

# Bloodborne Pathogen Exposure Control Plan

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**For Clemson University. Updated 2021.**

## **Purpose**

The purpose of this exposure control plan is to direct the response of an exposure to bloodborne pathogens including but not limited to the following areas:

- Facilities
- Housing
- Athletics
- Research Labs
- PSA Labs
- Medical environments including Redfern, Sullivan Center, and School of Nursing environments
- Police, Fire, and EMS
- First aid responders

These exposures can take place either on Clemson University Main Campus, Satellite Campuses across the state, or during any Clemson University sponsored event at any location.

Individual departments and colleges may develop their own exposure control plans with the help of Occupational and Environmental Safety.

Regulation reference: [29 CFR 1910.1030](#)

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## Introduction

This Bloodborne Pathogen Exposure Control Plan has been developed and implemented to meet the requirements of the Occupational Safety and Health Administration's (OSHA) Bloodborne Pathogen Standard codified at 29 CFR 1910.1030. This standard was originally developed and continues to address occupational exposure risk from human body fluids that may contain bloodborne pathogens such as human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV). The original versions of this document were separated into research and lab-based areas and health care, facilities, housing, and emergency response. This current document will cover both groups.

While OSHA standards apply directly to employees (personnel who are paid by the employer to perform work), it is expected that supervisors provide information and training to ALL personnel under their supervision, regardless of employment status. This standard of practice will reduce BBP exposure risk for ALL personnel in the work environment. However, non-employee students or volunteers are not covered under this exposure control plan.

## Definitions

- *Blood* - human/non-human primate blood, blood components, and products made from human/non-human primate blood.
- *Bloodborne Pathogens (BBP)* - pathogenic microorganisms that are present in human/non-human primate blood and can cause disease in humans. 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 materials.
- *Contaminated* - the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
- *Contaminated Laundry* - laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.
- *Contaminated Sharps* - any contaminated object that can penetrate the skin including, but not limited to needles, pipettes, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.
- *Decontamination* - the 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.
- *Engineering Controls* - controls (e.g., sharps disposal containers, self-sheathing needles, safer medical devices, such as sharps with engineered sharps injury protections and needleless systems) that isolate or remove the bloodborne pathogens hazard from the workplace.

- *Exposure Incident* - a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.
- *Handwashing Facilities* - a facility providing an adequate supply of running potable water, liquid soap and single use towels.
- *Licensed Healthcare Professional* - a person whose legally permitted scope of practice allows him or her to independently perform the activities required by paragraph (f) of the Federal OSHA Blood Borne Pathogen Standard (“Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up”).
- *HBV* - Hepatitis B Virus.
- *HCV* - Hepatitis C Virus.
- *HIV* - Human Immunodeficiency Virus.
- *Needleless systems* - a device that does not use needles for:
  - The collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established;
  - The administration of medication or fluids; or
  - 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, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.
- *OES* - Occupational and Environmental Safety. Formally Environmental Safety and Research Safety.
- *Other Potentially Infectious Materials (OPIM)*:
  - The following human/non-human primate body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, 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;
  - Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and
  - 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, HBV, or HCV.
  - Samples from labs doing research on other types of blood borne pathogens.
- *Parenteral* - piercing mucous membranes 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 or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

- *Regulated Waste* - 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 that 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 or Teaching Laboratory* - any laboratory (excluding diagnostic or clinical) that stores or manipulates HIV, HBV, HCV, or any other blood borne pathogen cultures, blood or OPIM.
- *Sharps with engineered sharps injury protections* - a non-needle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, 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 materials may be a source of occupational exposure to the employee.
- *Sterilize* - the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.
- *Universal Precautions* - an approach to infection control. According to the concept of Universal Precautions, all human/non-human primate blood and certain human/non-human primate body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.
- *Work Practice Controls* - controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

## **Exposure Determination**

Employees who may reasonably expect to be exposed to bloodborne pathogens as part of their routine duties include but is not limited to:

- Physicians, Nurse Practitioners, Physician Assistants, Nursing personnel
- Emergency Medical Technicians, Paramedics, and other emergency medical service providers
- Fire Fighters and other first responders
- Law Enforcement personnel (those exposed to blood or OPIM)
- Veterinarians
- Veterinary Technicians/Lab Animal Technician
- Biologists (those exposed to blood or OPIM)
- Microbiologists (those exposed to blood or OPIM)
- Biology/Microbiology Technicians and Laboratory Aides (those exposed to blood or OPIM)
- Lab Supervisors and Technicians (those exposed to blood or OPIM)
- Animal Handlers

- Chemists and Biochemists (those exposed to blood or OPIM)
- OES Personnel handling bio-waste
- Plumbers/plumbing shop personnel
- Recycling crews involved in trash clean up and sorting
- Wastewater treatment plant personnel
- Landscapers
- Radiology Technicians (those exposed to blood or OPIM)
- Custodial/housekeeping personnel (those exposed to blood or OPIM)
- Medical equipment service and repair personnel (those exposed to blood or OPIM))
- Other research employees including Principal Investigators, OES Representatives, and Research Assistants.
- Building Security Coordinators and Department Safety Representatives (if they enter labs where exposure to BBP is probable)

Employees not normally exposed to blood borne pathogens include:

- University administrators not involved with running a lab
- Facilities staff (other than plumbers or plumbing shop personnel)
- OES personnel who do not handle bio-waste
- Quality Assurance Auditors
- University faculty and staff not listed as reasonably expected to be exposure to BBP

Tasks and procedures that may result in exposure:

- Sharps pick-up
- Trash pick-up
- Biological Safety Cabinet decontamination and certification
- Processing/handling human body fluids, tissue, and/or cell lines
- Handling animals, tissues, waste, cell lines, fluids or cultures which may be infected or potentially infected with bloodborne pathogens
- Laundry processing
- Human tissue xenografts
- Processing blood
- Handling emergencies and first aid
- Work with HIV, HBV, HCV or other infectious cultures
- Needle stick
- Cleaning, handling contaminated instruments
- Handling biowaste

### **Methods of Compliance**

- Assume all human and non-human primate body fluids are infectious unless lab tested (Universal Precautions also known as Standard Precautions).

- Use of engineering & work practice controls to eliminate or reduce employee exposure including Personal Protective Equipment (PPE).
- Personal protective equipment may include gloves, gowns, laboratory coats, face shields or masks and eye protection, and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices; PPE is provided by the Employee's Department and its use ensured by appropriate supervisor.
- Engineering controls are kept on a regular preventive maintenance schedule.
- Biological safety cabinets are evaluated by an NSF 49 certified technician (or someone working under the direct supervision of an NSF 49 certified technician) at least annually and whenever moved.
- Readily accessible hand washing facilities with liquid soap or antiseptic cleansers and clean towels are in each lab/work area.
- Eye wash facilities are readily available in each lab/work area.
- Employees must wash hands immediately after PPE removal, i.e., gloves, and if there is any contact with blood or infectious material.
- Needles should be used one-time only. Contaminated needles and other sharps shall not be bent, recapped, or removed unless there is no alternative, and, in the case of recapping or removal, a one-handed method or mechanical device must be used.
- Contaminated sharps must be disposed of in containers that are puncture resistant, labeled or color-coded properly, leak-proof on sides and bottom, and closable on top.
- Sharps containers are removed by OES personnel whenever full or when study has been completed and sharps are no longer in use.
- Eating, drinking, smoking, chewing, applying lip balm or cosmetics, and handling contact lenses are prohibited in the labs.
- Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets or on countertops or bench tops where blood or other potentially infectious materials are present.
- Magazines and newspapers will not be taken home if brought into a work area but must be left in the lab and disposed of with the regular lab trash.
- Splashing, spraying, spattering and droplet generation (aerosols) will be minimized by using centrifuge covers and other techniques designed to reduce aerosol formation.
- Mouth pipetting is prohibited.
- Blood specimens or infectious materials are transported and stored in leak-proof containers.
- Equipment is decontaminated with disinfectant included in *Clemson University List of Approved Disinfectants for Use against Blood Borne Pathogens* prior to servicing. This list is derived from the registered disinfectants that appear on both EPA List E and EPA List F. List of disinfectants can be accessed at <http://media.clemson.edu/research/safety/Disinfectants%20for%20BBP.pdf>
- Each work area handling bloodborne pathogens must have a written cleaning schedule including autoclaving, decontamination procedure using *Clemson University List of Approved Disinfectants for Use against Blood Borne Pathogens*, and laundry handling.

The supervisor is responsible for this schedule. An autoclave must also be conveniently available. These procedures may be covered in an Institutional Biosafety Committee protocol for that lab.

- Each supervisor is responsible for reviewing the effectiveness of the individual controls and making corrections to conform to the Bloodborne Pathogens Standard.
- SDS (Safety Data Sheet) is available for every chemical in use in the facility, per OSHA requirement.
- Cleaning, Laundering, and Disposal: Disposable PPE should be used when possible. The employer shall clean, launder, and dispose of personal protective equipment at no cost to the employee. In no event shall such PPE be taken home for cleaning, laundering, or disposal. The employer shall provide, repair, and replace such PPE as necessary at no cost to the employee.

### **Special Requirements for HIV, HBV, or HCV Research Labs**

Currently, Clemson University has no HIV, HBV, or HCV research labs. Introduction of such research will require a revision of this plan.

### **Labels and Signs**

Biohazard labels and signs consist of a red or fluorescent orange colored background with the traditional biohazard symbol in a contrasting color. The OES Office will keep a supply of labels meeting these criteria and these will be available upon request.



The following items must be labeled:

- Entrances to all laboratory areas where blood, cell cultures, or other potentially infectious materials are used.
- Containers of regulated waste.
- Refrigerators, freezers, incubators, or other equipment containing blood, cell cultures, or other potentially infectious materials.
- Sharps disposal containers.



- Containers used to store, transport or ship blood and other potentially infectious materials. When a primary container holds several smaller items containing the same potentially infectious substance, only the primary container needs to be labeled. All employees handling these containers must be informed of their contents and the need to use Universal Precautions when handling such items. Items that are transported or shipped need to comply with local and federal transportation regulations. Contact the OES Office prior to shipping any potentially infectious materials.
- Laundry bags/containers holding contaminated items. Alternately, laundry may be placed in a biohazard bag. Employees handling laundry must be informed of the potential for contamination and/or infectivity of the biohazard bags.
- Contaminated equipment.

## **Training**

New employees should be trained at the time of initial assignment to tasks where occupational exposure may take place; all employees will be re-trained annually, and whenever tasks or assignments are changed.

The initial training for Bloodborne Pathogens in research labs MUST be a LIVE training. An online refresher training may be taken for re-training. Trainings for Bloodborne Pathogens for non-research labs may be taken online but can only be taken between the hours of 8am to 4:30pm, Monday through Friday. The training records shall be maintained three years from the date training occurred.

Supervisors are required to ensure employee proficiency in biological safety practices prior to employee being allowed to work with blood or OPIM and to provide employee training in the handling of human pathogens or tissue prior to employee being allowed to work with blood or OPIM.

### **Components of Training**

- Explanation of epidemiology, symptoms, and transmission modes of bloodborne diseases.
- How to recognize bloodborne hazards.
- How to prevent or reduce exposure.
- How to minimize aerosol production.
- Handling needles properly.
- Information and instruction on Personal Protective Equipment location, selection, removal, decontamination, and disposal.
- Instruction on hand washing procedures.
- Information on biological waste handling and disposal.
- Information on the Hepatitis B vaccine.

- At initial training, opportunity for interactive questions and answers with a technically qualified person.
- Explanation of the contents of Standard 1910.1030.
- Explanation of and access to the Exposure Control Plan.
- Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials.
- Explanation of color coding and labeling per 1910.1030(g).
- Handling of biological waste.

### **Hepatitis B Vaccination**

- New employees, or employees newly assigned to job functions involving exposure to blood or OPIM, will be offered the HBV vaccination within 10 working days of initial assignment to a position requiring work with blood or OPIM. The employee may decline the vaccination by signing the *Hepatitis B Vaccine Status Form*. The cost(s) of the vaccinations will be borne by the employee's department.
- New employees, or employees newly assigned to job functions involving exposure to blood or OPIM, may not work with blood or OPIM until at least 10 days after receiving the first of the three HBV injections or until after signing the declination form.
- Students who have not already had the vaccine may get it from Redfern for a fee.
- The Occupational Health Nurse will maintain records of vaccination or of declination.

### **Post exposure evaluation and follow up**

- If contact with blood or other potentially infectious material occurs on skin with open cuts, wash the area for 15 minutes with soap and water.
- If blood or potentially infectious material splashes in the eyes or on mucous membranes, flush the area for 15 minutes with water.
- If there is a cut or puncture with a contaminated object (broken glass, needle, etc) wash the area for 15 minutes with soap and water.
- Report the incident to a supervisor, if available.
- The supervisor, employee or other individual who is present should call Corvel (1-866-282-2674). Corvel will direct the employee to either Redfern or other Authorized Medical Facility. In the case of emergency, call 911.
- The exposed employee will be offered medical evaluation, post-exposure prophylaxis, blood testing for HIV, HBV, and HCV, and counseling by a physician as directed by OSHA. These evaluations and procedures shall be conducted according to recommendations of the US Public Health Service current at the time.
- Incident reports should be submitted for Risk Management and Occupational and Environmental Safety in a timely manner.

## **BBP Exposure Incident Response**

**A BBP occupational exposure incident occurs when human blood or OPIM enters your bloodstream through:**

1. Splash to the eyes, nose, or mouth,
2. Puncture wound with contaminated item,
3. Contact with broken skin or prolonged contact (more than 5 minutes) with intact skin.

**Immediate response is required to reduce your chance of acquiring infection!**

**Take the following actions immediately if injured:**

1. Flush the exposed skin or mucous membranes for 15 minutes.
2. INJURED WORKER WILL REPORT THE INJURY TO THEIR SUPERVISOR AND TO CORVEL
  - a. Call 1-866-282-2674 to report the injury
  - b. This is a 24/7 Nurse Line
  - c. The NURSE will discuss the appropriate level of treatment needed and direct the injured worker to Redfern or other AUTHORIZED Off Campus location
3. In the case of life or limb threatening injury, treatment should be sought at the nearest emergency medical facility.

**The supervisor must also notify the Office of Risk Services and Insurance and fill out the First Report of Injury form: <https://www.clemson.edu/administration/risk/workers-comp/>**

**Contact the Office of Occupational and Environmental Safety at 864-656-0341 within 3 days of the exposure for further follow-up.**

## Record keeping

All listed records must be kept by the designated departments:

- Hepatitis B vaccination records and declination forms – Occupational Health Nurse
- Blood Borne Pathogen Training records – OES
- Medical records – Redfern
- OSHA 300 and Sharp injury log – Risk Management

## References

OSHA Bloodborne Pathogen Standard

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030>

Wastewater OSHA Interpretation

<https://www.osha.gov/laws-regs/standardinterpretations/2007-07-30>

Biosafety and Microbiological and Biomedical Laboratories (BMBL) 5<sup>th</sup> Ed.

<https://www.cdc.gov/labs/pdf/CDC-EHSMicrobiologicalBiomedicalLaboratories-2009-P.PDF>

Human Cell Lines (OPIM) OSHA Interpretation

<https://www.osha.gov/laws-regs/standardinterpretations/1994-06-21>

Clemson University Biosafety Manual

<http://media.clemson.edu/research/safety/bsm.pdf>

## Appendix A: First Aid & Human Blood Spill Responders' Exposure Control Guide

### Overview

Employees who are required to provide first aid assistance or clean up body fluids suspected to be contaminated with human blood, need to perform these duties in a manner that protects themselves and others in the immediate area where the event occurred. Because there are unique challenges associated with performing these duties, it is essential that the employees assigned to the duties have been appropriately trained and have adequate supplies and resources available to carry out these duties effectively and safely.

### First Aid Response Exposure Control Pointers

It is strongly recommended that *only* personnel who have been trained in first aid response *and* have been specifically assigned that duty as a job responsibility render such services. Employees with this assigned job responsibility must complete bloodborne pathogens training *before* performing first aid services. Supervisors must ensure that employees under their direction understand clearly who is expected (and NOT expected) to provide first aid services and/or the proper procedure for dispatching emergency medical care personnel to the job site.

First aid responders must minimize their exposure risk while rendering first aid services by adhering to the following practices:

- Know where first aid kits are located, and that they are always stocked and ready for service.
- Keep at least 2 pair of gloves (in your size) immediately available for your use. Always wear gloves when contact with any body fluids is anticipated. Double glove when performing first aid services where visible blood is present.
- Always take note of where your closest running water is in case you need it for first aid, hand washing, or for exposed skin flushing purposes.
- If injuries are minor, and the injured person is capable, provide supportive, rather than hands-on services. In other words, give the person direction for wound cleaning, bandage application, etc., but let them do it themselves.
- If an injured person is actively bleeding, try to get the person isolated from others and keep them in that location to limit the spread of blood contamination. In this scenario, post someone to keep others out of the area where the contamination is present.
- If your clothes become contaminated with an injured person's blood or OPIM, you must remove contaminated clothing items as soon as possible. If the contamination soaked through to your skin, you must thoroughly flush the exposed skin. (See exposure incident response procedure at the end of this guidance document.) Moderately or heavily contaminated clothing should be laundered on-site separate from other clothing using hot water and a bleach-based detergent. Alternatively, this clothing must be sent to a commercial laundry service that is equipped to process clothing contaminated with blood or OPIM. Contaminated clothing awaiting treatment must be stored in a closed leak-resistant plastic bag tagged with a biohazard symbol.

- Always wash your hands after rendering any first aid services and after glove removal.

## Human Blood Spill Response Exposure Control Guidance

First aid incidents involving a person who is actively bleeding commonly result in contamination of items in the area where the incident occurred. Other potentially infectious materials may be present as well such as vomit with blood in it. These contaminated areas and items must be isolated and properly disinfected by trained personnel before they are brought back into service.

Blood spill responders must observe the following practices to protect themselves and the public from exposure to human blood or OPIM:

- Know where spill cleanup kits are located, and that they are always stocked and ready for service.
- Always have disposable gloves (in your size) readily available. Wear two pair of gloves for all spill response activities.
- If a spill occurs, isolate the contaminated area immediately. Either post someone at the site to keep others out of the area or close off the area.
- Other than very minor spills involving a few drops of blood, all spill response procedures should be carried out with 2 trained persons present if possible. If the spill is too large for you to manage with the supplies available in the spill kit, or if you are not confident that you can manage the spill on your own, you must notify your supervisor and request additional assistance.
- If the spill includes contaminated broken glass or other sharp objects, you must use mechanical tools to pick up the broken glass. Contaminated broken glass should be placed in an approved sharps container for disposal if feasible. If this is not feasible, place broken glass in a puncture-resistant bucket. Permanently close the bucket with a lid and place the bucket into a biohazardous waste bag. Blood spill response waste must be disposed of as medical waste. While awaiting disposal, bags of spill waste must be stored in a secure area in a leak proof container with a lid that is labeled as a biohazard.
- If your clothes become contaminated with blood or OPIM, you must remove contaminated clothing items as soon as possible. If the contamination soaked through to your skin, you must thoroughly flush the exposed skin. (See exposure incident response procedure at the end of this guidance document.) Moderately or heavily contaminated clothing should be laundered on-site separate from other clothing using hot water and a bleach-based detergent. Alternatively, this clothing must be sent to a commercial laundry service that is equipped to process clothing contaminated with blood or OPIM. Contaminated clothing awaiting treatment must be stored in a closed leak-resistant plastic bag tagged with a biohazard symbol.
- Always wash your hands after glove removal or anytime they may have come into contact with body fluids.

## Appendix B

### Hepatitis B Vaccine Declination (29CFR1910.1030)

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Employee Signature:

Employee Name (printed):

Date:

Witness Signature:

Witness Name (printed):

Date: