

Bloodborne Pathogen Exposure Program for Research Areas

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1.0 Purpose

The purpose of this program is to eliminate or minimize employee occupational exposure to human blood, other human body fluids or tissues, and comply with the OSHA Bloodborne Pathogen Standard 29 CFR 1910.1030. This program combined with the completed exposure control plan through BioARROW and annual training shall comprise the complete exposure control plan for each employing unit on campus where blood or other infectious materials are worked with.

2.0 Scope

The program will apply to all faculty, staff, and students employed by or enrolled at the UW Madison and who are occupationally exposed to blood or other potentially infectious materials during research activities.

3.0 Definitions

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

Bloodborne Pathogens – pathogenic microorganisms that can cause disease in humans. These pathogens include but not limited to hepatitis B (HBV) and human immunodeficiency virus (HIV)

CFR – Code of Federal Regulations

Clinical Laboratory – a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

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

Contaminated Laundry – laundry which has been soiled with blood or other potentially infectious material or which may contain sharps.

Contaminated Sharps – any contaminated objects that can penetrate the skin including, but not limited to 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 no longer are capable of transmitting infectious particles; and the surface or item is rendered safe for handling, use, or disposal.

Engineering Controls – (e.g. sharps disposal containers, self-sheathing needles) controls that isolate or remove the bloodborne pathogen hazards from the workplace.

Exposure Control Plan – The OSHA Bloodborne Pathogens Standard requires that every employer with employees at occupational risk of exposure to bloodborne pathogens “establish a written control plan designed to minimize or eliminate employee exposure.” The plan must: identify all employees with occupational exposure, specify measures which must be taken minimize exposure risk, and develop procedures for evaluating exposure incidents.

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.

Gloves – The most widely used form of personal protective equipment. They act as a primary barrier between hands and bloodborne pathogens. Latex or vinyl gloves are used for medical, dental or laboratory procedures. Heavy-duty utility gloves may be used for housekeeping duties.

Hand washing facilities – a facility providing an adequate supply of running potable water soap and single use towels.

HBV – hepatitis B virus

HCV – hepatitis C virus

HIV – human immunodeficiency virus

Institutional Biosafety Committee (IBC) – campus committee that reviews and approves recombinant DNA activities and other activities that may pose a biological hazard.

Needleless Systems – devices that do 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.

Medical waste – sharps contaminated with blood, infectious or biologically contaminated material that can cause accidental injury.

Occupational Exposure – reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or any other potentially infectious material that may result from the performance of an employee's duties.

Other Potentially Infectious Materials (OPIM) – includes (1) The following human body fluids: cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, amniotic fluid, semen, vaginal secretions, saliva in dental procedures; any body fluid that is visibly contaminated with blood and all body fluids in situations when it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); (3) HIV-containing cell or tissue culture, organ culture, HIV, HCV, or HBC-containing culture medium or other solutions; and (4) blood, organs, or other tissues from experimental animals infected with HIV, HCV, or HBV; (5) Human cell lines (including established cell lines and stem cells).

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

Personal Protective Equipment (PPE) – specialized clothing or equipment worn by an employee for protection against a hazard. It include: gloves, gowns, face shields, masks, protective eyewear, mouthpieces and resuscitation bag or other ventilation devices. General work clothes (e.g. uniforms, pants, shirts or blouses) not intended to function as protection against a hazard is not considered to be personal protective equipment.

Production Facility – facility engaged in industrial-scale, large volume (10 liters or more).

Regulated Waste – liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials 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, also called Biohazardous Waste.

Research Laboratory – a laboratory producing or using research laboratory scale amounts of HIV, HCV, or HBV. Research laboratories may produce high concentrations of HIV, HCV, or HBV but not in the volume found in production facilities.

Routes of Exposure – include the inadvertent introduction of blood or infectious materials by parenteral or percutaneous inoculation, direct contact with skin broken by cuts scratches, abrasions, or dermatitis, and exposure of mucous membranes to droplets.

Sharps – an item that is designed to cut or puncture skin. Sharps include unused, disinfected or contaminated: needles, syringes with needles, scalpel blades, lancets, and razor blades, broken vials and laboratory slides contaminated with infectious agents or human blood.

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 build-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

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 concept of Universal Precautions, all human blood and certain other human body fluids are treated as if known to be infected with HIV, HBV, or other bloodborne pathogens.

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

4.0 Role(s) and Responsibilities

Supervisors and Principal Investigators shall:

1. Identify the persons in their work group who have occupational exposure to blood or other potentially infectious materials and are included in the exposure control plan.
2. Provide necessary engineering controls and personal protective equipment for staff and students in their workgroup.
3. Assure staff and students work in a safe and responsible manner.

4. Follow and enforce practices and procedures described in this manual, the Bloodborne Pathogen Exposure Plan in BioARROW and the UW Madison Biological Recognition and Control.
5. Inform lab workers, maintenance personnel, or guests about the bloodborne pathogen material contained in the lab, consequences of exposure to that material, and proper behavior in that lab.
6. Restrict lab access following the recommendations of the CDC-NIH Biosafety in Microbiological and Biomedical Laboratories (BMBL) and the OSHA Bloodborne Pathogen Standard.
7. Train staff and students in good microbiological technique.
8. Maintain records of continuing education and training in the laboratory safety for staff.

Employees shall:

1. Participate in the health surveillance program for bloodborne pathogens or sign the declination form. Employees may always change their mind and participate at any time.
2. Successfully complete annual BBP training.
3. Follow safe work practices identified by the supervisor, including engineering controls and PPE use.
4. Notify supervisor immediately and initiate first aid if they incur a bloodborne exposure.
5. Ask their supervisor or the BBP Coordinator questions that pertain to safe work with blood or infectious materials.

Faculty shall:

1. Assure students who have exposure to BBP are informed and trained according to this plan.
2. Assure students have access to necessary engineering controls and PPE.
3. Assure students are encouraged to participate in the same health surveillance services as staff including vaccinations and post exposure medical follow up.
4. Refer students to University Health Services for medical services associated with this plan.

Students with exposure to BBP shall:

1. Successfully complete annual BBP training.
2. Follow safe work practices identified by the instructor, including engineering controls and PPE use.
3. Notify instructor immediately and initiate first aid if they incur a bloodborne exposure.
4. Ask their instructor or the Occupational Health Officer questions that pertain to safe work with blood or infectious materials.

Office of Biological Safety shall:

1. Manage overall implementation of Bloodborne Pathogen Exposure Plan on campus for the research community. **NOTE:** Operational and clinical unites are managed by University Health Service.
2. Evaluate bloodborne exposures that occur among UW faculty, staff, and students in research laboratories.
3. Provide oversight of the BBP program by monitoring compliance and annually evaluating the exposure control plan and program.

5.0 Program Requirements

Compliance Methods

1. Universal precautions will be required at the university in order to prevent contact with blood or other potentially infectious materials.
2. When universal precautions are observed, all blood or other potentially infectious material will be considered infectious regardless of perceived status of the source individual.

Exposure Determination

1. Supervisors and Principle Investigators are to perform an exposure determination concerning which employees may incur occupational exposure to blood and other potentially infectious materials. This determination must be documented on the Bloodborne Pathogen Exposure Plan in BioARROW.
2. The exposure determination is made without regard to the use of personal protective equipment.
3. Each work unit or laboratory shall complete the List of Personnel Occupationally Exposed to Blood or Other Potentially Infectious Materials in the Bloodborne Pathogen Exposure Plan in BioARROW. This is a list of all tasks and procedures or groups of closely related tasks and procedures, in which occupational exposure occurs and that are performed by employees. Tit must be updated annually and located in the office of the supervisor or principal investigator.

Post-Exposure Evaluation and Follow-Up

1. Exposure incidents are events where blood or other potentially infectious materials contact the eye, mouth, other mucous membrane, non-intact skin, or parenteral contact (e.g. needlestick).
2. Should a needle-stick or accidental inoculation occur, encourage bleeding, followed by immediate, thorough washing and cleansing of the wound with soap and water. If an eye exposure occurs, irrigate through the use of an eyewash for 15 minutes. Note that this will seem like a very long time and users should be encouraged to do so even though it may not seem comfortable.
3. Prompt evaluation and treatment is essential for exposures.

4. Report the incident immediately to the supervisor or instructor. A confidential post-exposure medical evaluation and follow-up must be made available to the employee or student immediately following an exposure incident.
5. For exposures related to patient care, employees can be seen by UW Hospital Employee Health located at 600 Highland Avenue, Madison, WI. The phone number is 608-263-7535. For other exposures, such as those relating to the use of stem cells or recombinant organisms, employees and students with any exposure can be seen at University Health Services located at 333 East Campus Mall. The phone number is 608-265-5610.
6. The components of this confidential post-exposure medical evaluation, follow-up and counseling includes:
 - a. Documentation of the incident is through an injury report. The required information should include the route(s) of exposure, the date, time of exposure, and the job activity being performed. If the incident is from a sharp (needlestick), complete the sharp injury log information on the Worker's Compensation form.
 - b. Identification of the source individual, including a blood test to determine the source individual's HBV and HIV antibody status.
7. A hepatitis B vaccine will be offered if prior vaccine had not previously been obtained.
8. The exposed employee will get blood test for HBV and HIV or retention of a baseline serum specimen for 3 months following the exposure incident. Post-exposure prophylaxis is dispensed as medically indicated.
9. Counseling and evaluation of reported illnesses to include a written assessment of the employee's risk and recommended follow-up due to an exposure incident which is given to the employee within 15 days of the exposure.
10. An accurate medical record will be maintained on each employee and kept in the University Health Services – Occupational Health Officer's medical surveillance secure files.
11. The record will include: name and identifying number, Hepatitis B vaccine status and dates or Hepatitis B vaccine declination, patient antibody testing consent, employee's decision follow-up to occupational exposure, and evaluation of employee after occupational exposure and health care professional's written opinion concerning an occupational exposure.
12. All medical record information and pertinent information documentation will be kept confidential. This information must comply [19 CFR 1910.1020](#) and be kept for the length of employment plus 30 years.
13. Workers compensation forms (Employee's Work Injury and Illness Report, Supervisor and Safety Coordinator Investigation Report for Injury or Illness, and Employer's First Report of Injury or Disease) shall be filled out and returned to the workers compensation department as soon as possible. When employees report to a medical facility for treatment, they should indicate the event was work-related and that billing should be directed to UW Workers Compensation, 21 N. Park Street, Madison WI. If medications are prescribed,

workers compensation can provide a temporary prescription card to pay for medications. They can be reached at 608-262-5650.

Hepatitis B Immunization

1. The UW provides, at no cost, hepatitis B vaccine to all employees who have exposure to human blood or OPIM during the course of performing their duties.
2. Immunizations must be offered after the worker has received training and within 10 days of initial assignment. Workers should be instructed on the efficacy, safety, method of administration, benefits of the immunization. Refer to the Hepatitis B Vaccine Facts Sheet from the CDC.
3. The vaccine is not mandatory. If workers do not want to receive the hepatitis B vaccine, they must sign a declination.
4. If employees decline, they must complete Hepatitis B Vaccine Consent or Declination Form
 - a. If employees accept, they will also complete the Hepatitis B Vaccine Consent or Declination Form
5. The employee may, at any time, request the vaccine, even if they have previously declined.
6. If an employee previously started the vaccination series, but did not complete, it will need to be repeated.
7. For staff who have patient contact in healthcare setting or who work in clinical diagnostic laboratories, refer to Hepatitis B and Health Care Personnel for what follow-up is necessary after the hepatitis B vaccine series is complete.
8. If an employee fails to develop titer after completion of one series of vaccinations, the series can be repeated. If after the second attempt titer is not achieved, the employee is deemed to be a non-converter and further attempts are not indicated. The employee may still have immunity, however their titer status should be discussed with attending medical professionals should an exposure occur.

Engineering and Work Practice Controls

1. Engineering and work practice controls shall be used to eliminate or minimize employee exposure.
2. All procedures involving blood or other potentially-infectious material must be performed in a manner which minimizes splashing, spraying, and spattering and generation of these substances.
3. All potentially contaminated laboratory materials should be collected in biohazard containers and decontaminated, preferably by autoclaving or incineration, before disposal.
4. Laboratory work surfaces should be chemically decontaminated with an appropriate disinfectant (EPA registered disinfectants for HIV and HBV) upon completion of work activities and following any spill of potentially infectious material.
5. Glassware and other reusable items should be autoclaved prior to being washed and reprocessed. Alternatively, immersion in an effective chemical disinfectant can be used as a decontamination procedure.

6. Mechanical pipetting devices will be used for all liquid transfers. Mouth pipetting or mouth suctioning of blood or other potentially infectious material by mouth is prohibited. Use mechanical pipetting devices for the manipulation of all laboratory liquids. Pipette tips must be disposed in biohazard sharps containers.
7. Specimens of blood or other potentially infectious materials must be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping. The containers should be labeled "Biohazard" and should be either red or red-orange in color.
8. Biological safety cabinets or other containment (e.g. fume hood, if sterility is not needed) are recommended for certain aerosol-generating procedures involving clinical materials (e.g. blending, sonicating, vigorous mixing, and harvesting of tissues from infected donors). If available, a biological safety cabinet or vented hood should be utilized for handling damaged containers.
9. Horizontal laminar flow cabinets (such as clean benches) should never be used as containment devices since they do not afford operator protection.
10. Only personnel authorized by the laboratory supervisor are allowed in the laboratory. Casual visitors (e.g. family members, tour groups) are discouraged. Non-laboratory personnel are closely supervised, and appropriate protective measures and/or equipment (e.g. clothing) are used to ensure that they do not cause a hazard to themselves or the laboratory staff.
11. Service and maintenance personnel are not permitted to enter a biohazard area until the laboratory's safety requirements are reviewed, the instrument is decontaminated and appropriate PPE is used and worn.
12. Laboratory doors will remain closed when work is in progress. Access to animal houses must be kept closed when work is in progress and will be restricted to authorized persons.
13. Centrifuging Specimens
 - a. Tubes containing blood should be capped and centrifuged in either sealed trunnion buckets (adapter are available for most centrifuges) or rotor heads with covers.
 - b. If such equipment is not available, blood should be spun in unbreakable, screw-capped tubes.
 - c. After centrifugation, buckets, rotor heads, or screw-capped tubes should be opened within a biological safety cabinet or fume hood, if available.
 - d. If such containment equipment is unavailable, care should be taken to minimize creating aerosols when transferring blood elements.
 - e. Centrifuges should be routinely cleanse with an effective, non-corrosive disinfectant. If an accidental breakage of tubes containing known or suspected agents should occur, allow 30-60 minutes for aerosol settling before opening the centrifuge.
 - f. Most centrifuge buckets and their interior parts can be decontaminated by autoclaving following an accident.
 - g. Laboratory workers should be aware that some centrifuges designed for preparing blood films or fluids for cytological studies may disseminate hazardous aerosols.

14. Automated Equipment

- a. Specialized instruments and automated processors are used to perform biochemical, immunological, and other laboratory assays. For the most part, these devices do not present a significant risk of disseminating pathogenic organisms.
- b. Some procedures involved in the handling, preparation, and delivery of specimens can create a potential for release of infectious material. Wear gloves, to clean and chemically disinfect all tubing periodically, and to assure that wash fluids or reservoir contents are appropriately decontaminated (by chemicals or autoclave) prior to disposal.
- c. Cell sorters and flow cytometers may generate droplets containing infectious agents. Protective transparent shielding must be used between the operator and the source of droplets. If test results are not affected, samples can be inactivated with buffered formalin (1%) prior to assay.
- d. Microplate assay manipulations such as inoculation, diluting, washing, and harvesting involved often produce splattering, spillage, and dissemination of droplets. Users must wear protective gloves and clothing and, when feasible, perform all test operation in a biological safety cabinet. If a BSC is not available, a fume hood, or if neither of the previous are available manipulations are to be performed on plastic backed paper.
- e. If available, use automated titrators to reduce aerosol release when using an automated microplate system.
- f. Plastic plate covers for microplates are available to minimize spillage.
- g. Presently there are no sealed buckets for centrifuging microplates, and care should be exercised to use balanced plates when sedimentation is necessary.

15. Contaminated Equipment

- a. Equipment which has been contaminated with blood or other potentially infectious materials must be decontaminated before being serviced or shipped unless it can be shown that decontamination of the equipment is not feasible.
- b. Equipment, or portions thereof, which have not been decontaminated, requires a warning label be affixed by appropriate personnel.
- c. The University will convey information to affected employees. The servicing representative and or manufacturer's representative as appropriate prior to handling servicing or shipping so that appropriate precautions are taken.

16. Specimen Receipt

- a. Incoming clinical specimens should be received in a designated area of the laboratory by a staff member trained to handle and segregate such material.
- b. The trained staff member should wear gloves and inspect parcels for leakage indicative of broken or improperly sealed containers.

- c. Intact cartons can be carefully opened on counters of impervious material that can be easily decontaminated following manipulations.
- d. Broken tubes should be discarded in appropriate containers for decontamination.
- e. Leaking tubes or tubes with evidence of blood on the outside should be handled with the utmost care when transferring contents. Patient information on contaminated labels or request slips should be recopied.
- f. All contaminated or soiled materials should be discarded in a biohazard bag for suitable disposal. The work area should be cleansed with a chemical disinfectant after specimen receipt and handling.

Communication of Hazards to Employees

1. Signs

- a. The principal investigator or the designated employee is responsible for obtaining and posting biohazard signs at the entrances to clinical and research laboratories as well as HBV, HCV, and HIV research laboratories. The signs shall be fluorescent orange-red or predominantly so, with lettering or symbols in a contrasting color.
- b. Signs must bear the biohazard legend with the name of infectious agent, if known, special requirements for the area, and the name and telephone number of the laboratory director or other responsible persons.

2. Labels

- a. Warning labels must be affixed to containers of regulated waste and to refrigerators and freezers containing blood or other potentially infectious materials.
- b. Labels must be fluorescent orange or orange-red or predominantly so, with lettering or symbols in a contrasting color.
- c. Labels must include the biohazard legend.



- d. Required labels will be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.
- e. Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment or disposal are exempted from the labeling requirement.

- f. Contaminated equipment must be labeled in accordance with the requirements mentioned above and must state which parts of the equipment remain contaminated.
3. Employee Training
- a. OSHA requires that all employees with occupational exposure potential participate in a training program during working hours which will be provided at no cost to the employee. Students with exposure must participate as well.
 - b. The training must be at the time of initial assignment and at least annually thereafter.
 - c. The training must include:
 - i. An accessible copy of the OSHA rules and regulations
 - ii. An overview of bloodborne pathogens
 - iii. An explanation of the institution's exposure control plan
 - iv. Identification of high risk procedures and situations; information of the types, proper use, location, removal, handling, decontamination, and disposal of personal protective equipment.
 - v. The correct use of appropriate personnel protective equipment and engineered controls as well as safe work practices (e.g. hand washing, no recapping of needles by hand, etc.) for the work site.
 - vi. An explanation of the benefits, risks, and free availability of the hepatitis B vaccine.
 - vii. First aid procedures if an employee or student receives a biohazardous exposure (e.g. puncture, laceration, splash to mucous membrane, etc.).
 - viii. Information about the UW's post-exposure protocol.
 - ix. An explanation of the signs and labels and or color coding used to identify hazards.
 - x. An opportunity for interactive questions and answers with the person conducting the training.
 - d. The supervisor must keep a record of all training given, including the dates of the training sessions, the names and qualifications of the trainers, the contents or a summary of the training sessions, and the names and job titles of all persons attending the session. Records of training must be maintained for 3 years from the date training occurred. Attendance records of training programs meeting the requirements of the regulations will be maintained in employee's personnel file in their department office for review.
 - e. Because of the risk inherent from exposure to these agents, additional training requirements are placed on HIV, HCV, and HBV labs.
 - f. A progression of work activities should be assigned as techniques are learned and proficiency is developed.

- g. Supervisors must assure that all employees demonstrate proficiency in standard microbiological practices and techniques and in the practices and operations specific to the facility before being allowed to begin work with HIV or HBV and must assure that employees have prior experience in handling of human pathogens or tissue culture before working with HIV or HBV.
4. Personal Hygiene
- a. Eating, drinking, smoking, applying cosmetics or lip balm, handling contact lenses and gum chewing are prohibited in areas where there is a reasonable risk of occupational exposure to bloodborne pathogens.
 - b. Food and drink must not be kept in lab refrigerators, freezers, or cabinets or on countertops, shelves and bench tops where blood or other potentially infectious materials are present. These refrigerators must have biohazard stickers and “No Food/No Beverages” signs.
 - i. Food or beverages must be consumed only in safe designated areas.
 - c. Use of hand cream should occur only if approved for glove use.
 - d. Hands should be kept away from the face or head area.
 - e. Hand Washing
 - i. Personnel must wash their hands or any other skin surface with nonabrasive soap and water or flush the mucous membranes with water for at least 20 seconds, immediately or as soon as possible following contact with blood or potentially infectious materials. Hand washing prevents transferring contamination from hands to other areas of the body or other surfaces that may later be contacted.
 - ii. Personnel should wash their hands frequently: after completion of laboratory activities, following removal of protective clothing or other personal protection equipment (including gloves), and before exiting the laboratory.
 - 1. Mechanical liquid soap dispensers are preferable to bar soap.
 - 2. Where hand washing facilities are not available, antiseptic hand cleanser or antiseptic towelettes should be provided. Use these as temporary measures only.
 - f. All labs in which potentially infectious materials and hazardous materials are handled must have accessibility within 10 seconds to safety shower that can deliver a minimum of 20 gallons per minute of potable water for a period of 15 minutes.
5. Laundry Practices
- a. Lab coats and protective clothing shall be supplied and laundered, repaired, replace or dispose of by the employer on a routine basis at no cost to that employee if the job requires exposure to bloodborne pathogens. Contact the UW Purchasing Services to initiate a contracted service with outside vendors.

- b. If a garment is penetrated by blood or other potentially infectious materials, the garment must be removed immediately or as soon as feasible. If disposable, the garment shall be disposed appropriately. If the garment is reusable, It will be treated with an appropriate, approved disinfectant as soon as feasible or laundered.
 - c. Handle contaminated laundry as little as possible and with minimal agitation. Place soiled laundry in a labeled or color coded leak proof bags or containers without sorting or rinsing. Potentially contaminated laundry should not be washed in work areas.
 - d. Employees are forbidden to take contaminated protective equipment or garments home for cleaning.
6. Personal Protective Equipment (PPE)
- a. The employer will provide appropriate protective equipment if the employee's job requires exposure to bloodborne pathogens, and will assure it is cleaned, repaired, replaced or disposed at no cost to employee.
 - b. The employee must be trained to use the PPE properly.
 - c. Protective equipment must be appropriate for the task and must be used each time a task is performed.
 - d. The equipment must be checked prior to application to insure it is free of physical flaws that could compromise safety.
 - e. If, when wearing equipment, it is penetrated by blood or OPIM, remove it as soon as possible.
 - f. Before leaving the work area, remove all PPE and place it in the designated area or container for washing, decontamination , or disposal.
 - g. Gowns, aprons, surgical caps or hoods and/or shoe covers or other protective body covering must be worn in instances where gross contamination can be anticipated. Open toed or perforated shoes are prohibited.
 - h. Gloves must be worn when there is anticipated hand contact with blood, specimens containing blood, blood-soiled items, body fluids, body excretions, body secretions, potentially infectious materials, mucous membranes or non-intact skin.
 - i. Remove gloves, wash hands, and properly dispose of gloves when handling telephones, door knobs, or notebooks to prevent disseminating infectious material throughout the laboratory.
 - j. Remove gloves when they become contaminated, damaged, as soon as an operational phase is completed or before leaving the work area.
 - k. Never wash or decontaminate gloves for reuse.
 - l. Wash hands thoroughly after gloves are removed.
 - m. If the employee is allergic to latex or vinyl gloves, the supervisor must provide hypoallergenic gloves, glove liners, powderless gloves, or another alternative.

- n. Since gloves can be torn or punctured by sharps, bandage any cuts before donning gloves.
 - o. Follow safe procedures for glove removal, being careful that no substances from the soiled glove contact their hands.
 - i. With both hands gloved, peel one glove off from top to bottom and hold it in the gloved hand.
 - ii. With the exposed hand, peel the second glove from the inside tucking the first glove inside the second.
 - p. Laboratory coats, long pants, and closed toed shoes should be worn while working with potentially infectious materials. Laboratory coats should be removed and left within the laboratory prior to exiting.
 - q. Eye protection and face masks should be worn for procedures where there is a possibility of splashing materials into the eyes, nose, or mouth.
7. Housekeeping and Medical Waste
- a. Supervisors are responsible to assuring that the work site is maintained in a clean and sanitary condition. All equipment and environmental surfaces must be properly cleaned and disinfected after contact with blood, OPIM, or after completion of procedures.
 - b. Clean and decontaminate all working surfaces at the end of each work shift.
 - c. Clean all equipment and environmental working surfaces as soon as possible after contact with potentially infectious materials.
 - d. All bins, pails, cans and similar receptacle intended for reuse, which have the potential for contamination, must be inspected and decontaminated on a regular basis.
 - e. As a component of this facility's exposure control plan, the supervisor will determine and implement a written schedule for cleaning and decontamination of its facilities.
 - f. The two approved medical waste disposal methods are (1) disinfection and disposal to normal trash and (2) Madison Environmental Resources Inc. (MERI) collection. MERI collection is primarily for non-autoclaved, contaminated wastes and is regulated to sharps containers for the UW Madison Campus. This material is disinfected at the MERI facility prior to ultimate disposal.
 - i. Only boxes in the MERI container will be removed by MERI
 - 1. Medical waste from BSL3 labs must be disinfected prior to disposal.
 - ii. Disinfection and disposal of biohazardous waste to normal trash.
 - 1. Prior to autoclaving or other means of disinfection, properly label the container with the words "Biohazard" or "Infectious Waste" or use the universal biohazard symbol.
 - iii. After autoclaving or other forms of decontamination, deface the "Biohazard" label and discard in the regular trash.

- g. Replace protective coverings (e.g. aluminum foil, plastic wrap, etc.) on equipment or surfaces at the end of the work shift, or immediately after the surface is contaminated.
 - h. Containers with biohazardous waste must be color coded or identified with a biohazard label must be provided for disposal of potentially infectious waste or specimens. These closable containers or bags are designed to prevent leakage of fluids during handling, storage, transport, or shipping.
 - i. Once decontaminated, the labeling must be defaced or marked to indicate that the contents have been rendered noninfectious.
 - j. Biosafety warning signs that are designed to alert to possible hazards and guide to the appropriate precautions for hazards are to be posted on laboratory doors.
 - k. The biohazard label must be fluorescent orange or orange-red with lettering or symbols in a contrasting color.
 - l. Warning labels are to be used to designate contaminated equipment.
 - m. Bags or containers bearing the biohazard sign are to be used to alert that the container holds blood or other potentially infectious material.
 - n. Dispose of the enter bundle promptly.
 - o. UW Hospital and Clinica and certain other buildings on campus may have more stringent procedures for the disposal of medical and infectious waste and these must be followed.
 - p. For further information view the University of Wisconsin – Madison Biohazard Recognition and Control manual for information on autoclaving, chemical disinfection, and other disposal procedures for medical and infectious waste.
8. Management of Hypodermic Needles and Medical Sharps.
- a. The use of hypodermic needles and syringes in HIV and HBV laboratories is permitted only for (1) parenteral injection and (2) aspiration of fluids from laboratory animals and diaphragm bottles.
 - b. Because contamination may not be readily apparent, all waste sharps must be properly contained to minimize the risk of injury and exposure.
 - c. Only needle-locking syringes are permitted for the injection and aspiration of potentially infectious materials.
 - d. If appropriate sharps with engineered sharps injury protections, or needleless systems shall be provided and used in laboratory or clinical situations which may involve an exposure to a bloodborne pathogen.
 - e. Do not reuse needles or other sharps.
 - f. Place the sharps collection container as close as possible to the area where sharps are used.
 - g. Do not overfill sharps containers.
 - h. Keep the sharps collection container upright during use.
 - i. Use secondary containment if leakage is possible.

- j. Report any sharps containers that are mounted too high or otherwise not easily accessible to those who use them.
- k. Contaminated needles or other contaminated sharps shall not be bent, recapped, sheared, broken, or removed manually. A mechanical device such as a self-sheathing needle or a one-handed technique may be used to recap or remove needles.
- l. Do not handle needles more than necessary: open, use, and dispose of needles in one step.
- m. Do not recap needles unless you use a modern, specially- designed recapping device that prevents injury or you use a one-handed technique.
- n. Do not cut, shear, or bend needles. This is forbidden by OSHA because studies show these practices increase the number of needle sticks.
- o. Whenever possible, do not remove the needle from the syringe barrel. Discard the empty syringe barrel and needle together. Needle sticks are often caused by attempts to recap or remove syringe needles.
- p. Immediately or as soon as possible after use, sharps will be placed in designated sharps container that meet OSHA standards, and are easily accessible to those who use them.
- q. Sharps containers should be labeled “Sharps” and if the sharps are contaminated with human blood or other biohazards, the container must also be labeled with the international biohazard symbol. The containers are to be puncture resistant, leak proof on the sides and bottom, and be labeled or color coded red.
- r. The UW sharps disposal policy requires work groups to:
 - i. Segregate sharps from other wastes.
 - ii. Place sharps in approved sharps container with tight fitting lid.
 - iii. Fill container only $\frac{3}{4}$ full and then seal with the provided lid. Do not overfill containers. Disinfecting/autoclaving sealed sharps containers is not usually needed but is required for waste from BSL3 labs.
 - iv. Carry the sharps container to the building’s MERI collection site.
 - v. Contact the building manager for the collection bin’s location.
 - vi. Once decontaminated, deface any biohazard markings and biohazard symbols. Alternatively, place the autoclaved sharps container in a black or opaque bag, labeled “autoclaved sharps”, and deposit in the MERI collection bin.
 - vii. Do NOT dispose of sharps in Madison landfills.
- s. Disposal of other Regulated Sharps
 - i. Some sharps and laboratory glass have special disposal requirements such as those with chemical or radioactive materials

1. Radiation Safety is not allowed to dispose of any “medical” waste. It must be disinfected first. Waste sharps and laboratory glass that are contaminated with radioactive materials must be therefore disinfected first and then disposed according to the University’s Radiation Safety Regulations.
 2. The Chemical Safety Program of EHS should be contacted regarding disposal of chemically contaminated sharps. In some cases autoclaving may not be appropriate as it may volatilize contaminants.
- t. Biohazardous Glass Disposal
- i. Do not pick up broken glass which may be contaminated directly with gloved or bare hands, use tongs, forceps or a dustpan and brush.
 - ii. Do not put needles or other sharps in glass disposal boxes.
 - iii. Autoclave / disinfect contaminated material.
 - iv. For unbroken glass and other non-sharp items autoclaving is usually the simplest decontamination method, although an overnight soak in an appropriate disinfectant (e.g. a fresh 10% bleach solution). Place autoclaved or disinfected materials in a box.
 - v. Before use with broken glass and wet wastes, line a sturdy cardboard box with a plastic bag and secure seams and corners with waterproof tape or duct tape. Do not use madkin, lab, medical, or cellophane tape because these will disintegrate or come unstuck when wet. This will insure containment of slivers, glass fragments, other small pieces, and moisture from these wastes.
 - vi. When setting out laboratory glass for disposal, be sure there are no harmful contaminants on the glass.
 - vii. Tape the box closed.
 - viii. Mark or label the box “Hazardous Glass for Disposal, No Needles” and write the lab’s room number on the box and deface the biohazard symbol.
 - ix. The most commonly accepted practice to discard waste glass is to place the taped, marked box in the hallway next to the door for removal by the custodian.
 1. If boxes are in a bag, use a clear bag so the contents can easily be identified.
 2. Do not block aisles or place in a foot traffic area. Check with the Custodial Department or building manager for details on glass disposal in your building.
 - x. Hazardous glass and plastic are other, non-medical and uncontaminated laboratory items that may cause an injury if not contained. This waste type includes Pasteur pipettes, other pipettes, pipette tips, slides, coverslips, and broken or

fragile glass, These wastes must be disposed separately in a suitable cardboard box.

- xi. Double-boxing may be necessary for heavy boxes and for broken glass and pipettes that can pierce one layer of cardboard. The box must be able to withstand handling and dropping by custodians and waste handlers and may be exposed to the weather. Broken glass and Pasteur pipettes can find their way through small opening in cardboard boxes, and injure the workers handling them. Do not make the box too heavy, a heavy box is particularly susceptible to breaking open if it is dropped or thrown.

9. Manifests

- a. Copies of waste manifest should be forwarded to and maintained by the Environment Health and Safety Department, Chemical Safety Program. Manifest will be retained and made available to the Wisconsin Department of Natural Resources for inspection and copying for a period of three years.

10. HIV, HCV, and HBV Research Labs

- a. Research labs which use HIV or HBV are required to adhere to practices outlined by CDC and NIH for biosafety level 2 (BSL 2) labs.
- b. Appropriate precautions must be followed when handling human blood, blood products, and body fluids as well as certain tissues. The extent of precaution depends on the degree of exposure. The full complement of precautions should be utilized when handling known HIV or hepatitis infected materials or large quantities of blood.
- c. HCV, HIV, or HBV research labs are required to have a hand washing facility and an eye wash station which is readily available within the work area.
- d. These labs must also have an autoclave available for decontamination of regulated waste.
- e. Vacuum lines in these research laboratories and production facilities must be protected with liquid disinfectant traps and high-efficiency particulate air (HEPA) filters or filters of equivalent or superior efficiency. These filters must be checked as soon as necessary by appropriate personnel.
- f. A fluorescent orange-red biohazard sign on a door indicated that HIV, HBV, HCV, or other biohazard work takes place within. The sign should list any special requirements for entering the facility.
- g. Special training for work with HIV, HCV, and HBV is required.

11. Transfer of HIV, HCV, and HBV

- a. For the purposes of this plan HIV, HCV, and HBV will be considered etiological agents as defined by the Department of Health and Human Services. Transfer of HIV or HBV from a University research laboratory or production facility to another researcher, university or other facility must comply with the regulations pertaining to the

packaging and shipment of etiological agents as described in 42 CFR 72.3

6.0 Regulatory References

- Biohazard Recognition and Control Manual: University of Wisconsin – Madison
- CDC-NIH Biosafety in Microbiological and Biomedical Laboratories (2007)
- Code of Federal Regulations 29 CFR 1910.1030: Department of Health and Human Services, Occupational Exposure to Bloodborne Pathogen Standard.
- Code of Federal Regulations 42 CFR 72.3 Department of Transportation, Interstate Shipment of Etiologic Agents
- Wisconsin Department of Safety and Professional Services. 332.50