Bloodborne Pathogens Exposure Control Plan

Document Number: EHS-0078 Revision: 1

Contents

[1 Purpose 3](#_Toc167800030)

[2 Introduction 3](#_Toc167800031)

[3 Scope and Applicability 3](#_Toc167800032)

[4 Terms and Definitions 3](#_Toc167800033)

[5 Roles and Responsibilities 6](#_Toc167800034)

[5.1 INDIVIDUAL ROLES AND RESPONSIBILITIES 6](#_Toc167800035)

[5.2 KEY INTERFACES 8](#_Toc167800036)

[6 Resources, References, and Source Information 8](#_Toc167800037)

[6.1 REQUIREMENT AND PROGRAM DESIGN INPUTS 8](#_Toc167800038)

[6.2 CONTEXTUAL AND SUPPORTING REFERENCES 8](#_Toc167800039)

[7 Standard EHS Program Information 8](#_Toc167800040)

[7.1 ACCIDENT, INCIDENT, AND EMERGENCY PLANNING AND RESPONSE 8](#_Toc167800041)

[7.2 TRAINING REQUIREMENTS 11](#_Toc167800042)

[7.3 DOCUMENTATION AND RECORDKEEPING 12](#_Toc167800043)

[7.4 MINIMUM PROGRAM INSPECTIONS, SELF-AUDITS, AND EVALUATIONS 13](#_Toc167800044)

[8 Hazard Identification, Assessment, and Control 13](#_Toc167800045)

[8.1 EXPOSURE DETERMINATION 13](#_Toc167800046)

[8.2 COMMUNICATION OF HAZARDS 13](#_Toc167800047)

[8.3 METHODS OF EXPOSURE CONTROL AND COMPLIANCE 14](#_Toc167800048)

[8.4 HEPATITIS B VACCINATION 15](#_Toc167800049)

[9 Regulated Medical Waste 16](#_Toc167800050)

[9.1 SOLID RMW AT UP 16](#_Toc167800051)

[9.2 SOLID WASTE GENERATED AT NON-UP LOCATIONS 17](#_Toc167800052)

[9.3 LIQUID RMW 17](#_Toc167800053)

[9.4 SHARPS 17](#_Toc167800054)

[10 Revision History 17](#_Toc167800055)

[11 Supplemental Information (Appendices) 18](#_Toc167800056)

[12 Appendix A – Job Classifications and Titles with All Employee Exposure Potential 19](#_Toc167800057)

[13 Appendix B - Job Classifications and Titles with Select Employee Exposure Potential 20](#_Toc167800058)

[14 Appendix C – Bloodborne Pathogen Risk Assessment Form 23](#_Toc167800059)

[15 Appendix D – Bloodborne Pathogen Risk Assessment Form 24](#_Toc167800060)

# Purpose

This Bloodborne Pathogens Exposure Control Plan (“Plan”) was developed for the Pennsylvania State University (Penn State), as required by the Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen Standard, 29 CFR 1910.1030. This document provides information on bloodborne pathogens, including what they are, the University’s policy regarding them, determination of exposures, methods of compliance, regulated medical waste disposal, Hepatitis B immunization, post exposure follow up, and training requirements in accordance with federal and state regulations.

# Introduction

It is the practice of Penn State to minimize occupational exposure to blood or other potentially infectious materials (OPIM) as much as is reasonably possible. Penn State meets this standard through the following strategies:

* identifying the job classifications under which personnel would be reasonably anticipated to have occupational exposure to blood or OPIM;
* ensuring that those personnel are trained to strictly adhere to Universal Precautions, including the appropriate use of personal protective equipment (PPE);
* providing suitable PPE;
* minimizing the use of sharps;
* offering the Hepatitis B immunization to these personnel.

This Exposure Control Plan describes the procedures necessary to comply with the OSHA Bloodborne Pathogen Standard (29 CFR 1910.1030), PA Confidentiality of HIV-Related Act, 148, and PA Regulated Medical and Chemotherapeutic Waste Law (Title 25 Chapter 284).

# Scope and Applicability

This Plan applies to University employees who could reasonably anticipate occupational exposure to blood or OPIM in the performance of their duties. This includes those at non-University Park locations, but excludes those at the Hershey Medical Center. Job classifications of employees who could be reasonably anticipated to have occupational exposure to blood or OPIM in the performance of their duties are listed in Appendixes A, B, and C. It extends to University-affiliated personnel, including students, who can reasonably anticipate exposure to blood or OPIM while performing unpaid duties. This policy does not apply to those at the Penn State Hershey Medical Center or the College of Medicine.

# Terms and Definitions

Blood—Human blood, human blood components, and products made from human blood.

Bloodborne Pathogens (BBP)—Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Human Immunodeficiency Virus (HIV), Epstein Barr Virus (EBV), and human parasitic species

of the genus Plasmodium (Plasmodium spp.). Additionally, some human cell lines (those that are known or may contain bloodborne pathogens) are considered to be OPIM.

Contaminated—The presence or the reasonably anticipated presence of blood or OPIM on an item or surface, including laundry or sharps.

Decontamination—The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens to the point where they are no longer capable of transmitting infectious particles.

Engineering Controls—Physical devices that isolate or remove the bloodborne pathogens hazard (e.g., sharps disposal containers, self-sheathing needles, sharps with engineered sharps injury protections).

Exposure Incident—Eye, mouth, other mucous membrane, non-intact skin, or parenteral contact (e.g. via needlestick) with blood or OPIM that results from the employee’s duties. Note: Penn State refers to incidents which result in exposure, injury, or illness as “accidents.”

Handwashing Facilities—A facility providing an adequate supply of running potable water, soap, and single- use towels or air-drying machines.

Laboratories—

* Clinical laboratories—are defined by OSHA as workplaces where diagnostic or other screening procedures are performed on blood or OPIM.
* Research laboratories—are defined by OSHA for the purposes of the Bloodborne Pathogens Standard as those producing or using smaller scale amounts of HIV or HBV. These amounts may be of high concentration, but in volumes less than 10 liters. If volumes are to exceed 10 liters, additional regulations apply, and these laboratories should contact Environmental Health and Safety (EHS).
* Research laboratories at Penn State that do not work with HIV or HBV but do work with blood or OPIM—are still required to follow the precautions in the OSHA Bloodborne Pathogens Standard. These precautions are in alignment with the publication “Biosafety in Microbiological and Biomedical Laboratories” (BMBL) as prepared by the Centers for Disease Control and Prevention and the National Institutes of Health. This publication serves as the basis for many of the biosafety guidelines at Penn State. These materials are generally handled at Biosafety Level 2 conditions and additional resources can be found in Penn State’s Laboratory and Research Safety Plan.

Occupational Exposure—Reasonably anticipated skin, eye, mucous membrane, or other parenteral contact with blood or OPIM that may result from the performance of an employee's duties.

Other Potentially Infectious Materials (OPIM)—the following materials are considered OPIM.

* The following human body fluids—
  + amniotic fluid
  + cerebrospinal fluid
  + pericardial fluid
  + peritoneal fluid
  + pleural fluid
  + saliva in dental procedures
  + semen
  + synovial fluid
  + vaginal secretions
  + any body fluids that are visibly contaminated with blood
  + all body fluids in situations where it is difficult or impossible to differentiate between body fluids.
* Any unfixed tissue or organ (other than intact skin) from a human (living or dead), including primary cell lines.
* HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.
* Established human or animal cell lines that are likely to have been infected or contaminated with human bloodborne pathogens. If these cell lines have been documented to be free of bloodborne pathogens, with no potential subsequent introduction of such pathogens, they may be exempt. If there are any questions or concerns, the employee should contact EHS at 814-865-6391 or [psuehs@psu.edu.](mailto:psuehs@psu.edu)

Parenteral—Piercing mucous membranes or the skin barrier through such events as needlesticks, human or animal bites, cuts, or abrasions.

Personal Protective Equipment (PPE)—Specialized clothing or equipment worn for protection against a hazard. This may consist of gloves, gowns, face shields, masks, protective eyewear, respiratory protection and/or lab coats.

Regulated Medical Waste (RMW)—The OSHA bloodborne pathogen standard defines Regulated Waste as liquid or semi-liquid blood or OPIM, contaminated items that would release blood or OPIM in a liquid or semi-liquid state if compressed, items that are caked with dried blood or OPIM and are capable of releasing these materials during handling, contaminated sharps, and pathological and microbiological wastes containing blood or OPIM. The Pennsylvania Department of Environmental Protection has a broader definition that the University follows. The full definition of RMW can be found within 25 PA Code 271.

Sharps—Any objects that can penetrate the skin, including but not limited to needles, scalpels, broken glass, Pasteur pipets, and exposed ends of dental wires.

Standard Precautions— A set of work practices that expand upon Universal Precautions and are designed to prevent the transmission of disease. Standard Precautions add urine, feces, nasal secretions, sputum, vomit, breast milk, and all saliva to the OPIM list. While Universal Precautions are the standard that is utilized in this Plan, personnel covered by this Plan should be aware that other bodily fluids may also transmit disease.

Sterilize—The use of physical or chemical procedures to destroy all microbial life, including bacterial endospores.

Universal Precautions—A set of work practices designed to prevent the transmission of disease from patients to caregivers and from caregivers to other patients. Universal Precautions as a concept are underpinned by the treatment of all blood or OPIM as though they are known to be infectious with HIV, HBV, or other bloodborne pathogens.

Work Practice Controls—Controls that reduce the likelihood of exposure by altering the manner by which a task is performed (e.g., prohibiting the recapping of needles by a two-handed technique).

# Roles and Responsibilities

## INDIVIDUAL ROLES AND RESPONSIBILITIES

* + 1. EHS/Program Manager

The Bloodborne Pathogens Program is managed by the University’s Biosafety Officer(s) who have been delegated the authority to meet the following responsibilities—

* Manage implementation of the Exposure Control Plan.
* Conduct an annual review of the Exposure Control Plan and revise the plan as necessary to reflect changes in regulations and/or University policies and procedures.
* Conduct audits of University compliance with the Exposure Control Plan.
* Assist Safety Officers and Supervisors in determining appropriate workplace controls and PPE for work involving BBP.
* Oversee development, implementation, and compliance with regulated medical waste program for the University (excluding Hershey Medical Center)
  + 1. Work Unit Safety Officer, including College and Department Safety Officers
* Facilitate installation and maintenance of handwashing facilities, eyewash stations, autoclaves, and other equipment that are required for the safe handling of blood, OPIM, and RMW.
* Coordinate with supervisors to identify employees with potential exposure to bloodborne pathogens and notify EHS if those employees are not indicated in this Plan.
* Coordinate with supervisors as needed to support their responsibilities.
* Report incidents and accidents via completion of a First Report of Injury or Illness form and submission to the Office of Absence Management in Human Resources within forty-eight (48) hours of the accident.
  + 1. Supervisors, including Principal Investigators for Laboratories
* Identify the personnel in their work group who have the potential for occupational exposure to blood or OPIM and are therefore included in the Exposure Control Plan.
* Ensure that personnel who are included in the Exposure Control Plan complete and submit a Bloodborne Pathogen Immunization Determination Form (Appendix D) to Occupational Medicine.
* Ensure that personnel who are included in the Exposure Control Plan complete the annual bloodborne pathogens training appropriate for their job description and as described in section 7.2 of this plan.
* Provide necessary engineering controls and PPE for personnel who have the potential for occupational exposure to bloodborne pathogens at no cost to the personnel.
* Examine and maintain or replace engineering controls as necessary to ensure their effectiveness.
* Ensure that all personnel use PPE as required.
* Ensure that PPE is maintained in a suitable condition to include the cleaning, laundering, repair and/or disposal/replacement of PPE as appropriate.
* Ensure that personnel are properly trained in and follow work practice controls that eliminate or minimize employee exposure to bloodborne pathogens as described in section 8.2.
* Report accidents via completion of a First Report of Injury or Illness form and submission to the Office of Absence Management in Human Resources within forty-eight (48) hours of the accident.
  + 1. Occupational Medicine
* Provide the HBV vaccine for employees who are determined to be reasonably anticipated to have occupational exposure to bloodborne pathogens and request the vaccine.
* Maintain vaccine records for HBV, via the Bloodborne Pathogen Immunization Determination Form (Appendix D) provided at the end of this plan for all personnel determined to be reasonably anticipated to have occupational exposure to bloodborne pathogens.
* Handle post-exposure evaluations and medical follow-up as described in section 7.1 of this plan.
* Maintain the medical records detailed in section 7.3 of this plan, which are retained for at least the duration of employment plus 30 years.
  + 1. Office for Research Protection
* Penn State’s Office for Research Protections (ORP) administers the Institutional Biosafety Committee (IBC), which reviews work involving biohazardous and infectious materials, including human blood and OPIM.
  + 1. Employees Covered by this Program
* Complete the appropriate version of bloodborne pathogens training annually.
* Complete the Bloodborne Pathogen Immunization Determination Form (Appendix D) and file it with Occupational Medicine within ten working days of initial assignment or change in assignment to work with blood or OPIM. Employees are welcome to discuss the HBV vaccine with Occupational Medicine. If an employee initially decides to decline the HBV vaccine, but later wishes to receive it, they are still able to receive the vaccine at no cost through Occupational Medicine.
* Follow safe work practices identified by their supervisor/principal investigator (PI), including the use of engineering controls, work practice controls, and PPE.
* Follow proper procedures following an exposure incident, including the immediate use of first aid, notification of supervisor(s), and contact and follow-up with Occupational Medicine.
* Make safety concerns known to supervisors/PIs or EHS as necessary in an effort to avoid exposure incidents and revise safe work practices to be as effective as possible.
* Report incidents and injuries to their supervisors.

## KEY INTERFACES

This section describes the significant and notable interfaces for this program.

* + 1. Internal EHS Interfaces

Work controls and best practices for sharps handling are detailed in the Laboratory and Research Safety Plan.

* + 1. Other Penn State Interfaces
* Occupational Medicine
* Office for Research Protections (ORP)
* Workers Compensation
* CITI Training

# Resources, References, and Source Information

## REQUIREMENT AND PROGRAM DESIGN INPUTS

* + 1. Regulations – Federal
* OSHA Bloodborne Pathogen Standard (29 CFR 1910.1030)
  + 1. Regulations –State
* PA Confidentiality of HIV-Related Act, 148, and 25 PA Code, Chapters 271, 273, 283, 284, and 285

## CONTEXTUAL AND SUPPORTING REFERENCES

* Biosafety in Microbiological and Biomedical Laboratories (BMBL) describes commonly held best practices for biological laboratory procedures, including working with bloodborne pathogens.
* The Centers for Disease Control and Prevention (CDC) also maintains a substantial body of information about Standard Precautions for patient care, including training and education to prevent the spread of infections.
* Penn State Safety Policy SY01
* Laboratory and Research Safety Plan
* Biosafety Training
* Bloodborne Pathogens Training
* Emergency Shower and Eye Wash Program

# Standard EHS Program Information

## ACCIDENT, INCIDENT, AND EMERGENCY PLANNING AND RESPONSE

At Penn State, situations where blood or OPIM contact the eye, mouth, other mucous membrane, non- intact skin, or parenteral contact are considered accidents. Parenteral contact could include needlesticks, sharp instrument injuries, human bites, or animal bites if the animals have been exposed to bloodborne pathogens including HIV and HBV. Post-exposure actions are intended to attend to any acute injury and then prevent disease from bloodborne pathogen infection to the greatest extent possible. Accidents should be reported via “Employer’s First Report of Occupational Injury or Disease (FROI) for employees or by X for unpaid personnel covered by this plan. Other contact with blood or OPIM is considered an incident and should be reported via LionSafe’s incident module.

If an accident involving exposure to blood or OPIM also constitutes a medical emergency, emergency medical services (911) should be called immediately and informed of a potential bloodborne pathogen exposure in addition to other relevant information. For non-emergency exposure incidents, first aid should immediately follow the incident. Depending on the site of exposure, first aid may include a removal of any contaminated PPE or clothing, followed by a thorough washing of the exposure area with soap and water or flushing eyes with an eyewash for fifteen (15) minutes. The site of exposure should be washed thoroughly, but not abraded to the point of risking further exposure or damage. Following first aid, the affected individual should then report this exposure to their immediate supervisor. An "Employer’s First Report of Occupational Injury or Disease" (FROI) must be filled out by the work unit following Safety Policy SY04 Employee Accidents – Reporting and Investigation. If any equipment or materials have been contaminated during the exposure incident, they should be decontaminated or disposed of before returning to normal operations.

* + 1. Post Exposure Evaluation

Confidential medical evaluation, treatment, and follow-up will be made available immediately to the personnel who experienced such exposure. For post-exposure prophylactic treatment to be effective, it must begin within 72 hours after the exposure occurred; however, faster treatment increases the odds of successful prophylaxis. Such services must be provided at no cost to the personnel.

* University Park—During normal working hours, treatment for an exposure incident is conducted through Occupational Medicine for employees and University Health Services for students. After hours, and on weekends and holidays, employees who have a work-related exposure incident should seek treatment at the Mount Nittany Medical Center Emergency Room. They should identify themselves as a Penn State employee or student and that they have had an exposure to human blood or OPIM.
* Commonwealth Campuses and Other Locations—Medical services at Penn State locations across the Commonwealth vary. At these locations, exposures to blood or OPIM should be evaluated as soon as possible by the nearest health care facility (i.e., on-campus clinic or nurse if possible, or a local hospital or medical clinic). Guidelines for the appropriate course of treatment will be provided by Occupational Medicine for all non-University Park locations. Personnel should identify themselves as a Penn State employee or student and that they have had an exposure to human blood or OPIM.
  + 1. Post Exposure Follow Up

Occupational Medicine, University Health Services, or other medical professionals as detailed in section

* + 1. will determine the required follow-up or treatment to be taken based on details of the exposure, applicable CDC guidelines, and their professional medical judgement. Occupational Medicine will provide guidelines regarding appropriate medical treatment for Penn State employees and the relevant medical professionals will do the same for other University personnel covered by this plan.
       - Occupational Medicine is responsible for documenting all exposures and medical actions taken.
       - Occupational Medicine is responsible for maintaining and retaining medical records of such evaluations, treatment, and follow-up. These records are maintained in accordance with PA Act 148.
       - EHS is responsible for evaluating the circumstances surrounding an exposure incident and must recommend appropriate safety equipment and/or changes in procedure to prevent further exposures of this type.
    2. Medical Evaluation

The University must make a confidential medical evaluation and follow-up immediately available to exposed employees or other personnel covered by this plan. This evaluation and follow up must include the following elements:

* Documentation of the route(s) of exposure, and the circumstances under which the exposure occurred.
* Identification and documentation of the source (specimen or patient) unless the employer can establish that identification is infeasible or prohibited by state or local law.
* The source individual's blood must be tested as soon as feasible and after consent is obtained to determine HBV and HIV infectivity. If consent is not obtained, the employer must establish that legally required consent cannot be obtained. When the source individual's consent is not required by law, the source individual's blood, if available, must be tested and the results documented. If the source of the blood or OPIM is of an experimental origin, efforts must be made to determine the origin of the blood or OPIM and its HBV or HIV infectivity status.
* When the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status need not be repeated.
* Results of the source’s testing must be made available to the exposed employee, and the employee must be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual within the confines of PA Act 148.
* Collection and testing of the exposed individual’s blood for HBV and HIV status.
* The exposed employee's blood must be collected as soon as feasible and tested after consent is obtained.
* If the employee consents to baseline blood collection, but does not give consent at that time for HIV serologic testing, the sample must be preserved for at least 90 days. If, within 90 days of the exposure incident, the employee elects to have the baseline sample tested, such testing must be done as soon as feasible.
* Post-exposure prophylaxis, when medically indicated, as recommended by the U.S. Public Health Service.
* Counseling done prior to collection of blood.
* Evaluation of reported illnesses.
  + 1. Information Provided to the Healthcare Provider

The University must ensure that the healthcare professional evaluating an employee or other personnel covered by this plan after an exposure incident is provided with the following information:

* A description of the exposed individual’s duties as they relate to the exposure incident.
* Documentation of the route(s) of exposure and circumstances under which exposure occurred.
* Results of the source individual’s blood testing, if and when available.
* Medical records relevant to the appropriate treatment of the employee including vaccination status, which are the University’s responsibility to maintain.
  + 1. Healthcare Professional’s Written Opinion

The University must obtain and provide the personnel with a copy of the evaluating healthcare professional’s written opinion within 15 days of the completion of the evaluation.

* The healthcare professional’s written opinion for Hepatitis B vaccination must be limited to whether Hepatitis B vaccination is indicated for the personnel, and if the personnel have received such vaccination.
* The healthcare professional’s written opinion for post-exposure evaluation and follow-up must be limited to the following information:
  + That the personnel have been informed of the results of the evaluation.
  + That the personnel have been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.
* All other findings or diagnoses must remain confidential and must not be included in the written report.

## TRAINING REQUIREMENTS

All employees or other personnel covered by this plan who may have occupational exposure to bloodborne pathogens must attend training which explains the hazards of working with blood and OPIM and the methods of compliance used by the University to minimize this exposure. It will be the responsibility of the Heads of each Administrative unit to ensure that their at-risk personnel attend the training.

Initial training must be provided to all at-risk personnel before they begin activities that could expose them to blood or OPIM. Refresher training is to be provided annually or, in the event of personnel reassignment, training on new tasks or procedures must be provided at the time of such reassignment.

Research personnel listed on IBC protocols including human blood or OPIM are required to complete Bloodborne Pathogen training through CITI, as assigned by ORP. Non-research personnel who are determined to be at risk of potential exposure to human blood or OPIM are required to complete Bloodborne Pathogen training through the Learning Resource Network (LRN).

* + 1. Training Requirements

The training must include, but not be limited to, the following:

* A copy of the OSHA Bloodborne Pathogen standard and an explanation of its contents
* A general explanation of the epidemiology and symptoms of bloodborne diseases.
* An explanation of the modes of transmission of bloodborne pathogens
* An explanation of the University's Exposure Control Plan and the means by which an employee can obtain a copy of the plan
* An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and OPIM
* An explanation of the use and limitations of the method that will prevent or reduce exposure, including appropriate work practices and PPE
* Information on the types, proper use, location, removal, handling, decontamination, and disposal of PPE
* Information on the basis for selection of PPE
* Information on the Hepatitis B vaccine as described in Section 8.4 of this document
* Information on the appropriate actions to be taken and persons to contact in an emergency involving blood or OPIM
* An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available
* An explanation of pertinent signs and warning labels in use at the University
* An opportunity for questions and answers
* Hands-on training must be provided and documented by supervisors
  + 1. Training Proficiency

Personnel who are covered by this plan must complete the required training through the LRN or CITI as defined by their administrative unit. Online Bloodborne Pathogens training must be renewed annually. Supervisors must provide hands-on training commensurate with the work duties to each individual prior to start of work. This training must be updated whenever there is a change in the scope of work and in response to an incident or injury. Documentation of hands-on training must be maintained by the supervisor and available upon request.

## DOCUMENTATION AND RECORDKEEPING

* + 1. Documents that Constitute this Program

Table 1. Summary of Program-Specific Implementing Documents

|  |  |
| --- | --- |
| **EHS Document ID** | **Document Title** |
| EHS-0078 | Bloodborne Pathogens – Exposure Control Plan |
| EHS-0078ata | Bloodborne Pathogen Risk Assessment |
| EHS-0078atb | Bloodborne Pathogen Immunization Determination |

* + 1. Training Record Retention Requirements

The OSHA Bloodborne Pathogens Standard requires that training records be retained for at least 3 years from the date the training occurred.

* + 1. Additional Document and Recordkeeping Requirements

Any relevant records for this program that may involve protected health information are handled by Occupational Medicine.

## MINIMUM PROGRAM INSPECTIONS, SELF-AUDITS, AND EVALUATIONS

* + 1. Minimum Periodic Inspections

Research laboratories working with blood or OPIM are subject to the biosafety inspection process that corresponds with protocol submission and renewal with the IBC. These inspections occur every three years. Medical and clinical care areas are not subject to these inspections.

* + 1. Minimum Program Self-Audits and Evaluations

The Laboratory and Research Safety Plan also covers research laboratories working with blood or OPIM. They must follow all requirements of that plan, including an annual self-inspection. Medical and clinical care areas are not subject to the Laboratory and Research Safety Plan.

# Hazard Identification, Assessment, and Control

## EXPOSURE DETERMINATION

Bloodborne Pathogen Exposure Determination is made without regard to the use of PPE. Employees who can be reasonably expected to have exposure to human blood or OPIM are considered to have occupational exposure risk even if PPE is worn.

Each Department or Administrative Unit must verify that all job classifications in their unit with risk of exposure are accounted for in the lists provided in Appendices A and B of this plan. If a job classification is not included in these lists, the unit must request an update to the Exposure Control plan by emailing the relevant job information to [psuehs@psu.edu.](mailto:psuehs@psu.edu) EHS provides guidance in determining at risk job classifications as needed, but supervisors are ultimately responsible for assessing the risks to their employees and ensuring that they participate in and comply with the Bloodborne Pathogen Program.

## COMMUNICATION OF HAZARDS

The universal biohazard symbol must be used to indicate the presence of blood or OPIM, and must be affixed to:

* Refrigerators and freezers containing these materials.
* Containers used to transport these materials including containers of RMW.
* Equipment used to manipulate these materials.
* At the entrances to areas where these materials are used or stored.

Biohazard labels must be fluorescent orange, orange-red, or predominantly so, with lettering and symbols in a contrasting color. Labels must be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.

## METHODS OF EXPOSURE CONTROL AND COMPLIANCE

* + 1. Universal Precautions

Strict adherence to Universal Precautions is required for this Exposure Control Plan to be effective. The cornerstone of Universal Precautions is that all blood or OPIM, regardless of the source, be treated as if it is infectious. Appropriate PPE (including gloves, breathing masks for rescue breathing/CPR, and eye protection) and work practices (minimize splashing, care in handling sharps, waste segregation) must be observed to reduce the possibility of skin and/or mucous membrane exposure to blood and OPIM. Personnel covered by this Plan should be aware that bodily fluids other than those explicitly mentioned in this Plan may be contaminated with blood. In such a case, those fluids are considered as OPIM.

* + 1. Personal Protective Equipment

Appropriate PPE that protects mucous membranes and skin from exposure to bloodborne pathogens must be worn by all job classifications listed in Appendices A and B when working with blood or OPIM. This includes gloves, eye and face protection (safety glasses/goggles and/or face shield), and a lab coat, coverall, or gown to protect against splash and splatter Scrubs may be worn in lieu of a lab coat for clinical procedures (e.g., phlebotomy or inoculation) based on risk assessment and in accordance with industry standards. Additional PPE may be required for certain work materials or procedures, such as work with HIV infected animals. Required PPE is provided, cleaned, and/or replaced as required by law by the University unit where personnel work at no cost to the employee. Additional guidance about PPE selection can be found in the Laboratory and Research Safety Plan and through the EHS Personal Protective Equipment program.

* + 1. Work Practices and Engineering Controls

For the purposes of this plan, work practice controls are a set of practices that aim to reduce or eliminate occupational exposure to bloodborne pathogens. Engineering controls are devices that are designed to limit exposure to bloodborne pathogens. These include:

* + - 1. Sharps Containers

All sharps (i.e., needles, syringes, lancets, razor and scalpel blades, Pasteur pipettes, glass capillary tubes), especially those contaminated with human blood or OPIM, must be collected in a rigid, leakproof sharps container for disposal. This container should be kept as close as possible to where sharps are handled.

Sharps containers that contain sharps contaminated with blood or OPIM must be sealed, autoclaved, and disposed of as Regulated Medical Waste (RMW) when it is 2/3 full.

* + - 1. Biosafety Cabinets

When procedures are conducted that have the potential for generating aerosols with blood or OPIM, they should be performed in a biosafety cabinet. The biosafety cabinet should be disinfected before and after use and must be certified annually; biosafety cabinets must also be recertified after they are moved or undergo significant repair or maintenance. For additional guidance on the proper usage of biosafety cabinets, please refer to Penn State’s Laboratory and Research Safety Plan.

* + - 1. Handwashing Facilities

Proper, timely handwashing is critical to preventing the spread of bloodborne pathogens. Handwashing facilities (consisting of hot and cold running water, soap, and single use towels) are required wherever bloodborne pathogens are handled. Those covered by this plan should wash their hands and any other potentially contaminated skin area after removing gloves or PPE regardless of contact with blood or OPIM. They should also wash their hands and/or any other skin surfaces which come into contact with blood or OPIM with soap and water as soon as feasible following exposure.

* + - 1. Needlestick Prevention

Devices that are capable of reducing or eliminating the potential for needlestick and other sharp instrument injuries are available. Examples of such technology include needleless delivery systems, self-sheathing needles and catheters, retractable hypodermic needles, and needle guards and shields. It is vitally important that the use of these devices is a standard practice in clinical and research laboratories. They should be used wherever and whenever possible. Employees who use these devices the most (for example, nurses and phlebotomists) should be consulted for input in the type of needlestick prevention equipment purchased. Recapping of needles potentially contaminated with blood or OPIM is prohibited except in rare cases for certain veterinary procedures. Any request for exception must be reviewed by EHS prior to implementation to ensure worker safety.

* + - 1. Work Area Restrictions

Laboratories and other areas that handle human blood or OPIM have specific requirements. These areas fall under BSL-2 conditions and are fully described in section 8.4 of the Laboratory Research and Safety Plan. The BSL-2 requirements include:

* + - * + Laboratory doors are to be kept closed when blood or OPIM is being manipulated.
        + Vacuum lines and aspiration flasks are to be protected with a 0.2 micron filter which is checked every 6 months and replaced as necessary.
        + There must be no eating, drinking, chewing gum, applying cosmetics or lip balm, or handling of contact lenses in the work area.
        + Food and beverages must not be kept in refrigerators where blood or OPIM is stored.
        + Mouth pipetting is strictly prohibited; automatic or manual devices must be provided and used.
        + All procedures are conducted in a manner that minimizes splashing, spraying, splattering, and creation of droplets of blood or OPIM.
      1. Specimen Containers

Containers used for holding, processing, or transporting blood or OPIM must be labeled as biohazards. Transport containers must be of sufficient size to hold twice the volume of material being transported in them. Containers should be constructed of materials that can be easily cleaned and should be cleaned and disinfected if contamination is noted.

## HEPATITIS B VACCINATION

Each employee or other personnel whose duties may reasonably be anticipated to involve exposure to blood or OPIM will be offered the Hepatitis B vaccine by the University at no cost to these individuals.

Information about the vaccine, its efficacy, safety, method of administration, and the benefits of being vaccinated will be provided to the employee during the required bloodborne pathogen training. The vaccine is provided in accordance with current CDC recommendations.

* Employees or other personnel covered by this plan may choose to take the vaccine or decline. If they decline the vaccine, a waiver stating that fact must be signed by them. In either case, the Immunization Determination Form (Appendix D) must be completed and filed with Occupational Medicine.
* If at any time, potentially exposed personnel who initially declined to receive the vaccine wishes to receive the vaccine, the University will provide the vaccine at no cost to them.
* Occupational Medicine is responsible for maintaining Bloodborne Pathogen Immunization Determination Form (Appendix D) and vaccination records. All Penn State employees not vaccinated at Occupational Medicine should make every effort to obtain their vaccination records and forward a copy to Occupational Medicine, 1850 East Park Avenue, Centre Medical Sciences Bldg., Suite 310, State College, PA 16803.

To begin the process to receive Hepatitis B vaccination, you must first be trained regarding the dangers of bloodborne pathogens and how to protect yourself. This training is administered through CITI for research personnel or the LRN for non-research personnel. Once training has been completed, the employee may then begin the Hepatitis B immunization series by scheduling an appointment with Occupational Medicine or for those at Commonwealth campus locations, with their local Occupational Medicine provider.

# Regulated Medical Waste

Regulated Medical Waste (RMW) is the term used by Penn State and the PA Department of Environmental Protection (DEP) to describe, in part, waste materials that are contaminated with human or animal pathogens, or with human blood or OPIM. It is sometimes referred to as medical waste, biowaste, or “red bag” waste. Safety Policy SY29 Infectious Waste Disposal provides information regarding the proper storage, treatment, and disposal of RMW, and is summarized below.

The following are not considered RMW: animal blood, sanitary napkins, band aids, other bandages and towels or cloths with small blood spots on them.

## SOLID RMW AT UP

Non-sharp solid waste material, such as pipettes, Petri dishes, multi-well plates, tissue culture flasks, tubes, cuvettes, pipette tips, gloves, and bench paper should be collected in biohazard bags and loosely secured before autoclaving on an appropriate cycle. Following autoclaving, bags should be removed to cool, labeled with the lab PI’s name, and placed in the large white RMW barrels located in autoclave rooms at the University Park campus. RMW barrels should not be overfilled, nor should they be used as a storage location. Loose material will not be accepted. The outermost biohazard bag should be free of any biological contamination. Contaminated, ripped, or torn bags should be re-bagged in a clean biohazard bag. Bags for solid RMW must be red, red-orange, or orange and be rated for autoclave usage if they are to be autoclaved.

For solid waste generated in locations without an autoclave, contact EHS for appropriate packing, handling, and pick up details.

## SOLID WASTE GENERATED AT NON-UP LOCATIONS

Personnel should follow the autoclaving instructions above, then place the cooled autoclaved waste into another biohazard-marked plastic bag and tie that bag closed (preferably with a gooseneck). These bags should be placed into the specially marked biohazard waste cardboard boxes provided by the RMW vendors. These boxes should not be closed until full, and must be picked up within 90 days of when they are filled and closed. Boxes should weigh no more than 40 pounds. When ready for pickup, RMW generators at non-UP locations should contact Waste Management (814-299-4976) to arrange for pickup.

## LIQUID RMW

All tissue culture media and broth cultures containing human blood or OPIM should be disinfected before disposal down a laboratory drain. This may occur via autoclaving, or by adding sodium hypochlorite (household bleach) to a final concentration of 10% of the total volume (e.g. for a final volume of 1 L liquid waste, 100 mL would be bleach). If using bleach for disinfection, the mixture should be incubated at room temperature for 10 or more minutes before drain disposal. Never autoclave bleach-containing solutions.

Due to the large amount of protein present, blood is not a good candidate for autoclaving and should be treated with bleach.

* + 1. Agar

Agar plates and tubes containing human blood or OPIM should be collected in a biohazard bag, loosely secured, autoclaved, allowed to resolidify, and then placed in the white RMW barrel at the University Park campus. At non-University Park locations, these materials should be treated as solid RMW (Section 9.1) after being allowed to resolidify.

## SHARPS

All sharps (i.e., hypodermic needles, syringes, razor and scalpel blades) must be disposed of in a puncture- resistant sharps container. In addition to these items, all Pasteur pipettes, broken glass, and microscope slides which have been in contact with viable infectious materials should be disposed of in a sharps container, which should be autoclaved before disposal. Biohazard sharps containers must be rigid, puncture proof, have a tightly closing lid, and be of the color red, red-orange, or orange. Following autoclaving, which is indicated with autoclave tape, sharps containers are to be labeled with the name of the lab’s PI before placing into a RMW barrel at the University Park campus. When ready for pickup, RMW generators at non-UP locations should contact Waste Management (814-299-4976) to arrange for pickup.

# Revision History

|  |  |
| --- | --- |
| Revision Date | Purpose or Description |
|  |  |
|  |  |
|  |  |

# Supplemental Information (Appendices)

Appendix A: Job Classifications and Job Titles in which ALL employees have an occupational exposure to bloodborne pathogens.

Appendix B: Job Classifications and Job Titles in which SOME employees have an occupational exposure to bloodborne pathogens, including the tasks and procedures in which exposure occurs.

Appendix C: Bloodborne Pathogen Risk Assessment Form

Appendix D: Bloodborne Pathogen Immunization Determination Form

# Appendix A – Job Classifications and Titles with All Employee Exposure Potential

Job Classifications and Job Titles in which ALL employees have an occupational exposure to bloodborne pathogens.

|  |  |
| --- | --- |
| University Health Services   * College Health Nurse * Emergency Medical Technician * Facilities Staff * Nurse Practitioner * Nurse Manager * Physical Therapist * Physician * Physician's Assistant * Primary Care Coordinator * Nursing Assistant * Medical Assistant * X-Ray Technician * Medical Technologist * Laboratory Technician * Phlebotomist   University Park – Office of Physical Plant   * Incinerator Control Operator * Incinerator Operator and Mechanic University Park – Occupational Medicine * Clinical Staff | Campus Recreation   * Aquatics   Lifeguard  Head Lifeguard Pool Operator Coordinator Assistant Director   * Competitive Sports Supervisor * Facilities   Student Building Supervisor Recreation Attendant (IM Building)   * Outdoor Adventures   Associate Director Assistant Director Coordinator  Trip Leader  Team Building Facilitator  Lead Team Building Facilitator   * Stone Valley Recreation Area   Associate Director Assistant Director Coordinator  Facilities and Maintenance   * Tennis   Customer Service Representative Camp Counselor |

# Appendix B - Job Classifications and Titles with Select Employee Exposure Potential

Job Classifications and Job Titles in which SOME employees have an occupational exposure to bloodborne pathogens, including the tasks and procedures in which exposure occurs.

This list is meant as guidance for colleges, departments, or work areas in which some employees have the potential for an occupational exposure to bloodborne pathogens. The final determination as to which specific employees have occupational exposure to bloodborne pathogens is made by the supervisor and EHS.

College of Nursing—provide instruction in patient care; performing venipuncture; starting IVs; training students in the cleaning of dressings.

* Instructor
* Professor
* Associate Professor
* Assistant Professor
* Associate Director
* Clinical Instructor
* Nurse
* Research Nurse
* Graduate Student

Academic Colleges (All Locations)—drawing of blood; analysis and purification of blood and blood components; culturing of blood cells; measurement of blood flow; implantation of micro-electrodes.

* Professor
* Associate Professor
* Assistant Professor
* Staff Scientist
* Post-Doctoral Fellow
* Graduate Assistant
* Senior Research Aide
* Research Aide
* Research Associate
* Senior Prep. Technician
* Graduate Student
* Visiting Scientist

Environmental Health and Safety—providing first aid and CPR; collection and packaging of regulated medical waste; responding to accidents and incidents involving blood.

* Director
* Assistant Director
* Manager
* Senior Biosafety Officer
* Assistant Biosafety Officer
* Fire Protection Engineer
* Program Manager/Industrial Hygienist
* EHS Specialist
* EHS Coordinator
* Special Waste Technician

University Police—providing first aid care and CPR; law enforcement activities; apprehension of criminal suspects; collection of evidence.

* Director
* Deputy Director
* Supervisor
* Assistant Director
* Police Service Officer
* Community Service Officer
* Property Protection Guard

Intercollegiate Athletics Department—providing medical treatment to athletes; First aid and CPR; dressing wounds, handling regulated medical waste.

* Team Physician
* Head Team Physician
* Trainer
* Student Trainer
* Director of Athletic Medicine
* Physical Therapist
* Lifeguard

Office of the Physical Plant—handling regulated medical waste, cleanup of blood or OPIM.

* Grades 9 and 10 Custodial Workers
* Waste Collector
* Plumber
* Wastewater Treatment Plant Worker Animal Resource Program (ARP)
* ARP Director
* ARP Veterinarian
* ARP Veterinary Technician
* ARP Research Technologist
* ARP Facilities Staff
* ARP Technologist 3
* ARP Animal Caretaker
* ARP ABSL-3 and Gnotobiotic Animal Laboratory Technician
* Facilities Manager for Pell Lab
* Facilities Representative for Pell Lab

Non-Academic Positions at Locations other than University Park

Providing first aid and CPR; law enforcement activities; apprehension of criminal suspects; collection of evidence.

* Manager, Safety and Security
* Police Service Officer
* Manager, Police and Security
* Police Service Officer
* Community Service Officer
* Patrol Officer
* Police Supervisor

Providing basic health care services and first aid; dressing of wounds, physical examinations; handling regulated medical waste.

* Nurse

Providing medical treatment to athletes; first aid and CPR; handling regulated waste

* Athletic Trainer

# Appendix C – Bloodborne Pathogen Risk Assessment Form

[Bloodborne Pathogens Risk Assessment Form](https://ehs.psu.edu/sites/ehs/files/bbpriskassessment.doc)

# Appendix D – Bloodborne Pathogen Risk Assessment Form

[Bloodborne Pathogens Immunization Determination Form](https://ehs.psu.edu/sites/ehs/files/immunizationdetermination.doc)