waste. • Attends a training session (EHS-731) that addresses the specific procedures related to the containment and storage locations (pickup sites), and the waste-pickup procedures of LBL's contractor.

Continued on next page.

4. Responsibilities (continued)

4.7 EH&S Waste Management Group

- Advises generator on the identification and characterization of waste.
- Arranges and schedules the generator training course (EHS-730) and the pickup site coordinator training course (EHS-731).
- Performs surveillances of generator work areas for environmental regulatory compliance.
- Contracts with a vendor for the hauling and disposal of medical and biohazardous waste.
- Monitors record-keeping practices of generators and pickup site coordinators.
- Inspects containment and storage locations (pickup sites) at least once each year.
- Audits the LBL contractor who hauls, treats, and disposes of medical and biohazardous waste once each year.
- Prepares and files the Medical Waste Management Plan for registration with the State of California, Department of Health Services, Environmental Management Branch.
- Maintains all records described in Section 11 of this Guide, *Record Keeping — Cradle-to-Grave Tracking*.
- Updates this Guide and its appendices when needed and obtains necessary approvals.
- Updates EH&S records with the cost-to-date of the vendor contract for hauling, treating, and disposing of medical waste.
- Updates EH&S records with the weight (in pounds and kg) of medical waste hauled and treated for each month and totals for the calendar year.
- Arranges for the incineration of off-spec biochemicals, pharmaceuticals, and over-the-counter drugs that are not considered hazardous waste and that are approved by the medical waste disposal contractor.

Continued on next page.

4. Responsibilities (continued)

4.8 Facilities Department (including custodial personnel)	• Receives training on handling and disposal of waste. • Follows the procedures and policies in this Guide.
4.9 Medical Services Group	• Provides medical assistance whenever there is an exposure to a biohazard or an infectious agent.

5. Policy

5.1 Waste that is also Hazardous and/or Radioactive

If medical or biohazardous waste is contaminated or mixed with a hazardous chemical or material, with a radioactive material, or with both, the waste will be handled in accordance with the applicable federal and State of California laws and regulations for hazardous, radioactive, or mixed waste. Review the flow chart (Figure 5-1).

Medical and biohazardous waste containing only residual amounts of bleach, phenol, ammonia, iodoform, or permanganate solutions will be accepted as medical and biohazardous waste. Refer to the *Guidelines for Generators of Hazardous and Chemical Waste at LBL* or *Guidelines for Generators of Radioactive and Mixed Waste at LBL* , and call EH&S Waste Management Department at extension 5251 for assistance.

5.2 Discharge to Public Sewer and Storm Drains

Liquid and semiliquid waste that does not meet the definition of medical and biohazardous waste or of hazardous waste after it has been disinfected can be discharged to the sanitary sewer system. Pharmaceuticals, biochemicals and over-the-counter drugs must not be discharged to the sanitary sewer or storm drains. Call the EH&S Waste Management Group at extension 5251 for assistance.

5.3 Incineration

Animal carcasses (including tissues and parts) must be incinerated. Generators mark the pickup site container for incineration when the waste inside contains any of these items.

5.4 Nonmedical and Nonbiohazardous Wastes

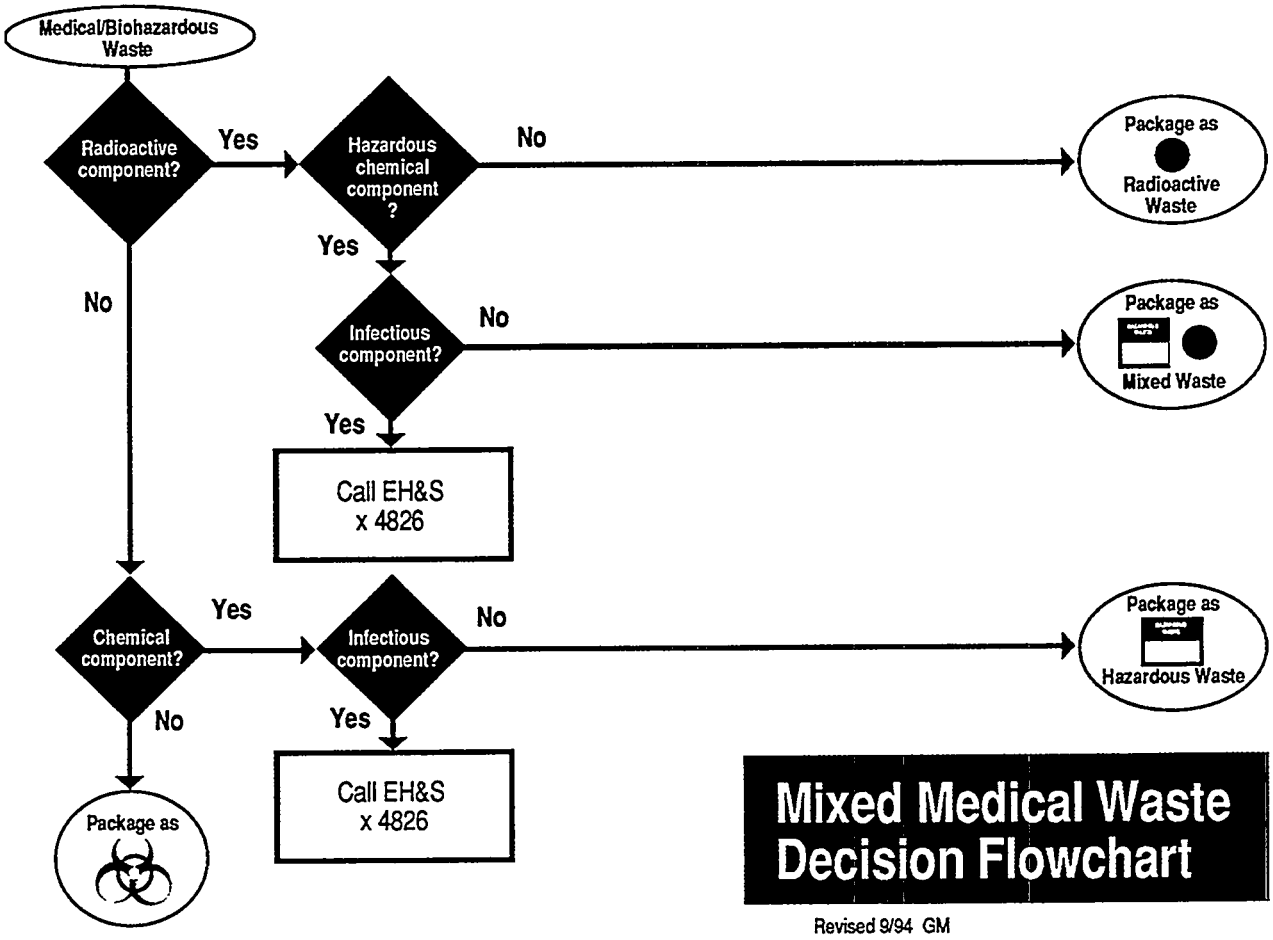
Gloves that look like medical gloves used in nonidentified biohazardous work areas may be discarded in the regular trash, provided they are not contaminated with solvents, other hazardous chemicals, or radioactive materials. Gloves used to handle epoxy that solidifies or to handle high-vacuum components may be discarded as regular trash, as long as they are not contaminated with hazardous or radioactive materials.

Broken glass that is not contaminated with medical or biohazardous waste may be discarded in the regular trash and subsequently recycled by an LBL contractor. Refer to Section 7.4 for packaging instructions.

Continued on next page.

5. Policy (continued)

Figure 5-1 **Decision Flow Chart for Mixed Medical Waste**



Continued on next page.

5. Policy (continued)

5.5 Identified Biohazardous Areas at LBL

If you work in one of the following areas:

- Bioresearch laboratories
- Biomedical laboratories
- Patient treatment areas (e.g., Medical Services, and Building 55)
- Specific areas in LBL Buildings 10, 55, 70, 70A, 74, 74B, 83, 934, Calvin (Building 3, UCB), and Donner (Building 1, UCB)
- Medical research laboratories
- Cholesterol Research Center on Telegraph Avenue (Building 940)

you must dispose of all

- blood and blood-contaminated items
- human and animal tissues
- biological/medical associated materials (uncontaminated materials that the public might assume are contaminated by infectious agents because of their appearance). Examples include the following:
  - culture dishes(including Petri dishes)
  - medical gloves*
  - needles
  - needles attached to syringes
  - Pasteur pipettes
  - scalpels
  - specimen tubes/vials
  - syringes, glass or plastic
  - Vacutainers™

as medical/biohazardous waste.

*All gloves (whether contaminated or noncontaminated) that are used in an identified biohazardous area must be disposed of as medical and biohazardous waste.

6. Overview of What is Required of the Generator

6.1 Inventory and Planning

- Review the definition of medical and biohazardous waste (see Section 3) to determine what must be collected separately. Medical and biohazardous waste contaminated with hazardous chemicals/materials and/or radioactive isotopes will be handled according to hazardous chemical waste and/or radioactive waste regulations .

- Schedule a routine quarterly cleaning of all rigid containers. First, remove all visible dirt by agitation. Then disinfect the container, using freshly prepared hypochlorite (bleach) solution containing 500 ppm available chlorine. [Prepare the 500-ppm solution by adding 2-1/2 ounces (75 ml) of household bleach to one gallon of water.] The minimum contact time for the bleach solution is three minutes.

6.2 Setting up Accumulation Containers at the Worksite or Near the Lab Bench

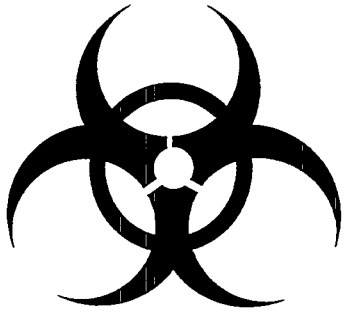
- Place small, rigid, lidded containers lined with red biohazard bags and/or sharps containers near the point of origin (worksite) where the waste is generated (see Figure in Section 7). See Appendix 2 for a list of supplies.

- Ensure that the containers and lids are marked with the words BIOHAZARDOUS WASTE, or with the international biohazard symbol (see Figure 6-1) and the word BIOHAZARD. The markings must be clearly visible from any side of the container to personnel who may be in or around that worksite.

- Document the location of the containers (see Figure 6-2).

Note: Waste must not accumulate in a biohazard bag more than seven days. In other words, waste must be picked up by LBL's contractor by the end of the seventh day of accumulation.

Figure 6-1 **International Biohazard Symbol**



6. Overview of What is Required of the Generator (continued)

Figure 6-2 Example of Completed Points of Origin Form (Locations of Accumulation Containers)

Lawrence Berkeley Laboratory • Environment, Health and Safety Division

Medical and Biohazardous Waste Points of Origin

(Locations of Accumulation Containers)

Use a √ for type of waste.

Building	Room	Contact Person & Extension	LBL employee #	Type of Waste*: Laboratory Wastes	Blood or body fluids	Sharps	Contaminated animals	Surgical Specimens	Isolation Waste	LBL Policy: Publicly perceived**
99	117	Richard Cullingworth x9852	123456		√	√	√			
99	Mach Shop	Martin Smith x7342	789012			√				
99	305	Marty Nesbitt x9877	345678			√				

EXAMPLE

*Type of waste

Laboratory wastes — specimen or microbiologic cultures, stocks of infectious agents, live and attenuated vaccines, and culture mediums

Blood or body fluids — liquid blood elements or other regulated body fluids, or articles contaminated with blood or body fluids

Sharps — syringes, needles, blades, broken glass (At LBL sharps may be included here because they are perceived by the public as a medical waste.)

Contaminated animals — animal carcasses, body parts, bedding materials

Surgical specimens — human or animal parts or tissues removed surgically or by autopsy

Isolation waste — waste contaminated with excretion, exudate, or secretions from humans or animals who are isolated due only to the highly communicable diseases listed by Centers for Disease Control as requiring Biosafety Level 4 precautions. Biosafety Level 4 viruses and diseases are: Congo-Crimean hemorrhagic fever, Tick-borne encephalitis virus complex (Absettarov, Hanzalova, Hypr, Kumlinge, Kyasanur Forest disease, Omsk hemorrhagic fever, and Russian Spring-Summer encephalitis), Marburg disease, Ebola, Junin virus, Lassa fever virus, Machupo virus.

** **Publicly perceived** — includes culture dishes, surgical/medical gloves and sharps.

Form completed by: Pickup Site Coordinator on Proj. Leader Date: 8/2/93

(9/94 GM) **Send a copy to EH&S, Waste Management Group, M/S B75B-101.**

Continued on next page.

6. Overview of What is Required of the Generator (continued)

6.3 Transferring Waste to a Containment and Storage Area (Pickup Site)

- Every seven days, medical waste must be picked up by LBL's contractor for offsite shipment. Therefore, the day **before** the scheduled waste pickup (that is, the sixth day of accumulation), transfer all waste that has been accumulating in bags and full sharps containers to the pickup site.
- Tie/tape bags securely. Seal sharps containers. Wear appropriate personal protection equipment. Wear medical gloves (intact latex or vinyl), and wash hands with soap immediately after gloves are removed.
- Place tied/taped bags and sealed sharps containers inside a **rigid** container with a lid (e.g., tied red bags inside a covered cardboard box), and transfer the container to a designated pickup site.
- Remove tied/taped bags and sealed sharps containers from the rigid transfer container, and deposit them in a biohazardous storage carton or barrel inside the designated containment and storage area nearest the worksite. Animal carcasses are stored in a refrigerator or freezer.
- Log in the deposit on the accumulation log. Different accumulation logs are used, depending on where the waste originates (see Figures 6-3 and 6-4). Medical waste originating in RMMAs must be certified by the generator as nonradioactive (see Figure 6-3) before it is transferred offsite for treatment and disposal. The Waste Management technician will complete a Certification of Release form (see Figure 6-5) for all medical waste originating in RMMAs. This form will be sent to the EH&S Waste Management Group for filing.
- Check that the lid is on the carton, and secure the storage location.

6.4 Scheduled Waste Pickup

A licensed waste hauler routinely picks up the cartons/barrels and replaces them with empty ones in the containment and storage location. Most generators have their medical waste picked up weekly. Those who are on a intermittent basis, or generators needing to make changes associated with their waste pickup, should contact EH&S at extension 5251.

Continued on next page.

6. Overview of What is Required of the Generator (continued)

Figure 6-3 **Record of Medical and Biohazardous Waste Accumulation (for waste originating in RMMAs)**
(See Appendix 4 for a full-sized form.)

Lawrence Berkeley Laboratory
Record of Medical & Biohazardous Waste Accumulation

Containment & Storage Location: Building:_____Room:_____Date:_____Page___of___

Date Added	Signed Statement of non-radioactivity	Description of What Was Added*	Operating Account No.	Bldg. & Room #	Quantity**
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				

*Type of Waste. e.g., Sharps, Infectious, animal carcass
**Bag, Quart, 1/2 Bag

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Continued on next page.

6. Overview of What is Required of the Generator (continued)

Figure 6-4 **Record of Medical and Biohazardous Waste Accumulation (for waste *not* originating in RMMAs)**
(See Appendix 4 for a full-sized form.)

Lawrence Berkeley Laboratory
Record of Medical & Biohazardous Waste Accumulation (for areas where no radioisotopes are used)

Containment & Storage Location: Building:_____Room:_____Date:_____Page___of___

Date Added	Waste Packages Deposited By	Description of What Was Added*	Operating Account No.	Bldg. & Room #	Quantity**

None of the medical waste packages deposited in pickup containers at this site come from Radioactive Materials Management Areas (RMMAs) in a Controlled Area. No radioisotopes are used by the generators that deposit waste at this site. Sharps containers from shop and office areas that are deposited at this site do not come from Controlled Areas either.

*Type of Waste. e.g., sharps, infectious, animal carcass
**Bag, quart, 1/2 bag

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Continued on next page.

6. Overview of What is Required of the Generator (continued)

Figure 6-5 Example of Completed "Certification for Release of Biohazardous Material from Radioactive Material Management Area (RMMA)"

CERTIFICATION FOR RELEASE OF BIOHAZARDOUS MATERIAL FROM RADIOACTIVE MATERIAL MANAGEMENT AREA

Date 3/10/92

User Certification As Radioisotope Free [X]

Instrument Used	Instrument #	Background
LUDLUM 3B-g	12345	20 cpm
LBL α	69432	2 cpm

Calibration Date: 1/29/92

Comments:

External Meter Survey Indicate No Detectable Activity Above Background [X]

Signature Of Monitor MRSmith

Area Released From: 99-111

QA/QC Smear Check Results neg

Date 3/12/92

3/25/92 Network Word:Envir Prot:RC/Biohaz/RA area cert release

Continued on next page.

6. Overview of What is Required of the Generator (continued)

6.5 Documentation and Records

The two-part "Hazardous Waste Hauling Record and Certificate of Destruction" form is used to document the removal and destruction of medical and biohazardous waste. This form is a regulatory requirement and documents the quantity of waste en route to a facility for treatment and disposal. Figure 6-6 shows the first part of the form, which is filled out when the medical waste leaves LBL. Figure 6-7 shows the second part of the form, which is filled out when the waste has been destroyed. Figure 6-8 is a flow chart showing the documentation process described below.

Note: Each part of the form has more than one copy.

When the waste is picked up

- The hauler prepares the first part of the tracking record (see Figure 6-6) for each collection.
- The Pickup Site Coordinator or alternate signs the tracking record, thus certifying that the information filled in on the form is correct to the best of his/her knowledge. LBL personnel authorized to sign the tracking record have their signatures recorded on a signature verification form (see Figure 6-9).
- The Pickup Site Coordinator keeps the generator copy of the form and attaches the completed accumulation logs to it.

When the waste has been destroyed

- After the waste has been treated, rendered nonrecognizable, and disposed of, the treatment facility completes the "Certificate of Destruction" portion of the tracking record (see Figure 6-7) by filling in the disposal date and signature.
- The EH&S Waste Management Group receives the monthly invoices and sends copies of the completed tracking record to each Pickup Site Coordinator. **It is critical that the Certificate of Destruction information on the tracking record be on file and current with the Pickup Site Coordinator.**
- The Pickup Site Coordinator may discard the generator copy once the Certificate of Destruction copy of the tracking record is in the tracking record file. These records are kept on file by the Pickup Site Coordinator for one year and by the Waste Management Group for three years (see Section 11).
- The Pickup Site Coordinator forwards the original accumulation logs to the EH&S Waste Management Group only after the "Certification of Destruction" copy is received.

Continued on next page.

6. Overview of What is Required of the Generator (continued)

Figure 6-6 Hazardous Waste Hauling Record and Certificate of Destruction (portion of form to be filled out when waste picked up)

HAZARDOUS WASTE HAULING RECORD AND CERTIFICATE OF DESTRUCTION 103038

INTEGRATED ENVIRONMENTAL SYSTEMS
499 High Street, Oakland, CA 94601
(415) 261-1512

INTEGRATED ENVIRONMENTAL SYSTEMS
8761 YOUNGER CREEK DR.
SACRAMENTO, CA 95827
(916) 387-8540

SUBSIDIARY OF NORCAL WASTE SYSTEMS, INC.

GENERATOR OF WASTE:

NAME LBL (CHOLESTEROL RESEARCH CENTER) 2ND FLOOR
(PRINT OR TYPE)

PICKUP ADDRESS 3101 TELEGRAPH AVE
BERKELEY

CLIENT REFERENCE NO.

DESCRIPTION OF WASTE:

☒ BIO-HAZARDOUS WASTE

☐ CONFIDENTIAL WASTE

☐ OTHER

The waste is described to the best of my ability and it was delivered to the licensed waste hauler described herein.
I certify (or declare) under penalty of perjury that the foregoing is true and correct.

V. R. Smith 7/31/91
Signature of authorized agent and title *Date*

HAULER OF WASTE (Must be filled by Hauler):

☒ INTEGRATED ENVIRONMENTAL SYSTEMS
499 High Street, Oakland, CA 94601
(415) 261-1512

☐ EPA ID # CAD 980890321

HAZARDOUS WASTE HAULERS REG. NUMBER: 2028

☐ OTHER HAULER'S REG. NO.:

TYPE VEHICLE: ENCLOSED-VAN

	PICK-UP	DELIVERED
NUMBER OF BARRELS:		
NUMBER OF BOXES:	\	\

PICK UP: 7-30-91 (DATE) (TIME) (DRIVER)

The described waste was hauled by me to the disposal facility named below and was accepted.

D Whitney
Signature of authorized agent and title *Date*

DISPOSER OF WASTE (Must be filled by Disposer):

☐ INTEGRATED ENVIRONMENTAL SYSTEMS
499 High Street, Oakland, CA 94601
(415) 261-1512

The hauler above delivered the described waste to this disposal facility and as described it was an acceptable material under the terms of the State Department of Health regulations.

Quantity measured at site

DISPOSAL DATE:

Signature of authorized agent and title *Date*

INVOICE COPY

Continued on next page.

6. Overview of What is Required of the Generator (continued)

Figure 6-7 **Hazardous Waste Hauling Record and Certificate of Destruction (portion of form to be filled out when waste destroyed)**

HAZARDOUS WASTE HAULING RECORD AND CERTIFICATE OF DESTRUCTION 103038

☒ INTEGRATED ENVIRONMENTAL SYSTEMS
499 High Street, Oakland, CA 94601
(415) 251-1512

INTEGRATED ENVIRONMENTAL SYSTEMS
8761 YOUNGER CREEK DR.
SACRAMENTO, CA 95827
(916) 387-8540

SUBSIDIARY OF NORCAL WASTE SYSTEMS, INC.

GENERATOR OF WASTE:

NAME LBL (CHOLESTEROL RESEARCH CENTER) 2ND FLOOR
(PRINT OR TYPE)

PICKUP ADDRESS 3101 TELEGRAPH AVE
BERKELEY

CLIENT REFERENCE NO.

DESCRIPTION OF WASTE:

☒ BIO-HAZARDOUS WASTE
☐ CONFIDENTIAL WASTE
☐ OTHER

The waste is described to the best of my ability and it was delivered to the licensed waste hauler described herein.
I certify (or declare) under penalty of perjury that the foregoing is true and correct.

X V. R. Smith 7/30/91
Signature of authorized agent and title *Date*

HAULER OF WASTE (Must be filled by Hauler):

☒ INTEGRATED ENVIRONMENTAL SYSTEMS
499 High Street, Oakland, CA 94601
(415) 251-1512

☐ EPA ID # CAD 980890321

HAZARDOUS WASTE HAULERS REG. NUMBER: 2028

☐ OTHER HAULER'S REG. NO.:

TYPE VEHICLE: ENCLOSED VAN

	PICK-UP	DELIVERED
NUMBER OF BARRELS:		\
NUMBER OF BOXES:		\

PICK UP: 7-30-91 _____ _____
DATE TIME DRIVER

The described waste was hauled by me to the disposal facility named below and was accepted.

[signature]
Signature of authorized agent and title *Date*

DISPOSER OF WASTE (Must be filled by Disposer):

☐ INTEGRATED ENVIRONMENTAL SYSTEMS
499 High Street, Oakland, CA 94601
(415) 251-1512

The hauler above delivered the described waste to this disposal facility and as described it was an acceptable material under the terms of the State Department of Health regulations.

Quantity measured at site 28 LBS

DISPOSAL DATE:

S. Dall 7/31/91
Signature of authorized agent and title *Date*

INVOICE COPY

Continued on next page.

6. Overview of What is Required of the Generator (continued)

Figure 6-8 **Document Flow Chart for Hazardous Waste Hauling Record and Certificate of Destruction**

At this time	This happens	
	"Pickup" portion of form	"Destruction" portion of form
At time of waste pickup	• Waste hauler prepares form. • Pickup Site Coordinator signs form. • Pickup Site Coordinator keeps one copy of signed form.	
After waste treated and disposed of		• Treatment facility fills out form, sends to LBL Waste Management (WM). • WM makes copy of form, sends copy to Pickup Site Coordinator. • WM files its copy.
When Pickup Site Coordinator receives "Destruction" portion of form	• Pickup Site Coordinator discards this portion of form.	• Pickup Site Coordinator files this copy of form. • Pickup Site Coordinator forwards relevant accumulation log to WM.

6. Overview of What is Required of the Generator (continued)

Figure 6-9 Medical and Biohazardous Waste Signature Verification Form

Medical And Biohazardous Waste Signature Verification Form

Pickup Site _____

Only personnel listed on this form are authorized to sign the hauling tracking record, the "Biohazardous Waste Hauling Record and Certificate of Destruction" when the vendor picks up a storage carton or barrel of waste.

Name (printed)	Signature	Initials	Date

Note: Personnel authorized to sign tracking records must have completed the "Medical/ Biohazardous Waste Generator Training Course," EHS-730.

For each pickup site, several individuals may be designated to sign these forms.

Send original to, EH&S Waste Management Group, M/S B75B-101.

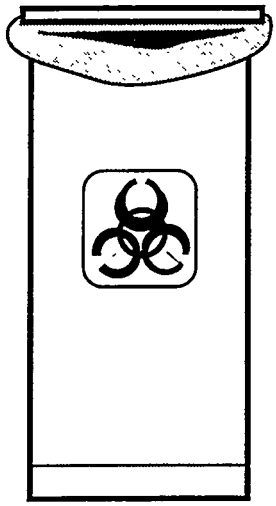
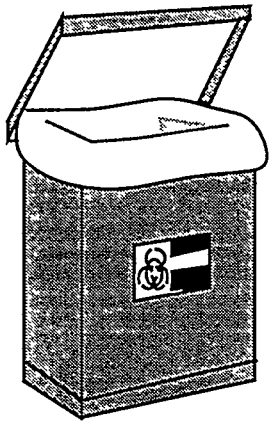
Keep a copy for the pickup site coordinator's "Tracking Records" file.

(8/15/94RC)

Continued on next page.

7. Containers, Packaging, and Labeling

7.1 Medical and Biohazardous Waste Containers

<table>
<tr><th>Container</th><th>Waste Types</th></tr>
<tr><td>waste container*, plastic or metal, with lid and red bag
 
*with or without foot pedal</td><td rowspan="2">bandages with dried blood
blood-contaminated materials
blood, non-fluid
blood tubes, sealed
all carcasses, all body parts, bedding material (contaminated)
cultures or specimens, human or animal
cultures and stocks of infectious agents from research and industrial laboratories
culture dishes and devices used to transfer, inoculate, and mix cultures
human surgery specimens, or tissues removed at surgery or autopsy, that are suspected by the attending physician and surgeon or dentist of being contaminated with infectious agents known to be contagious to humans
Kimwipes™, contaminated
liquid wastes in their own container
medical gloves
uncontaminated syringes, plastic, without needle
wastes from production of bacteria or viruses
wastes from the use of spores
wastes from discarded live and attenuated vaccines
wastes containing any microbiologic specimens sent to a laboratory for analysis
No Hazardous or Radioactive Waste</td></tr>
<tr><td>rigid container** with lid and red bag
 
**can be any shape, even round</td></tr>
</table>

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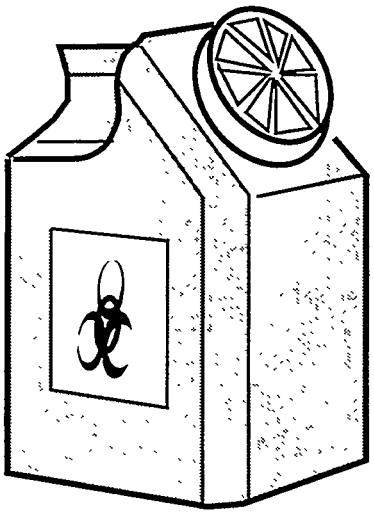
7. Containers, Packaging, and Labeling (continued)

7.2 **Sharps Containers**

Container	Waste Types
sharps container* (red), several sizes available  *can be autoclaved at least once	blades, all broken blood vials** broken glass/glassware, contaminated hypodermic needles, all (with needle intact) syringes, glass, without needle*** syringes, glass or plastic, with needle intact*** Pasteur pipettes, all needles with attached tubing, all scalpel blades, all† razor blades, all† drill bits that are capable of piercing or cutting (like the hypodermic needle)† †Found in production shops, warehouses, shipping and receiving areas, cafeterias, offices, and other areas. **No hazardous or radioactive waste**

All sharps items, regardless of their use in any area of LBL, must be accumulated in leakproof, rigid, puncture-proof containers and disposed of as medical and biohazardous waste (as long as they are not contaminated with a hazardous chemical or radioactivity).

Needles: Do not recap needles. Do not break or bend needles. Do not remove needles from syringes.

****Blood vials:** If blood vials that contain fluid blood are placed in sharps containers as a precaution against vial breakage, the sharps containers **must** be disposed of within **seven days**, whether or not the sharps container is full.

*****Syringes:** All syringes, both plastic and glass, regardless of use, must be disposed of as medical/biohazardous waste.

Continued on next page.

7. Containers, Packaging, and Labeling (continued)

7.3 Segregation and Packaging

Medical waste generators must segregate and package their waste to ensure the containment of the waste as well as the protection of the workers, waste handlers, the general population, and the environment. Each person who generates medical and biohazardous waste must properly separate and dispose of these items at the point of generation (point of origin).

Any container may be used to accumulate waste at the point of origin as long as it is rigid, lined with a biohazard bag, has a tight-fitting lid, and has a biohazard warning label affixed to the outside of the container and the lid. Place the warning label low enough on the container so that it can be seen after the bag is added. The label must be visible from all sides of the container.

Ordinary wastebaskets are used in patient treatment areas, and the biohazard bags are transferred inside a **rigid** lidded container to a storage carton/barrel at the close of each business day.

A double-containment package (small box lined with a red bag) can be used to prevent breaks in the bag when very large pieces of broken glass are accumulated. A double-containment package can also be used to prevent leakage if the waste contains significant moisture. The entire package is placed in the storage carton/barrel.

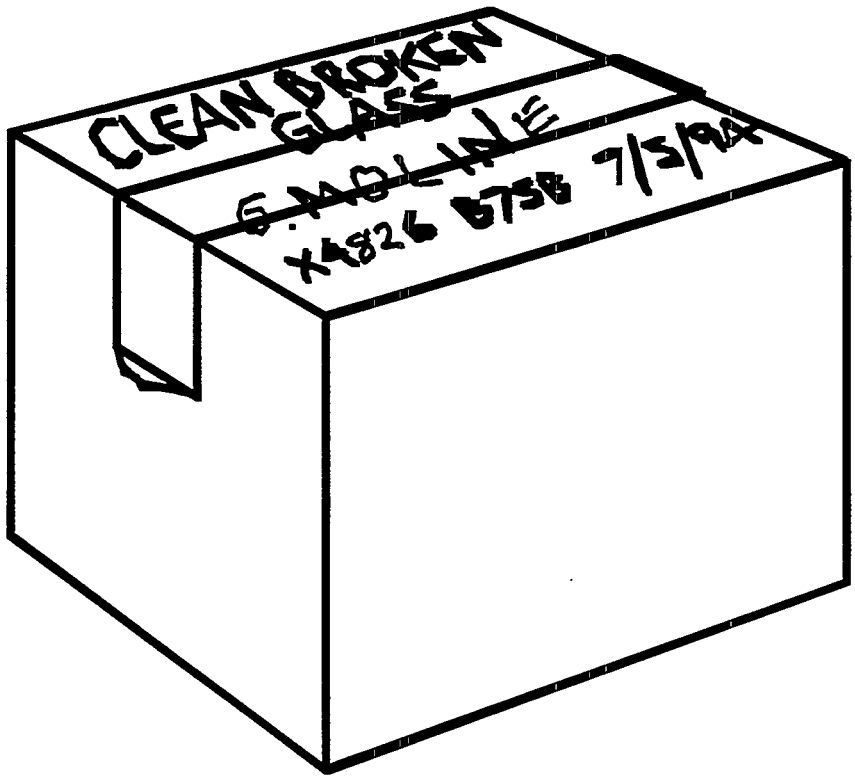
Tie bags before removing them from a container. Seal sharps containers with their lid to prevent leakage. Proper personal protection equipment must be worn.

Continued on next page.

7. Containers, Packaging, and Labeling (continued)

7.4 Uncontaminated Broken Glass

Put uncontaminated broken glass in a cardboard box and tape the box closed. Write your name, telephone extension, the date and the words CLEAN BROKEN GLASS on the box. Dispose of the box in the regular trash.



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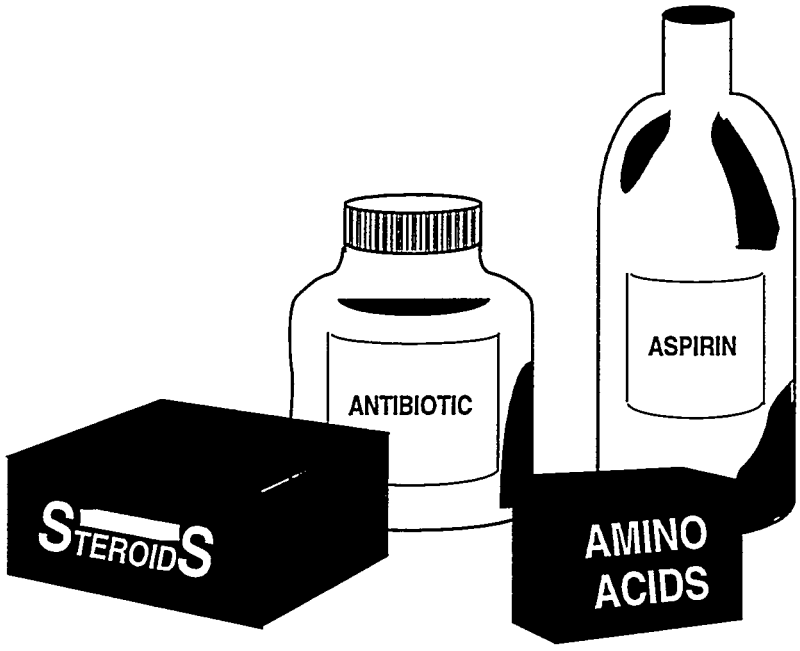
7. Containers, Packaging, and Labeling (continued)

7.5 Biochemicals, Pharmaceuticals, and Over-the-Counter Drugs

Various biochemicals, pharmaceuticals, and over-the-counter drugs are acceptable for disposal as medical waste provided they are incinerated. The EH&S Waste Management Group maintains a list of compounds approved for incineration.

Biochemicals, pharmaceuticals, and over-the-counter drugs must not be disposed of as regular trash or via the sanitary sewer. The generator, with assistance from EH&S Waste Management Department, must ensure that none of the biochemicals or pharmaceuticals are considered hazardous waste. (Any hazardous waste must be handled by LBL's Hazardous Waste Handling Facility, extension 5251.)



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7. Containers, Packaging, and Labeling (cont'd)

7.6 Sharps in Shops, Offices, Warehouses, and Other Areas

Devices with sharp edges capable of piercing or cutting the skin (sharps) are to be disposed of as medical waste. The following is a list of sharps found in shops, offices, warehouses, and nonidentified biohazardous areas:

- razor blades
- syringes—glass and plastic (with or without needles)
- scalpel blades
- drill bits capable of piercing or cutting the skin (thin bits like hypodermic needles) (LBL policy)
- needles

All sharps items, regardless of their use in any area of LBL, must be accumulated in leak-proof, rigid, puncture-proof containers and disposed of as medical and biohazardous waste (as long as they are not contaminated with a hazardous chemical or radioactivity). (Established January 1991, Volume XVII, Number 19)

Accumulate sharps in an approved sharps container. In LBL shop, office and warehouse areas, sharps containers are labeled SHARPS WASTE. If a container is received from a supplier that is labeled INFECTIOUS WASTE, that label should be taped or painted over.

Item	Description	Stores No.	Comments
Sharps container	1-qt-capacity red, w/clear 1-way valve	6515-71985	x5268 (LBL Stores ext.)
Sharps container	1 gallon	6515-71347	x5268
Sharps container	2-gallon-capacity red, w/clear 1-way valve	—	Non-stores purchase; outside vendor
Sharps container	3 gallon	6515-71348	x5268
5-gallon container with Lid (also known as "sharps container"), used by LBL for other medical waste	5-gallon-capacity red, w/clear lid that folds in the middle	—	Non-stores purchase; outside vendor
Wire holders for sharps container	For either size	6516-71349	x5268

See also Lab Safety Supply and other vendor catalogues.

Non-stores purchases require submitting a purchase order through the LBL Purchasing Department.

When the sharps container is full, seal with the lid and transfer to a pickup site. Call the EH&S Waste Management Group at 5251 for assistance.

Caution about needles: Protect yourself from skin punctures by leaving needles attached to syringes and leave needles intact (do not break or bend needles). Do not recap needles.

8. Pickup Site Rules

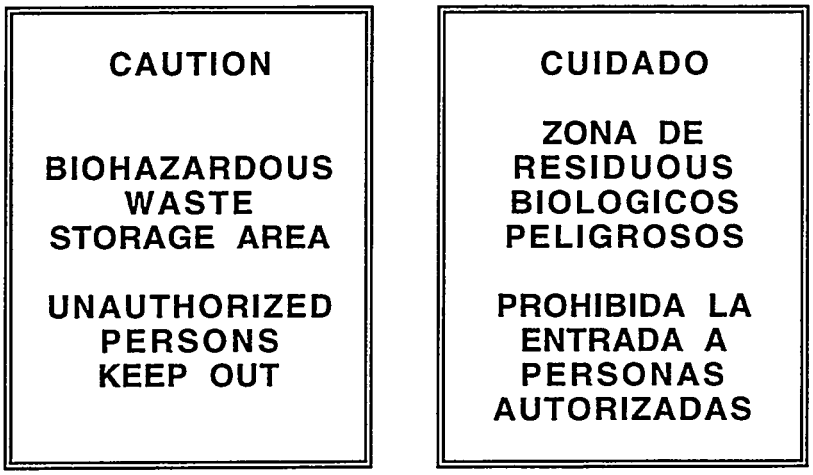
8.1 General Pickup Site Rules

- Medical and biohazardous waste must be stored in a secured area.
- The area must be protected from the weather and extreme temperature changes.
- The storage area must not be in a hallway or exit area.
- Outside storage must be locked to prevent access by animals or unauthorized personnel.
- All locations must display two biohazardous-waste warning signs, one in English and one in Spanish (see Figure 8-1). The signs must be easily read from a distance of 8 meters (25 feet).

  Note: See Appendix 5 for full-sized copies of these signs.

Figure 8-1 **Storage Area Biohazardous Waste Warning Signs (Spanish and English)**

Note: These signs must be readable from 8 m (25 ft)



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8. Pickup Site Rules (continued)

8.2 RMMA Waste

Medical and biohazardous waste (including sharps waste) generated in a Radioactive Materials Management Area (RMMA) must be certified by the generator as nonradioactive before it is transferred offsite for treatment and disposal. This certification is documented in the accumulation log (see Figure 6-3). Generators must mark/label the waste package with the room number and their initials if generators from more than one controlled area use the same pickup site. Before the scheduled pickup of waste, the EH&S Waste Management technician will visit each pickup site and monitor for radioactivity if any of the waste is generated in an RMMA. Storage and containment cartons/barrels will be surveyed. Individual waste packages (sealed sharps containers, tied red biohazard bags, etc.) will not be opened unless absolutely necessary. The Waste Management technician will complete a Certification of Release form (see Figure 6-4), which will be sent to EH&S Waste Management Group for filing.

Continued on next page.

8. Pickup Site Rules (continued)

8.3 Transferring Waste to the Pickup Site

Note: All medical waste (with the exception of unfilled sharps containers that contain *only* sharps waste) must be transferred from the point of generation to the pickup site within seven days.

- Tie or tape bags securely and seal sharps containers with their lids before placing them inside a **rigid**, leak-resistant lidded container. Proper personal protection equipment must be worn. Always wear medical gloves (intact latex or vinyl), and wash hands with soap immediately after gloves are removed.

- Transfer tied/taped bags and sealed sharps containers within the rigid container to a designated pickup site.

  Note: Since LBL is not permitted to accept waste from offsite locations, and since a hazardous-waste-hauler permit is required to transport medical waste off site in a vehicle, **no** medical waste is allowed to be transported from offsite locations (that is, Building 934, the Cholesterol Research Center on Telegraph Avenue, and UC campus locations). When transferring medical and biohazardous waste on site, ensure that the waste is in a rigid, lidded container that is properly labeled with the international biohazard symbol and the word BIOHAZARD, and that the waste is not transported with any other types of waste.

- Deposit tied/taped bags and sealed sharps containers in a biohazardous storage carton/barrel inside the designated containment and storage area (pickup site) nearest the worksite. Make an entry in the accumulation log sheet (see Figures 6-3 and 6-4). Indicate the date, type of waste, building and room number, an estimate of the amount of waste, and operating account number, and sign the nonradioactive certification statement (if applicable).

- Check that the lid is on the carton/barrel, and secure the pickup site.

8.4 Storage Containers at the Pickup Site

Place sealed red bags, smaller double-containment boxes with tied bag inside, and sharps containers in the storage containers shown in Figure 8-2.

8.5 Refrigeration

Refrigeration of the waste may be necessary, depending on the type of waste and the length of storage (see Table 8-1).

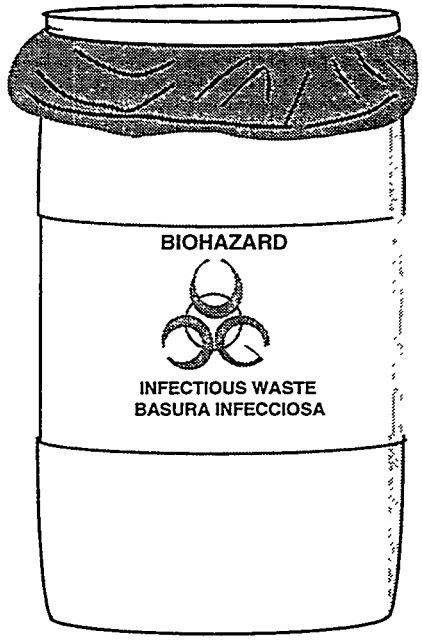
Continued on next page.

8. Pickup Site Rules (continued)

Figure 8-2 **Storage Containers**

30-gallon cardboard carton with lid and red bag*

44-gallon green barrel and red bag*



High-moisture-content waste, e.g., carcasses

No hazardous or radioactive waste

*Contractor picks up container and leaves an empty one

Table 8-1 **Storage Time Limitations (includes BOTH time at the point of origin AND time at the pickup site)**

Waste Type	Time Limit and Storage Temperature Requirements at LBL
Full sharps container	7 days at room temperature (California Health and Safety Code §25082)
All other medical waste	7 days at temperatures above 32° F (0° C), **or** 90 days at or below 32° F (0° C) (California Health and Safety Code §25081)

Continued on next page.

8. Pickup Site Rules (continued)

8.6 Offsite Transfer for Treatment and Disposal

A contractor that holds a license for medical waste hauling, treatment, and disposal has been contracted to collect waste at designated locations. The collection and disposal of medical waste will be monitored by EH&S's Waste Management Group.

Storage cartons/barrels kept in containment and storage locations (pickup sites) will be hauled away once every seven days (LBL policy). The Pickup Site Coordinator arranges a schedule with the contractor that is appropriate for the type and amount of waste generated. Most locations have waste picked up once a week. The contractor leaves replacement cartons/barrels and a liner (a red biohazard bag) for each one hauled away.

The hauler requires a 24-hour notice for additional pickups that may be necessary due to an emergency or increased waste generation.

Sharps containers from nonidentified biohazardous work areas (shop areas, etc.) must be transferred to the nearest pickup site. Notify the Pickup Site Coordinator before delivering such waste. Contact EH&S for coordinator names and pickup sites. If this is not feasible, contact the EH&S Waste Management Group at extension 5251, and a special pickup will be arranged.

The contractor cannot accept hazardous wastes or radioactive wastes for treatment. Some examples of unacceptable wastes include phenol, chemotherapeutic/cytotoxic medicines, and preservatives (formaldehyde, chloroform). Tissues and containers with only residual amounts of these wastes are acceptable.

If you have any questions regarding the acceptability of a waste, please call the EH&S Waste Management Group at extension 5251.

Continued on next page.

8. Pickup Site Rules (continued)

8.7 Signing the Hauling/Tracking Record

Before signing the certification statement, the LBL designated employee should:

- Check that EH&S Field Operations personnel have tagged each container as OK for release by taping the lid in two places. **THIS ITEM APPLIES TO RMMA WASTE ONLY. Do not release waste to the medical waste hauler if the tape appears to be tampered with in any way.** Call the EH&S Waste Management Group if there is any problem.

- Lift the lid and look inside each carton/barrel to be picked up as a check that the container appears to contain sealed medical and biohazardous waste packages. (At no time should packages be opened.)

- Verify that there is a completed accumulation log sheet (see Figure 6-3) with the nonradioactive certification statement signed for each container to be picked up;

- Check that the number of containers on the Hauling/Tracking Record (Figure 6-5) is correct.

If the result of the checks is satisfactory to the employee, he/she should be able to sign the certification statement on the Hauling/Tracking Record.

A copy of the signed Hauling/Tracking Record and the completed accumulation logs should be kept by the Pickup Site Coordinator.

9. Training Requirements

9.1 Who Receives Training?

Table 9-1 lists the training requirements and who should receive them.

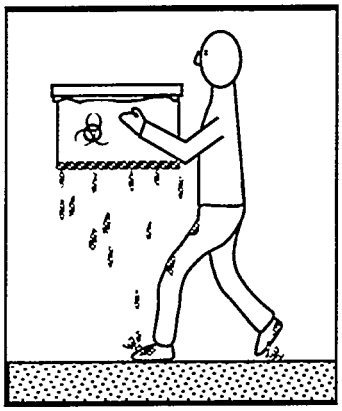
Table 9-1. Training Requirements

Personnel	Course Number
Generators	EHS-730
Pickup site coordinators and their alternates	EHS-730, EHS-731
Supervisors of personnel who may enter work area(s) where medical and biohazardous waste is stored or generated	EHS-730 or Consultation with Waste Management Department
Personnel who work nearby areas where medical and biohazardous waste is generated or stored	On-the-job training by their supervisor
Custodians who handle medical and biohazardous accumulation containers	EHS-730
Facilities personnel who need to recognize the biohazard warning sign and/or move one of the storage containers	EHS-730 or on-the-job training
Emergency Response Personnel	EHS-730
Building (Safety) Managers	Building Manager's Training or EHS-730

9.2 How to Enroll

Contact the EH&S Training Group for course schedule. Courses will be scheduled on an as-needed basis. Pre-registration is not necessary. Information provided in EHS-730 is tailored to the audience's needs and responsibilities (e.g., generators, C&M Personnel, administrative support staff, Plant Engineering personnel) whenever possible.

10. Emergency Action Plan



When infectious/biohazardous material is dropped or spilled on clothing and/or skin:

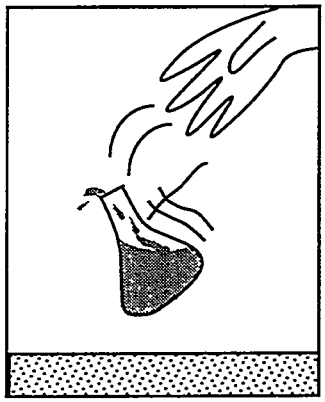
- **Wash skin with soap.**
- **Contact Medical Services, x6266. (x7911, nights and weekends)**
- **Decontaminate clothing** by disinfecting and washing. If necessary, dispose of the clothing as medical and biohazardous waste.
- **Follow the procedures** in the next column for cleaning up the spill.

Exposures and Decontamination of Personnel

The decontamination of facility personnel will depend upon their degree of exposure to infectious wastes. For external or topical exposures, wash with any soap. Showering and changing clothes is advisable. Internal exposures, such as puncture wounds from needlesticks or mucous membrane exposure to body fluids, must be treated by medical professionals after the employee is decontaminated.

Report all incidents of exposure to Medical Services (x6266) immediately. (x7911, nights and weekends)

An emergency involving the waste hauler: The hauler is responsible for decontamination, cleanup, and disposal. The hauling company must report the spill to EH&S (486-5251).



When infectious/biohazardous material is dropped or spilled:

- Wear double gloves, protective clothing (e.g., a lab coat) and safety glasses when cleaning up the spill.
- Disinfect the area surrounding the spill with a freshly prepared hypochlorite (bleach) solution containing 500 ppm available chlorine. [Prepare a 500-ppm solution by adding 2-1/2 ounces (75 ml) of household bleach to 1 gallon of water.]
- Let the solution stand for a minimum of three minutes to allow decontamination.
- Liquid and semiliquid waste from the spill and subsequent decontamination can be discharged to the sanitary sewer if there is no chemical or radioactive contamination.
- Dispose of all solid material (damp rags and paper towels, broken glass, red bags, cardboard) as medical and biohazardous waste.

Work Area Spill Kit Inventory

Put the items shown below in a cabinet or shelf near the work area. Label the cabinet/shelf "Medical Waste Spill Kit."

- Household bleach (1 gallon)
- Paper towels
- Red bags (2)
- Medical gloves, 6 pair
- Lab coat
- Bar of soap

This kit is not available commercially. (See Appendix 2 for supplies.)

11. Record Keeping—Cradle-to-Grave Tracking

11.1 Law

Both federal and State of California law require all medical and biohazardous waste generators to keep accurate records relative to quantity generated, containment, storage, hauling, treatment, and disposal of their waste. This section describes each step in the cradle-to-grave tracking system. Table 11-1 summarizes the record-keeping requirements.

11.2 Record Keeping

Pickup Site Coordinators keep a list of the locations of smaller waste accumulation containers (points of origin) found in the work areas and laboratories (see Figure 6-2). This list is used for emergency preparedness and identifies the individual generators.

An accumulation log sheet (see Figures 6-3 and 6-4) is maintained for each storage carton/barrel and kept on file by the Pickup Site Coordinators. The information on this log is supported by generator experiment or process knowledge documentation and amount of waste generated. EH&S keeps the original copy.

The hauler prepares a tracking record, the "Biohazardous Waste Hauling Record and Certificate of Destruction," for each collection (see Figure 6-6). This form is a regulatory requirement and documents the quantity of waste en route to a facility for treatment and disposal.

The Pickup Site Coordinator or an alternate signs the Hauling/Tracking record (Figure 6-6), thus certifying that the information filled in on the form is correct to the best of his/her knowledge. An authorized signature verification form listing LBL employees who sign the Hauling/Tracking records (Figure 6-9) is kept on file with the Pickup Site Coordinator and the EH&S Waste Management Group.

The Pickup Site Coordinator keeps the generator copy of the hauling record.

After the waste has been treated, rendered nonrecognizable, and disposed of, the disposal facility completes the "Certificate of Destruction" portion of the tracking record (Figure 6-7) by filling in the disposal date. The invoice copy of this form is attached to the monthly statement. Separate invoices are received for each pickup site.

The EH&S Waste Management Group receives copies of the monthly invoices. Copies of the completed tracking record are then sent to each Pickup Site Coordinator. **It is critical that the Certificate of Destruction information on the tracking record be on file and current with the Pickup Site Coordinator.**

Continued on next page.

11. Record Keeping—Cradle-to-Grave Tracking (continued)

Table 11-1 **Summary of Record-Keeping Requirements**

Responsible Party	Record/Document	Retention
Generator (shop and office areas are exempt)	• Medical Waste Generator's Guide (PUB-3095) (current version) (at least one copy for each Facility)	Until revision is published
	• Process or experiment knowledge documentation (description of how and why the waste was generated in any format)	3 years
Division	List of all medical and biohazardous waste generators	Keep current list on file
Building Safety Manager	Listing—Point of Origin (Locations of Accumulation Containers) (copy)	Keep current list on file
Pickup Site Coordinator (**Note**: The Hauling Tracking Records are kept in a file labeled "Medical Waste Hauling/Tracking Records")	• Hauling Tracking Record — "Biohazardous Waste Hauling Record" (generator copy)	Until Certificate of Destruction is received; then discard
	• Hauling Tracking Record — "Certificate of Destruction" (copy)	1 year; then discard
	• Accumulation Log (what went in a storage carton/barrel) (original)	Until Certificate of Destruction is received; then forward the original to EH&S Waste Management Group
	• Signature Verification form (copy) (List of personnel authorized to sign the Hauling Tracking Record)	Keep the current form on file in the "Medical Waste Hauling Tracking Record" file. Send original to EH&S Waste Management Group.
	• Listing—Point of Origin (Locations of Accumulation Containers) (copy)	Keep current list on file
EH&S Waste Management Group	• Hauling Tracking Record — "Certificate of Destruction" (copy)	3 years, then archive
	• Accumulation Logs (what went in a storage carton/barrel) (originals from pickup site)	3 years, then archive
	• Signature Verification (original) (List of personnel authorized to sign the Hauling Tracking Record)	3 years, then archive

Continued on next page.

11. Record Keeping—Cradle-to-Grave Tracking (continued)

Table 11-1 (continued)

Responsible Party	Record/Document	Retention
EH&S Waste Management Group	• Listing—Point of Origin (Locations of Accumulation Containers) (copy)	3 years, then archive
	• Invoices	1 year, then discard
	• Contract	Keep current contract on file
	• Cost-to-date and pounds disposed of to date figures	3 years
	• Certification for Release of Biohazardous Material from Radioactive Material Management Area Forms (original)	1 year, then archive
LBL Accounting Department	• Invoices and Certificates of Destruction	3 years or longer

11.2 Record Keeping (continued)

Pickup Site Coordinators maintain medical waste Hauling/Tracking Record files for one year. Certificates of Destruction should be received six weeks after the end of the billing month. Contact the EH&S Waste Management Group if the Certificate of Destruction does not arrive on time.

The Pickup Site Coordinator forwards the original accumulation logs to the EH&S Waste Management Group only after the "Certification of Destruction" copy is received. A copy of the Accumulation Log may be maintained for tracking records.

12. Appendices

Appendix 1 Who to Call for Further Information

Item	Contact	Extension
Exposure to an infectious agent (after hours)	Medical Services	6266 7911
Spills	LBL Fire Dept.	7911
Work practices involving infectious agents or biohazardous waste	Industrial Hygiene	5829
Definitions of medical, infectious, biological or biohazardous waste	Waste Management	4826
Training, course content	Waste Management	4826
Training, to register	EH&S Training Unit	6612
Storage location	Waste Management	4826
Pickup, arrangements for disposal and pickup	Waste Management	4826
Regulations and Laws	Waste Management	4826
Radioactive waste disposal	Waste Management	6825
Hazardous waste disposal	Waste Management	5877
RMMA and controlled area procedures	Radiation Assessment	6424

Continued on next page.

12. Appendices (continued)

Appendix 2 Supplies

Item	Description	LBL Stores Stock Number	Comments or LBL Stores Extension
Bags, red biohazard, small, autoclavable	approx. 19" x 23" x 1.5 mil	8105-62688	x 4935/36
Bags, red biohazard, medium, autoclavable	approx. 25" x 35"	8105-71984	x 4935/36
Bags, red biohazard, large, autoclavable	approx. 36" x 45"	8105-71350	x 4935/36
*Broken-glass carton, bench	8" x 8" x 10"	VWR 56617-832	Non-stores purchase; outside vendor**
*Broken-glass carton, floor	12"x12"x27"	VWR 56617-800	Non-stores purchase; outside vendor**
Warning sign, biohazard (readable from 25 ft.)	Spanish and English	—	See Appendix 6 of this Guide
Labels, Infectious Agent	4" x 3" self adhesive	4280-71401	x 5087
Labels, Biohazard	4" x 3" self adhesive	4280-71402	x 5087
Labels, Biomedical Material, (Etiological Agents) Warning	Various	—	Non-stores purchase; outside vendor**
Sharps container	1 qt. capacity red, w/clear 1-way valve	6515-71985	x5268
Sharps container	1 gallon	6515-71347	x5268
Sharps container	2 gallon capacity red, w/clear 1-way valve	—	Non-stores purchase; outside vendor**

*See also Lab Safety Supply Catalog.

** Non-stores purchases require submitting a purchase order through the LBL Purchasing Department

Continued on next page.

12. Appendices (continued)

Appendix 2 (continued) Supplies

Item	Description	LBL Stores Stock Number	Comments or LBL Stores Extension
Sharps container	3 Gallon	6515-71348	x5268
8-gallon container with lid (also known as "sharps container"), used by LBL for other medical waste	8-gallon capacity red, w/clear lid that folds in the middle	Lab Safety Supply #WX-25703	Non-stores purchase; outside vendor**
Wire holders for sharps container	For either size	6516-71349	x5268
Spill kit items	—	Refer to LBL Stores Catalogue	x5087

*See also Lab Safety Supply Catalog.

** Non-stores purchases require submitting a purchase order through the LBL Purchasing Department

Continued on next page.

12. Appendices (continued)

Appendix 3 Material Safety Data Sheets (MSDSs)

The following MSDSs appear after this page:

Household Bleach Material Safety Data Sheet

Hi-Tor Plus, Germicide Material Safety Data Sheet

Continued on next page.

The Clorox Company
7200 Johnson Drive
Pleasanton, California 94566
Tel. (415) 847-6100

Material Safety Data Sheet

HMIS	
HEALTH	2*
FLAMMABILITY	0
REACTIVITY	1
Personal Protection	B

I Chemical Identification

NAME: REGULAR CLOROX BLEACH

DESCRIPTION: CLEAR, LIGHT YELLOW LIQUID WITH CHLORINE ODOR

CAS no. N/A

RTECS no. N/A

Other Designations

EPA Reg. No. 5813-1
Sodium hypochlorite solution
Liquid chlorine bleach
Clorox Liquid Bleach

Manufacturer

The Clorox Company
1221 Broadway
Oakland, CA. 94612

Emergency Procedure

Notify your Supervisor
Call your local poison control center
or

Rocky Mountain Poison Center
(303) 573-1014

II Health Hazard Data

*Causes severe but temporary eye injury. May irritate skin. May cause nausea and vomiting if ingested. Exposure to vapor or mist may irritate nose, throat and lungs. The following medical conditions may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, chronic bronchitis or obstructive lung disease. Under normal consumer use conditions the likelihood of any adverse health effects are low. FIRST AID: EYE CONTACT: Immediately flush eyes with plenty of water. If irritation persists, see a doctor. SKIN CONTACT: Remove contaminated clothing. Wash area with water. INGESTION: Drink a glassful of water and call a physician. INHALATION: If breathing problems develop remove to fresh air.

III Hazardous Ingredients

Ingredients	Concentration	Worker Exposure Limit
Sodium hypochlorite CAS# 7681-52-9	5.25%	not established

None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen list. Occasional clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (eg. irritation) occurs during exposure. Routine clinical tests conducted on intact skin with Clorox Liquid Bleach found no sensitization in the test subjects.

IV Special Protection Information

Hygienic Practices: Wear safety glasses. With repeated or prolonged use, wear gloves.

Engineering Controls: Use general ventilation to minimize exposure to vapor or mist.

Work Practices: Avoid eye and skin contact and inhalation of vapor or mist.

V Special Precautions

Keep out of reach of children. Do not get in eyes or on skin. Wash thoroughly with soap and water after handling. Do not mix with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acid or ammonia containing products. Store in a cool, dry place. Do not reuse empty container; rinse container and put in trash container.

VI Spill or Leak Procedures

Small quantities of less than 5 gallons may be flushed down drain. For larger quantities wipe up with an absorbent material or mop and dispose of in accordance with local, state and federal regulations. Dilute with water to minimize oxidizing effect on spilled surface.

VII Reactivity Data

Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metal may cause pitting or discoloration.

VIII Fire and Explosion Data

Not flammable or explosive. In a fire, cool containers to prevent rupture and release of sodium chlorate.

IX Physical Data

Boiling point——212°F/100°C (decomposes)
Specific Gravity (H_2O=1)——1.085
Solubility in Water——complete
pH——11.4

6959H

DATE PREPARED 8/87

DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH.

Huntington®
MATERIAL SAFETY DATA SHEET

QUICK IDENTIFIER

SECTION I - IDENTITY

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Huntington Laboratories, Inc.	219/356-8106
ADDRESS (Number, Street, City, State, and Zip Code)	
970 East Tipton Street, Huntington, Indiana 46750	
CHEMICAL NAME AND SYNONYMS: N/A	TRADE NAME AND SYNONYMS: Hi-Tor Plus
CHEMICAL FAMILY: Germicidal Detergent	FORMULA: N/A

SECTION II - HAZARDOUS INGREDIENTS

CAS NO.	PRINCIPAL HAZARDOUS COMPONENT(S)	%	TLV (Units)
7173-51-5	Didecyl dimethyl ammonium chloride	5-15	N/A
8001-54-5	n-alkyl dimethyl benzyl ammonium chloride	5-15	N/A

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212	SPECIFIC GRAVITY (H_2O = 1)	1.0
VAPOR PRESSURE (mm Hg.)	17 @ 20°C	PERCENT, VOLATILE BY VOLUME (%)	76
VAPOR DENSITY (AIR = 1)	<1	EVAPORATION RATE (__water__ = 1)	1
SOLUBILITY IN WATER	100%	REACTIVITY IN WATER	None
APPEARANCE AND ODOR	Clear yellow-green liquid; lemon odor	pH	11.7-12.7

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT (Method used)	None TOC	FLAMMABLE LIMITS	LOWER N/A	UPPER N/A
EXTINGUISHING MEDIA	N/A	AUTO-IGNITION TEMPERATURE	N/A	
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V - PHYSICAL HAZARDS

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	None
INCOMPATABILITY (Materials to avoid)	Acids		
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon dioxide, carbon monoxide, nitrous oxides, ammonia.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	None

12. Appendices (continued)

Appendix 4 Record of Medical and Biohazardous Waste Accumulation—RMMA (Blank Form)

Lawrence Berkeley Laboratory

Record of Medical & Biohazardous Waste Accumulation

Containment & Storage Location: Building:_____Room:_____Date:_____Page___of___

Date Added	Signed Statement of non-radioactivity	Description of What Was Added*	Operating Account No.	Bldg. & Room #	Quantity**
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				
	"Based upon my knowledge of the waste, I certify that this waste package is free of radioactive contamination." Signed:				

*Type of Waste. e.g., Sharps, Infectious, animal carcass

**Bag, Quart, 1/2 Bag

Rev. 9/8/94-GM

Continued on next page.

12. Appendices (continued)

Appendix 4 (continued) Record of Medical and Biohazardous Waste Accumulation for Areas Where no Radioisotopes are Used (Blank Form)

Lawrence Berkeley Laboratory
Record of Medical & Biohazardous Waste Accumulation
(for areas where no radioisotopes are used)

Containment & Storage Location: Building:_____Room:_____Date:_____Page___of___

Date Added	Waste Packages Deposited By	Description of What Was Added*	Operating Account No.	Bldg. & Room #	Quantity**

None of the medical waste packages deposited in pickup containers at this site come from Radioactive Materials Management Areas (RMMAs) in a Controlled Area. No radioisotopes are used by the generators that deposit waste at this site. Sharps containers from shop and office areas that are deposited at this site do not come from Controlled Areas either.

*Type of Waste. e.g., sharps, infectious, animal carcass
**Bag, quart, 1/2 bag

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12. Appendices (continued)

Appendix 5 Biohazardous Waste Storage Area Warning Signs (English and Spanish)

Note: These signs must be easily read from 8 m (25 ft). The signs on the following two pages meet this requirement. You may copy them or remove them from this guide and use them.

Continued on next page.

CAUTION

BIOHAZARDOUS WASTE STORAGE AREA

UNAUTHORIZED PERSONS KEEP OUT

CUIDADO

ZONA DE RESIDUOS BIOLOGICOS PELIGROSOS

PROHIBIDA LA ENTRADA A PERSONAS NO AUTORIZADAS

12. Appendices (continued)

Appendix 6 Signature Verification Form

Medical And Biohazardous Waste Signature Verification Form

Pickup Site _____

Only personnel listed on this form are authorized to sign the hauling tracking record, the "Biohazardous Waste Hauling Record and Certificate of Destruction" when the vendor picks up a storage carton or barrel of waste.

Name (printed)	Signature	Initials	Date

Note: Personnel authorized to sign tracking records must have completed the "Medical/ Biohazardous Waste Generator Training Course," EHS-730.

For each pickup site, several individuals may be designated to sign these forms.

Send original to, EH&S Waste Management Group, M/S B75B-101.

Keep a copy for the pickup site coordinator's "Tracking Records" file.

(8/15/94RC)

Continued on next page.

12. Appendices (continued)

Appendix 7 Points of Origin (Locations of Smaller Accumulation Containers) (Blank Form)

See form on following page.

Continued on next page.

Lawrence Berkeley Laboratory • Environment, Health and Safety Division

Medical and Biohazardous Waste Points of Origin

(Locations of Accumulation Containers)

Use a √ for type of waste.

Building	Room	Contact Person & Extension	LBL employee #	Type of Waste*						LBL Policy
				Laboratory Wastes	Blood or body fluids	Sharps	Contaminated animals	Surgical Specimens	Isolation Waste	Publicly perceived**

***Type of waste**

Laboratory wastes — specimen or microbiologic cultures, stocks of infectious agents, live and attenuated vaccines, and culture mediums

Blood or body fluids — liquid blood elements or other regulated body fluids, or articles contaminated with blood or body fluids

Sharps — syringes, needles, blades, broken glass (At LBL sharps may be included here because they are perceived by the public as a medical waste.)

Contaminated animals — animal carcasses, body parts, bedding materials

Surgical specimens — human or animal parts or tissues removed surgically or by autopsy

Isolation waste — waste contaminated with excretion, exudate, or secretions from humans or animals who are isolated due only to the highly communicable diseases listed by Centers for Disease Control as requiring Biosafety Level 4 precautions. Biosafety Level 4 viruses and diseases are: Congo-Crimean hemorrhagic fever, Tick-borne encephalitis virus complex (Absettarov, Hanzalova, Hypr, Kumlinge, Kyasanur Forest disease, Omsk hemorrhagic fever, and Russian Spring-Summer encephalitis), Marburg disease, Ebola, Junin virus, Lassa fever virus, Machupo virus.

****Publicly perceived** — includes culture dishes, surgical/medical gloves and sharps.

Form completed by: _____ Date: _____

(9/94 GM) **Send a copy to EH&S, Waste Management Group, M/S B75B-101.**

12. Appendices (continued)

Appendix 8 LBL's Contractor for Medical Waste Hauling, Treatment, and Disposal

Integrated Environmental Systems (IES)
499 High Street
Oakland, CA 94601

Telephone: (510) 261-1512

Dispatcher: Jim McIntosh (arranges pickup of waste)

The following items are incinerated at the IES treatment plant:
Pickup site boxes/barrels, marked "incinerate," containing animal carcasses/body tissues
Waste with high moisture content
Pharmaceuticals
Over-the-counter drugs
Biochemicals

Label pickup site boxes/barrels so that the waste hauler can set the contents containing animal carcasses/body tissues aside for incineration.

All pharmaceuticals, biochemicals, and over-the-counter drugs are incinerated. Send a list of the pharmaceuticals, biochemicals, and excess drugs for disposal to the EH&S Waste Management Group for review. The EH&S Waste Management Group will then advise the Pickup Site Coordinator and arrange for pickup of these items.

All other waste is treated in microwave unit.