

# Lawrence Berkeley National Laboratory

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Medical and Biohazardous Waste Generator's Guide (Revision 2)

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## Medical Waste

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# Medical and Biohazardous Waste Generator's Guide

**Waste Management Group**  
Environment, Health and Safety Division  
Ernest Orlando Lawrence  
Berkeley National Laboratory

**Revision 2**

**Prepared for the U.S. Department of Energy under  
Contract No. DE-AC02-05CH11231**

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### 1. Introduction

These guidelines describe procedures to comply with all Federal and State laws and regulations and Lawrence Berkeley National Laboratory (LBNL) policy applicable to State-regulated medical and unregulated, but biohazardous, waste (medical/biohazardous waste). These guidelines apply to all LBNL personnel who

- generate and/or store medical/biohazardous waste,
- supervise personnel who generate medical/biohazardous waste, or
- manage a medical/biohazardous waste pickup location.

Personnel generating biohazardous waste at the Joint Genome Institute/Production Genomics Facility (JGI/PGF) are referred to the guidelines contained in [Section 9](#). Section 9 is the only part of these guidelines that apply to JGI/PGF.

Medical/biohazardous waste referred to in this Web site includes [biohazardous](#), [sharps](#), [pathological](#) and [liquid](#) waste. Procedures for proper storage and disposal are summarized in the [Solid Medical/Biohazardous Waste Disposal Procedures Chart](#). Contact the Waste Management Group at 486-7663 if you have any questions regarding medical/biohazardous waste management.

#### 1.1 Generator Responsibilities

If you are a generator of medical/biohazardous waste, then your responsibilities (as described in more detail in subsequent sections) include:



- **Attending** a [Medical/Biohazardous Waste Generator Training Class \(EHS 730\)](#)
- **Characterizing** your medical/biohazardous waste (i.e., knowing what type of medical/biohazardous waste you have and whether it is also chemically hazardous or radioactive).
- **Segregating** and physically separating medical/biohazardous waste from other waste streams (e.g., hazardous or radioactive waste).
- Properly **storing** medical/biohazardous waste in containers lined with red or clear biohazardous bags.

- Properly **storing** sharps waste in red sharps containers.
- **Moving** medical/biohazardous waste and full sharps containers into medical waste pickup containers for pickup by an outside contractor.
- **Maintaining** documentation on the processes or experiments that generate medical/biohazardous waste.

## 1.2 Definitions

Medical/biohazardous waste at LBNL is defined as waste that requires inactivation of the biological material in an approved manner prior to final disposal, and includes but is not limited to the following discarded items:

- Primary human cell lines and tissue cultures
- Organisms with recombinant DNA
- Cultures and stocks of infectious agents
- Potentially infectious agents (e.g., bacteria, viruses, fungi, prions)
- Biological material that may contain potentially infectious agents
- Toxins (e.g., snake venom)
- Live and attenuated vaccines
- Blood, blood products, and other potentially infectious materials that may contain human blood-borne pathogens
- Carcasses and tissues
- Soil, plants, and pathogens controlled by the United States Department of Agriculture (USDA)
- Labware and other items that have come into contact with the aforementioned waste streams (e.g., contaminated plastic pipettes, pipette tips, petri dishes, centrifuge tubes, eppendorf tubes, disposable gloves, and wipes)

Infectious material is defined as material capable of transmitting pathogenic microorganisms, their toxins, or prions that may cause disease or injury in healthy human adults.  Biologicals are medicinal preparations made from living organisms and their products including serums, vaccines, antigens, and anti-toxins. 

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## Medical Waste

## 2. Medical/Biohazardous Waste Disposal Procedures

### 2.1 Biohazardous Waste Labels, Bags, and Containers

Medical/biohazardous waste generated at LBNL must be disposed of in biohazardous waste bags, as discussed in detail in the following section. Biohazardous waste bags must be **placed in labeled** biohazardous waste containers.


#### 2.1.1 Biohazardous Waste Labels



Biohazardous waste labels with either the words "Biohazardous Waste," or with a biohazard symbol and the word "Biohazard" (see [Figure 2-1](#)) must be placed on biohazardous waste containers.

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**Figure 2-1.** A biohazardous waste label with the biohazard symbol.

## 2.1.2 Biohazardous Waste Bags

Biohazardous waste bags must be either **RED** or clear (orange bags are not allowed) and labeled with either the words "Biohazardous Waste," or with a biohazard symbol and the word "Biohazard." These bags must be disposable and impervious to moisture, and have strength sufficient to preclude ripping, tearing, or bursting under normal conditions of usage and handling.

**Red** biohazard bags must be used for Medical Waste, which is regulated by the California Department of Health Services (DHS). Regulated Medical Waste is generated or produced as a result of any of the following:

- diagnosis, treatment, or immunization of human beings or animals;
- research pertaining to treatment, diagnosis, or immunization of human beings or animals;
- or the production of [biologicals](#).

In some cases, LBNL researchers generate biological material which is then transferred offsite for DHS regulated use. Incidental regulated use of the material offsite does not make the waste regulated at LBNL. Red bags are used to line all medical/biohazard containers in laboratories where any regulated medical waste is produced, and red bags are used to line all pickup containers provided by the disposal contractor. If a room uses red bags, the waste will be presumed to be regulated and must conform to the red-bag requirements listed after the flowchart.

**Clear** biohazard bags are used for biohazardous waste that is not regulated by the California Department of Health Services (DHS). The Waste Management Group **must document** that a laboratory's biohazardous waste is not regulated in order for a laboratory to use clear biohazard bags. Anytime that the research significantly changes in a laboratory that uses clear bags, it is the responsibility of the Principle Investigator to notify the Waste Management Group of the change (contact Marty White at x7663).







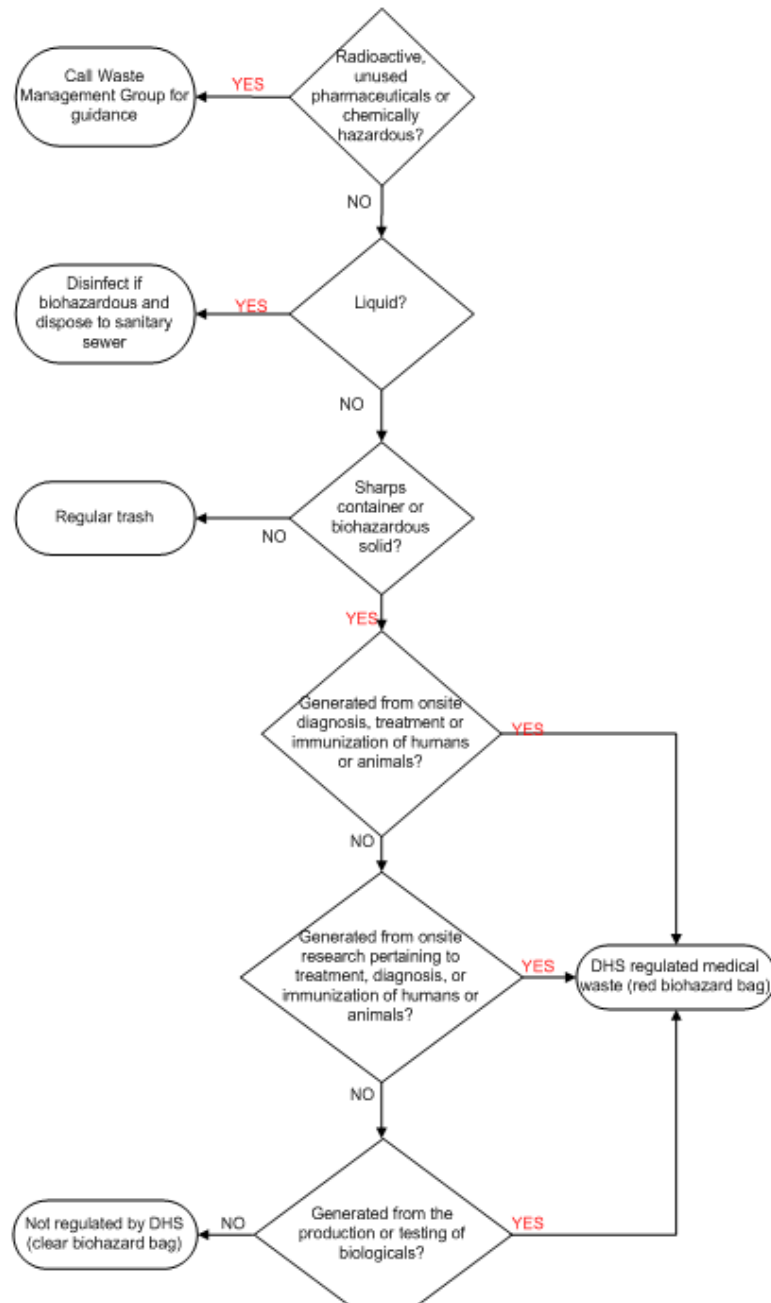
**Figure 2-2.** Red biohazard bag.    **Figure 2-3.** Clear biohazard bag.

The color of a biohazardous bag is used to differentiate between waste that is regulated by DHS (red) and waste that is not (clear). The color of the bag does **not** indicate the level of biological risk or final treatment. Both colors of bags are disposed and treated by LBNL's biohazardous/medical waste disposal subcontractor in the same manner.

The following flowchart ([Figure 2-4](#)) shows the basis for clear-bag use for solid medical/biohazardous waste as well as disposal guidelines and definitions for medical/biohazardous waste. Use this chart to determine if your laboratory biohazardous/medical waste is regulated by DHS and must therefore be contained in a red bag:

## Biohazardous/Medical Waste Disposal

### Is Waste:



### Definitions:

Biohazardous waste is waste that requires biological inactivation in an approved manner prior to final disposal, and includes, but is not limited to, the following: primary human cell lines and tissue cultures; organisms with recombinant DNA; cultures and stocks of infectious agents; potentially infectious bacteria, viruses, and spores; toxins; live and attenuated vaccines; blood and blood products; carcasses; tissue specimens; recognizable human or animal body parts; soils with pathogens; labware that has come in contact with aforementioned waste streams.

Biologicals are medicinal preparations made from living organisms and their products including serums, vaccines, antigens, and anti-toxins.

DHS is the California Department of Health Services

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.

Medical waste is generated or produced as a result of the following: diagnosis, treatment, or immunization of human beings or animals; research pertaining to treatment, diagnosis, or immunization of human beings or animals; the production or testing of biologicals.

Pharmaceuticals are over-the-counter or prescription human or veterinary drugs, and drugs are any article recognized in the US Pharmacopoeia - National Formulary or the Homeopathic Pharmacopoeia. Depending on the properties of the pharmaceutical, it can be a controlled substance, a RCRA hazardous waste, or a specialized medical waste that is disposed of in a separate pharmaceutical container. Call the Waste

**Figure 2-4.** Biohazardous/medical waste disposal flowchart.

**Clear Biohazard Bag Program:**

- All biohazard bags in the room must be part of the Clear Biohazard Bag Program.
- Once a room switches to clear bags, the room must continue to use clear bags unless the research significantly changes.
- Generators are responsible for supplying their own bags. The bags must be clear or white and labeled with the biohazard symbol or wording. The bags do not need to be certified for autoclave use. The following suppliers sell clear biohazard bags of various sizes:
  - o [VWR Scientific Products](#)
  - o [Lab Safety Supply](#)
  - o [Fisher Scientific](#)
- Full bags must be tied or taped closed and disposed of in gray pickup containers lined with red bags. Fill out the Accumulation Log with the wording "unregulated lab waste."
- Lab containers may not be overfilled.
- Containers must be labeled with the biohazard symbol or wording.
- Dispose of clear bags when they are full or if there is a noxious odor. Weekly disposal is not necessary for clear bags.
- Benchtop containers lined with clear bags do not need to be covered. Larger containers lined with clear bags should be covered as a best-management practice.
- Sharps waste must continue to be accumulated in a sharps container labeled as "unregulated sharps." These containers may not be overfilled.
- Only those generators notified by Waste Management that they qualify may participate in the clear-bag program.
- Generators must take EHS 730: Training for Medical/Biohazardous Waste Generators.

**Red Biohazard Bag Waste:**

- All biohazard bags in the room must be part of the Red Biohazard Bag Program.

- Generators are responsible for supplying their own bags. The bags must be red and labeled with the biohazard symbol or wording. The bags do not need to be certified for autoclave use. The following suppliers sell red bags of various sizes:
  - o [VWR Scientific Products](#)
  - o [Lab Safety Supply](#)
  - o [Fisher Scientific](#)
- Full bags must be tied or taped closed and disposed of in gray pickup containers lined with red bags. Fill out the Accumulation Log with the type of waste.
- Lab containers may not be overfilled.
- Dispose of red biohazard bags at least once a week.
- All containers, including benchtop containers, must be covered with a lid when not in use, and the lids must be cleaned once a week.
- Containers, including benchtop containers, must be labeled with the biohazard symbol or wording.
- Sharps waste must be accumulated in a sharps container labeled with the biohazard symbol or wording. These containers may not be overfilled.
- Generators must take EHS 730, training for Medical/Biohazardous Waste Generators.

### 2.1.3 Laboratory Biohazardous Waste Containers

Biohazardous waste containers ([Figure 2-5](#)) must be **rigid and leakproof**, with a tight-fitting lid, and preferable a footpedal to operate the lid. The containers may be any color, but they must be labeled with either the words "Biohazardous Waste," or with a biohazard symbol and the word "Biohazard." The labels must be placed on **both** the lid and the sides of the container. The labels must be visible from all sides of the container. In addition, biological materials of human origin that are covered by the OSHA Bloodborne Pathogen Standard must be placed in containers that are red or containers that have fluorescent orange or Orange-red biohazard labels.

Biohazardous waste containers must be **lined** with biohazardous waste bags before adding the waste. The **labels on the container must be visible** once a biohazardous waste bag is added. There are biosafety reasons and regulatory requirements for maintaining lids in place on containers. In general, lids should be used to prevent the spread of potentially infectious agents or material. The lid should be kept closed on the

container whenever waste is not being actively added to the bag. At a minimum, the lid must be on the container during breaks, lunch, and at the end of each workday. Small countertop containers lined with clear bags (used for nonregulated biohazardous waste) can be used and kept uncovered. Larger containers lined with clear biohazard bags should be covered as a best-management practice.



**Figure 2-5.** A biohazardous waste container.

Biohazardous waste containers need to be placed in the laboratories **near the point of medical/biohazardous waste generation**. Medical/biohazardous waste must be segregated and physically separated from other wastes. Avoid, if possible, mixing medical/biohazardous waste with chemical or radioactive materials.

Medical/biohazardous waste must be free from radioactive and chemical contamination to be classified and disposed of as medical waste.

#### 2.1.4 Medical/Biohazardous Waste Pickup Containers



The waste is collected from specified containers called **pickup containers** ([Figure 2-6](#)). The pickup containers are supplied by the LBNL medical/biohazardous waste subcontractor and are **usually gray** in color, except for red pathology containers, which are discussed later. They are pre-labeled with biohazard symbols and the word "Biohazard." Medical/biohazardous waste collected



**Figure 2-6.** Medical/  
biohazardous waste pickup  
containers

in laboratory waste containers (red-bagged or clear-bagged) must be transferred to these pickup containers for pickup. Laboratory waste in red bags must be transferred weekly. Laboratory waste in clear bags need only be transferred when the bag is full, there is a noxious odor, or continued accumulation may present a biohazard to personnel.

There are designated [pickup sites](#) around the laboratory where medical waste is collected by LBNL's medical/biohazardous waste subcontractor.

## 2.2 Solid Medical/Biohazardous Waste Disposal

The following section describes the procedure that must be followed when transporting waste from laboratory medical/biohazardous waste containers to medical waste pickup containers. This includes moving medical/biohazardous waste more than a few feet within a room.

Wear and use **personal protective equipment (PPE)** appropriately when handling medical/biohazardous waste ([Figure 2-7](#)). Wear PPE (e.g., lab coat, gloves, safety glasses) to prevent potential contact with and exposure to infectious material. In addition, prevent the spread of infectious material by: a) changing gloves that have been used or may be contaminated, b) not touching doorknobs or other "clean" surfaces with gloved hands, and c) washing hands after removing gloves.

**Seal** the biohazard bag closed (tape, rubber band, etc.). **Carry** the biohazard bag to the nearest medical waste pickup container ([Figure 2-8](#)). The biohazard bag must be **secondarily contained during transport** in a labeled biohazard container with a lid.

This is a necessary precaution, should the bag leak. **Remove** the biohazard bag and deposit it into the pickup container. The pickup container must be lined with a red biohazard bag. **Close the lid** on the pickup container after adding the waste.

Fill out the [Medical Waste Accumulation Log](#) which should be affixed to the lid of each gray pickup container.

Note: Do not overfill the gray pickup containers. The lid must be able to fully close. Start a new one if necessary. Wash your hands after removing your gloves.



**Figure 2-7.** Wear PPE when handling medical/ biohazardous waste.



**Figure 2-8.** A sealed biohazard bag being carried to the nearest medical waste pickup container.

The California Medical Waste Management Act prohibits accumulation of medical waste on site for more than seven days above 32°F. **Therefore, you must dispose of any waste in a red bag each week.** Currently, pickups are on Wednesday mornings 🚚 for hill locations and Thursday mornings for Potter St. 🚚

## 2.2.1 Disinfecting Biohazardous Waste Container

### Lids

Laboratory biohazardous waste container lids are not protected by the red bag liners, and **must be cleaned and disinfected** whenever the bagged waste is removed from a container lined with a red bag. In practice, this means that the lid of the laboratory container should **be wiped down on the inside and outside** every time waste is transferred to the pickup container.

To clean the lids, use a *freshly* prepared 1% bleach solution containing 500 ppm available chlorine. Prepare the 500 ppm solution by adding 1-1/4 ounces (38 ml) of household bleach (with 5.25% sodium hypochlorite) to one gallon (3.78 liters) of water. Wipe the inside and outside of the lid with this solution.

## 2.2.2 Disinfecting Biohazardous Waste Containers

Our medical/biohazardous waste subcontractor is responsible for replacing the gray biohazardous waste pickup containers with clean containers every pickup day. However, it is the generator's responsibility to disinfect the **laboratory** biohazardous waste containers periodically. At a minimum, these containers must be cleaned and disinfected any time a biohazardous-waste bag develops a leak, or if the container is visibly dirty. Each laboratory container should be cleaned **not less than once each quarter**.

To clean the barrels, use a *freshly* prepared 1% bleach solution containing 500 ppm available chlorine. Prepare the 500 ppm solution by adding 1-1/4 ounces (38 ml) of household bleach to one gallon (3.78 liters) of water. The minimum contact time for the bleach solution is 3 minutes.

## 2.3 Liquid Medical/Biohazardous Waste Disposal

Certain liquid medical/biohazardous wastes that have been disinfected, such as **cell culture media and blood**, can be discharged to the sanitary sewer system. To disinfect your waste, add a sufficient amount of household bleach to the biohazardous liquid so as to create a 10% concentration of bleach ([Figure 2-9](#)). This mixture may be made by adding 100 ml of bleach for each liter of liquid waste (or 1.5 cups bleach per gallon). Then let the mixture stand for 3 – 20 minutes (depending on the extent of the organic matter that is present) before drain disposal.

**Remember** the waste must not be defined as chemically hazardous or radioactive before drain disposal or cause a violation of the LBNL wastewater permit discharge limits. Contact Environmental Services Group (x7413) for assistance with this type of waste.





**Figure 2-9.** To disinfect your liquid waste, create a 10% concentration of household bleach in the liquid waste.

## 2.4 Biochemicals, Pharmaceuticals, and Over-the-Counter Drug Disposal

Pharmaceuticals are over-the-counter or prescription human or veterinary drugs, and drugs are any article recognized in the U.S. Pharmacopoeia — National Formulary or the Homeopathic Pharmacopoeia ([Figure 2-10](#)). Pharmaceuticals that have expired or are no longer needed **cannot** be disposed of in the laboratory medical/biohazardous waste containers nor can they be disposed of in the trash or the sanitary sewer. Depending on the properties of the pharmaceutical, it can be a controlled substance, an RCRA hazardous waste, or a specialized medical waste that is disposed of in a separate pharmaceutical container. Special procedures need to be followed to dispose of pharmaceuticals. Contact your Generator Assistant for disposal guidance.





**Figure 2-10.** Examples of pharmaceuticals.

## 2.5 Medical/Biohazardous Waste Contaminated with Radioactive and/or Chemical Materials

Medical/biohazardous wastes that are contaminated with radioactive and/or hazardous chemical materials are **not** regulated as medical waste. They are regulated as radioactive, mixed, or hazardous waste, depending on the contamination. This waste must **not** be put into the medical/biohazardous waste containers. Refer to LBNL/PUB-3092, [Guidelines for Generators to Meet HWHF Acceptance Requirements](#), for proper disposal of these wastes, or contact your [Generator Assistant](#).

*Exception: Medical/biohazardous waste that contains only residual amounts of bleach, phenol, ammonia, iodoform, or permanganate solutions may be placed into the medical/biohazardous waste containers.*

## 2.6 Medical/Biohazardous Waste from a Radioactive Materials Area (RMA)

Medical/biohazardous waste originating from an RMA must be below minimum detection levels for radioactivity. By signing the Medical Waste Accumulation Log, the generator is certifying that there is no detectable radioactivity in the waste. If you are unsure whether there is radioactive contamination in your medical/biohazardous waste, please contact your Radiation Control Technician.

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### 3. Sharps Waste Management

#### 3.1 Definition

A sharp is any device having corners, edges, or projections capable of cutting or piercing the skin ([Figure 3-1](#)). LBNL's definition of sharps includes regulated sharps (medical waste), unregulated biohazardous sharps, and unregulated uncontaminated sharps that pose a safety hazard to the custodians and other personnel.

The following items are considered sharps at LBNL and should be placed in a sharps container (**whether or not they are contaminated with medical/biohazardous waste**).

- Needles
- Needles with syringes
- Needles from vacutainers
- Needles with attached tubing
- Blades (razors, scalpels, X-acto, etc.)



**Figure 3-1.** Examples of sharps.

The following items **contaminated with medical/biohazardous waste** must be placed in a sharps container:

- Broken glassware
- Glassware with sharp edges or points
- Pasteur pipettes
- Glass slides

The following items may be placed in a rigid container and marked with the words "Broken Glassware" and placed in the sanitary trash **only** if they are **not contaminated with medical/biohazardous waste**:

- Broken glassware

- Glassware with sharp edges or points
- Pasteur pipettes
- Glass slides

## 3.2 Sharps Containers



**Figure 3-2.** Examples of sharps containers for medical waste.

Sharps containers ([Figure 3-2](#)) should be **RED** and must be puncture-resistant and labeled as “sharps waste,” or with a biohazard symbol and the word “biohazard,” or as “unregulated sharps,” as specified in the following sections. Sharps containers must be placed in the laboratory near the area of sharps waste generation. **Do not overfill sharps containers.**

In the case of sharps that are contaminated with biological materials that are covered under the OSHA Bloodborne Pathogen Standard, the sharps container must be leakproof on the sides and bottom, and must be

“easily accessible to personnel and located as close as feasible to the immediate area where sharps are used.”

## 3.3 Sharps Waste Disposal Procedures for Biohazardous Areas

### 3.3.1 Sharps Waste Disposal Procedures for Medical Waste (Red Bag) Areas

Sharps containers used for medical waste (red-bag laboratories) must be made of rigid material so as to be puncture-resistant and labeled with the words “sharps waste,” or with a biohazard symbol and the word “biohazard.” The following section describes the disposal procedures for a full sharps container.

**Wear appropriate PPE** when handling sharps waste (e.g., lab coat, gloves, safety glasses).

**Close the lid** on the sharps



container when it is full (**do not overfill**). As a best- management practice, sharps containers should not be more than 2/3 full.



**Figure 3-3.** Wear appropriate PPE when handling sharps waste.

Exception: If you place blood vials containing fluid blood in a sharps container, then the sharps container **must be** disposed of within seven days, whether or not the sharps container is full.

**Hand-carry** the sharps container to a biohazardous waste container in your lab or to your nearest medical waste accumulation pickup container. Make sure the biohazardous waste accumulation container or the pickup container is lined with a red biohazard bag before depositing the sharps container. After depositing the sharps container, close the lid on the biohazard container.

If depositing the sharps container into a pickup container, **fill out** the [Medical Waste Accumulation Log](#). Wash your hands after removing your gloves.

Remember, **do not store full sharps containers in the lab**; immediately transfer them to a biohazardous waste container.

### 🚫 3.3.2 🚫 Sharps Waste Disposal Procedures for Biohazardous Areas That Use Clear Biohazard Bags

Sharps containers used for biohazardous waste in laboratories using clear bags can be red in color and must be made of rigid material so as to be puncture-resistant and labeled with the words "unregulated sharps." The following section describes the disposal procedures for a full sharps container in an area that produces biohazardous waste and uses clear biohazard bags.

**Wear the appropriate PPE** when handling sharps waste (e.g., lab coat, gloves, safety glasses).



**Figure 3-4.** An example of an unregulated sharps container.

**Close the lid** on the sharps container when it is full (**do not overfill**). As a best-management practice, sharps containers should not be more than 2/3 full.

**Hand-carry** the sharps container to a biohazardous waste container in your lab **or** your nearest medical waste accumulation pickup container. Make sure that the biohazardous waste accumulation container is lined with a clear bag or that the pickup container is lined with a red biohazard bag before depositing the sharps container. After depositing the sharps container, **close the lid** on the biohazard container.

If you are depositing the sharps container into a pickup container, **fill out** the [Medical Waste Accumulation Log](#). Wash your hands after removing your gloves.

### **3.3.3** **Sharps Waste Contaminated with Radioactive and/or Chemical Materials**

Sharps wastes that are contaminated with radioactive and/or chemical materials are **not** regulated as medical waste. They are regulated as radioactive, mixed, or chemical waste, depending on the contamination. These sharps **must not** be put into the medical/biohazard sharps containers. Refer to LBNL/PUB-3092, [Guidelines for Generators to Meet HWHF Acceptance Requirements](#), for proper disposal of these sharps, or contact your [Generator Assistant](#).

## **3.4 Sharps Waste from a Radioactive Materials Area (RMA)**

Sharps waste originating from an RMA must be below minimum detection levels for radioactivity. By signing the Medical Waste Accumulation Log, the generator is certifying that there is no detectable radioactivity in the waste. If you are unsure whether there is radioactive contamination in your sharps waste, please contact your Radiation Control Technician.

## **3.5 Sharps Waste Disposal Procedures for Unregulated Nonbiohazardous Areas**

Sharps are also generated in unregulated nonbiohazardous areas like shops, offices, and warehouses. These sharps, even though not contaminated with medical/biohazardous waste, must also be disposed of in sharps containers.



This policy is in place to protect custodians and other employees from puncture wounds. The following items are considered sharps at LBNL and should be placed in a sharps container

- Needles
- Needles with syringes
- Needles from vacutainers
- Needles with attached tubing
- Blades (razors, scalpels, X-acto, etc.)

Since these are uncontaminated sharps, **remove or cover** any biohazard symbols or labeling that says biohazardous or infectious waste. Label the container "**Unregulated Sharps.**" These sharps must also be free from chemical and/or radioactive contamination.

Sharps containers from unregulated nonbiohazardous areas must be **transferred** to the nearest medical waste pickup container by following the procedures outlined in ["Sharps Waste Disposal Procedures for Biohazardous Areas using Clear Biohazard Bags."](#) Fill out the Medical Waste Accumulation Log and describe the waste as an "unregulated sharps container."

## 3.6 Uncontaminated Glassware Disposal Procedures

Laboratory glassware free from any biohazardous, radioactive, and chemical contamination should be disposed of by packaging in a cardboard box or other rigid container. This policy includes the disposal of the following uncontaminated items:

- Broken glass
- Pasteur pipettes
- Glass slides
- Glass vials

When the box containing the glassware is full, seal the box closed and label "Broken Glass." Set the box out for janitorial pickup. Although any rigid container or cardboard box may be used, you can also purchase cardboard boxes made especially for glassware disposal.



**Figure 3-5.**  
Uncontaminated glassware ready for disposal.

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## 4. Pathology Waste Management

### 4.1 Definition

Pathological waste is defined at LBNL as any **recognizable human or animal body part and tissue**. The most common pathological waste found at LBNL is an animal carcass.

### 4.2 Pathological Containers

Pathological waste pickup containers are supplied by LBNL's medical waste subcontractor ([Figure 4-1](#)). They are usually red, and are pre-labeled with the biohazard symbol and the words "Pathological Waste."

Pathological containers **must be lined** with a red biohazard bag before depositing waste.



**Figure 4-1.** A pathological waste pickup container.



## 4.3 Pathological Waste Disposal Procedures

The following section describes the procedures that must be followed when disposing of pathological waste.

- **Wear** the appropriate PPE for handling pathological waste (e.g., lab coat, gloves, safety glasses).
- **Deposit** the pathological waste into a biohazardous waste bag. Seal the biohazard bag closed (tape, rubber band, etc.) **Red** biohazard bags are to be used for pathology waste in areas where the laboratory waste is deposited into containers lined with red biohazard bags. **Clear** biohazard bags are to be used for pathology waste in areas where the laboratory waste is deposited into containers lined with clear biohazard bags.
- **Label** the outside of the bag with the generator's name and extension, and the date the bag was sealed.
- **Store** the bagged waste in a freezer. This helps to minimize odors.
- The morning of the pickup, **transfer** the waste into a pathological waste pickup container.
- **Fill out** the [Medical Waste Accumulation Log](#)
- **Wash** your hands after removing your gloves.

## 4.4 Pathological Waste Contaminated with Radioactive Material

Pathological waste that is contaminated with radioactive material (e.g., animal carcasses labeled with tritium) **is not** medical waste. It is regulated as radioactive waste. This waste **must not** be put into the pathological waste containers. Refer to [LBNL/PUB-3092, Guidelines for Generators to Meet HWHF Acceptance Requirements](#), for proper disposal of these wastes, or contact your Generator Assistant.

## 4.5 Pathology Waste from a Radioactive Materials Area (RMA)

Pathology waste originating from an RMA must be below minimum detection levels for radioactivity. By signing the Medical Waste Accumulation Log, the generator is certifying that there is no detectable radioactivity in the waste. If you are unsure whether there is radioactive contamination in your medical/biohazardous waste, please contact your Radiation Control

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## 5. Medical/Biohazardous Waste Pickup

### 5.1 Medical/Biohazardous Waste Transportation, Treatment, and Disposal

LBNL subcontracts with a vendor to transport, treat, and dispose of all medical waste generated on site and at Donner, Calvin, and the Potter Street Facility. **Only** this vendor is licensed to transport medical waste off site. LBNL employees **must not transfer** medical waste from offsite locations such as Donner, Calvin or Potter Street.

The medical/biohazardous waste that is collected in the gray containers is **autoclaved**, and the pathological waste collected in the red containers is **incinerated**. After treatment, the waste is landfilled. Medical waste is autoclaved in some laboratories before it is put into the pickup containers. Autoclaving in the lab may be done as an added safety precaution or requirement in some cases, but cannot be considered final treatment. Medical waste must be treated by a licensed treatment facility before it is legally considered noninfectious. LBNL does not have a license to treat medical waste; therefore, all medical waste that is autoclaved on site must still be disposed of through the medical/biohazardous waste vendor.

### 5.2 Medical Waste Pickup Locations

Medical waste is picked up from the following LBNL building locations. Each pickup site has a contact.

The following table lists medical-waste pickup locations:



Location	Pickup-Site Contact	Extension
Bldg 10	Donna Hamamoto	5527

Bldg 26	Wendy Corr	4483
Bldg 55	Steve Hanrahan	6263
Bldg 64	Ken Wan	4456
Bldg 67	Bruce Cohen	6640
Bldg 70A	Stacey Gauny	5106
Bldg 74	Randy DeGuzman	6758
Bldg 80	Rosanne Boudreau	7076
Donner Lab (Bldg 1)	Amy Ukena	5987
Calvin Lab (Bldg 3)	Vangie Peterson	4348
Potter Street (Bldg 977)	Gregory Seaman	7834

Pickup-site contacts work with the Medical Waste Program Coordinator to resolve any problems with the management of medical waste in their respective areas.

### 5.3 Medical Waste Pickup Schedule

Currently, medical waste is picked up **every Wednesday** morning for offsite treatment and disposal. The Potter Street Facility has medical waste picked up on Thursday mornings. All regulated waste (anything in a red biohazard bag) must be brought to a medical waste pickup site on a weekly basis, before the scheduled pickup, and placed in a pickup container. It is necessary to remove the regulated medical waste and regulated full sharps containers from your laboratory every week, at the scheduled time, to comply with the California Medical Waste Management Act. Regulated pathology waste may be stored in a freezer for up to 90 days, but it is a best-management practice to transfer the waste from the freezer to the pickup container within 7 days.

You can usually wait to dispose of a sharps container until it is 2/3 full. However, if you work in a laboratory that uses red biohazard bags for the accumulation containers and you place blood vials containing fluid blood in a sharps container, then the sharps container must be disposed of within 7 days, whether or not the sharps container is full.

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## 6. Medical/Biohazardous Waste Training and Inspections

### 6.1 Medical/Biohazardous Waste Training

All of the following employees need to take the [Medical Waste Generator Training](#) class (EHS 730), which covers the management procedures for medical waste:

- Medical/biohazardous waste generators
- Medical waste pickup site coordinators and their alternates
- Supervisors of personnel who work in areas where medical/biohazardous waste is generated/stored
- Custodians who handle medical/biohazardous waste containers
- Facilities personnel who need to recognize the biohazard warning signs and/or move one of the storage containers
- Building (safety) managers

Supervisors are responsible for ensuring that their personnel receive medical-waste training, if appropriate. Personnel who work near areas where medical waste is generated or stored and are not generating medical waste can be trained by their supervisor.

### 6.2 Medical/Biohazardous Waste Inspections

A representative from the Waste Management Group will perform **quarterly** inspections of each medical/biohazardous waste generating location. They will inspect for proper management of medical/biohazardous waste, including labeling, storage, and handling. Results of these inspections will be discussed with the Safety Coordinator and researchers.

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## Medical Waste

### 7. Forms and Supplies

#### 7.1 Medical Waste Accumulation Log

All biohazardous waste bags and sharps containers deposited into the gray medical waste pickup containers or the red pathological waste pickup containers **must** be recorded on a Medical Waste Accumulation Log. This helps identify the source of the waste, should there be a safety or regulatory violation regarding the waste. The Log also serves as a **certification** that the waste is free from radioactive and chemical contamination.

**Note:** The first person placing medical waste into a pickup container is responsible for affixing a Medical Waste Accumulation Log to the lid of the container. [Figure 7-1](#) is an example of a correctly filled out Medical Waste Accumulation Log.

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Lawrence Berkeley National Laboratory  
Medical Waste Accumulation Log

Container No. AD42V Building: 74 Room: 3110

BY SIGNING BELOW I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE, THIS MEDICAL WASTE IS FREE OF BOTH REGULATED QUANTITIES OF HAZARDOUS MATERIALS AND RADIOACTIVE CONTAMINATION.

Date Waste Added	Waste Generator (Signature)	Employee ID Number	Medical Waste Description (Culture media, needles, syringes, etc.)	Number of Bags or Sharps Containers
8/16/01	<i>[Signature]</i>	279951	tubes, tips glasses, pipets	1
2/10/01	<i>[Signature]</i>	288003	1000s pipettes, plasticware 1000s pipettes, plasticware 1000s pipettes, plasticware	1

Figure 7-1. Example of a completed Medical Waste Accumulation Log.

## 7.2 Ordering Medical Waste Supplies

You may order medical/biohazardous waste supplies from LBNL Stores or from outside vendors (VWR, Lab Safety Supply). In all cases, use your operating account number. Generators are responsible for supplying items such as biohazard bags, labels, and containers. Sharps containers are available from LBNL stores. All other items must be purchased from outside vendors. Examples of vendors and order numbers are indicated below:

Item	Description	Vendor/Order Numbers
Biohazard bags (red)	19" x 24"	VWR/ #14220-110
Biohazard bags (red)	36" x 45"	VWR/ #14220-114
Biohazard bags (clear)	24" x 30"	VWR/ #14220-012
Biohazard bags (clear)	24" x 36"	VWR/ #14220-014
Broken glass carton, (benchtop box)	8" x 8" x 10"	Lab Safety Supply/ # 17-729SR
Broken glass carton, (floor box)	12" x 12" x 27"	Lab Safety Supply/ #17-728SR



Waste container, "biohazardous"	6 gallons	Lab Safety Supply/ # 29190
Waste container, "biohazardous"	10 gallons	Lab Safety Supply/ # 44331
Labels, "biohazard"	3.5" x 5"	Lab Safety Supply/ # 18766
Sharps container	3.4 quarts	Berkeley Lab Stores/ # 6515-71985
Sharps container	8.2 quarts	Berkeley Lab Stores/ # 6515-71347
Sharps container	5 gallons	Berkeley Lab Stores/ # 6515-71348

**Note:** Please review the VWR or Lab Safety Supply catalog before placing an order to verify the order numbers are correct.

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### 8. Solid Medical Waste Disposal Procedures Chart

Sharps Container	Lab Container	Pathology Container	Pickup Container
<p><b>Used for – All:</b></p> <ul style="list-style-type: none"> <li>Needles with or without syringes or tubing</li> <li>Blades (razors, scalpels, etc.)</li> </ul> <p><b>Contaminated only with medical/biohazardous waste:</b></p> <ul style="list-style-type: none"> <li>Broken glass</li> <li>Glass pipettes</li> <li>Microscope slides</li> <li>Other sharp items</li> </ul>	<p><b>Used for –</b></p> <ul style="list-style-type: none"> <li>Any solid contaminated with medical/biohazardous waste that does not go into a sharps container or a pathology container</li> <li>Can accept sharps containers</li> </ul>	<p><b>Used for –</b></p> <ul style="list-style-type: none"> <li>Animal carcasses</li> <li>Large tissue specimens</li> <li>Recognizable human or animal body parts and tissues</li> </ul>	<p><b>Used for –</b></p> <ul style="list-style-type: none"> <li><b>Red-bagged regulated medical waste from lab containers</b></li> <li><b>Clear-bagged biohazardous waste from lab containers</b></li> <li><b>Regulated medical waste sharps containers</b></li> <li><b>Unregulated waste sharps containers</b></li> </ul>
<p><b>Bag color:</b></p> <ul style="list-style-type: none"> <li>Regulated medical waste sharps must be deposited into a</li> </ul>	<p><b>Bag color:</b></p> <ul style="list-style-type: none"> <li>Regulated medical waste must be deposited into a</li> </ul>	<p><b>Bag color:</b></p> <ul style="list-style-type: none"> <li>Store regulated medical pathology waste in a closed</li> </ul>	<p><b>Bag color:</b> <b>Line the pickup container with a red bag. This</b></p>

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<p>container lined with a <b>red bag</b>.</p> <ul style="list-style-type: none"> <li>Unregulated waste sharps may go into a lab container lined with a clear bag or into the pickup container lined with a <b>red bag</b>.</li> </ul>	<p>container lined with a <b>red bag</b>.</p> <ul style="list-style-type: none"> <li>Unregulated biohazardous waste goes into a container lined with a clear bag.</li> </ul>	<p><b>red bag</b> in the freezer.</p> <ul style="list-style-type: none"> <li>Store unregulated pathology waste in a closed clear bag in the freezer.</li> <li>Line the pathology pickup container with a <b>red bag</b>. This container accepts all pathology waste.</li> </ul>	<p><b>container accepts clear-bagged waste and red-bagged waste in the same pickup container.</b></p>
<p><b>Labels:</b></p> <ul style="list-style-type: none"> <li>Regulated medical waste sharps must have the biohazard label or symbol.</li> <li>Unregulated waste sharps are labeled "unregulated sharps."</li> </ul>	<p><b>Labels:</b></p> <p>Lab containers for medical/biohazardous must have biohazard labels or symbols.</p>	<p><b>Labels:</b></p> <ul style="list-style-type: none"> <li>Write your name and extension plus the date waste is put into freezer on the bagged waste.</li> <li>The pathology pickup container is labeled "biohazard" and "pathology waste."</li> </ul>	<p><b>Labels:</b></p> <p><b>Pickup containers must have biohazard labels or symbols.</b></p>
<p><b>Storage time limit:</b></p> <p>Sharps containers may be used until they are 2/3 full. Dispose of the sharps container the same day it is closed.</p>	<p><b>Storage time limit:</b></p> <ul style="list-style-type: none"> <li>Dispose of regulated medical waste (red bag) weekly.</li> <li>Transfer unregulated biohazardous waste (clear bag) when the bag is full.</li> </ul>	<p><b>Storage time limit:</b></p> <p>Best-management practice is to store pathology waste in the freezer for no more than 7 days. The maximum amount of time regulated pathology waste is allowed to be stored in the freezer is 90 days.</p>	<p><b>Storage time limit:</b></p> <p><b>Pickup containers with waste must be removed for treatment every 7 days.</b></p>
<p><b>Disposal:</b> Close the sharps container when 2/3 full. Dispose of in either a lab container or a pickup container. Fill out a Medical Waste Accumulation Log.</p>	<p><b>Disposal:</b> Tie or tape the bag closed and carry it in the lab container to the pickup container. Fill out a Medical Waste Accumulation Log.</p>	<p><b>Disposal:</b> Transfer bagged waste to pathology pickup container for contractor to pickup for offsite treatment and disposal. Fill out a Medical Waste Accumulation Log.</p>	<p><b>Disposal:</b> Contractor picks up the waste every Wednesday morning for offsite treatment and disposal.</p>

- If your waste is contaminated with chemical and/or radioactive materials, do not dispose of as medical waste.

- “Biohazardous waste” means waste that requires biological inactivation in an approved manner prior to final disposal and includes the following: primary human cell lines and tissue cultures; organisms with recombinant DNA; cultures and stocks of infectious agents; potentially infectious bacteria, viruses, and spores; toxins; live and attenuated vaccines; blood and blood products; carcasses; tissue specimens; recognizable human or animal body parts; soil with pathogens; and labware that has come in contact with aforementioned waste streams.
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## 9. Biohazardous Waste Disposal at JGI /PGF

The JGI does not produce any regulated medical waste from the research that is conducted there, thus the biohazardous waste that is produced there is managed differently from the medical/biohazardous waste produced in Berkeley. JGI has autoclaves that are used to sterilize waste contaminated with biohazardous material. Examples of the biohazardous wastes produced at JGI include attenuated *E. coli*, bacteria, and recombinant DNA. The autoclaves at JGI employ saturated steam under a pressure of approximately 15 psi to achieve a chamber temperature of at least 121°C (250°F) for at least 40 minutes.

### 9.1 JGI Autoclave Procedures

- Waste contaminated only with biohazardous material is deposited into designated waste containers in the lab marked with the following sign, "Biological Contaminated Waste ONLY to be AUTOCLAVED (i.e., *E. coli*, bacteria, recombinant DNA)." Waste contaminated with hazardous chemicals does not belong in this type of container. Contact your Safety Coordinator or Waste Management Generator Assistant for guidance on disposal of waste with chemical contaminants.
- Each biologically contaminated waste container is lined with 2 clear autoclave bags.
- When the container is full, remove and seal the inner bag with a wire tie or blue rubber band. Avoid overfilling, as there is limited space in the autoclave. If the inner bag is damaged, seal the outer bag closed around the damaged inner bag.
- Using secondary containment and wearing appropriate PPE, bring the bagged waste to Room 142 or 143 in Building 100, or Room 418 in Building 400.
- Place all bags in the metal rectangular containers that are present in the rooms.
- Sharps containers in the lab are labeled as "unregulated sharps," and should be placed in the metal containers after closing the sharps container lid. **Do not overfill the sharps container.** Once

the sharps container is autoclaved, contact your Waste Management Generator Assistant for guidance on disposal of the sharps container.

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