



**COLORADO SCHOOL OF MINES**  
EARTH • ENERGY • ENVIRONMENT

## **Bloodborne Pathogens Program**



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## 1.0 INTRODUCTION

**1.1 Purpose:** The Colorado School of Mines is committed to establish guidelines and procedures in accordance with applicable federal and state regulations for the storage, handling, use and disposal of biological materials and appropriate training for work with these biological materials.

**1.2 Policy:** It is the policy of the Colorado School of Mines to provide a safe environment for work and study. This policy has been prepared for faculty, staff and students who will be potentially exposed to Bloodborne Pathogens. By following these procedures, the safety of the working environment should be improved by minimizing or eliminating exposure to biological hazards.

This policy addresses engineering controls, work practices and personal protective equipment which should be implemented where possible to minimize the exposure to infectious agents or potentially infectious agents.

## **2.0 EXPOSURE CONTROL METHODS**

Bloodborne pathogens (BBP) are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV). The following methods are outlined to eliminate or control exposure to Bloodborne pathogens.

The following Exposure Control methods have been set to include Universal Precautions, engineering and work practice controls, Housekeeping and laboratory hygiene, and proper personal protective equipment.

### **2.1 Universal Precautions**

Universal Precautions shall be implemented. This can be accomplished by avoiding contact with blood, bodily fluids or other potentially infectious materials (OPIM). Wearing appropriate PPE, using proper engineering controls, practicing good laboratory hygiene and treating all BBP as potentially infectious are common Universal Precaution practices.

### **2.2 Engineering and Work Practice Controls**

Engineering and work practice controls must be implemented by all faculty staff and students in order to take precautions to prevent injuries when using needles, scalpels, and other sharp instruments, when cleaning used instruments, and during disposal and handling of sharps. Best practices include:

- No recapping of needles, bending or braking needles, or otherwise manipulating needles.
- Never handle broken glassware directly by hand, use a mechanical device such as tongs or a brush and dustpan.
- Disposal of syringes and needles, blades, scissors or other sharps must be placed in a puncture-resistant container for disposal. The containers must have an appropriate biohazard label affixed to it.
- All other laboratory specimens must be collected in leak-proof containers as well as contaminated contact waste such as gloves, and spill clean-up materials.
- Work areas must be maintained and cleaned after each work shift. Surfaces must be decontaminated with an appropriate disinfectant. This includes benchtops, and laboratory equipment used such as centrifuges.
- Bloodborne spills must be decontaminated as soon as possible using bleach or an appropriate disinfectant. Call the EHS spill team for guidance and assistance on blood cleanup procedures.
- Biohazard warning signs must be affixed to containers of regulated medical waste, refrigerators and freezers containing BBP, and other containers used for storage or disposal.

Proper laboratory hygiene is an effective measure to prevent BBP exposure. Ensure that:

- Hands are washed immediately if they come in contact with bloodborne pathogens.
- Hands must also be washed upon removal of gloves and when leaving a work area.
- Eating, drinking, smoking, applying cosmetics, and handling contact lenses are prohibited when working in the laboratory.
- Laboratory procedures are to be performed in a manner to minimize splashing, spraying, and droplet generation.

Personal Protective Equipment: Supervisors must ensure that PPE is provided to significantly reduce the risk since it acts as a barrier against exposure. Supervisors are required to provide, clean, repair, and replace this equipment as needed at no cost to the worker.

- Select the appropriate PPE for the work you will be doing. This can include gloves, gowns, laboratory coats, face shields or masks, eye protection, pocket masks or other protective gear.
- If it is reasonably expected to have hand contact, gloves must be worn and replaced when they show signs of cracking, peeling, tearing, puncturing, or deteriorating.
- Gloves must be worn at all times when working with blood, bodily fluids, or other potentially infectious materials.
- When splashes, sprays, splatters or droplets are a potential hazard to the eyes, protective eyewear is required.
- Remove PPE before leaving the work area. If lab coat or other garment is contaminated with BBP or OPIM, it must be removed immediately or as soon as feasible. Once PPE is removed, it must be placed in an appropriate area for storage, washing, decontamination, or disposal.
- Wash hands immediately after the removal of gloves or other PPE.

### 3.0 HANDLING CONTAMINATED SHARPS

Sharps are objects that can penetrate a worker's skin, such as needles, scalpels, broken glass, capillary tubes and the exposed ends of dental wires. If OPIM are potentially present, it is a contaminated sharp and appropriate precautions and PPE must be followed when handling them. The proper handling of sharps can prevent injury and reduce the risk of infection. The following items must be taken into consideration when working with sharps.

- Use safer medical devices whenever possible. These are items such as built-in protection guards and needleless devices.
- Immediately dispose of contaminated sharps into an appropriate waste container that is puncture resistant. Sharps disposal containers must be readily accessible and located close to area where sharps will be used.
- Once a sharps container is full, the container must be closed to prevent spilling the contents and leaks. If there is a chance that the container may leak, it must be placed in secondary containment that is labeled with a Biohazard sign. Sharps containers are available from EHS.
- Sharps must never be shared or broken. Recapping, bending, braking, or removing needles from waste containers is prohibited.
- Contaminated broken glass must be picked up by mechanical devices such as a brush and dust pan, tongs, or forceps. Never pick up contaminated broken glass by hand.
- Containers for contaminated sharps must be puncture-resistant and the sides and bottom of the container must be leak proof. They must be appropriately labeled and color-coded red. Containers must not be overfilled and replaced routinely to avoid needle sticks, cuts and spills.

#### **4.0 WASTE DISPOSAL**

Regulated medical waste is a liquid or semi-liquid blood or other potentially infectious material (OPIM), contaminated items that would release blood or OPIM when compressed, contaminated sharps, pathogenic and microbiological waste containing blood or OPIM. All waste must be disposed of in red bags marked with the biohazard symbol. Proper waste disposal procedures include:

- Biohazard bags must be placed in designated biohazard bins with appropriate biohazard markings on them.
- Sharps waste must be placed in a device that is puncture resistant. When sharps containers are full, they can be placed in larger biohazard bins.
- Broken glass/plastic items contaminated with BBP such as pipettes and blood vials must also be placed in a puncture resistant biohazard bin.
- Do not overfill containers. When a container is full, tie the biohazard bag up and request a biohazard waste pickup by calling EHS at 303-273-3316.

## 5.0 EXPOSURE INCIDENTS

If there is exposure to blood or OPIM, an immediate confidential medical evaluation and follow-up procedures are made available. An exposure incident can include a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials (OPIM).

- Exposure incidents must be reported immediately and a medical evaluation can be conducted.
- The medical evaluation and follow-up is available at no cost to the worker and at a reasonable time and place. Performed by a licensed physician or other licensed healthcare professional.
- Laboratory test must be conducted at an accredited laboratory.
- Employer will obtain and provide the worker with a copy of the evaluating healthcare professional's written opinion within 15 days of completion of the evaluation.
- The written opinion should only include: whether hepatitis B vaccination was recommended for the exposed worker; whether or not the worker received the vaccination, and that the healthcare provider informed the worker of the results of the evaluation
- Contact EHS for arrangements.

## 6.0 TRAINING

The Environmental Health and Safety Department will provide Bloodborne Pathogens Training to all employees who will work with human blood or OPIM. Training will be provided as follows:

- Initial: New employees, who will work with BBP, must be trained prior to their working with infectious materials.
- Annual: Annual BBP training is required for faculty, staff and students who will continue to work with blood or OPIM. The supervisor will ensure that the employee's participation in a training session within one year of their previous training.
- Training Records: EHS will keep a record of dates of training sessions.
- Training topics include: Biological hazards, exposure control methods, universal precautions, Biological material use and handling, biological waste disposal, decontamination, Risk groups, Biosafety levels, and procedures for Exposure Incidents.
- Contact EHS to schedule training.

The Environmental Health and Safety Department can also provide Bloodborne Pathogens Awareness training.

## **7.0 HEPATITIS B VACCINATION**

Employees with occupational exposures to human blood must be offered and should be encouraged to get the Hepatitis B Vaccination. The Hepatitis B Vaccination is free of charge and can be arranged with the Environmental Health and Safety Department. The Hepatitis Declination form can be found in Appendix A.

- The vaccine must be offered after the worker is trained and within 10 days of initial assignment to a job where there is occupational exposure, unless the worker has previously received the vaccine series, antibody testing has revealed that the worker is immune, or the vaccine is contraindicated for medical reasons.
- Workers who decline the vaccination must sign a declination form.

## 8.0 RESPONSIBILITIES

### Responsibilities of Users:

- Principal investigators or supervisors must perform appropriate risk assessment for the workplace and employees for all involving biological materials.
- Principal investigators must provide on-the-job training and ensure that employees are trained annually.
- Ensure that blood and OPIM are handled in accordance with this policy.

### Responsibilities of EHS:

- EHS will maintain training records and perform BBP trainings to users on an annual basis.
- EHS will update this BBP policy as applicable changes to the OSHA Bloodborne Pathogens standard occur.
- EHS will conduct inspections to insure compliance with these procedures.
- EHS will make available Hepatitis B vaccinations to all workers with occupational exposure. Make available post-exposure evaluation and follow-up to any occupationally exposed worker who experiences and exposure incident at no cost to the worker.

## 9.0 DEFINITIONS

**BBP (Blood Borne Pathogen)** – pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV)

**Blood** – human blood, human blood components, and products made from human blood

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

**Contaminated Sharps** – any contaminated object that can penetrate the skin including, but not limited, needles, 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 items 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.

**Licensed Healthcare Professional** – a person whose legally permitted scope of practice allows him or her to independently perform the activities required by...

**Hepatitis B Virus** - A pathogenic microorganism that can cause potentially life threatening disease in humans, HBV infection is transmitted through exposure to blood and other potentially infectious materials (OPIM).

**Infectious Agent** – an agent capable of producing infections such as a virus, bacteria and fungus, parasites, and pathogens.

**Needlestick** – an accidental puncture of the skin from a needle (or other sharp object) that may result in exposure to blood or other body fluids.

**OPIM (Other Potentially Infectious Materials)** – The following human fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluids, 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); 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.

**Parenteral** – piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

**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.

**Sharps** – any object which readily puncture or cut the skin of an individual when encountered. A sharp can be: glass, pipette tips, needles, syringes, knives, razor blades, anything with sharp edges, and anything that could puncture through a garbage bag.

**Sterilize** – the use of 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 blood and certain human 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).

## **10.0 REFERENCES**

29 CFR-1910.1030 OSHA Bloodborne Pathogens

## **Appendix A**



### Hepatitis B Declination Form

Employee Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Department: \_\_\_\_\_ Job Title: \_\_\_\_\_

I \_\_\_\_\_ understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring hepatitis 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 may 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 received the vaccination series at no charge to me.

Employee Name (print): \_\_\_\_\_ Date: \_\_\_\_\_

Employee Signature: \_\_\_\_\_

Supervisor Name (print): \_\_\_\_\_ Date: \_\_\_\_\_

Supervisor Signature: \_\_\_\_\_