



Parvatibai Chowgule College of Arts and Science
Autonomous

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POLICY
ON
LABORATORY WASTE
DISPOSAL PROCEDURES



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Policy on Laboratory Waste Disposal Procedures

Preamble

Cleaning and waste disposal services in a laboratory requires strict adherence to applicable policies and procedures. Chemical and bio-hazardous waste and bio-hazardous sharps must be handled in specific ways, in order to comply with the institutional policy. This policy will outline how to safely and compliantly dispose of chemical and biohazard contaminated waste. Our goal is to develop scientific and safe disposal procedures for laboratories that comply with the institutional guidelines.

I. Definitions

A. Biohazard: Any bacteria, fungi, viruses, rickettsia, chlamydia, parasites, allergens, viroid's, virions, and prions, recombinant DNA, recombinant (genetically modified) organisms, that can be harmful to humans, animals, plants or the environment.

B. Biosafety Level: The level of containment, on a scale of BSL-1 to BSL-4, under which the biohazard can be safely handled. As the biosafety level raises, the standards for laboratory practices, equipment and facilities increase. The NIH Guidelines and Biosafety in Microbiological and Biomedical Laboratories Manual define the minimum standards that must be met at each biosafety level.

C. Biohazardous Waste: Cultures, stocks, sharps, personal protection equipment's or any other item contaminated with a biohazard or pathological waste, including blood, bodily fluids and animal or human tissues, excludes teeth and fixed tissues.

D. Sharps – Needles, scalpels, pipette tips, biopsy punches, disposable surgical instruments, razor blades, capillary tubes, or any other item that could cause wounding to personnel or punctures of soft sided disposal, storage or containers.

E. Non-hazardous waste: This includes waste that is not regulated because it does not exhibit any of the hazardous characteristics (ignitability, corrosivity, reactivity or toxicity) as defined by the Environment Protection Act (EPA) and is not listed as hazardous.



II. Procedures

Decontamination – All the biohazardous waste must be properly decontaminated* prior to its disposal.

* When operating an autoclave, biohazardous waste shall be subjected to: a temperature of not less than 121°C and pressure of 15 pounds per square inch (psi) for not less than 60 minutes;

A. *Biohazardous liquid waste*

1) Method - 1:

- a) Add appropriate disinfectant for contact time, based on the nature of the waste
- b) Once contact time is completed, dispose of by pouring down the drain to sanitary sewer or in accordance with disinfectant requirements

2) Method - 2:

- a) Autoclave using your laboratory specific biosafety manual to determine the appropriate temperature and time of cycle
- b) Prior to autoclaving, container of biohazardous liquid must be labelled as biohazard, autoclave tape must be applied to container, and it must be placed in a secondary, autoclavable, leak proof container to avoid overflow of biohazardous materials into autoclave
- c) After autoclaving, allow to cool and use heat resistant gloves to remove the containers from autoclave
- d) After decontamination is complete, dispose of by pouring down the drain to sanitary sewer

B. *Biohazardous solid waste*

1. Place the waste in a leak-proof autoclavable biohazard bag
2. Autoclave or incinerate, as indicated for the agent as specified in the laboratory specific biosafety manual
 - a) Prior to autoclaving, place in autoclavable biohazard bags
 - b) After autoclaving, place biohazard bag into a black trash bag and seal prior to disposal
 - c) Laboratory staff must immediately dispose of the properly bagged waste in the standard waste stream.

C. *Biohazardous sharps waste*

1. Place in hard-walled, leak-proof, sealable container



2. Autoclave or incinerate, as indicated for the agent and specified in the lab-specific biosafety manual
 - a) Prior to autoclaving, place in autoclavable biohazard bags
 - b) After autoclaving, place biohazard container into a cardboard box, seal well with tape, and label box as “decontaminated sharps”
 - c) Laboratory staff immediately dispose of properly labelled and well-sealed box in the standard waste stream.

*Methods of decontamination not listed in this policy may be approved by the IBC through the protocol or biosafety manual review process.

III. Disposal of non-hazardous waste

The non-hazardous waste can be disposed of safely and legally in the normal trash. The common wastes usually not regulated as hazardous include certain salts (e.g., potassium chloride and sodium carbonate), many natural products (e.g., sugars and amino acids), and inert materials used in a laboratory (e.g., non-contaminated chromatography resins and gels).

IV. Disposal of Spills

Most chemical spills can and should be cleaned up by laboratory workers themselves. Regulations allow laboratory workers to clean up such spills, although it is advisable that they have training to handle spills and adequate equipment to carry out the cleanup safely.

General guidelines for cleaning up spills are as follows:

- Assess the potential hazard presented by the spill to personnel within the work area as well as within other parts of the facility and the outside environment.
- Remove possible sources of ignition if the spilled material is flammable:
- Turn off hot plates, stirring motors, and flames.
- Shut down equipment in the area that could increase danger.
- Secure the area so that no one will walk through the spill or interfere with the clean-up efforts.
- Choose appropriate personal protection devices
- Always wear protective gloves and goggles or a face shield.
- If there is a chance of body contact with the spill, wear an apron or coveralls.
- Wear rubber or plastic (not leather) boots if there is a chance of stepping into the spill.



- b) After autoclaving, place biohazard container into a cardboard box, seal well with tape, and label box as “decontaminated sharps”
- c) Laboratory staff immediately dispose of properly labelled and well-sealed box in the standard waste stream.

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- Secure the area so that no one will walk through the spill or interfere with the clean-up efforts.
- Choose appropriate personal protection devices
- Always wear protective gloves and goggles or a face shield.
- If there is a chance of body contact with the spill, wear an apron or coveralls.
- Wear rubber or plastic (not leather) boots if there is a chance of stepping into the spill.
- Do not let any of the spilled material enter the sewer system, for example, through a floor drain.



- Cover the spill with an absorbent material; paper towels may be appropriate for small, unreactive materials.
- Sweep up or in other ways collect the absorbed materials and place them in a container that can be securely closed.
- If the spilled material is an acid or a base, use a neutralizing material; sodium bicarbonate is commonly used for acids, and sodium bisulphate for bases.
- Dispose of the absorbed spill appropriately as hazardous or non-hazardous waste.

V. Safe Disposal of Ethidium Bromide Solutions and Gels

Ethidium bromide is mutagenic and moderately toxic and must be handled with care. The powder form is considered an irritant to the upper respiratory tract, eyes, and skin. Although this waste is not regulated as a hazardous waste, it is felt that the mutagenic properties of such wastes may present a hazard if disposed down the drain or in the regular trash.

A. Work Practices

- When working with EtBr, minimize the spill potential as much as possible.
- Preparation of stock solutions and any operations capable of generating Ethidium bromide dust or aerosols should be conducted in a fume hood to prevent inhalation.
- Nitrile gloves, a lab coat, and eye protection should be worn at all times, as with working with any hazardous material.
- Prevent accidents by keeping EtBr quantities in the lab as small as possible.
- Keep EtBr containers tightly closed when not actively working with the container.
- Gloves, test tubes and paper towels that are grossly contaminated with ethidium bromide should be deactivated in bleach before disposal.

B. Disposal

If gel contains less than 0.1% ethidium bromide it can be dried, placed in plastic bags and disposed of as normal trash. If a gel contains more than or equal to 0.1%, dry the gels and place them in plastic bags, label the bag with "Contains Ethidium Bromide", and place in the waste room for disposal




C. Treatment

- EtBr wastes can be treated in order to render them non-hazardous and suitable for disposal down the drain. The following procedure can be used for treatment of aqueous wastes containing EtBr.
- Carry out the following steps in a fume hood:
 - For each 10 mg EtBr per 100 ml of solution, add 100 ml household bleach. (Bleach deteriorates over time upon exposure to air. If in doubt about the quality, use an excess and stir overnight.)
 - Dispose the destroyed EtBr solution down the sanitary sewer drain with 10 parts excess water.


All the stakeholders are required to abide by the policy to make the college campus green, clean and eco-friendly.

VI. References

- UGC guidelines for Universities, Research Institutes and Colleges for procurement, storage, usage and disposal of radioactive and other hazardous materials/ chemicals, 2011.
- Bio-Medical Waste (Management and Handling) Rules, Published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (i)], Ministry of Environment, Forest and Climate change, Government of India, 2016.


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