



Biohazardous Waste Management Plan



This document has been prepared to provide guidance to Central Michigan University (CMU) employees in the use and disposal of biohazardous materials in compliance with the regulatory requirements and guidelines established in the:

- Michigan Medical Waste Regulatory Act (Act 368 Part 138)
- Michigan Bloodborne Infectious Diseases Standard (R325.70001-R325.70016)
- 6th edition of Biosafety in Microbiological and Biomedical (BMBL) from the United States Department of Health and Human Services
- Guidelines for Research Involving Recombinant DNA Molecules from the National Institute of Health (NIH Guidelines)

Biohazardous Waste Management Plan

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Introduction

Central Michigan University defines the term “biohazardous waste” as any discarded materials, which might include infectious agents, or laboratory-disposed materials regulated by federal, state, and local authorities. The following waste categories are considered to be biohazardous waste and are covered by the provisions of the CMU Biohazardous Waste Management Plan (BWMP).

- **According to the Michigan Medical Waste Recovery Act (MMWRA), medical waste includes:**
 1. Cultures and stocks of infectious agents and associated biologicals, including laboratory waste, biological production waste, discarded live and attenuated viruses, culture dishes, and related devices.
 2. Liquid human and animal waste, including blood and blood products and body fluids, but not including urine or materials stained with blood or body fluids.
 3. Pathological waste:
 - a.) defined as human organs, tissues, body parts other than teeth, products of conception, and fluids removed by trauma or during surgery, autopsy or other medical procedure, and not chemically fixed (i.e. formaldehyde).
 - b.) animal carcasses, organs, tissues, and body parts.
 4. Sharps: defined as needles, syringes, scalpels, and intravenous tubing with needles attached regardless of whether they are contaminated or not. Additionally, any object that is contaminated and sharp enough to puncture the skin (i.e. microscope slides, lab slides, cover slips, etc.).
 5. Contaminated animal wastes that may contain agents infectious to humans, these being primarily research animals.
- **Regulated waste** as defined by the Michigan Occupational Safety and Health Administration (MIOSHA) Blood borne Infectious Diseases Standard includes:
 1. Liquid or semi-liquid blood or potentially infectious materials;

2. Contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed;
 3. Items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling;
 4. Contaminated sharps which includes any contaminated object that can penetrate the skin and cause infection;
 5. Pathological and microbiological wastes containing blood or potentially infectious materials.
- **Laboratory waste and regulated waste** as defined in the NIH Guidelines for Research Involving Recombinant DNA Molecules and the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories. In general, this category includes contaminated waste that is potentially infectious and/or hazardous to humans, animals, or plants.

CMU requires that all employees involved in the generation, handling and disposal of biohazardous waste comply with the provisions of the BWMP.

General Program Management

Areas of Responsibility

The proper segregation, treatment and disposal of biohazardous waste is the responsibility of all responsible CMU personnel. This division of responsibility includes:

1. The Biohazardous Waste Manager, Radiation Safety Officer (RSO), and Chemical Hygiene Officer (CHO) in conjunction with the Hazardous Waste Manager and the Animal Facility Coordinators or their designees (refer to Appendix A for contact information).
2. Supervisory Personnel (including Department Chairs, Directors, Principal Investigators, Managers, and Supervisors).
3. Employees.

The CMU Biohazardous Waste Manager or designee will:

- Oversee the implementation of the BWMP;
- Develop, in coordination with administrators, additional biohazardous waste-related policies and procedures as needed to support the effective implementation of this plan and maintain compliance with regulatory requirements;
- Provide biohazardous waste handling training for CMU affected employees.
- Sign applicable biohazardous waste manifests
- Revise the plan within 30 days each time there is a change in the following:
 - a. A person or site named in the plan;
 - b. The type of waste handled, or the methods of handling waste in a CMU facility;
 - c. Applicable regulations.

Supervisory Personnel

- Assure that all employees who generate, handle, treat and/or dispose of biohazardous waste receive biohazardous waste training
- Assure that all employees under their supervision who generate, handle, treat and /or dispose of biohazardous waste follow the procedures outlined in this plan.

Employees

Employees who generate, handle, treat, and/or dispose of biohazardous waste are responsible for:

- Following the procedures and practices outlined in this document;
- Receiving appropriate training for handling biohazardous waste.

Biohazardous Waste Management Plan Availability

The BWMP is available to all CMU employees. CMU employees can request a copy by calling the Office of Laboratory and Field Safety (OLFS) at 774-4474 or by visiting the OLFS web page.

Biohazardous Waste

Potential Types of Biohazardous Waste Generated and /or Handled by Central Michigan University

1. Cultures and stocks of infectious agents and associated biologicals, including laboratory waste, biological production wastes, culture dishes, and related devices.
2. Liquid human and animal waste, including blood, blood products and body fluids, (not including urine) or materials stained with blood or body fluids.
3. Research or teaching animal carcasses, organs and body parts.
4. Sharps, which means needles, syringes, scalpels, or any item sharp enough to penetrate the skin and is contaminated with potentially infectious material.
5. Wastes generated in recombinant DNA research.
6. Animal carcasses, wastes, or bedding generated while conducting infectious disease or recombinant DNA research.

Segregation, Packaging, Labeling, and Collection of Biohazardous Waste

A. General Methods

1. Biohazardous waste is to be packaged, contained and located in a manner that prevents and protects the waste from release at the producing facility at any time before ultimate disposal.
2. Primary containers (other than approved biohazard bags) used for biohazardous waste collection, storage, and disposal are to be labeled with a **biohazard symbol** and/or the words **“BIOHAZARDOUS WASTE”** in letters not less than one inch high. The required background color of all primary containers is red or orange (e.g., biohazard bags). A biohazard bag that may contain liquids must be contained in a secondary, leak-proof container with a biohazard sticker to meet all regulations.
3. All biohazardous waste containers slated for disposal are required to be labeled with a completed Medical Waste Tracking Form (refer to Appendix B).

B. Waste Type-Specific Management Methods

1. Liquid cultures and stocks of materials contaminated with infectious agents and associated biologicals, including laboratory waste, biological production wastes, discarded live and attenuated viruses and microorganisms, and recombinant DNA waste shall be stored in closable, puncture resistant, containers and decontaminated by autoclaving (currently done in Brooks, Biosciences, and Research Laboratory buildings only). After autoclaving, decontaminated liquid waste can be disposed of in a sanitary sewer if no other hazardous materials are present (e.g. chemicals and /or radioactive materials). For information on the disposal of mixed radioactive or chemical biohazardous waste, contact the Office of Laboratory and Field Safety for guidance.
2. All solid cultures and stocks of materials contaminated with infectious agents, culture dishes and related devices other than sharps, can be stored in leak-proof, biohazard bags prior to decontamination. If rupture of bags or leakage is possible, the use of a secondary leak-proof container or bag is required.
3. Biohazardous waste, with the exception of liquids and sharps, may be disposed of in the dumpster provided the waste has been decontaminated by a validated autoclave cycle, securely packaged in bags or containers and the biohazard warning labels have been removed. Decontaminated waste in biohazardous bags with an “Autoclaved” bag indicator must be placed inside a non-see-through (opaque) plastic bag or other secondary non-transparent container (box) prior to disposal in the dumpster.
4. It is imperative that the waste is sufficiently autoclaved (darkening of the indicator) prior to disposal. Only autoclavable biohazard bags with a temperature indicator are acceptable.
 - All blood, blood products and body fluids shall be disposed of by one of the following methods:

- a. Chemical disinfection or autoclaving followed by flushing down a sanitary sewer
 - b. Decontamination by autoclaving followed by landfill disposal.
5. Animal waste (carcasses or tissue) must be double-bagged and placed in a secondary container and designated for pick up by the university's biohazardous waste hauler.
6. Sharps will be disposed of through the university's biohazardous waste hauler. Place discarded needles and syringes into approved sharps containers. An approved sharps container is one that is leak proof, puncture-resistant, closable, bears the biohazard symbol, and is manufactured as a sharps container (this does not include plastic bleach bottles, milk bottles, etc.). Do not clip, bend, break, or recap sharps. A sharps container is discarded when:
 - It is $\frac{3}{4}$ full and within 18 months of the date that the first sharp was placed in it. (Label sharps containers with the date that the first sharp is inserted in the container as well as disposal date).
7. All waste generated in recombinant DNA research will be stored, treated and disposed of in the same manner as comparable waste types (i.e. liquid, solid, sharps) generated in infectious disease research.

Methods of Storage

Biohazardous waste cannot be stored on the premises for more than 90 days. All containers and equipment (e.g. incubators, refrigerators) used for storage shall be labeled with the biohazard sticker and or symbol. The preferable background color of all primary medical waste containers is red or orange (e.g., biohazard bags).

Methods of Decontamination

Decontamination by Autoclave (Brooks Hall, Biosciences, Research Lab ONLY)

1. Biohazardous waste, other than sharps and animal carcasses, may be decontaminated on-site by autoclaving. To use this on-site treatment method, personnel must use an autoclave that has been tested and approved for biohazardous waste decontamination. Routine spore strip (or equivalent) testing will be performed to demonstrate the effectiveness of the decontamination. A logbook will be maintained of the test results and the parameters used to demonstrate effectiveness of the decontamination process. All personnel using the autoclave for waste decontamination purposes must follow these parameters.
2. For questions or more information, contact the Office of Laboratory and Field Safety at 774-4474.

Disposal

Autoclaved and properly decontaminated biohazardous waste may be disposed of in a type II Municipal Solid Waste (MSW) sanitary landfill.

Central Michigan University utilizes approved and licensed waste disposal companies to transport and dispose of biohazardous waste.

Currently CMU is utilizing:

Bio-MED Regulated Waste Solutions

256 Executive Drive
Troy, MI 48083
Phone: 800-736-2466

Exposure Control Plan

In accordance with MIOSHA regulations, CMU has an Exposure Control Plan (ECP) for bloodborne pathogens (BBP). The ECP covers the protocols, training, personal protective equipment, and engineering controls required to prevent or control aerosols of BBP.

Personnel are encouraged to visit the Risk Management and Environmental Health and Safety (RM/EHS) website for information regarding BBP training and other safety training programs available at Central Michigan University.

Proposals for work with infectious agents or recombinant DNA must be approved through the Institutional Biosafety Committee (IBC). The IBC will not approve any work that does not comply with applicable regulations.

Biohazardous Waste Training

- All personnel who generate, handle or dispose of biohazardous waste must complete training in the provisions of this plan. The training topics will include:
- Purpose and overview of the CMU BWMP
- Types of biohazardous waste generated, treated, or disposed of at the work site
- Segregation, packaging, storage, and transport of biohazardous waste that is generated, treated, or disposed of at the work site
- Treatment and disposal methods for biohazardous waste that is generated, treated, or disposed of at the work site
- Contact the Office of Laboratory and Field Safety to receive the appropriate training

In accordance with the Michigan Medical Waste Regulatory Act, new personnel must complete biohazardous waste training before they assume duties that involve the handling of biohazardous waste.

Employees will receive updated information when a change in the BWMP occurs that directly affects their duties.

Training Records

Training records will be maintained for all CMU personnel completing biohazardous waste training.

Training must be renewed every 3 years at a minimum through the Office of Laboratory and Field Safety.

Appendix A

Contact information:

Biohazardous Waste: Industrial Hygienist, Office of Laboratory and Field Safety: 989-774-3215

Biological Safety: Laboratory Safety Specialist, Office of Laboratory and Field Safety: 989-774-3754.

Chemical Safety or Radiation Safety: Director, Office of Laboratory and Field Safety: 989-774-4189

For information regarding packaging, storage, or pickup of animal waste or sharps in the vivarium contact: Animal Facility Coordinator, College of Health Professions: 989-774-3015

Chemical Waste Pickup: Hazardous Waste Manager, Office of Risk Management/Environmental Health and Safety: 989-774-2770

Bloodborne Pathogens: Manager, Risk Management/ Environmental Health and Safety & Emergency Management: 989-774-3313

For information regarding transport packaging, contact Bio-MED at 800-736-2466

Schedule:

Bio-MED pickups are scheduled every 90 days. Items for disposal must be placed in the designated areas no later than the day before the scheduled pickup date in order to be processed, labeled properly, boxed and ready for pickup on the scheduled date.



APPENDIX B - MEDICAL WASTE TRACKING FORM

Name: _____ Department: _____ PI Name: _____
(Please Print)

In Sections (A) and (B) below please indicate the quantity of each container submitted for disposal.

Section (A): Biohazard Disposal Container (*Lined with a sealed/tied red biohazard bag*)

_____ **Cardboard Box**
_____ **Other (Please describe):** _____

Section (B): Sharps Containers (*containing contaminated glass, needles, syringes, scales, etc.*)

_____ **Large (4.7 qt)**
_____ **Medium (1.7 qt)**
_____ **Small (0.7 qt)**
_____ **Wall Mounted (5.4 qt)**
_____ **Other Puncture Resistance Container (Please Describe):** _____

Section (C): Characterization of Biohazardous Waste

- ☐ **Cultures/Stocks of Infectious Agents and associated biologicals, including:**
- | | |
|---|---|
| ☐ Laboratory Wastes | ☐ Discarded live and attenuated vaccines |
| ☐ Biological Production waste | ☐ Culture Plates |
| ☐ Other (Please Specify) _____ | |
- ☐ **Liquid** human and animal waste, including
- | |
|---|
| ☐ Blood and blood products |
| ☐ Other body fluids (Please specify) _____ |
- ☐ **Pathological Waste:** (i.e. human or animal organs, tissues, body parts other than teeth, products of conception, and fluids removed by trauma or surgery, autopsy or other medical procedure).
- ☐ **Contaminated wastes from research animals** that have been exposed to agents infectious to humans.
- Please identify infectious or chemo-therapeutic agent (s):** _____

Generator Declaration: *I hereby certify that; each transferred container in Section (A) above is lined with a bag that has been sealed/tied. Biohazardous waste meeting the "sharps" definition in Section (B) has been placed in a sharps safe or puncture resistant container. Biohazardous waste identified in Section (C) above is accurate to the best of my knowledge and that the waste has been properly contained in a biohazard bag.*

I authorize the Office of Laboratory and Field Safety to charge associated costs for proper transportation and disposal of this biohazardous waste to Cost Center/Account Number _____

Signature: _____

Date: _____