



Environmental Health & Safety  
MICHIGAN STATE UNIVERSITY

# BLOODBORNE PATHOGENS EXPOSURE CONTROL PLAN

July 2024

Environmental Health & Safety  
**Michigan State University**  
4000 Collins Road, Room B20  
Lansing, MI 48910  
517-355-0153  
[ehs.msu.edu](https://ehs.msu.edu)

MSU Occupational Health/University Physician's Office  
**Michigan State University**  
Olin Health Center  
East Lansing, MI 48824

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## CONTACTS

**EMERGENCY: Dial 911**

### Non-emergency Medical Attention

#### East Lansing Area Employees

##### **Faculty, staff, and paid student employees**

###### **Lansing Urgent Care**

<https://www.lansingurgentcare.com>

(517) 999-2273

##### **Non-employee students**

###### **Olin Student Health Center**

<https://olin.msu.edu/>

(517) 353-5557

Or nearest emergency room or after – hours urgent care facility

#### Grand Rapids MSU Employees

Spectrum Occupational Health

(616) 391-2778

#### Other Areas

Go to the nearest emergency room.

### Assistance involving occupational, environmental, radiation, chemical and/or biological safety

##### **Environmental Health & Safety (EHS)**

<https://ehs.msu.edu>

Monday – Friday

8:00 am – 5:00 pm

(517) 355-0153

##### **Nights and weekends**

MSU Police

(517) 355-2221

# 1 INTRODUCTION

The MSU Exposure Control Plan (ECP) has been developed and implemented to meet the letter and intent of MIOSHA's (Michigan Occupational Safety and Health Administration) Bloodborne Infectious Diseases Standard, codified as R 325.70001 through R 325.700018. Compliance with this Standard will reduce occupational exposure to blood and other potentially infectious materials, including human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV), and other bloodborne pathogens (BBP).

These principles are applied when employees are potentially exposed to bloodborne pathogens:

- Minimize all exposures to bloodborne pathogens
- Institute as many engineering and work practice controls as possible to eliminate or minimize employee exposure to bloodborne pathogens
- Routinely employ universal precautions when exposure to blood or potentially infectious materials is anticipated.

The objectives of the Exposure Control Plan:

- Provide information on procedures and regulations regarding bloodborne pathogens
- Protect employees from health hazards associated with bloodborne pathogens
- Provide information on appropriate treatment and counseling to employees exposed to bloodborne pathogens

## 2 DEFINITIONS

Listed are common terms and their definitions as they are used in the ECP.

**Biologically hazardous conditions:** Equipment, containers, rooms, materials, experimental animals, and animals infected with HBV or HIV virus, or combinations thereof that contain, or are contaminated with, blood or other potentially infectious material.

**Blood:** Human blood, human blood components, and products made from human blood.

**Bloodborne pathogens (BBPs):** Pathogenic microorganisms that are present in human blood or OPIM and can infect and cause disease in persons who are exposed to blood containing the pathogen. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).

**Clinical laboratory:** A workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious material.

**Contaminated:** The presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

**Contaminated laundry:** Laundry that has been soiled with blood or other potential infectious materials (OPIM) or that may contain sharps.

**Contaminated sharps:** Any contaminated object that can penetrate the skin (i.e., needles, scalpels, broken glass)

**Decontamination:** Use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

**Disinfect:** To inactivate virtually all recognized pathogenic microorganisms, but not necessarily all microbial forms, on inanimate objects.

**Engineering controls:** Controls designed to isolate or remove the bloodborne pathogen hazard from the workplace (e.g., sharps disposal containers, biosafety cabinets, and safer medical devices such as sharps with engineered sharps injury protections, needleless systems, blunt suture needles, plastic capillary tubes and mylar-wrapped glass capillary tubes).

**Exposure incident:** A specific eye, mouth, other mucous membrane, non-intact skin (includes skin with dermatitis, hangnails, cuts, abrasions, chafing, acne, etc.), or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

**Handwashing Facilities:** Facilities that provide an adequate supply of running, potable water, soap, and single-use towels or an air-drying machine.

**Needleless Systems:** A device that does not use needles for: (A) the collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established; (B) the administration of medication or fluids; or (C) any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.

**Occupational exposure:** Reasonably anticipated skin, eye, mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

**Other potentially infectious materials (OPIM):** Materials in addition to human blood that may be capable of transmitting bloodborne pathogens.

1. Human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental settings, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids
2. Any unfixed tissue or organ (other than intact skin) from a human (living or dead)
3. HIV-containing cell or tissue cultures, organ cultures, and HIV or HBV-containing culture media or other solutions as well as human cell cultures (see note)
4. Blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Human cell lines are potentially infectious and within the scope of the BBP Standard unless the specific cell line has been characterized to be free of hepatitis viruses, HIV, Epstein-Barr virus, human papilloma viruses and other recognized bloodborne pathogens.

**Parenteral:** Piercing mucous membrane or the skin barrier through such events as, needlesticks, human bites, cuts, and abrasions.

**Personal protective equipment (PPE):** Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts, blouses) not intended to function as protection against a hazard are not considered personal protective equipment.

**Post-exposure follow-up:** In the case of an exposure incident, the mandatory course of action taken by the employer to provide medical services (i.e., medical assessment, vaccination, source testing, baseline testing, and counseling) to the exposed worker to reduce the risk of infection.

**Production facility:** Facility engaged in industrial scale, large volume or high concentration production HIV or HBV.

**Regulated waste:** Any of the following: liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items which are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

**Research laboratory:** A laboratory producing or using research-laboratory-scale amounts of HIV or HBV, but not in the volume found in production facilities.

**Sharps:** Needles, syringes, scalpels, and intravenous tubing with needles attached, as well as any contaminated object that can penetrate the skin such as: Pasteur pipettes, razor blades, capillary tubes, etc.

**Sharps with Engineered Sharps Injury Protections (Safer Sharps Devices):** A non-needle sharp or a needle device with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

**Source individual:** Any individual, living or dead, whose blood or other potentially infectious material may be a source of occupational exposure to an employee.

**Sterilize:** The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

**Universal precautions:** A method of infection control that treats all human blood and other potentially infectious material as capable of transmitting HIV, HBV, HCV, and other bloodborne pathogens.

**Work practice controls:** Controls that reduce the likelihood of exposure to bloodborne pathogens by altering the way a task is performed.

### 3 GENERAL PROGRAM MANAGEMENT

Michigan State University is an employer with various groups of employees who have a reasonably anticipated risk of exposure to human blood and other potentially infectious materials when performing their required job duties. As such, MSU has an exposure control plan in accordance with Michigan OSHA's Bloodborne Infectious Diseases standard. This plan is an administrative document that outlines how this occupational exposure risk will be controlled using administrative controls, engineering controls, work practice controls, and personal protective equipment.

This document has been prepared by the Environmental Health & Safety (EHS) Office to outline the institutional exposure control policies & procedures followed by all affected MSU departments. Due to the diversity of job tasks with associated bloodborne pathogens risk, it is recognized that information related to task-specific and site-specific procedures are prepared and maintained at the supervisory level along with this institutional exposure control plan to fully address regulatory requirements.

#### 3.1 Responsibilities

Four areas of responsibility are central to the implementation of the ECP at MSU.

- Exposure Control Officer
- Supervisory Personnel (including Department Chairpersons, Directors, Principal Investigators, Managers and Supervisors)
- Education/Training Coordinators and Instructors
- Employees

##### 3.1.1 Exposure Control Officer

The Biological Safety Officer (or designee) of Environmental Health & Safety (EHS) will serve as MSU's Exposure Control Officer and is responsible for management and support of the Bloodborne Pathogens Compliance Program. The Health and Safety Operations Committee and MSU Occupational Health/University Physician's Office will assist the Exposure Control Officer. Activities delegated to the Exposure Control Officer include:

- Overseeing implementation of the Exposure Control Plan.
- Developing, in cooperation with administrators, any additional bloodborne pathogens related policies and practices needed to support the effective implementation of this plan.

- Revising, updating, and improving the Exposure Control Plan when necessary, and on an annual basis.
- Collecting and maintaining a suitable reference library related to bloodborne pathogens.
- Understanding current legal requirements concerning bloodborne pathogens.
- Conducting periodic organizational audits to maintain an up-to-date Exposure Control Plan.

### 3.1.2 Supervisory Personnel

Department Chairpersons, Directors, Principal Investigators, Managers and Supervisors are responsible for compliance in their areas. They work with the Exposure Control Officer, EHS, MSU Occupational Health/University Physician's Office and their employees. Activities delegated to the supervisory personnel include:

- Assuring employees in their area who are at risk of BBP receive initial training and annual retraining (including site – specific training) in BBP as outlined in the “Information and Training” section of this document.
- Evaluating the BBP risk associated with an employee's job classification. Done when a new employee is hired and when an employee changes jobs. The evaluation includes:
  - Checking employee's job classification, tasks, and procedures that they will perform to determine if there is a reasonably anticipated risk of exposure to blood or OPIM.
  - Identifying the new job classifications, tasks, and procedures which will potentially expose the employee to blood or OPIM.
  - Informing EHS of all changes for updating records.
- Assuring that proper exposure control procedures are followed as outlined in the “Methods of Compliance” section of this document.
- Assuring that appropriate personal protective equipment (PPE) is available and in good working condition for all employees at risk of exposure to BBP.
- Assuring that any employee who experiences an occupational exposure incident to blood or OPIM is provided with post-exposure medical services as outlined in the “Post-Exposure Evaluation and Follow-Up” section of this document.

### 3.1.3 Education/Training Coordinator and Instructors

The Education/Training Coordinator and Instructors provides information and training to all employees who have an anticipated risk of exposure to BBP. The EHS Biological Safety Officer (or designee) is the Education/Training Coordinator. The BSO:

- Maintains an up-to-date list of MSU personnel that have taken the required initial training and annual retraining.
- Develops suitable education/training programs for employees and instructors.
- Maintains appropriate training records.
- Periodically reviews the training programs to include appropriate new information.

Training for employees will be offered through EHS. Designated qualified trainers may perform additional training in their departments. The trainer must actively participate in the Bloodborne Pathogens Train-the-Trainer Program. **For further information contact the EHS Biosafety Team at 355-0153.**

### 3.1.4 Employees

The employees are responsible for following procedures and practices as outlined in the ECP. This includes but is not limited to:

- Taking BBP initial training, annual retraining, and site-specific training
- Demonstrating an understanding of which tasks have a potential occupational exposure to BBP.



- Conducting all operations in accordance with established work practice controls.
- Following universal precautions.
- Developing and maintaining good personal hygiene habits.
- Reporting all occupational exposure incidents.

## 3.2 Exposure Control Plan Availability and Review

The ECP is readily available to all employees through their supervisor. The plan is accessed online at [ehs.msu.edu](http://ehs.msu.edu) and/or a hard copy of the plan can be kept in areas where exposure to BBP may be anticipated. Employees are advised of the availability of the plan during their education/training sessions.

The MSU ECP is reviewed annually and updated when:

- New or modified tasks and procedures are implemented which affect occupational exposure of employees.
- Developments in technology occur that eliminate or reduce exposure to BBP.

## 4 EXPOSURE DETERMINATION

MIOSHA's Bloodborne Infectious Diseases Standard state that all employees who have duties which potentially expose them to blood or OPIM are determined to have a reasonably anticipated risk of exposure to BBP and are acknowledged in the Exposure Control Plan.

Category A Classification: Job classifications which may have reasonably anticipated risk of exposure to BBP, either by the nature of the occupation or by specific tasks which the employee is required to perform as part of their job are listed below. This list may not cover all job classifications where an employee may have a BBP risk. Some employees with a job classification on this list may not be at risk. Risk assessments will be performed by the supervisor.

Anatomy Resources Manager  
Animal Caretaker  
Athletic Trainer  
Athletics Equipment Manager  
Banquet/Catering Manager  
Biological Safety Officer  
Building Sanitation Worker  
Cage Wash Worker  
Cardiovascular Technologist  
Care Manager  
Catering /Sales Coordinator  
Chairperson (Associate, Assistant)  
Chef/Sous/Cook  
Chemical Safety Officer  
Chief of Police/Deputy  
Clerical/Office (Asst, Secretary)  
Clinical (Mgr, Coordinator)  
Clinical Administrator  
Coach/Coaching Aide  
Core Facilities Officer  
Counselor/Social Worker  
Crime Analyst  
Culinary Svcs Retail & Events Mgr  
Custodial Supervisor  
Custodian

Dining Services Mgr/Asst Manager  
Director (Associate, Assistant)  
EEG Technologist  
Electrician  
Embalmer  
Environmental Health/Safety Inspector  
Events Worker  
Facilities (Coordinator, Supervisor, Mgr)  
Farm Manager, Asst Manager  
Fire Marshal  
Food Service Assistant  
Golf Course Manager  
Grounds/Horticulture Assistant  
Hazardous Materials Professional  
Hazardous Waste Coordinator  
Health Care (Asst, Leader, Representative)  
Health Physicist  
Histology Technician  
Human Anatomy Preparation Tech  
Incinerator Operator  
Industrial Hygienist  
Instruc Equipment and Supplies Tech  
Instructor/Asst Instructor  
Kitchen Sanitation Worker  
Lab (Aide/Prep/Tech/Sup/Mgr)

Labor Assistant  
 Laboratory Sanitation Worker  
 Laborer  
 Landscape Services Utility Worker I  
 Laundry Attendant/Worker  
 Lead Worker  
 Lifeguard  
 Mechanic/Maintenance  
 Medical Aesthetician  
 Medical Lab (Tech, Mgr)  
 Medical Technologist  
 Nurse (Clinician, Practitioner)  
 Nurse (Manager, Administrator)  
 Occupational Safety Compliance Officer  
 Occupational Therapist  
 Operations Supervisor  
 Operations/Safety Coordinator  
 Pharmacist  
 Pharmacy Technician  
 Physical Therapist/Asst  
 Physician  
 Physicians Assistant  
 Pipefitter  
 Planner/Inspector/Analyst  
 Plumber  
 Police (Lieutenant, Captain)  
 Police (Officer, Sergeant)  
 Production and Operations Manager  
 Professional Aide

Professor (Associate/Assistant)  
 Psychiatrist  
 Psychologist  
 Quality & Risk Mgt Administrator  
 Radiation Safety Officer  
 Radiographer  
 Radiology Administrator  
 Research (Associate, Assistant)  
 Research Nurse  
 Research Technologist  
 Resident (MSU)  
 Residential & Hospitality Serv Asst/Lead  
 Respiratory Therapist/Pulm Func Tech  
 Safety Technologist  
 Safety/Security (Mgr, Asst)  
 Safety/Security Assistant  
 Service Manager  
 Simulation (Asst, Patient)  
 Skilled Trades Supervisor  
 Specialist  
 Stockroom Attendant  
 Student Athletics/Recreation Asst  
 Survivor Advocacy Coordinator  
 Teaching Assistant  
 Technical Aide  
 Trades Aide  
 Training/Program (Coordinator/Developer)  
 Ultrasonographer  
 Veterinarian/Vet Assistant

## 5 METHODS OF COMPLIANCE

### 5.1 Universal Precautions

Employees at MSU will observe universal precautions. All human blood and OPIM are treated as if they are known to be infectious for HBV, HIV, and other BBP.

Universal precautions currently do not apply to feces, nasal secretions, sputum (spit), sweat, tears, urine, vomit, or saliva **unless they are visibly contaminated with blood**. Where it is difficult or impossible to differentiate between body fluid types, all fluids are assumed to be potentially infectious.

### 5.2 Engineering Controls

Where engineering controls such as hand washing facilities, eye wash stations, sharps disposal containers, biological safety cabinets, ventilating laboratory hoods, autoclaves, and safer sharps devices will reduce employee exposure either by eliminating or isolating the hazard, they are used.

EHS and departments will review tasks and procedures to determine where engineering controls can be implemented or updated. The Department Manager or Supervisor will ensure that employees are trained regarding the use of the engineering controls for their job classification and the tasks/procedures they perform. This training is documented through the completion of Site-Specific Training.

The following engineering controls are used throughout MSU:

1. Safer sharps devices are used on human blood or OPIM, where appropriate, to reduce the risk of injury from needlesticks and from other sharp devices.
  - a. Refer to section on the Sharps Injury Protection Program.
  - b. Needles that will not become contaminated by blood or OPIM during use, such as those used to draw medication from vials, are not required to have engineering controls.
2. Hand washing facilities are readily accessible to all employees who have a potential for exposure. Waterless antiseptic hand cleansers or antiseptic towelettes must be available to employees at risk of exposure if running water is not readily available. When waterless cleansers and towelettes must be used, the employee will follow-up with soap and water wash as soon as feasible.
3. Emergency eye wash stations are near workstations where employees perform tasks that produce splashes of potentially infectious materials (PIM). Eye wash stations meet the ANSI requirements as per MSU Chemical Hygiene Plan and flushed on a regular basis with documentation on a log.
  - a. Specifications for eye wash stations found in the MSU Chemical Hygiene Plan are to be adhered to in areas where hazardous chemicals are used.
4. Autoclaves are available to decontaminate solid biohazardous waste. The departments will monitor this equipment to ensure that proper sterilization occurs. Proper instrumentation will be used to verify time, temperature, and steam pressure are adequate. EHS will also provide an annual check of all autoclaves on campus used for decontaminating biological wastes. Contact EHS for specifics regarding the annual check.
5. Sharps containers are used to properly store and dispose of sharps. Approved sharps containers are designed to isolate the cut or puncture hazard associated with handling the item. Approved containers are:
  - a. Puncture resistant
  - b. Red in color or labeled with a biohazard warning label
  - c. Leak – proof on the sides and bottom
  - d. Closable

Containers for reusable sharps meet the same requirements as containers for disposable sharps, with the exception that they are not required to be closable. Reusable sharps are not stored or processed in a manner that requires reaching into containers of contaminated sharps.

Approved sharps containers are available from University Stores. Food containers such as coffee cans should not be used.

6. Storage containers are used to reduce the possibility for an environmental release of potentially infectious materials. Primary containers are designed to be leak-proof, puncture-resistant, and capable of being closed. Single primary containers used for PIM are labeled with the biohazard symbol.

Exceptions from the labeling requirements:

- a. Containers of blood, blood components, or blood products which are labeled as to their contents, and which have been released for transfusion or other clinical use.
- b. Individual containers of blood or PIM that are placed in a labeled container during storage.

Examples of containers that must be labeled as biohazardous if storing blood or PIM:

- c. Refrigerator
- d. Freezer
- e. Liquid nitrogen tank
- f. Incubator

7. Transport containers are secondary containers that are used to reduce the possibility for an environmental release of PIM when transporting biological materials locally between campus facilities as well as over the local roadways. (See *Transporting Biological Materials* on EHS website).

## 5.3 Work Practices

Supervisors, working in conjunction with Deans, Directors, Chairpersons, or designees oversee the implementation of Work Practice Controls in cooperation with EHS. The Department Manager or Supervisor ensures that employees are trained to use work practice controls for their job classification and the tasks/procedures they perform. This training is documented through the completion of Site-Specific Training.

Work Practice Controls implemented:

1. Employees wash their hands:
  - After removal of gloves or other PPE
  - When visible contamination with blood, body fluids, or OPIM are present
  - When work is completed and before leaving the work area (i.e., laboratory, clinic)
  - Before eating, drinking, smoking, applying makeup, changing contact lenses, or using the bathroom
  - Before activities that entail hand contact with mucous membranes, eyes, or breaks in the skin

Note: Alcohol based hand sanitizers may be used by healthcare personnel for patient care. When health care personnel's hands are visibly soiled, they will wash with soap and water.

2. Contaminated needles and other contaminated sharps must not be bent, recapped, or removed unless:
  - It can be demonstrated that there is no feasible alternative
  - The action is required by a specific medical procedure

When recapping or removal of needles is required as there are no alternatives, a mechanical device or a one-handed method is used.

3. Use mechanical means (i.e., tongs) when handling contaminated sharps when possible and eliminate hand-to-hand passing of sharp instruments.
4. Contaminated sharps are placed in appropriate containers immediately, or as soon as possible after use.
5. Eating, drinking, smoking, applying cosmetics (i.e., lip balm), and handling contact lenses is prohibited in work areas where there is a potential for exposure to BBP.
6. Food and drink are not kept in refrigerators, freezers, on countertops, or in other storage areas where blood or OPIM are present. (See *MSU Chemical Hygiene Plan 2.3*).
7. Mouth pipetting/suctioning of blood or OPIM is prohibited.
8. Minimize splashing, spraying, or other actions generating droplets of blood or OPIM during all procedures. At a minimum, BSL-2 precautions are required for laboratories working with specimens of blood or body fluids. Contact EHS for information and assistance regarding these requirements.
9. Specimens of blood or OPIM will be placed in designated leak-proof containers, appropriately labeled for handling and storage. When outside contamination of a primary specimen container is likely, the container will be placed within a second leak-proof container, appropriately labeled, for handling and storage. When the specimen can puncture the primary container, the secondary container is puncture resistant.
10. Primary containers of potentially infectious materials are placed in puncture resistant, leak-proof, closable secondary containers for transportation outside of the work area (i.e., from lab to lab where a common hallway is used, etc.)
11. Properly prepare and transport biological materials in a vehicle by following the Transporting Biological Materials procedure (See EHS website).

12. Perform disinfection and housekeeping procedures as outlined in the *Housekeeping* section of this Exposure Control Plan.

## 5.4 Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) are provided by the employer at no cost to the employee with an occupational exposure to blood or OPIM. The equipment may include gloves, gowns, lab coats, face shields/masks, splash goggles, resuscitation bags, pocket masks, hoods, and shoe covers.

PPE is appropriate only if it does not permit blood or OPIM to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time that the PPE is used.

The Department Manager or Supervisor ensures:

- All work areas have appropriate PPE available to employees. Employees are trained regarding the use of the appropriate PPE for their job classification and the tasks/procedures they perform. The training is documented through the completion of Site-Specific Training.
- PPE is available in appropriate sizes and accessible locations.
- Employees use appropriate PPE unless the employer shows that the employee temporarily and briefly declined to use PPE when, under rare and extraordinary circumstances, it is the employee's professional judgment that in the specific instance the use of PPE will prevent the delivery of health care or public safety services or posed an increased hazard to the safety of the worker or coworker. When the employee makes this judgment, the circumstances are investigated and documented to determine if changes can be made to prevent future occurrences.

To ensure that PPE is not contaminated and is in the appropriate condition to protect employees from potential exposure:

1. All PPE are inspected periodically by the department manager or supervisor and repaired or replaced as needed.
2. Reusable PPE is cleaned, laundered, and decontaminated as needed.
3. Single-use PPE or equipment that cannot for whatever reason be decontaminated is disposed of through existing practices and procedures as outlined in the MSU Waste Disposal Guide.

Employees adhere to these practices when using PPE:

1. Garments, including personal clothing, penetrated by blood or OPIM must be removed as soon as possible. These are to be collected in biohazard bags and decontaminated by the MSU Laundry Facility or an appropriate laundry service provider that is selected by the department or disposed of as biohazardous waste.
2. All PPE is inspected prior to use to verify that it is in good working condition.
3. All PPE is removed prior to leaving the work area.
4. Gloves are worn when:
  - Employees anticipate hand contact with potentially infectious materials
  - Performing vascular access procedures
  - Handling or touching contaminated items or surfaces

*Note: "The US Food and Drug Administration has issued a ban on all powdered gloves. Exposure to starch powder from gloves can cause undesirable reactions, which vary from well-known allergy symptoms and upper respiratory-tract disorders to surgical adhesions and infections. The presence of glove powder can also result in many other undesirable effects, such as interference in laboratory*

*testing causing false results (i.e., PCR – Polymerase Chain Reaction, enzyme immunoassay or some HIV tests)."*

5. Disposable gloves are replaced as soon as possible after contamination or immediately when torn, punctured, or are otherwise rendered unable to function as an exposure barrier.
6. Non-latex gloves are provided to employees who are allergic to the gloves normally provided.
7. Utility gloves are decontaminated for reuse; if utility gloves are cracked, peeling, torn, or exhibit other signs of deterioration, they are disposed.
8. Masks/eye protection, or chin-length face shield is worn as appropriate whenever there is a chance that a splash or spray may generate droplets of infectious materials.
9. Protective clothing is worn whenever potential exposure to the body is anticipated.
10. Surgical caps/hoods and shoe covers/boots are used in any instances where gross contamination is anticipated.

## 5.5 Sharps Injury Protection Program

Supervisors of all departments who have employees with occupational exposure to BBP are required to:

- Use effective engineering controls, including safer sharps devices, to reduce the risk of injury from needlesticks and from other sharp medical instruments.
  - An appropriate safer sharps device includes only devices whose use, based on reasonable judgment in individual cases, will not jeopardize patient or employee safety or be medically contraindicated.
- Establish a program for evaluating safer sharps devices designed to eliminate or minimize occupational exposure. The program includes identification, evaluation, and a selection process.

### 5.5.1 Identification Process:

Supervisors identify all sharp devices that have available products with safer engineering features and determine which products are evaluated.

### 5.5.2 Evaluation Process:

Evaluation of the safer sharp devices must be documented on the *Safer Sharps Device Evaluation Form*.

Supervisors in departments with direct patient care cannot evaluate and select the safer sharp device alone; supervisors must choose non-managerial employees who perform the tasks with sharps exposure risks to be involved in the process.

The supervisor:

- Provides at least four or more test samples of each product evaluated to everyone evaluating the product.
- Provides visual instruction and a demonstration of the proper use of each device to all evaluators.
- Reviews the instructions and rating system on the evaluation form with each evaluator.
- Encourages each evaluator to comment on the forms to provide a useful decision-making tool.
- Keeps all records of completed evaluation forms in their department.

*Note: Safer sharps currently in use are required to have an evaluation completed. If no safer option for a particular device used where there is an exposure to blood or OPIM risk, you are not required to use something other than the device that is normally used. Document this information and re-evaluate the device during your annual review by inquiring about new or prospective safer options.*



### 5.5.2.1 Selection Process:

When the evaluation process is complete and a safer device has been chosen, supervisors implement use of the safer sharps as soon as possible.

*Note: The selection and implementation process cannot be postponed using up current supplies of non-safer sharps. When the safer sharps are in place, supplies of non-safer sharps may not be used. Contact EHS for disposal assistance. Do not put unused supplies in the trash or send them to salvage. When safety devices are not available due to supply shortages, back orders, shipping delays, etc. it will be documented.*

### 5.5.2.2 Annual Review:

All sharps being used where there is exposure to human blood or OPIM are reviewed annually. Complete a *Safer Sharps Devices Annual Review Form* annually and keep all forms with departmental records.

The review form documents annual consideration and implementation of appropriate commercially available and effective safer sharps devices designed to eliminate or minimize exposure.

The review and update reflect innovations in procedure and technological developments that eliminate or reduce exposure to BBP, including but not limited to, newly available sharps devices reducing the risk of percutaneous exposure to BBP.

## 5.6 Housekeeping

Departments and Units, together with Custodial Services or other assigned employees perform the following:

1. Clean and decontaminate all equipment and surfaces:
  - a. After contact with blood or OPIM (gross contamination is removed before decontaminating to ensure disinfection is effective and complete).
  - b. At the end of the work shift, if the surface may have been contaminated since the last cleaning.
  - c. Prior to servicing or shipping. Equipment Release Form must be attached. When it is demonstrated that decontamination is not possible, then these steps are taken:
    - i. Attach a biohazard label to the contaminated equipment, identifying the contaminated portions.
    - ii. Inform all affected employees, the equipment manufacturer, and the equipment service representative of remaining contamination prior to handling, service, or shipping.
  - d. Immediately when blood or OPIM is spilled. These considerations are made when treating and removing spills of infectious materials:
    - i. Wear appropriate PPE to clean spill
    - ii. Spills are covered with absorbent material, wiped up, disposed of in a biohazard bag, then surfaces are disinfected.

*Note: Any department that has a potential for a spill of potentially infectious materials has a spill kit and a spill response procedure. General response procedure and items for assembling a departmental spill kit are provided on the EHS website. Spill kits are available for purchase through the EHS Biosafety Office.*

*Note: Decontamination is performed with a disinfectant product that is EPA registered for the destruction of Hepatitis B or is a tuberculocidal. It is applied to contaminated surfaces for the time and concentration prescribed by the manufacturer to assure effective decontamination.*

2. Remove and replace protective coverings as soon as possible when contaminated and at the end of the work shift after use.
3. Routinely inspect all pails, bins, cans, and other receptacles for contamination. Clean these items on a routine basis and decontaminate whenever visibly contaminated.
4. Pick up potentially contaminated broken glassware using mechanical means (such as dustpan and brush) and dispose of it in appropriate sharps container.
5. Inspect laundry to verify it is free of sharps or other hazardous materials prior to placement in hamper and sending to laundry. Handle contaminated laundry as little as possible. Facilities with high volumes of contaminated laundry have a red laundry cart that is leak proof and signifies contamination. Facilities without red carts should place any contaminated laundry in a biohazard bag. Attach a label to the bag listing the contaminants (i.e., blood).
6. When disposing of biohazardous waste:
  - a. Place solid waste in a secondary leak proof container with lid and biohazard label. Line the secondary container with a biohazard bag.
  - b. When autoclaving solid waste, biohazard bag must be autoclavable. After autoclaving, place bags in a non-transparent, opaque bag and dispose of in regular solid waste receptacle.
  - c. Place containers for regulated waste within easy access to employees and as close as possible to the source of the waste.
  - d. Maintain waste containers in an upright position, replace routinely, and do not overfill.
  - e. Close the containers of regulated waste after use and for disposal or transportation to the autoclave or waste collection site.

*Note: Biohazardous waste is not held in the work area for more than 90 days. All biohazardous waste will be disposed of according to the procedures outlined in the MSU Waste Disposal Guidance and the MSU Biohazardous Waste Management Plan.*

## 6 HEPATITIS B VACCINATION, POST-EXPOSURE EVALUATION AND FOLLOW-UP

A Hepatitis B Vaccination Program has been established through the MSU Occupational Health/University Physician's Office.

### 6.1.1 Hepatitis B Vaccination Program

MSU has a vaccination program through MSU Occupational Health/University Physician's Office. The program is offered to all employees who have occupational exposure to BBP. The cost, as required by statute, is assumed by the employer, MSU.

The program consists of a series of three vaccinations over a four-to-six-month period and a post-vaccination titer upon completion of vaccine series. Additional vaccinations may be necessary if there is an inadequate post-vaccine titer. There is currently no medical indication to receive further booster doses or measurement of titer if there is an adequate post-vaccine titer.

Employees will receive information regarding the vaccination program following the completion of BBP training. They will also receive the required Hepatitis B Surveillance Program Form to be completed and returned to MSU Occupational Health/University Physician's Office, (see Occupational Health website).



The MIOSHA Bloodborne Infectious Disease Standard requires that Hepatitis B vaccine be made available to the employee within ten days of initial assignment and after the employee has completed the BBP initial training.

MSU Occupational Health/University Physician's Office, under supervision of a licensed physician, is responsible for the vaccination program. Employees identified as having an occupational risk of exposure to BBP will be registered with their office.

### 6.1.2 Post-Exposure Evaluation and Follow-Up

When an employee is involved in an incident where exposure to BBP may have occurred, the employee will seek medical consultation and treatment expeditiously. Actions should include the following:

- When contact with blood or OPIM occurs on non-intact skin (i.e., cuts, rashes, acne, dermatitis), wash the area for 15 minutes with soap and water.
- When contact with blood or OPIM occurs in mucous membranes (i.e., eyes, nose, mouth), flush the area for 15 minutes with water or normal saline.

*Note: If contact of blood or OPIM with intact skin, employee will clean the area immediately with soap and water. If doubt regarding the condition of the contaminated skin, employee will be medically evaluated as described in this section.*

- Report the incident to a supervisor or person in charge.
- Initiate medical follow-up immediately.
- Supervisor refers employee to Lansing Urgent Care, Occupational Health Corwell Health – Ottawa Ave (if working in Grand Rapids area), or the closest emergency room when outside of Lansing or Grand Rapids areas.
- Employee will take a completed Authorization to Invoice MSU or Authorization to Invoice MSU Employee Outside of Lansing Area with them. These are available on the MSU Human Resources website.
- If there is an identifiable source, departments will follow their written source protocol for informing the source patient about the incident and assisting in source follow-up or to have samples tested if signed consent form from source is in place (see: *Source Protocol Guide*, EHS website).
- Employee with supervisor, will complete and distribute the Report of Claimed Occupational Injury or Illness Form within twenty-four hours of the incident. The form is available on the MSU Human Resources website.
- EHS will evaluate all BBP exposure incidents and record information on the Exposure Incident Investigation Report.
  - Date/Time of incident
  - Name of employee, job title, department, supervisor
  - Incident description, including route of exposure, device in use, use of engineering/work practices/PPE.
  - Date of most recent BBP training
  - Comments/recommendations/corrective actions
- EHS will complete a Sharps Injury Log for all BBP exposure incidents involving sharps.
- Information in the Exposure Incident Investigation Report and Sharps Injury Log will be recorded and maintained in a manner as to protect the confidentiality of the employee.

- The report and log shall be maintained in the Human Resources Department.

*Note: This information shall be obtained through interviews and incident report reviews.*

### 6.1.3 Medical Record Keeping

MSU Occupational Health/University Physician's Office must establish and maintain employee medical records. All information is confidential. Information will not be disclosed without the employee's written consent, except as required or permitted by law.

## 7 LABELS AND SIGNS

Biohazard required labels consist of a red or fluorescent orange colored background with a traditional biohazard symbol in a contrasting color. Labels can be an integral part of a container or affixed by a method that prevents the loss or the unintentional removal of the label. EHS maintains a supply of required biohazard labels and signs available upon request for MSU facilities. Biohazards are labeled according to the following procedures:

- Containers of regulated waste
- Refrigerators, freezers, incubators, or other equipment containing blood or OPIM
- Sharps disposal containers
- Containers used to store, transport, or ship blood and OPIM
  - When a secondary container holds more than one smaller potentially infectious item, only the secondary container needs to be labeled
- Laundry bags/containers holding contaminated items
  - Laundry may be placed in a red hamper without a label, a red laundry bag, or a biohazard bag
- Contaminated equipment
- Signs on entrances to any BSL-2 or higher laboratory

## 8 INFORMATION AND TRAINING

Employees who have the potential for exposure to BBP complete a comprehensive training program provided at no cost and during working hours.

1. Bloodborne Pathogens Initial Training
2. Bloodborne Pathogens Annual Refresher Training

EHS maintains documentation for all employees who have potential exposure to BBP and have received training through EHS. Departments will ensure that Site-Specific Training forms are completed and uploaded into the employee's online training record.

Sign up for classes and view training sessions on [ehs.msu.edu](https://ehs.msu.edu).

All new employees, as well as employees changing jobs or job functions, will be given any additional training their position requires by their new supervisor prior to beginning their new job assignments.

### 8.1 Training Methods

- Training techniques may include:
  - Personal instruction
  - Video
  - Computer aided training
  - Training manuals/employee handouts
  - Employee review sessions

- Online video meeting applications
- Opportunities for employees to ask questions.
- Departments requesting training to be conducted at their site provide a designated person to be available during the training session to answer site-specific questions.
- Participants complete site-specific training with their supervisor or a designated trainer for their area after completion of initial training, after new tasks are assigned, and annually.

### 8.1.1 Bloodborne Pathogen Initial Training Described

- Taken by all employees who have a potential risk of exposure to human blood or OPIM
- Completed before the employee performs any tasks that have a BBP exposure risk
- Available as an online course or in-person training as needed

#### 8.1.1.1 Training Topics

Bloodborne pathogens initial training for new employees or employees changing job duties that include a risk of BBP exposure will include these mandatory topics:

1. MIOSHA's Bloodborne Infectious Disease Standard
2. Epidemiology, symptoms, and modes of transmission of bloodborne diseases including HIV, HBV, HCV
3. Existence of other bloodborne diseases
4. MSU's Exposure Control Plan including how to access it
5. Appropriate methods for recognizing tasks and other activities that may involve exposure to blood and OPIM
6. A review of the use of limitations of methods that will prevent or reduce exposure including:
  - a. Engineering controls
  - b. Work practice controls
  - c. Personal protective equipment
7. Selection and use of PPE including: the types, proper use, limitations, location, removal, handling, decontamination, and disposal
8. Visual warning of biohazards including labels, signs, and color-coded containers
9. Proper procedures and materials involved in the cleanup of spills of potentially infectious materials
10. Information on the HBV vaccine, including: the availability, efficacy, safety, method of administration, benefits of vaccination, cost – none to employees, and MSU's vaccination program that includes the Hepatitis B Surveillance Program Form
11. Actions to take and persons to contact in an emergency involving blood or OPIM
12. Procedures to follow if an exposure incident occurs and incident reporting
13. Post-exposure evaluation and follow-up including medical consultation
14. Recommendations specific to a particular department and unique threats posed by potentially infectious materials in that department.

### 8.1.2 Annual Refresher Training

MSU employees who have previously completed initial bloodborne pathogens training through MSU EHS take annual refresher training. It is due one year from the last date of training. When overdue, the employee will take the initial bloodborne pathogens training. Site-specific training done with the supervisor or designated trainer is also required.

### 8.1.3 Site-Specific Training

Site-specific training is completed in each department and administered by the employee's supervisor or the supervisor's designated trainer. It is documented with the following:

- Bloodborne Pathogens Site-Specific Training Checklist

- Bloodborne Pathogens Task Procedure Form or a written departmental procedure

### ***8.1.3.1 Bloodborne Pathogens Site-Specific Training Checklist***

Completion of the checklist is required to complete the training requirements for MIOSHA's Bloodborne Infectious Diseases Standard. When completed, the checklist must be uploaded to the employee's online training record. Laboratories using biologicals/toxins or chemicals will fill out a combined checklist. Checklists are completed within 30 days of initial training, after procedural change, when new tasks are assigned, and annually. These are kept for 3 years with departmental records and are subject to periodic checks by EHS.

- Department supervisor or designated training reviews the items listed on the checklist with the employee and checks each item as it is reviewed. Write N/A if it is not applicable to your work.
  - Departmental procedures involving tasks that may involve handling human blood or OPIM are reviewed as part of the site-specific training checklist.
- A Training Guide is included with the Site-Specific checklist to be used as a tool to assist the supervisor or designated trainer in completing the checklist with the employee.
- Off campus employees complete the checklist with each facility's supervisor/trainer where they are at risk for bloodborne pathogen exposure. The facility will include their policies and procedures related to their exposure control plan and medical waste management plan.

### ***8.1.3.2 Bloodborne Pathogens Task Procedure Form***

Written procedures are required for all tasks that have a reasonably anticipated risk of exposure to bloodborne pathogens. These procedures may be part of departmental procedural documents or may be written on the form (Bloodborne Pathogens Task Procedure). The following are all acceptable documents:

- Standard Operating Procedures (SOP)
- Policies
- Directives
- Bloodborne Pathogens Task Procedure

These are reviewed:

- After an employee completes bloodborne pathogens initial training
- When a procedure changes or new tasks are assigned
- Annually

The completed forms are maintained with departmental records and are readily available for regulatory review.

### ***8.1.4 Training Record Keeping/Retention***

1. All bloodborne pathogens training conducted by EHS or by an EHS designated trainer must be documented by EHS to contain the following information:
  - a. Dates of training sessions
  - b. Names and job title of employees attending the training sessions
  - c. Contents/summary of the training sessions
  - d. Names of the instructors
2. All EHS designated trainers must send a copy of the sign-in form to EHS for computerized record keeping purposes.
3. Training records are retained for 3 years.

### 8.1.5 Bloodborne Pathogens Compliance Visits

EHS staff will periodically visit departments, labs, and clinics working with or may be in contact with human blood or OPIM to assure that regulatory compliance needs are met and to identify areas where further assistance is needed.

Visits will include checking the worksite for items such as proper use of the equipment and signage as well as a review of departmental procedures and training documents.

If you have any questions about the BBP ECP or other safety and health concerns, contact EHS or MSU University Physician's Office.

## 9 HIV AND HBV RESEARCH LABORATORIES AND PRODUCTION FACILITIES

HIV and HBV research laboratories and production facilities present increased risk for occupational exposure to BBP.

### 9.1 HIV or HBV Research Labs

All labs engaged in the culture, production, concentration, experimentation, and manipulation of HIV or HBV will reduce employee risk by providing additional administrative controls, protective equipment, information, and training beyond that required for research labs not involved in this work.

HIV and HBV research laboratories present increased risk for occupational exposure to bloodborne pathogens.

A research laboratory produces or uses research laboratory-scale amounts of HIV or HBV. A research laboratory may produce high concentrations of HIV or HBV, but not in the volume found in a production facility.

These laboratories engaged in the culture, production, concentration, experimentation, and manipulation of HIV or HBV will reduce employee risk by providing additional administrative controls, protective equipment, information and training beyond that required for research laboratories not involved in such work. These requirements are in addition to the other requirements as outline in this Exposure Control Plan.

#### 9.1.1 Security

1. Keep laboratory doors closed when work involving HIV or HBV is in progress.
2. A hazard warning sign incorporating the universal biohazard symbol shall be posted on all access doors when potentially infectious material or infected animals are present in the work area or containment module.
3. Access to work area shall be limited to authorized persons only.
4. Establish written procedures whereby only persons who have been advised of the biohazard, who meet any specific entry requirements, and who comply with all entry and exit procedures shall be allowed to enter the work area and animal rooms.

#### 9.1.2 Sharps

1. Hypodermic needles, syringes, and other sharp instruments shall be used only when a safer alternate technique is not feasible.

2. Safety needles/syringes shall be used for the injection or aspiration of other potentially infectious material. (See section on Sharps Injury Protection Program)
3. Use extreme caution when handling needles and syringes to avoid autoinoculation and the generation of aerosols during use and disposal.
4. Do not bend, shear, or replace needles in the sheath or guard, or remove from the syringe after being used.
5. Promptly place the needle and syringe in a puncture-resistant container, and decontaminate, preferably by autoclaving, before being discarded or reused.

### 9.1.3 Work Practice Controls

1. Certified biological safety cabinets or other appropriate combinations of personal protective equipment or physical containment devices, such as any of the following, shall be used for all activities with other potentially infectious material that poses a threat of exposure to droplets, splashes, spills, or aerosols:
  - a. Special protective clothing
  - b. Respirators
  - c. Centrifuge safety cups
  - d. Sealed centrifuge rotors
  - e. Containment caging for animals
2. Report all spills or accidents resulting in an exposure incident immediately to the principal investigator or other responsible person and to the Environmental Health and Safety (EHS) office at 517-355-0153.
3. Spills must be contained and cleaned up immediately by employees that are trained and equipped to work with potentially concentrated infectious material.

### 9.1.4 Engineering controls

1. Use biosafety cabinets or other physical containment devices within the containment module to conduct all activities that involve other potentially infectious material. Do not conduct this work on the open bench.

*Note: Biological safety cabinets shall be certified when installed, at least annually, and when they are relocated.*

2. Each laboratory shall contain a sink for washing hands and an eye wash station that are readily available in the work area. The eyewash must supply a sufficient quantity of water to completely flush the eyes. A 15-minute supply of continuous free-flowing water is acceptable. The hands must be free to hold the eyelids open to aid in the complete flushing of the eyes.
3. HEPA (high-efficiency particulate air) filters, or equivalent filters, and disinfectant traps must be used to protect vacuum lines. Check filters and traps routinely, and maintain or replace as necessary.
4. When transporting contaminated material, use containers that are durable, leakproof, labeled or color-coded, and closed before leaving the work area.
5. An autoclave for the decontamination of regulated wastes shall be available. All infectious liquid, solid waste, and all waste from work areas including animal rooms, shall be decontaminated before disposal by autoclaving or incineration.

### 9.1.5 Personal Protective Equipment

1. Laboratory coats, gowns, smocks, uniforms, or other appropriate protective clothing shall be used in the work area and animal rooms.
2. Do not wear protective clothing outside of work area.
3. Protective clothing must be decontaminated before laundering.
4. Gloves shall be worn when handling infected animals and when making contact with other potentially infectious materials is unavoidable.

### 9.1.6 Administrative

1. Personnel must be advised of potential hazards and are required to read and follow instructions on practices and procedures. This will be documented with a bloodborne pathogens site-specific checklist.
2. Personnel must read the *MSU Biosafety and Biosecurity Manual*. This will be documented on the bloodborne pathogens site-specific checklist.

## 9.2 HIV or HBV Production Facilities

MSU does not have these facilities. The ECP will be modified to meet additional requirements if the research status changes on this campus.

Note: Contact EHS for any questions regarding the status of HIV and HBV research facilities and laboratories at MSU.



## 10 REFERENCES

### Related Manuals, Policies, Guidance

- *MSU Biosafety and Biosecurity Manual*: <https://ehs.msu.edu/assets/docs/bio/msu-biosafety-manual.pdf>
- *MSU Biohazardous Waste Management Plan*: <https://ehs.msu.edu/assets/docs/waste/msu-biowaste-mgmt-plan.pdf>
- *MSU Chemical Hygiene Plan*: <https://ehs.msu.edu/assets/docs/chem/msu-chem-hygiene-plan.pdf>
- MSU Hazardous Waste Guidance: <https://ehs.msu.edu/waste/index.html>

### Hepatitis B Vaccination

- MSU Occupational Health information on vaccine request/waiver: <https://occhealth.msu.edu/resources/exposure-to-bloodborne-and-other-pathogens>
- MSU Occupational Health Vaccination Packet: <https://occhealth.msu.edu/files/attachment/109/original/HepBSurveillance.pdf>
- CDC vaccine information sheet: <https://www.cdc.gov/vaccines/hcp/vis/vis-statements/hep-b.pdf>

### Spill Response

- Biohazardous Spill Response Procedure: <https://ehs.msu.edu/lab-clinic/bio/biospill-cleanup.html>

### Site-Specific Training

- Instructions for site-specific training: <https://ehs.msu.edu/training/site-specific.html>
- Checklist for laboratory personnel: <https://ehs.msu.edu/assets/docs/lab/sstc.pdf>
- Checklist for clinic/other personnel: <https://ehs.msu.edu/assets/docs/bbp/bbp-site-specific-checklist.pdf>

### Task Procedure

- *Task Procedure Form*, including example: <https://ehs.msu.edu/assets/docs/bbp/bbp-task-procedure.docx>

### Safer Sharps

- *Safer Sharps Evaluation Form*: <https://ehs.msu.edu/assets/docs/bbp/safer-sharps-device-evaluation-form.pdf>
- *Annual Review Form*: <https://ehs.msu.edu/assets/docs/bbp/annual-sharps-review.doc>

### Source Protocol

- *Source Protocol Guide*: <https://ehs.msu.edu/lab-clinic/bbp/source-protocol-guide.html>
- *Source Patient Lab Worksheet*: <https://ehs.msu.edu/assets/docs/bbp/source-patient-worksheet.pdf>
- *Source Patient Protocol*: <https://ehs.msu.edu/assets/docs/bbp/source-patient-protocol.pdf>

### Transporting Biological Materials

- Local Transport of Biological Materials: <https://ehs.msu.edu/lab-clinic/shipping/local-transport.html>