

MICHIGAN STATE UNIVERSITY

Bloodborne Pathogens Exposure Control Plan



Prepared By:

Environmental Health & Safety (EHS)

1449 Engineering Research Court, C-125
East Lansing, MI 48824

293 Farm Lane, Rm 164
East Lansing, MI 48824-1326

MSU Occupational Health/University Physician's Office

463 E.Circle Drive
East Lansing, MI 48824-1326

Revised: February/2014

**BLOODBORNE PATHOGENS
EMERGENCY CONTACT REFERENCE**

Environmental Health &
Safety (EHS)
(517) 355-0153

MSU Police
911 (on campus)

or
(517) 355-2221

Primary Care
MSU Student Health Center
(517) 353-4660
(For Appt)

Sparrow Hospital
Emergency Room
(517) 364-4140

Bloodborne Pathogens

Exposure Response

If an employee is involved in an incident where exposure to bloodborne pathogens may have occurred, the employee should seek medical consultation and treatment immediately. In these instances, actions should include the following:

1. WASH / FLUSH AREA FOR 15 MINUTES!

- If contact with blood or other potentially infectious material occurs on skin with cuts, rashes, acne or dermatitis, wash the area for **15 minutes** with soap and water.
- If blood or other potentially infectious material splashes in the eyes or on mucus membranes, flush the area for 15 minutes with water or normal saline.

2. NOTIFY YOUR SUPERVISOR (IF AVAILABLE)

3. IMMEDIATE Medical Follow-up:

Call: Primary Care
Olin Health Center
353-4660

(During regular business hours)

Go to: Emergency Room
Sparrow Hospital
364-4140 (For Directions)

(After hours/Weekends)

Take with you:

- An "Authorization to Invoice MSU" form. (Obtain from www.hr.msu.edu)
(The CDC guidelines for a potential bloodborne pathogens exposure incident will be followed at the emergency care facility)

Follow-Up:

- Complete, together with supervisor, the "Report of Claimed Occupational Injury or Illness". (Obtain from www.hr.msu.edu)
- Complete all follow-up through Olin Health Center Primary Care.

Exposure Control Plan For Bloodborne Pathogens

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Introduction	1
Definitions	1
General Program Management	4
• About the MSU Bloodborne Pathogens Exposure Control Plan	4
• Areas of Responsibility	4
• Availability of the Exposure Control Plan to Employees	6
• Review and Update of the Plan	6
Exposure Determination	7
Methods of Compliance	7
• Universal Precautions	7
• Engineering Controls	7
• Work Practices	10
• Personal Protective Equipment	11
• Sharps Injury Protection Program	13
• Housekeeping	15
HIV and HBV Research Laboratories and Production Facilities	16
Hepatitis B Vaccination, Post-Exposure Evaluation and Follow-Up	17
• Vaccination Program	17
• Post-Exposure Evaluation and Follow-Up	17
• Medical Record Keeping	19
Labels and Signs	19
Information and Training	19
• Training Topics	20
• Training Methods	21
• Annual Refresher Training	21
• Site-Specific Training	21
• Record Keeping	22
• Inspections/Audits	23

APPENDICES

Appendix A: Exposure Determination

Appendix B: Hepatitis B Vaccination Information

Appendix C: MSU Policies Related to the Exposure Control Plan

- MSU Policy for Food and Drink in Laboratories

Appendix D: Resource Information Related to the Exposure Control Plan

- Application of Exposure Control Plan to Human Cell Cultures
- Biohazardous Spill Response
- Disinfection
- Bloodborne Pathogens Source Protocol Preparation Guide

Appendix E: Resource Information Related to Training

- Bloodborne Pathogens Site-Specific Training Checklist
- Supervisor's Guidelines for Site-Specific Training
- Bloodborne Pathogens Task Procedure (Blank Form)
- Bloodborne Pathogens Task Procedure form (Sample)
- Bloodborne Pathogens Train-The-Trainer Program Summary

Appendix F: Resource Information Related To Safer Sharps Devices

- Safer Sharps Device Evaluation Form
- Safer Sharps Devices Annual Review Form
- Sharps Injury Log

Appendix G: HIV and HBV Research Laboratories

Appendix H: MIOSHA Documents Related to the Exposure Control Plan

- "Bloodborne Infectious Diseases" Standard
- The Bloodborne Infectious Diseases Rules: Requirements for Training

Introduction

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

The following principles must be applied when employees are potentially exposed to bloodborne pathogens:

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

The objectives of the Exposure Control Plan are to:

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

Definitions

The following is a list of common terms and their definitions as they are used in the Exposure Control Plan.

Amniotic fluid: Fluid from the uterus.

Blood: Human blood, human blood components (i.e. plasma, platelets), and products made from human blood (i.e. immune globulins, albumin).

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

Cerebrospinal fluid: Fluid from the spine.

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

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

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

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

HBV: Hepatitis B virus; causes inflammation of the liver and may lead to long term liver damage including cirrhosis and cancer.

HCV: Hepatitis C virus; causes inflammation of the liver and can lead to long term liver damage including cirrhosis and cancer.

HIV: Human immunodeficiency virus; attacks critical cells of the immune system which leads to acquired immunodeficiency syndrome (AIDS), a life-threatening condition.

Needleless Systems: A device that does not use needles for: (A) the collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established; (B) the administration of medication or fluids; or (C) any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps (e.g. intravenous medication delivery systems that administer medication or fluids through a catheter port or connector site using a blunt cannula or other non-needle connection, jet injection systems that deliver subcutaneous or intramuscular injections of liquid medication through the skin without the use of a needle).

Occupational exposure: Reasonably anticipated (includes the potential for contact as well as actual contact with blood or OPIM) skin, eye, mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

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

1. The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental settings, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.
2. Any unfixed tissue or organ (other than intact skin) from a human (living or dead).
3. HIV-containing cell or tissue cultures, organ cultures, and HIV or HBV-containing culture media or other solutions as well as human cell cultures not shown to be free of bloodborne pathogens.
4. Blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Parenteral exposure: Exposure occurring as a result of piercing mucous membrane or the skin barrier, such as exposure through subcutaneous, intramuscular, intravenous, or arterial routes resulting from needlesticks, human bites, cuts, abrasions, or other mechanical means.

Pericardial fluid: Fluid surrounding the heart.

Peritoneal fluid: Fluid from the abdominal cavity that surrounds the major organs.

Pleural fluid: Fluid from lung tissue.

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

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

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

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

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

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

Sharps with Engineered Sharps Injury Protections (Safer Sharps Devices): A non-needle sharp or a needle device 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 (e.g. syringes with a sliding sheath that shields the attached needle after use, shielded or retracting catheters used to access the bloodstream for intravenous administration of medication or fluids, and intravenous medication delivery systems that administer medication or fluids through a catheter port or connector site using a needle that is housed in a protective covering).

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

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

Synovial fluid: Fluid from the joints such as the knees or elbows.

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

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

General Program Management

About the MSU Bloodborne Pathogens Exposure Control Plan

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

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

Areas of Responsibility

Four areas of responsibility are central to the implementation of the Exposure Control Plan at Michigan State University (MSU) and they include:

1. Exposure Control Officer;
2. Supervisory Personnel (including Department Chairpersons, Directors, Principal Investigators, Managers and Supervisors);
3. Education/Training Coordinators and Instructors;
4. Employees.

Exposure Control Officer

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

- overseeing implementation of the Exposure Control Plan;
- developing, in cooperation with administrators, any additional bloodborne pathogens related policies and practices needed to support the effective implementation of this plan;
- revising, updating and improving the Exposure Control Plan when necessary, and on an annual basis;
- collecting and maintaining a suitable reference library related to bloodborne pathogens;
- understanding current legal requirements concerning bloodborne pathogens;
- conducting periodic organizational audits to maintain an up-to-date Exposure Control Plan.

Supervisory Personnel

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

- assuring that employees in their area who are at risk of exposure to bloodborne pathogens receive initial training and annual retraining (including site-specific training) in bloodborne pathogens as outlined in the "Training" section of this document;
- assuring that all employees receive on-site training regarding engineering controls, work practice controls, personal protective equipment, compliance with safer sharps devices, and proper procedures to follow after an exposure incident;
- evaluating the bloodborne pathogen risk associated with an employee's job classification. This must be done when a new employee is hired, or when an employee changes jobs. This evaluation must include:
 1. checking the employee's job classification and the tasks and procedures that he/she will perform against the Job Classifications and Task Lists which are identified in the Exposure Control Plan as those in which occupational exposure can occur;
 2. checking the job classifications and tasks/procedures pertaining to the employees previous position against these lists;
 3. identifying the new job classifications and/or tasks and procedures which will potentially expose the employee to blood or other potentially infectious materials;
 4. informing EHS so records can be updated.
- assuring that proper exposure control procedures are followed as outlined in the "Methods of Compliance" section of this document;
- assuring that appropriate personal protective equipment is available and in good working condition for all employees at risk of exposure to bloodborne pathogens;
- assuring that any employee who experiences an occupational exposure incident to blood or other potentially infectious materials is provided with post-exposure medical services as outlined in the "Post-Exposure Evaluation and Follow-Up" section of this document.

Education/Training Coordinator and Instructors

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

- maintain an up-to-date list of MSU personnel that have taken the required initial training and annual retraining;
- develop suitable education/training programs for employees and instructors;
- maintain appropriate training records;
- periodically review the training programs to include appropriate new information.

Training for employees will be offered through EHS. In addition, designated qualified trainers may perform training in their departments. In order to meet MIOSHA regulatory requirements, departmental trainers must observe the following:

- The training must include all mandatory training topics (as outlined in the “Training” section of this document) in all initial training sessions;
- The trainer must generate records of training and submit this information to EHS as outlined in the “Training” section of this document. The trainer must submit an outline of the training curriculum to EHS for review and recordkeeping. In addition, the trainer should keep this information on file for MIOSHA regulatory review if necessary;
- The trainer must actively participate in the Bloodborne Pathogens Train-the-Trainer program (see Appendix E).

For further information regarding MIOSHA’s interpretation of bloodborne pathogens trainer qualifications, refer to Appendix E of this document.

Employees

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

- taking the bloodborne pathogens initial training, annual retraining, and site specific training;
- demonstrating an understanding of which tasks have a potential occupational exposure to bloodborne pathogens;
- conducting all operations in accordance with established work practice controls;
- following universal precautions;
- developing and maintaining good personal hygiene habits;
- reporting all occupational exposure incidents.

Availability of the Exposure Control Plan to Employees

The Exposure Control Plan must be readily available to all employees through their supervisor. Employees are to be advised of the availability of the plan during their education/training sessions.

The Bloodborne Pathogens Exposure Control Plan can be accessed by going to:

www.orcbs.msu.edu

Employees must have access to this copy of the plan. The plan can be accessed on the computer and/or a hard copy of the plan can be kept in areas where exposure to bloodborne pathogens may be anticipated.

Review and Update of the Plan

The MSU Exposure Control Plan will be reviewed and updated:

- annually;
- when new or modified tasks and procedures are implemented which affect occupational exposure of employees;
- to reflect changes in technology that eliminate or reduce exposure to bloodborne pathogens.

Exposure Determination

MIOSHA's Bloodborne Infectious Diseases Standard states that all employees who have duties which potentially expose them to blood or other potentially infectious material are determined to have **a reasonably anticipated risk** of exposure to bloodborne pathogens and are acknowledged in the Exposure Control Plan.

EHS originally determined which job classifications include potential exposure to bloodborne pathogens through the use of a questionnaire delivered to the Deans, Directors, Chairpersons, Heads of Administrative Units, Principal Investigators and Supervisors. The exposure determination was made without regard to the use of personal protective equipment.

Job classifications which have been determined to have a reasonably anticipated risk of exposure to bloodborne pathogens, either by the nature of the occupation or by specific tasks which an employee is required to perform as part of their job, are listed in Appendix A of this document.

Information regarding job classifications which are covered by the provisions of the Exposure Control Plan will be updated annually based on information received from affected departments.

Note: *If a supervisor has an employee who has a reasonably anticipated risk of bloodborne pathogen exposure but the employee's job classification is not included in Appendix A, the supervisor should notify the Exposure Control Officer (355-0153) as soon as possible.*

Methods of Compliance

Universal Precautions

Employees at Michigan State University will observe universal precautions. All human blood and other potentially infectious materials (OPIM) are treated as if they are known to be infectious for HBV, HIV and other bloodborne pathogens.

Universal precautions apply to blood and other potentially infectious body fluids including tissues, semen, vaginal secretions, cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids.

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

Engineering Controls

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

EHS and departments will review tasks and procedures performed to determine where engineering controls can be implemented or updated. The Department Manager or Supervisor will ensure that employees are trained regarding the use of the engineering controls for their job classification and the tasks/procedures they perform. This training will be documented through the completion of the Site-specific Training Checklist form and a Bloodborne Pathogens Task Procedure form (see Appendix E).

EHS will upon request inspect:

- areas where engineering controls are currently employed;
- areas where engineering controls can be updated;
- areas currently not employing engineering controls, but where engineering controls could be beneficial.

The following engineering controls are to be used throughout the University:

1. Safer sharps devices are to be used, where appropriate, in order to reduce the risk of injury from needlesticks and from other sharp medical instruments. (Refer to section on the Sharps Injury Protection Program)

Note: Needles that will not become contaminated by blood or OPIM during use (such as those used to draw medication from vials) are not required to have engineering controls.

2. Hand washing facilities are readily accessible to all employees who have a potential for exposure. Waterless antiseptic hand cleansers or antiseptic towelettes must be available to employees at risk of exposure if running water is not readily available. If waterless cleansers or towelettes must be used, the employee must follow-up with a soap and water wash as soon as feasible.
3. Emergency eye wash stations are in close proximity to workstations where employees perform tasks that produce splashes of potentially infectious materials. Eyewash stations should meet the ANSI requirements as per the MSU Chemical Hygiene Plan.:

- The eye wash facility must be flushed on a regular basis. A log documenting the flush is required.

Note: Specifications for eyewash stations found in the MSU Chemical Hygiene Plan must be adhered to in areas where hazardous chemicals are used. Please direct your questions regarding the design of the eye wash facility specific for your laboratory to EHS.

4. Autoclaves are available in many departments to decontaminate solid biohazardous waste. These departments will monitor this equipment to assure that proper sterilization occurs. Proper instrumentation will be used to verify that time, temperature, and steam are adequate. In addition, EHS will provide an annual check of all autoclaves on campus that are used for decontaminating biological wastes. Please contact EHS for specifics regarding the annual autoclave check.
5. Sharps containers are used to properly store and dispose of sharps. Approved sharps containers are designed to isolate the cut or puncture hazard associated with handling sharp items such as needles, scalpels, or Pasteur pipettes. Approved sharps containers are:
 - puncture-resistant
 - red in color or labeled with a biohazard warning label
 - leak-proof on the sides and bottom
 - closable

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

Approved sharps containers are available from University Stores. Food containers such as coffee cans should not be used to dispose of contaminated sharp objects.

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

Exceptions:

- Containers of blood, blood components, or blood products which are labeled as to their contents and which have been released for transfusion or other clinical use are exempted from these labeling requirements.
- Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage are exempted from labeling requirements.

Examples of containers that must be labeled as biohazardous if storing blood or potentially infectious materials:

- Refrigerator
- Freezer
- Liquid nitrogen tank
- Incubator

7. Transport containers are secondary containers that are used to reduce the possibility for an environmental release of potentially infectious materials when transporting biological materials locally between campus facilities as well as over the local roadways.
 - a. Use primary containers designed to contain the material to be stored (as described above).
 - b. Place primary sample containers into a leak-resistant, securely covered secondary container for transport (i.e. cooler with a latchable lid)
 - c. If sample materials contain liquids, place enough absorbent material (i.e. paper towels) in the secondary container to absorb all free liquids in the event of breakage or leakage.
 - d. Package primary containers in the secondary container in a manner that will reduce shock and/or rupture. (Bubble wrap or similar shock-absorbing "spacer" materials may be used.)
 - e. Label secondary containers with a brief description of the contents and an emergency contact name and phone number. Containers used for transporting blood specimens (regardless of source) or specimens known or suspected to contain a pathogen (affecting humans or animals) should be additionally labeled with the biohazard symbol.
 - f. Use a University-owned vehicle whenever possible for transport. Store and secure the transport container in a location in the vehicle whereby if an accident were to occur, the container or its contents will not be an exposure risk to the driver or the environment.

Note: When shipping using a ground or air carrier (i.e. FedEx, UPS, DHL), contact the EHS biological safety team at 355-1283 or 353-6710.

Work Practices

Supervisors, working in conjunction with Deans, Directors, Chairpersons or designees will oversee the implementation of Work Practice Controls in cooperation with EHS. The Department Manager or Supervisor will ensure that employees are trained to use work practice controls for their job classification and the tasks/procedures they perform. This training will be documented through the completion of the Site-specific Training Checklist form and a Bloodborne Pathogens Task Procedure form (see Appendix E).

The following Work Practice Controls are to be implemented:

1. Employees will wash their hands:
 - after removal of gloves or other personal protective equipment;
 - when visible contamination with blood, body fluids, or other potentially infectious materials are present;
 - when work is completed and before leaving the laboratory;
 - before eating, drinking, smoking, applying makeup, changing contact lenses, or using the bathroom;
 - before activities that entail hand contact with mucous membranes, eyes, or breaks in the skin.

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

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

Removing the needle from a used blood-drawing/phlebotomy device is rarely, if ever, required by a medical procedure.

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

3. Use mechanical means (i.e. tongs) when handling contaminated sharps when possible and eliminate hand-to-hand passing of sharp instruments.
4. Contaminated sharps must be placed in appropriate containers immediately, or as soon as possible after use.
5. Eating, drinking, smoking, applying cosmetics or lip balm and handling contact lenses is prohibited in work areas where there is potential for exposure to bloodborne pathogens.
6. Food and drink must not be kept in refrigerators, freezers, on countertops, or in other storage areas where blood or other potentially infectious materials are present (See Appendix C).
7. Mouth pipetting/suctioning of blood or other infectious materials is prohibited.
8. Minimize splashing, spraying or other actions generating droplets of blood or other potentially infectious materials during all procedures. At a minimum, Biosafety Level 2 precautions are required for laboratories working with specimens of blood or body fluids. Contact EHS for further information and assistance regarding these requirements.

9. Specimens of blood or other materials must be placed in designated leak-proof containers, appropriately labeled for handling and storage. If outside contamination of a primary specimen container is likely, that container must be placed within a second leak-proof container, appropriately labeled, for handling and storage. If the specimen can puncture the primary container, the secondary container must be puncture-resistant.
10. Primary containers of potentially infectious materials must be placed in puncture-resistant, leak-proof, closable secondary containers for transportation outside of the work area (i.e. from lab to lab where a common hallway is used, etc.).
11. Perform disinfection and housekeeping procedures as outlined in "Housekeeping" section of this Exposure Control Plan.

Personal Protective Equipment (PPE)

Personal protective equipment will be provided by the employer at no cost to the employee with an occupational exposure to blood or potentially infectious material. This equipment may include: gloves, gowns, laboratory coats, face shield/masks, safety glasses, goggles, mouthpieces, resuscitation bags, pocket masks, hoods, and shoe covers.

The Department Manager or Supervisor will ensure that all work areas have appropriate personal protective equipment available to employees. Employees must be trained regarding the use of the appropriate personal protective equipment for their job classification and the tasks/procedures they perform. This training will be documented through the completion of the Site-specific Training Checklist form and a Bloodborne Pathogens Task Procedure form (see Appendix E).

Personal protective equipment is considered to be appropriate only if it does not permit blood or other potentially infectious material to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time that the protective equipment will be used.

An employer shall ensure that the personal protective equipment is available in appropriate sizes and accessible locations.

An employer shall ensure that an employee uses appropriate personal protective equipment unless the employer shows that the employee temporarily and briefly declined to use PPE when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance the use of PPE would have:

- prevented the delivery of health care or public safety services or
- posed an increased hazard to the safety of the worker or coworker.

When the employee makes this judgment, the circumstances shall be investigated and documented to determine if changes can be made to prevent future occurrences.

To ensure that personal protective equipment is not contaminated and is in the appropriate condition to protect employees from potential exposure, the following practices are to be utilized:

1. All personal protective equipment must be inspected periodically by the department manager or supervisor and repaired or replaced as needed.

2. Reusable personal protective equipment is cleaned, laundered and decontaminated as needed.
3. Single-use personal protective equipment (or equipment that cannot, for whatever reason, be decontaminated) is disposed of through existing practices and procedures as outlined in the MSU Waste Disposal Guide.

Employees must adhere to the following practices when using personal protective equipment:

1. Any garments, including personal clothing, penetrated by blood or other infectious materials, must be removed as soon as possible. These garments are to be collected in biohazard bags and decontaminated by the MSU Laundry facility or an appropriate laundry service provider that is selected by the department or disposed of as biohazardous waste.
2. All personal protective equipment must be inspected prior to use to verify that it is in good working condition.
3. All personal protective equipment must be removed prior to leaving the work area.
4. Gloves must be worn when:
 - employees anticipate hand contact with potentially infectious materials;
 - performing vascular access procedures;
 - handling or touching contaminated items or surfaces.
5. Disposable gloves must be replaced as soon as possible after contamination or immediately when torn, punctured, or are otherwise rendered unable to function as an exposure barrier.
6. Non-latex gloves must be provided to employees who are allergic to the gloves normally provided.
7. Utility gloves must be decontaminated for reuse; if utility gloves are cracked, peeling, torn or exhibit other signs of deterioration, they must be disposed.
8. Masks and eye protection must be used whenever there is a chance that a splash or spray may generate droplets of infectious materials.
9. Protective clothing must be worn whenever potential exposure to the body is anticipated.
10. Surgical caps/hoods and shoe covers/boots must be used in any instances where gross contamination is anticipated.

Sharps Injury Protection Program

Supervisors of all departments who have employees with occupational exposure to bloodborne pathogens must:

- use effective engineering controls, including safer sharps devices, in order to reduce the risk of injury from needlesticks and from other sharp medical instruments.

Note: An appropriate safer sharps device includes only devices whose use, based on reasonable judgment in individual cases, will not jeopardize patient or employee safety or be medically contraindicated.

- establish a program for evaluating safer sharps devices designed to eliminate or minimize occupational exposure. This program should include an identification process, an evaluation process and a selection process.
- review the sharps that are being used on an annual basis. (See Annual Review section below.)

Identification Process:

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

Evaluation Process:

1. Evaluation of the safer sharps devices must be documented on the "Safer Sharps Device Evaluation Form". See Appendix F.
2. Supervisors in departments that have direct patient care cannot evaluate and select the safer sharps devices alone; supervisors must choose members of non-managerial employees who perform tasks with sharps exposure risks to be involved in this process.
3. Supervisors must provide at least four or more test samples of each product being evaluated to each individual evaluating the product.
4. Supervisors will ensure that visual instructions and a demonstration of the proper use of each device is provided to all evaluators.
5. Supervisors will review the instructions and rating system on the evaluation form with each evaluator.
6. Supervisors should encourage each evaluator to comment on the forms. This will provide a useful decision making tool.
7. Supervisors will keep all records of completed evaluation forms in their department.

Note: If safer sharps devices are currently in use, the evaluation process must still be completed.

Note: If there is no safer option for a particular sharps device used where there is exposure to blood or OPIM, you are not required to use something other than the device that is normally used. This information must be documented. During your annual review of devices, you must inquire about new or prospective safer options.

Selection Process:

Once the evaluation process is complete and the safer sharp device has been chosen, supervisors must implement use of the safer sharps devices as soon as possible.

Note: The selection and implementation process cannot be postponed in order to use up supplies of non-safer sharps. Additionally, when the safer sharps are in place, supplies of the non-safer sharps may not be used. Contact EHS for disposal assistance if needed. Do not put unused supplies in the trash or send to salvage.

Note: If the safety device is not available (due to supply shortages, back orders, shipping delays, etc.), this must be documented.

Annual Review:

All sharps that are being used where there is exposure to human blood or OPIM must be reviewed on an annual basis. This will be accomplished by completing a "Safer Sharps Devices Annual Review Form". (Appendix F) This form should be completed annually and kept with departmental records.

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

The review and update must reflect innovations in procedure and technological developments that eliminate or reduce exposure to bloodborne pathogens. This includes, but is not limited to, newly available sharps devices designed to reduce the risk of percutaneous exposure to bloodborne pathogens.

Resources:

- For information on safety-engineered sharp devices and other products designed to prevent occupational exposures to bloodborne pathogens, go to the web site for "*The International Healthcare Worker Safety Center at the University of Virginia Health System*".

www.healthsystem.virginia.edu/internet/epinet/safetydevice.cfm

For more information of safer sharps devices and manufacturers, please contact University Stores at 884-6208 or the EHS at 355-0153.

Housekeeping

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

1. Clean and decontaminate all equipment and surfaces after contact with blood or other potentially infectious materials. Gross contamination must be removed before decontaminating to ensure the disinfectant is completely effective. Clean and decontaminate:
 - after the completion of medical procedures;
 - immediately (or as soon as feasible) when surfaces become contaminated;
 - after any spill of blood or infectious materials;
 - at the end of the work shift, especially if the surface may have become contaminated during that shift.

Note: Decontamination must be performed with a disinfectant product that is EPA-registered for the destruction of Hepatitis B or a tuberculocidal. Refer to the "Disinfection" section in Appendix D.

2. Ideally, equipment that becomes contaminated will be cleaned and disinfected prior to servicing or shipping. In addition, an Equipment Release Form must be attached. If it can be demonstrated that decontamination is not possible, then the following steps need to be taken:
 - a biohazard warning label is attached to any contaminated equipment, identifying the contaminated portions;
 - all affected employees, the equipment manufacturer and the equipment service representative, are informed of remaining contamination prior to handling, servicing or shipping.
3. Clean up spills of infectious materials as soon as possible. The following considerations should be made when treating and removing a spill of infectious material:
 - Wear appropriate personal protective equipment when cleaning up spills;
 - Spills should be covered with an absorbent material, wiped up and disposed of in a biohazard bag;
 - Disinfectant must be applied to contaminated surfaces for the amount of time prescribed by the manufacturer to assure effective decontamination.

Note: Any department that has a potential for a spill of potentially infectious materials shall have a spill kit and a spill response procedure. An example of a general response procedure and items for assembling a departmental spill kit are included in Appendix D. Biological spill kits are available for purchase through the Biosafety Office.

4. Remove and replace protective coverings as soon as possible when these become contaminated, and also at the end of the work shift.
5. Routinely inspect all pails, bins, cans and other receptacles for contamination. Clean these items on a routine basis and decontaminate whenever visibly contaminated.
6. Pick up potentially contaminated broken glassware using mechanical means (such as dustpan and brush) and dispose of in an appropriate sharps container.

7. Inspect laundry to verify that it is free of sharps and other hazardous materials prior to placement in the hamper and shipment to the laundry. Handle contaminated laundry as little as possible. Facilities with high volumes of contaminated laundry have red laundry carts that are leak proof and signify contamination. Facilities without red laundry carts should place any contaminated laundry in a biohazard bag. Attach a label to the bag listing contaminants (i.e. blood).
8. When disposing of biohazardous waste:
 - Place waste in a biohazard labeled secondary leakproof container with a lid that is lined with a biohazard bag.
 - If autoclaving, biohazard bags must be autoclaveable. After autoclaving, place bags in a non-transparent bag and dispose in the regular solid waste receptacle.
 - Place containers for regulated waste within easy access to employees and as close as possible to the source of the waste;
 - Maintain waste containers in an upright position, replace routinely, and do not overfill;
 - Close the containers of regulated waste after use and for disposal or transportation to the autoclave or waste collection site.
 - Blood and body fluids may be disposed of by pouring liquid wastes down the sanitary sewer system.

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

HIV and HBV Research Laboratories and Production Facilities

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

HIV or HBV Research Laboratories:

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

Refer to Appendix G (HIV and HBV Research Laboratories) for these additional requirements.

HIV or HBV Production Facilities:

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

Note: Refer to Appendix D for further information regarding the use of human cell cultures.

Note: Contact EHS at 355-0153 for any questions regarding the status of HIV and HBV research facilities and laboratories at MSU.

Hepatitis B Vaccination, Post-Exposure Evaluation and Follow-Up

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

Vaccination Program

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

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

At the time of the bloodborne pathogens training, or upon pre-placement medical evaluation, employees will receive information regarding the vaccination program. They will also receive the required Hepatitis B Surveillance Program form to be completed and returned to the designated representative in their department. Completed forms must be sent to the MSU Occupational Health/University Physician's Office. The MIOSHA Bloodborne Infectious Diseases standard requires that Hepatitis B vaccine be made available to the employee within ten days of employment.

MSU Occupational Health/University Physician's Office, under the supervision of a licensed physician, is responsible for the vaccination program. Employees identified as having an occupational risk of exposure to bloodborne pathogens will be registered with the MSU Occupational Health/University Physician's Office. All Hepatitis B Surveillance Program forms must be sent to the MSU Occupational Health/University Physician's Office. If the employee has received the vaccination at another institution, the employee will provide either documentation of the vaccine series or a completed Hepatitis B Surveillance Program form (see Appendix B) to the MSU Occupational Health/University Physician's Office. The Hepatitis B Surveillance Program form will also include the name of the institution and the dates of the series.

Post-Exposure Evaluation and Follow-Up

If an employee is involved in an incident where exposure to bloodborne pathogens may have occurred, the employee should seek medical consultation and treatment expeditiously. In these instances, actions should include the following:

- If contact with blood or other potentially infectious material occurs on skin with cuts, rashes, acne or dermatitis, wash the area for **15 minutes** with soap and water.
- If blood or other potentially infectious material splashes in the eyes or on mucus membranes, flush the area for **15 minutes** with water or normal saline.

Note: *In the case of contact of blood or OPIM with intact skin, the employee should clean the skin immediately with soap and water. If there is any doubt regarding the condition of the contaminated skin, the employee must be medically evaluated as described in this section!*

- Report the incident to a supervisor or person in charge.
- **Initiate medical follow-up immediately.**
- The supervisor refers the employee to the Primary Care Clinic located at Olin Health Center for **immediate** care and follow-up. (After hours/weekends: refer to Sparrow Hospital Emergency Room or the closest emergency room). The employee should take a completed "Authorization to Invoice MSU" form with them.
- If there is an identifiable source, each department will follow their written protocol for informing the source patient about the incident and assisting in source follow up. (See Appendix D: Source Protocols as an example)
- The Primary Care Clinic at Olin Health Center will follow the current Centers for Disease Control and Prevention guidelines for a potential bloodborne pathogens exposure incident.
- The employee, together with supervisor, will complete and distribute the "Report of Claimed Occupational Injury or Illness" form within 24 hours of the incident.
- EHS will evaluate all bloodborne pathogens exposure incidents and record the following information on the Exposure Incident Investigation Report:
 1. Date of Incident
 2. Time of Incident
 3. Name of Employee
 4. Department
 5. Job Title
 6. Supervisor
 7. Whether an incident report was completed
 8. Route of exposure
 9. Description of device in use
 10. Incident description
 11. Engineering controls used
 12. Work practice controls used
 13. PPE used
 14. Date of last bloodborne pathogen training
 15. Comments/Recommendations/Corrective Action
- EHS will also complete a Sharps Injury Log for all bloodborne pathogens exposure incidents involving sharps. (see Appendix F).
- The information in the Exposure Incident Investigation Report and the Sharps Injury Log will be recorded and maintained in such a manner as to protect the confidentiality of the employee.
- The Exposure Incident Investigation Report and the Sharps Injury Log shall be maintained in the Human Resources Department.

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

Medical Record Keeping

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

Labels and Signs

Biohazards must be labeled according to the following procedures. Required labels consist of a red or fluorescent orange colored background with the traditional biohazard symbol in a contrasting color. EHS will maintain a supply of the required biohazard labels and signs, which will be available upon request for campus facilities.

The following items must be labeled:

- containers of regulated waste;
- refrigerators, freezers, incubators, or other equipment containing blood or other potentially infectious materials;
- sharps disposal containers;
- containers used to store, transport or ship blood and other potentially infectious materials. When a secondary container holds a number of smaller items containing the same potentially infectious substance, only the secondary container needs to be labeled. All employees handling these containers will 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 regulations. Please contact EHS for further information.
- laundry bags/containers holding contaminated items. Laundry may be placed in a red hamper without a label, a red laundry bag, or a biohazard bag. Employees handling laundry will be informed of the potential for contamination and/or infectivity of red laundry bags;
- contaminated equipment.

Biohazard signs must be posted at entrances to any Biosafety Level 2 (or higher) laboratory. For more information on signs and labels contact EHS at 355-0153.

Information and Training

All employees who have the potential for exposure to bloodborne pathogens must attend a comprehensive training program. This includes bloodborne pathogens initial training and annual bloodborne pathogens refresher training.

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

EHS will maintain documentation for all employees who have potential exposure to bloodborne pathogens and have received training through EHS. Departments will maintain documentation of all site-specific training.

Note: Go to the EHS website at www.orcbs.msu.edu to sign up for classes and view the training sessions that are available online.

Training Topics

Bloodborne pathogens initial training for new employees who will have occupational exposure to bloodborne pathogens will include the following mandatory topics:

1. MIOSHA's Bloodborne Infectious Diseases Standard;
2. Epidemiology, symptoms and modes of transmission of bloodborne diseases including HIV, HBV, and HCV;
3. Existence of other bloodborne diseases;
4. MSU's Exposure Control Plan;
5. Appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials;
6. A review of the use and limitations of methods that will prevent or reduce exposure, including:
 - engineering controls including safer medical devices
 - work practice controls
 - personal protective equipment
7. Selection and use of personal protective equipment including:
 - types available
 - proper use
 - limitations
 - location
 - removal
 - handling
 - decontamination
 - disposal
8. Visual warning of biohazards including labels, signs, and color-coded containers;
9. Proper procedures and materials involved in the cleanup of spills of potentially infectious materials;
10. Information on the Hepatitis B Vaccine, including:
 - availability
 - its efficacy
 - its safety
 - the method of administration
 - the benefits of vaccination
 - MSU's vaccination program
11. Actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;
12. Procedures to follow if an exposure incident occurs, including incident reporting;

13. Post-exposure evaluation and follow-up including medical consultation;
14. Recommendations specific to a particular department and unique threats posed by potentially infectious materials in that department.

Training Methods

- 1) Several training techniques may be used including:
 - personal instruction
 - videotape programs
 - computer aided interactive training
 - training manuals/employee handouts
 - employee review sessions
- 2) Opportunities for employees to ask questions will be provided.
- 3) Departments requesting training to be conducted at their site must provide a designated person to be available during the training session to answer site-specific questions.
- 4) The participant must also complete site-specific training with their supervisor or a designated trainer for their area within thirty days of their initial training. (see below for details).

Annual Refresher Training:

MSU employees who have previously completed initial bloodborne pathogens training through EHS must take annual refresher training that will be due one year from the last date of training.

The participant must also complete site-specific training with their supervisor or a designated trainer for their area within thirty days of their refresher training. (see below for details).

Site-Specific Training:

Site-specific training must be completed in each department. It must be administered by the employee's supervisor or the supervisor's designated trainer. The following forms must be completed:

- Site-Specific Training Checklist
- Bloodborne Pathogens Task Procedure form

1. Bloodborne Pathogens Task Procedure form:

This form was designed to serve as a tool for departmental supervisors to use to develop site-specific and task-specific procedures for BBP exposure risk reduction. By completing a form for each task that has a reasonably anticipated risk of exposure, the supervisor will generate a documentation set that can serve as a training tool for both new and existing personnel to further assure that all exposure control elements of Michigan OSHA's Bloodborne Infectious Diseases standard are addressed at the departmental level. Please observe the following:

- Forms should be updated whenever a procedure changes that affects the information outlined in these documents. Otherwise, annual review of the forms to assure that the information is current is strongly recommended since they are intended to serve as guidance and training documents for affected personnel.

- If you need assistance with completion of these assessments, please do not hesitate to contact EHS Biosafety Team at 355-0153.
- Completed forms should be maintained with the departmental records and readily available for regulatory review.
- The form is available in Appendix E (including a completed example) and through the EHS website which can be accessed by logging on to the EHS Home Page (www.orcbs.msu.edu).

2. Site-Specific Training Checklist:

In order to complete the training requirements of MIOSHA's "Bloodborne Infectious Diseases" standard, please observe the following:

- The department supervisor or designated trainer must review the items listed on the site-specific training checklist with the employee and check each item as it is reviewed. Write N/A if it is not applicable to your work area.
- A Supervisor's Guidelines for Site-Specific Training form is included in Appendix E to assist the supervisor (or designated trainer) in completing the checklist with the employee.
- Refer to the Bloodborne Pathogens Task Procedure form as a training tool.
- When complete, the supervisor (or designated trainer) and the employee must sign and date at the bottom of the checklist.
- Checklists must be completed within 30 days of the training and filed with departmental records that will be subject to periodic audits by EHS.
- The Site-Specific Training Checklist and the Supervisor's Guidelines for Site-Specific Training form are available in Appendix E and through the EHS website which can be accessed by logging on to the EHS Home Page (www.orcbs.msu.edu).

Note: *If the participant performs duties involving a bloodborne pathogen exposure risk at a location that is off-campus, such as clinical or research work at a local healthcare facility, the participant should complete the checklist with that facility's supervisor/trainer. In these situations, the site-specific information to be reviewed must include the off-campus facility's policies and procedures related to their exposure control plan and medical waste management plan.*

Record Keeping

All bloodborne pathogens training that is conducted by EHS or by an EHS designated trainer must be documented by EHS and contain the following information:

1. Dates of all training sessions;
2. Contents/summary of the training sessions;
3. Names and qualifications of the instructors;
4. Names and job title of employees attending the training sessions.

All EHS designated trainers must send a copy of the sign-in form to the EHS for computerized record keeping purposes.

Inspections/Audits

Biological safety staff from EHS will periodically inspect departments that are working with or may come in contact with human blood or other potentially infectious materials to assure that regulatory compliance needs are met and to identify areas where further assistance is needed.

Inspections will be scheduled in advance and will include inspection of the worksite for items such as proper use of the equipment and signage as well as an audit of departmental procedures and training documents.

If you have any questions regarding the Bloodborne Pathogen Exposure Control Plan or other Safety and Health concerns, contact the:

Environmental Health & Safety Office (EHS) at 355-0153

or the:

MSU Occupational Health/University Physician's Office at 353-9137.

Appendix A: Exposure Determination

Exposure Determination

The provisions of MSU's Exposure Control Plan apply to all employees who have a **reasonably anticipated risk** of exposure to blood or other potentially infectious material (OPIM) as the result of **required** occupational tasks. This exposure determination was made without regard to the use of personal protective clothing or equipment.

ALL MSU employees in the following job classifications have reasonably anticipated risk of exposure to bloodborne pathogens and are included in the Exposure Control Program (formerly Category A)

Anatomical Preparation Technician	OB/GYN Surgeon
Anesthesiologist	Occupational Surgeon
Assistant Athletic Equipment Manager	Occupational Physician
Assistant IM Director	Optometrist
Athletic Equipment Manager	Orthopedic Surgeon
Biological Safety Officer	Physical Therapist
Biological Safety Graduate Assistant	Physical Therapy Assistant
Chemical Safety Officer	Physician
Chemical Safety Graduate Assistant	Physician Assistant
Clinic Aide	Pipefitter I & II
Clinical Laboratory Manager	Plumber I & II
Cytogenic Laboratory Director	Public Safety Captain
Cytogenic Laboratory Manager	Public Safety Deputy Director
Cytogenic Laboratory Technician I & II	Public Safety Lieutenant
Dental Hygienist	Public Safety Officer
Director, ORCBS	Public Safety Sergeant
Environmental Health/Safety Inspector	Radiation Safety Officer
Glazier, Skilled Trades	Safety Technician
Hazardous Waste Coordinator	Special Events Security
Hazardous Materials Professional, ORCBS	Staff Athletic Trainer
HC ASC Director CLNC	Staff Dentist
Immunization Clinic Coordinator	Staff Physician/Resident Physician
Laundry Worker I & II	Student Athletic Aide
Maxillofacial Practical Surgeon	Student Athletic Trainer
Nurse CLN I & II	Surgeon
Nurse CLN Manager	Surgical Resident
Nurse, Licensed Practical	Urological Surgeon
Nurse Practitioner	
Nurse, Registered	

These job classifications have occupational exposure to bloodborne pathogens based on the nature of their work. Some employees in other job classifications may have specific required routine or non-routine job tasks that result in occupational exposure. These classifications are listed on the following page.

**Employees in the following job classifications
that are required to perform the duties listed**

have reasonably anticipated risk of exposure to bloodborne pathogens
and are included in the Exposure Control Program

<u>Classification</u>	<u>Required Duties</u> (this column lists only examples of required duties that result in occupational exposure)
Academic Specialist (Audiology)	Cerumen management and ear mold impression
Accounting Clerk	Handles human blood samples
Associate Intramural Director	First aid
Assistant Professor	Drawing and processing human blood samples, swabs of human specimens
Associate Professor	Analyze human blood
Athletic Staff Trainer	First aid and treatment of athletic injury
Athletic Student Trainer	First aid and treatment of athletic injury
Community Health Assistant	Draws human blood
Custodian II, III or IV	Clean medical exam areas and laboratory facilities where blood may be present; blood/OPIM spill cleanup
Educational Coordinator II	Draws human blood
Electron Microscopist I & II	Process human tissue
Executive Management	First aid
Graduate Assistant	Process human blood and tissue samples
Health Care Aide	Handles blood samples
Health Care Assistant	Direct contact with patients, draws blood, housekeeping
Health Education Service Coordinator	Patient contact with potential to encounter human blood or OPIM
Health Physicist I & II	Emergency response and routine duties in environments where human blood or OPIM are present
Histological Technician	Process human blood and tissue
Housekeeper	Handles linens soiled with human blood or OPIM; cleaning duties that involve contact with human blood or OPIM
Industrial Hygienist I & II	Emergency response and routine duties in environments where human blood or OPIM are present
Instructor	First aid
Laboratory Attendant	Process human blood and tissue
Lab Preparation Supervisor	Handles human blood and vascular access
Lab Preparation Technician	Handle human blood
Laundry Control Checker	Handles soiled laundry from medical clinics and labs
Laundry Worker	Handles soiled laundry from medical clinics and labs
Maintenance Worker	Housekeeping (involves contact with human blood or OPIM)
Master Scientific Glassblower	First aid
Medical Technician I, II, or III	Draw, process and analyze human blood or OPIM
Occupational Therapist	Patient contact with potential to encounter human blood or OPIM
Office Assistant	Handles human specimens
Pharmacologist	Handles human blood or OPIM
Postdoctoral Fellow/Research Associate	ATP assays, maintain cultures of bloodborne pathogens, process human blood or OPIM
Professor	Process human blood or OPIM
Professor Emeritus	Analyze and process human blood or OPIM
Psychologist	Patient contact with potential to encounter human blood or OPIM
(Table continued on next page)	

<u>Classification</u> (Continued)	<u>Required Duties</u> (Continued)
Radiological Technician	Draws human blood
Registered Dietician	Draws human blood
Research Assistant	Draw, process and analyze human blood or OPIM
Research Technician	Process and test human blood or OPIM
Science Institute Facility Supervisor	First aid
Secretary	Handles human blood samples or OPIM, biohazard waste disposal
Specialist	Draws and analyzes human blood
Speech Therapist	Patient contact with potential to encounter human blood or OPIM
Stockhand	Handles human specimens including blood or OPIM
Student Clerk	Unpack human blood samples, transport patients
Student Departmental Aide	Laboratory surveys and analysis of samples of human blood or OPIM
Student Driver (Courier)	Handles specimens of human blood or OPIM
Student Equipment Manager	Handling, maintaining and washing athletic wear and equipment that may be contaminated with human blood or OPIM
Student Ice Hockey Official or Supervisor	First aid
Student Laboratory Aide	Process human blood or OPIM
Student Laboratory Attendant	Draws and processes human blood or OPIM
Student Maintenance Worker	Housekeeping (which involves contact with human blood or OPIM)
Student Technician	Handle/analyze human blood or OPIM
Technician	Handle/analyze human blood or OPIM
Vocational Counselor	Client contact with potential to encounter human blood or OPIM
Work Study Student	Wash glassware that may be contaminated with human blood or OPIM

Appendix B: Hepatitis B Vaccination Information

MSU Occupational Health

Hepatitis B Vaccination Information

**Page 1-2: Hepatitis B Vaccine – What
you need to know**

**Page 3: Hepatitis B Surveillance
Program**

**Page 4: Employee Vaccination
Request/Waiver Form**

Hepatitis B Vaccine

What You Need to Know

Many Vaccine Information Statements are available in Spanish and other languages. See www.immunize.org/vis.

Hojas de Información Sobre Vacunas están disponibles en Español y en muchos otros idiomas. Visite <http://www.immunize.org/vis>

1 What is hepatitis B?

Hepatitis B is a serious infection that affects the liver. It is caused by the hepatitis B virus.

- In 2009, about 38,000 people became infected with hepatitis B.
- Each year about 2,000 to 4,000 people die in the United States from cirrhosis or liver cancer caused by hepatitis B.

Hepatitis B can cause:

Acute (short-term) illness. This can lead to:

- loss of appetite
- diarrhea and vomiting
- tiredness
- jaundice (yellow skin or eyes)
- pain in muscles, joints, and stomach

Acute illness, with symptoms, is more common among adults. Children who become infected usually do not have symptoms.

Chronic (long-term) infection. Some people go on to develop chronic hepatitis B infection. Most of them do not have symptoms, but the infection is still very serious, and can lead to:

- liver damage (cirrhosis)
- liver cancer
- death

Chronic infection is more common among infants and children than among adults. People who are chronically infected can spread hepatitis B virus to others, even if they don't look or feel sick. Up to 1.4 million people in the United States may have chronic hepatitis B infection.

Hepatitis B virus is easily spread through contact with the blood or other body fluids of an infected person. People can also be infected from contact with a contaminated object, where the virus can live for up to 7 days.

- A baby whose mother is infected can be infected at birth;
- Children, adolescents, and adults can become infected by:
 - contact with blood and body fluids through breaks in the skin such as bites, cuts, or sores;
 - contact with objects that have blood or body fluids on them such as toothbrushes, razors, or monitoring and treatment devices for diabetes;
 - having unprotected sex with an infected person;
 - sharing needles when injecting drugs;
 - being stuck with a used needle.

2 Hepatitis B vaccine: Why get vaccinated?

Hepatitis B vaccine can prevent hepatitis B, and the serious consequences of hepatitis B infection, including liver cancer and cirrhosis.

Hepatitis B vaccine may be given by itself or in the same shot with other vaccines.

Routine hepatitis B vaccination was recommended for some U.S. adults and children beginning in 1982, and for all children in 1991. Since 1990, new hepatitis B infections among children and adolescents have dropped by more than 95% – and by 75% in other age groups.

Vaccination gives long-term protection from hepatitis B infection, possibly lifelong.

3 Who should get hepatitis B vaccine and when?

Children and Adolescents

- Babies normally get 3 doses of hepatitis B vaccine:

1st Dose:	Birth
2nd Dose:	1-2 months of age
3rd Dose:	6-18 months of age

Some babies might get 4 doses, for example, if a combination vaccine containing hepatitis B is used. (This is a single shot containing several vaccines.) The extra dose is not harmful.

- Anyone through 18 years of age who didn't get the vaccine when they were younger should also be vaccinated.

Adults

- All unvaccinated adults at risk for hepatitis B infection should be vaccinated. This includes:
 - sex partners of people infected with hepatitis B,
 - men who have sex with men,
 - people who inject street drugs,
 - people with more than one sex partner,
 - people with chronic liver or kidney disease,
 - people under 60 years of age with diabetes,
 - people with jobs that expose them to human blood or other body fluids,



- household contacts of people infected with hepatitis B,
 - residents and staff in institutions for the developmentally disabled,
 - kidney dialysis patients,
 - people who travel to countries where hepatitis B is common,
 - people with HIV infection.
- Other people may be encouraged by their doctor to get hepatitis B vaccine; for example, adults 60 and older with diabetes. Anyone else who wants to be protected from hepatitis B infection may get the vaccine.
 - Pregnant women who are at risk for one of the reasons stated above should be vaccinated. Other pregnant women who want protection may be vaccinated.

Adults getting hepatitis B vaccine should get 3 doses — with the second dose given 4 weeks after the first and the third dose 5 months after the second. Your doctor can tell you about other dosing schedules that might be used in certain circumstances.

4 Who should not get hepatitis B vaccine?

- Anyone with a life-threatening allergy to yeast, or to any other component of the vaccine, should not get hepatitis B vaccine. Tell your doctor if you have any severe allergies.
- Anyone who has had a life-threatening allergic reaction to a previous dose of hepatitis B vaccine should not get another dose.
- Anyone who is moderately or severely ill when a dose of vaccine is scheduled should probably wait until they recover before getting the vaccine.

Your doctor can give you more information about these precautions.

Note: You might be asked to wait 28 days before donating blood after getting hepatitis B vaccine. This is because the screening test could mistake vaccine in the bloodstream (which is not infectious) for hepatitis B infection.

5 What are the risks from hepatitis B vaccine?

Hepatitis B is a very safe vaccine. Most people do not have any problems with it.

The vaccine contains non-infectious material, and cannot cause hepatitis B infection.

Some mild problems have been reported:

- Soreness where the shot was given (up to about 1 person in 4).
- Temperature of 99.9°F or higher (up to about 1 person in 15).

Severe problems are extremely rare. Severe allergic reactions are believed to occur about once in 1.1 million doses.

A vaccine, like any medicine, could cause a serious reaction. But the risk of a vaccine causing serious harm, or death, is extremely small. More than 100 million people in the United States have been vaccinated with hepatitis B vaccine.

6 What if there is a moderate or severe reaction?

What should I look for?

- Any unusual condition, such as a high fever or unusual behavior. Signs of a serious allergic reaction can include difficulty breathing, hoarseness or wheezing, hives, paleness, weakness, a fast heart beat or dizziness.

What should I do?

- **Call** a doctor, or get the person to a doctor right away.
- **Tell** your doctor what happened, the date and time it happened, and when the vaccination was given.
- **Ask** your doctor, nurse, or health department to report the reaction by filing a Vaccine Adverse Event Reporting System (VAERS) form. Or you can file this report through the VAERS web site at www.vaers.hhs.gov, or by calling **1-800-822-7967**.

VAERS does not provide medical advice.

7 The National Vaccine Injury Compensation Program

The National Vaccine Injury Compensation Program (VICP) was created in 1986.

Persons who believe they may have been injured by a vaccine can learn about the program and about filing a claim by calling **1-800-338-2382** or visiting the VICP website at www.hrsa.gov/vaccinecompensation.

8 How can I learn more?

- Ask your doctor They can give you the vaccine package insert or suggest other sources of information.
- Call your local or state health department.
- Contact the Centers for Disease Control and Prevention (CDC):
 - Call **1-800-232-4636 (1-800-CDC-INFO)** or
 - Visit CDC's website at www.cdc.gov/vaccines

Vaccine Information Statement (Interim)

Hepatitis B Vaccine

2/2/2012

42 U.S.C. § 300aa-26

Office Use Only



Michigan State University

Hepatitis B

Surveillance Program

Name: _____

APID/ZPID: _____

Department: _____

Date of Birth: _____

Work Phone: _____

Supervisor: _____

YOU MUST CHOOSE OPTION A, B OR C AND SIGN IN THE RELEVANT SECTION.

Option A: Previously Vaccinated:

List approximate dates below if previously vaccinated:

1st Dose: _____ 2nd Dose _____ 3rd Dose: _____

If titer done, indicate result: Positive (adequate immunity) Negative

Clinic(s) where vaccinated: _____

Signature: _____ Date: _____

Option B: Not previously vaccinated and want to be vaccinated: Please sign vaccine request and call MSU Occupational Health at 353.9137 to schedule an appointment.

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 elect to receive the Hepatitis B vaccine at this time at no cost to myself.

Signature: _____ Date: _____

Option C: Not previously vaccinated and choose NOT to receive Hepatitis B vaccine at this time: Please complete vaccine waiver.

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. 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.

Signature: _____ Date: _____

Send completed form to MSU Occupational Health Service, 346 Olin Health Center, East Lansing, MI 48824-1037. For questions, call 353-9137.

Appendix C: MSU Policy for Food and Drink in Laboratories

Michigan State University Policy for Food and Drink in Laboratories

The following statement is the accepted practice for food and drink in campus laboratories and should be abided by at all times:

“There shall be no food, drink, smoking or applying cosmetics in laboratories which have radioactive materials, biohazardous materials or hazardous chemicals present. There shall be no storage, use or disposal of these ‘consumable’ items in laboratories (including refrigerators within laboratories). Rooms which are adjacent, but separated by floor to ceiling walls, and do not have any chemical, radioactive or biological agents present, may be used for food consumption, preparation, or applying cosmetics at the discretion of the principal investigator responsible for the areas.”

Appendix D: Resource Information Related to the Exposure Control Plan

- Application of Exposure Control Plan to Human Cell Cultures
- Biohazardous Spill Response
- Disinfection
- Bloodborne Pathogens Source Protocol Preparation Guide

Application of the Exposure Control Plan to Human Cell Cultures

The provisions of the MSU Exposure Control Plan provide protection to employees who have occupational exposure to human blood or other potentially infectious materials (OPIM). Established human cell lines¹ which are characterized² as free of contamination from human hepatitis viruses, human immunodeficiency viruses, and other recognized bloodborne pathogens, are not to be considered as OPIM and are not covered by the bloodborne pathogens standard and the Exposure Control Plan.

Established human or animal cell lines that are potentially infected or contaminated with bloodborne pathogens, are covered by the provisions of the Exposure Control Plan.

The final judgment for making the determination if human or animal cell lines in culture are free of bloodborne pathogens will be made by the Biological Safety Officer at MSU and/or the Institutional Biosafety Committee (IBC) in consultation with the Principal Investigator (PI), in accordance with the requirements of the bloodborne pathogen standard. Documentation that such cell lines are not OPIM should be on file with the PI for MIOSHA review.

All primary human cell explants and *in vitro* passages of human tissue explant cultures (human cell strains³) must be regarded as containing bloodborne pathogens and are subject to Universal Precautions and the requirements of the ECP. Non-transformed, human cell strains characterized by documented, reasonable laboratory testing, to be free of HIV, hepatitis viruses, or other bloodborne pathogens may be exempted from the ECP requirements. However, tissue explants or subsequent cultures derived from human subjects known to carry bloodborne pathogens (e.g., HIV, HBV), or deliberately infected with bloodborne pathogens, must be handled in accordance with the bloodborne pathogens standard and the MSU ECP. The same applies for animal tissues and explants or cell lines contaminated by deliberate infection with bloodborne pathogens.

Definitions

¹ Human cell lines are defined as *in vitro* or animal passage (e.g., nude mouse) cultures or human cells that fulfill traditional requirements of a cell line designation. That is:

- immortalized cells;
- cultures transformed by spontaneous mutation;
- cultures transformed by natural or laboratory infection with an immortalizing agent (e.g., Epstein-Barr Virus (EBV)).

Human cell lines may be adulterated with laboratory pathogens introduced by cultivation with other cell cultures, or cells may be physically contaminated by other cultures handled in the same lab. Cells should be documented to be pure cells and shown to be free of bloodborne pathogens in order to be exempted from the ECP requirements.

² Characterization of human cells, for exclusion from compliance with the bloodborne

pathogen standard, must include (1) screening of the cell lines or strains for viruses characterized as bloodborne pathogens (e.g., HIV, HBV, EBV), and (2) determining that the cells are not capable of propagating such viruses. Most cell lines are screened only for human mycoplasmas and are determined to be free of bacterial and mycotic contaminants. Testing to identify latent viruses capable of infecting humans such as Herpesviruses (e.g., EBV), or papilloma members of the Papovirus group, etc. may include:

- antigenic screening for viral or agent markers;
- co-cultivation with various indicator cells that allow contaminants to grow;
- using molecular techniques (polymerase chain reaction or nucleic acid hybridization).

Cell lines obtained from commercial vendors or other sources documented as free of human bloodborne pathogens and protected by the employer from environmental contamination may be excluded from the bloodborne pathogens standard.

3 Human cell strains are cells propagated *in vitro* from primary explants of human tissue or body fluids which have finite lifetime (non-transformed) in tissue cultures for 20-70 passages. Human cell strains must be handled as potential biohazards unless characterized by documented testing to be free of bloodborne pathogens.

Biohazardous Spill Response

A biohazardous spill occurs anytime there is an unplanned release of potentially infectious material into the work environment. Proper response to these incidents can ensure personnel and community safety while eliminating environmental contamination. In order for a biohazardous spill response to be effective and safe for the campus community, affected work groups must:

- Implement a spill response procedure for their work environment;
- Assure that spill cleanup materials are available for use;
- Assure that all personnel are trained in the provisions of the spill response procedure.

Biohazardous Spill Kits

Each work group that has a potential for a biohazardous spill should have sufficient and appropriate spill cleanup materials available to respond to the largest anticipated spill for that area. The basic items that should be included in a kit are:

- Gloves: nitrile or latex (multiple pairs) – Change annually
- Splash goggles (Check straps annually)
- Absorbent powder (i.e. Superfine, SSS Clean-up Powder)
- Absorbent towels
- Disinfectant (EPA registered product effective for destruction of HIV and hepatitis B virus, i.e. bleach) – Change as required
- Mechanical tools (i.e. forceps, dustpan/broom, tongs, plastic scrapers)
- Biohazard bags
- Antimicrobial towelettes – Change annually

Additional items might include: a fluid resistant smock to protect street clothes and a sharps container if contaminated sharps may be present.

Adopting A Biohazardous Spill Response Procedure

Biohazardous spills can happen in a number of different situations. When developing or adopting a spill procedure, assure that it is appropriate for your work area's specific needs. In addition, the following principles should be kept in mind:

- Minimize the spill responder's risk of exposure to both biological and chemical hazards. Eliminate unnecessary handling of the disinfectants (particularly in concentrated form) and spilled material. Prior to using a disinfectant, review the manufacturer's recommendations and material safety data sheet to assure safe and appropriate use of the product.
- Follow prescribed contact times and concentrations for disinfectants. These two parameters are critical to the effectiveness of these products.
- Be prepared. Supervisors must provide or arrange for training for all affected personnel regarding the spill protocol. Assure that spill materials are available and accessible.

A general sample response procedure is provided. If implemented, it can be modified to meet specific departmental needs. For more information on responding to spills in a biosafety containment lab, please refer to the MSU Biosafety Manual.

Sample Biohazardous Spill Procedure

This procedure is applicable to spills on a nonporous surface such as a tile floor or concrete floor.

1. Notify others working in the area of the hazard present.
2. Get your biohazard spill kit and review spill procedure before proceeding with cleanup.
3. Remove spill supplies from kit and line bucket/container with a biohazard bag. (Retrieve a sharps container for disposal of sharps if necessary.)
4. At a minimum, wear two pairs of gloves and splash goggles.
5. If applicable, using mechanical means (i.e. dustpan/broom, tongs), pick up any contaminated sharp items (needles, broken glass, etc.) and place them in an approved sharps container for disposal.
6. Cover the spill with an absorbent material (i.e. Superfine, SSS Clean-up Powder).
7. Remove the absorbent material by using a mechanical means (i.e. dustpan and broom, plastic scrapers) and deposit it along with the mechanical tool into a biohazard bag.
8. Spray the spill area with disinfectant and allow the appropriate contact time as recommended by the disinfectant manufacturer's instructions (i.e. 10 minute contact time for bleach)
9. Remove residual disinfectant with paper towels. Dispose of the towels in the biohazard bag.
10. Repeat steps 8 and 9 for sufficient disinfection of contaminated surfaces.
11. Remove outer pair of gloves only and dispose of them in the biohazard bag.
12. Remove splash goggles with inner gloves still on, and clean the goggles with an antimicrobial towelette (can also dispose of goggles if contaminated)
13. Remove inner pair of gloves and place them in the biohazard bag for disposal.
14. Close the bag and dispose of as biohazardous waste
15. Wash your hands with soap and water as soon as possible.
16. Return spill kit to designated location. Ensure that the spill kit is restocked for next use.

Treatment of contaminated items (solid, non porous items such as glassware, kitchen equipment, etc.):

1. Spray the item with disinfectant and allow a ten minute contact time (or as recommended by the disinfectant manufacturer's instructions).
2. Remove the contamination by wiping down the item with a paper towel.
3. Reapply the disinfectant and allow a ten minute contact time (or as recommended by the disinfectant manufacturer's instructions).
4. Remove excess disinfectant with a paper towel and allow to air dry.
5. If the treated surface is one that people will come in contact with (such as a toilet, faucet handles, etc.), assure that ALL disinfectant is removed from the item. Most disinfectants are corrosive and can cause irritation if they come in contact with the skin.

Treatment of contaminated items (porous surfaces such as fabric items):

- If the item is university-owned (such as a lab coat, sheets, etc.), contain it in a biohazard bag and deliver it to the MSU Laundry facility or an appropriate laundry service provider that is selected by the department for decontamination.
- If the item is a personal item and is heavily contaminated, contain it in a biohazard bag and deliver it to the MSU Laundry facility or an appropriate laundry service provider that is selected by the department for decontamination.

In some situations, it may not be appropriate for personnel to clean up a biohazardous spill. This may be the case if:

- An employee has not received training in biohazardous spill cleanup;
- Appropriate spill materials are not available;
- The spill is a combined hazard spill (i.e. radiation and biohazard);
- The spill is too large to be handled by your staff.

In these situations, personnel should take the following primary response steps:

1. Notify others in the work area of the spill;
2. Close off the area where the spill is located;
3. Call the designated spill responders (custodial staff, EHS, etc.);
4. Keep others out of the spill area until responders arrive and spill hazard is removed.

For more information regarding biohazardous spill response procedures, or for assistance with developing a departmental procedure, please contact the Biosafety Staff at EHS at 355-0153.

Disinfection

Introduction

Disinfection, sterilization, and antisepsis are all important aspects of infection control in the hospital and laboratory. It is important to understand the differences between the following definitions, because disinfection and sterilization are not interchangeable terms.

Sterilization is the use of physical or chemical processes to destroy all forms of microbial life.

Disinfection is the act of or process of reducing the amount of microbial life with the goal of obtaining a safe level (destroying pathogenic microbes).

Antisepsis is the disinfection of living tissue. The chemicals used for antisepsis are not the same as those used for disinfection.

Disinfection is one type of infection control that is widely used. For practical reasons, chemical disinfection is used in the clean-up of spills and to decontaminate surfaces. Some of these chemicals will be discussed below.

Factors Affecting Disinfection

The following are six primary variables that influence the efficacy of disinfection:

1. Nature of the item to be disinfected

The rougher the surface, the longer the contact time required for disinfection.

2. Number of microorganisms present

The number of microorganisms present will lengthen the time for effective disinfection to take place. In general, higher numbers of organisms require more time for disinfection.

3. Resistance of microorganisms

Some microorganisms are more resistant to disinfection than others. The generally accepted order from the most resistant to the least resistant is: bacterial spores, mycobacteria, hydrophilic viruses, fungi, vegetative bacteria, lipid viruses.

Disinfecting a spill with a small concentration of bacterial spores will require longer disinfection time than a large concentration of lipid viruses.

4. Type and concentration of disinfectant used

Resistance of microorganisms depends on the type of disinfectant used. A particular microorganism may be more resistant to one type of disinfectant than another. For instance, alcohol (isopropyl or ethyl) is effective against vegetative bacteria and most lipophilic viruses, but is not effective against bacterial spores or most hydrophilic viruses. Many disinfectants are broad spectrum; that is, effective against all or most forms of microbial life. Some broad spectrum disinfectants include glutaraldehyde, sodium hypochlorite (bleach), and hydrogen peroxide. Non-broad spectrum disinfectants include phenolics and quaternary ammonium compounds. Alcohols lie somewhere in between these two.

The concentration of a particular disinfectant affects disinfection. In most cases, a higher concentration increases microbial killing power and decreases time necessary for disinfection.

However, some disinfectants are not as effective in higher concentrations. Iodophors must be diluted according to the directions on the label; over-diluting or under-diluting may substantially lower the microbicidal potency. Alcohols used in concentrations above 90% are less effective because the water added to dilute the alcohol allows it to penetrate better and reach its target. Optimal concentration range is between 70 and 90%.

5. Presence of organic material

The presence of organic soiling matter will compromise disinfection. Blood, blood products, bodily fluids, and feces contain significant amounts of proteins, and protein will bind and inactivate some disinfectants or slow their action. Therefore, in the presence of large amounts of protein, a higher concentration of disinfectant and longer contact time will be necessary to achieve maximal disinfection.

6. Duration of exposure and temperature

Duration of exposure and temperature influences the disinfection process. The longer the duration of exposure, the higher the degree of disinfection achieved. Some disinfectants require a longer contact time to achieve killing, and some microorganisms need longer exposures to be killed. Higher temperatures increase the killing power of most disinfectants, whereas lower temperatures may slow the killing power of most disinfectants.

Disinfectant Types

Different disinfectants operate by different mechanisms, and some are more effective than others. Thus, it is not appropriate to use the various disinfectants interchangeably. The large number of chemical disinfectants that are available include alcohol, chlorine and chlorine compounds, formaldehyde, glutaraldehyde, hydrogen peroxide, iodophors, phenolics, and quaternary ammonium compounds. Effectiveness of a particular disinfectant will sometimes vary from organism to organism. For example, quaternary ammonium compounds are effective for destroying: fungi, bacteria, and lipophilic viruses (such as HIV and HBV); however, they are not effective for destroying spores. In addition, they are not generally effective for destroying *Mycobacterium tuberculosis* or hydrophilic viruses. Please call the ORCBS for the practical use of a particular disinfectant for your facility.

Bloodborne Pathogens and Tuberculosis

Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and *Mycobacterium tuberculosis* (*M. tuberculosis*) are of concern because of potential consequences associated with infection. HIV and HBV are bloodborne; *M. tuberculosis* is an airborne infectious agent and present in respiratory secretions.

HIV and HBV are both lipophilic viruses and therefore susceptible to a variety of disinfectants.

- **Bleach solution:** A 1:10 dilution of 5.25% sodium hypochlorite (common household bleach) to water is recommended for disinfection of material potentially infected with HIV and HBV. Before disinfecting a surface after a blood spill with 1:10 solution of household bleach, one should clean the surface first because of the fact that hypochlorites and other germicides are substantially inactivated in the presence of blood.

- **Other products:** Glutaraldehyde, hydrogen peroxide (3-6%), and iodophors are also effective for destroying bloodborne pathogens. Although isopropyl alcohol and ethanol will inactivate HIV and HBV, these disinfectants evaporate rapidly so sufficient contact time may be difficult to achieve. In order to assure adequate disinfection time, the contact time should be at least 10 minutes.

Destruction of *Mycobacterium tuberculosis* presents a challenge, as many disinfectants are not effective for destroying this pathogen. Bleach is effective only in higher concentrations. Alcohols and hydrogen peroxide have varying results; quaternary ammoniums are not effective for destroying *M. tuberculosis*. Phenolics are the best tuberculocides, for they readily inactivate *M. tuberculosis*. However, when disinfecting for *M. tuberculosis*, it is very important to avoid generation of droplets or aerosols, which are the primary transmission routes.

Choosing a Disinfectant

Choosing a disinfectant should be based on the spectrum of antimicrobial activity, availability, and cost. Bleach is an effective broad spectrum disinfectant, readily available, inexpensive, and works well for spills. Although alcohols do not have the spectrum of activity that bleach has, they are readily available, economical, and excellent for everyday use. Other disinfectants have similar qualities.

Conclusion

Disinfection is a very important process in infection control. One must not only disinfect a surface after a spill, but develop a regular schedule for disinfection. Awareness of the proper technique can prevent infection and maintain a safe work environment. It is recommended that the level of disinfectant used is appropriate to the agent involved. Do not overkill.

For further reading, seek the additional references listed below:

Block, Seymour (ed.). 1991. **Disinfection, Sterilization, and Preservation.** 4th ed. Lea & Fibiger, Philadelphia.

Vesley, Donald and Lauer, James L. Decontamination, Sterilization, Disinfection and Antisepsis. **Laboratory Safety, 2nd Edition Principles and Practices.** 1995. ASM Press., Washington, D.C. pp. 219-237.

Bloodborne Pathogens Source Protocol Preparation Guide

A source protocol is required when you have an identifiable source for an employee/student bloodborne pathogens exposure. Every reasonable effort should be made to identify the source if possible.

The person whose blood or body fluid is the source of an occupational exposure should be evaluated for HBV, HCV, and HIV infection as soon as possible. The source person should be informed of the incident and be asked to be tested for evidence of bloodborne virus infection. The protocol should be followed in an urgent manner that would include obtaining informed consent, in accordance with applicable state and local laws.

Know where your protocol is and how to access it in a timely matter. The source is not required to consent to testing. The goal of the protocol is to make the process as easy as possible for the source if consent is given.

- These questions should be answered in your protocol:
 1. Who will speak with the source person and who would be available when this person is absent?
 2. What paperwork/forms need to be completed? (i.e. Information and consent for lab tests including a consent for HIV testing, source patient lab worksheet for the source blood draw)
 3. Where will the source be sent for blood testing?
 4. Who is billed for the source's lab work (ensure that the source identity is documented on the "Report of Claimed Occupational Injury or Illness" form) The form is available through MSU Human Resources. The source will not be billed.
 5. How will the consent and release of information be delivered to the exposed and their provider?
- It is easier to obtain consent from the source for a blood sample to be drawn if the request is made at the time of the incident (i.e. before the patient leaves the clinic)

Resources:

- For information on the contents of a source protocol including forms needed, go to the Olin Health Center website at:

<http://www.olin.msu.edu/workrelatedillnessandinjuries.php>

or call: 4-OLIN (884-6546)

- Important Health Information booklet including HIV consent form:

http://www.michigan.gov/documents/DCH-0675electronicversion_163987_7.pdf

Appendix E: Resource Information Related to Training

- Bloodborne Pathogens Site-Specific Training Checklist
- Supervisor's Guidelines for Site- Specific Training
- Bloodborne Pathogens Task Procedure (Blank Form)
- Bloodborne Pathogens Task Procedure form (Example)
- Bloodborne Pathogens Train-The-Trainer Program Summary

Bloodborne Pathogens Site-Specific Training Checklist

Dear Manager/Precept/Trainer:

_____ has completed the MSU Initial/Refresher Bloodborne Pathogen training _____:
 (Print Employee's/Student Name) (Date of Training)

In order to complete the training requirements of MIOSHA's "Bloodborne Infectious Diseases" standard, please review the site-specific training items listed below with the employee or student. Please check each item as it is reviewed or write N/A if it is not applicable to your work area. Once completed, please sign and date the checklist. Please return this form to the faculty or student and keep a copy with departmental records. ***This checklist must be filled out for every medical facility or laboratory used for rotation, employment or training, and completed within 30 days of training.*** Thank you for your cooperation and assistance.

EHS Biological Safety Staff (355-0153)

Specific Work Practices

_____ Discussion of tasks that may involve handling potentially infectious materials and how to perform such tasks in a manner that reduces risk of exposure.

Personal Protective Equipment (PPE) (gloves, eye protection, ventilation devices, etc.)

_____ Explanation of types of PPE required for specific tasks;

_____ How to use the PPE;

_____ Location and availability of PPE;

_____ Maintenance of reusable PPE (cleaning, storage and inspection).

Engineering Controls

_____ Location, operation, and use of log for eyewash facilities;

_____ Explanation of engineering controls that are specific to the work environment (examples: sharps containers, biological safety cabinets, mechanical pipettors, safer sharps devices, etc.).

Biohazardous Waste Handling

_____ Discussion and clarification of which wastes generated in the work area are biohazardous and how those items are to be segregated, stored, transported, treated and disposed of.

_____ Review of procedures for on-site treatment methods (i.e. proper use of autoclave for waste decontamination purposes);

_____ Review of hazardous waste labeling and Pick-Up procedures as they apply to the work area (refer to the MSU Waste Disposal Guide and Biohazardous Waste Management Plan). For employees working at off campus facilities such as Sparrow Hospital, review the facility's medical waste management plan requirements.

Disinfection & Spill Response/Exposure Incident Response/Exposure Control Plan

_____ Review of work area's procedure for handling spills of potentially infectious materials (including location and availability of biohazard spill kits);

_____ Review of exposure incident response procedure.

_____ Location of the Exposure Control Plan and how to access it.

Additional Requirements for HIV and HBV Research Laboratories:

_____ Read the MSU Biosafety Manual;

_____ Complete the EHS Biological Safety Training;

_____ Review departmental security access procedures.

MSU Environmental Health and Safety (EHS)

Verification of Training

I certify that the site-specific training items were reviewed and understood as required by the MSU's Exposure Control Plan. (Complete at each facility you are working at)

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Manager/Precept/Trainer Signature - Date

Faculty/Student Signature - Date

Supervisor's Guidelines for BBP Site-Specific Training

About This Document:

In accordance with the requirements of Michigan OSHA's Bloodborne Infectious Diseases standard as well as the MSU Bloodborne Pathogens Exposure Control Plan, supervisors must assure that all personnel with reasonably anticipated risk of exposure to human blood or other potentially infectious materials (OPIM) receive training that is relevant for their specific worksite in order to most effectively reduce their occupational exposure risk. This training is to be performed on an annual basis and anytime there is a procedure change relevant to the exposure risk. The Bloodborne Pathogens Site-Specific Training Checklist was developed to serve as a means of documenting that this training has occurred as required by the regulations.

While documentation of the training is essential, it is important to assure that the site-specific information reviewed with employees is consistent and inclusive of all exposure risk-related topics. Therefore, the EHS has developed this guidance document to assist supervisors and departmental trainers in assuring appropriate coverage of this information.

Using This Document:

This document is meant to be a companion for the Bloodborne Pathogens Site-Specific Training Checklist. The training topics found on that form are listed in the table below. Each topic is followed by a guideline section that provides recommendations for the nature of the information to be covered. Additionally, fill-in sections are included to assist you in preparing your training.

Site-Specific Training Topic	Specific Work Practices
GUIDELINES Job tasks with a potential risk for BBP exposure need to be identified as well as the equipment and practices to be used to reduce the exposure risk. This information for each task should be documented on a BBP Task Procedure form and kept on file in each department/lab/clinic. The information captured on those forms will serve as the basis for a large portion of the information to be covered for initial and annual site-specific training. The job tasks that put employees at risk for exposure to blood/OPIM are: <ol style="list-style-type: none">1. _____2. _____3. _____4. _____5. _____6. _____7. _____ Note: Examples of job tasks with potential for exposure to blood/OPIM include administering first aid, phlebotomy (blood draws), blood/OPIM spill response, handling or treating waste contaminated with blood/OPIM, etc.	<ul style="list-style-type: none">• Discussion of tasks that may involve handling potentially infectious materials and how to perform such tasks in a manner that reduces risk of exposure.

Site-Specific Training Topic	Personal Protective Equipment (PPE) (gloves, eye protection, face shields, etc.) <ul style="list-style-type: none"> • Explanation of what kinds of PPE are required for specific tasks; • How to use the PPE; • Location and availability of PPE; • Maintenance of reusable PPE (cleaning, storage and inspection).
-------------------------------------	--

GUIDELINES

Information regarding what PPE to use for specific tasks should be outlined on the **BBP Task Procedure** form. To effectively cover this information, you should have a physical hands-on review of the PPE to be used. This demonstration and discussion will allow you to cover several essential elements for proper PPE use. By the end of this review, your employees should be able to answer the following:

- What PPE do I need to wear for what tasks?
- What are the limitations of the device?
- Where can I find this device?
- What is the right size for me?
- How do I inspect it to assure that it is in good working order?
- Can I reuse the device or must I dispose of it after one use?
- If I can reuse the device, what steps must I take for properly cleaning and storing the device?

For further information on PPE selection, please consult EHS. However, here are some general selection tips for PPE commonly used for protection against exposure to blood/OPIM.

Disposable gloves (latex or nitrile): These provide skin protection against brief exposure to bodily fluids (blood/OPIM). They are not generally recommended for immersion and they are not puncture-resistant or thermal resistant. Double-gloving is recommended if likelihood of contamination is strong. Some individuals may be sensitive to latex so a latex-free option is advised.

Splash goggles: These are the only eye protection rated for splash. If a true splash hazard exists, it is recommended that a shield be used whenever possible.

Face shields: These are rated for face protection and should not be used alone as a form of eye protection. Minimally, safety glasses should be worn under the face shield. Face shields are appropriate if there is a likelihood of generating aerosols and the face must be close to the hazard based on the nature of the task. As with splash goggles, whenever possible, procedures should be done behind a shield to minimize the exposure risk and the PPE requirements. *Please note that surgical masks are often fluid-resistant but are not generally considered to be a means of skin protection.*

Lab coats: Unless a lab coat is made of fluid-resistant material (i.e. Tyvek), it should not be assumed to be an effective fluid barrier. If a lab coat becomes contaminated with blood/OPIM, it should be removed as soon as possible. Clothing and skin should be examined for possible contamination. If contamination has reached the skin, the affected area should be immediately flushed and assessed for potential of BBP exposure. Contaminated lab coats should be placed in a biohazard bag and sent to MSU Laundry or whatever designated laundry service is in use. Lab coats must not be taken home for washing by employees.

Further comments on PPE:

Site-Specific Training Topic	Engineering Controls <ul style="list-style-type: none"> • Location and operation of eyewash facilities; • Explanation of engineering controls that are specific to the work environment (examples: sharps containers, biological safety cabinets, mechanical pipettors, safer sharps devices, etc.).
-------------------------------------	---

GUIDELINES

Information regarding the use of engineering controls for specific tasks should be outlined on the **Bloodborne Pathogens Task Procedure Specific** form. Remember that engineering controls are items that isolate or eliminate the hazard. In many instances, engineering controls are pieces of equipment and they are only effective as barriers if used properly. Therefore, as with the PPE information, hands-on review will go a long way in assuring that personnel understand how these devices work. By the end of this review, your employees should be able to answer the following:

- What engineering controls do I need to use for what tasks?
- How does the engineering control isolate the hazard?
- How do I properly use the engineering control?
- How do I inspect it to assure that it is in good working order?
- What maintenance is required of the device?

There are a variety of items that may be used as engineering controls for minimizing exposure risk to blood/OPIM. Here are some general tips regarding engineering control use and maintenance for some of the more common devices. For additional assistance regarding engineering controls, please contact the EHS Biosafety Staff at 355-0153.

Sharps Containers: These are puncture-proof collection containers with a restricted closable opening to reduce the risk of personnel or patients being punctured with a sharp device. Therefore, tops must be installed before use. Lids should be closed when the container is not in use. The proper size of container should be selected for the sharps in use. For example, containers with horizontal drops are best suited for longer devices (5" to 8"). Containers should be stored in an upright position when in use because they are not necessarily leak-proof at the top.

Eyewashes: These devices are used for emergency flushing in the event of an exposure. Therefore, they must be clean and unobstructed at all times. A log must be kept to document maintenance.

Safer Sharp Devices: Needles, scalpels and other sharp medical devices used in environments where a BBP hazard is present must have a design feature that allows shielding of the sharp end after use but before disposal. Because the operation of these devices varies somewhat from the "traditional" sharps, it is essential that all personnel receive training and practice on devices before they are implemented in lab or clinical use. Additionally, please refer to the "Sharps Injury Protection Program" section of the MSU Bloodborne Pathogens Exposure Control Plan for information on product evaluation and annual product review requirements.

Biosafety Cabinets (BSC): Biosafety cabinets are equipped with HEPA filters that will capture potentially infectious aerosols. They can provide both product and personnel protection and are commonly used for manipulation of human cells. Open flames should not be used in a BSC. If the BSC is equipped with a UV light, personnel must assure that they do not work with this light on or work in the room while the light is on. BSC use is covered in the biosafety training course offered by the EHS. Please note that human cell users are required to complete biosafety training as well as bloodborne pathogens training.

Further Information for Engineering Controls:

Site-Specific Training	<p>Biohazardous Waste Handling</p> <ul style="list-style-type: none"> • Discussion and clarification of which wastes generated in the work area are biohazardous and how those items are to be segregated, stored, transported, treated and disposed of; • Review of procedures for on-site treatment methods (i.e. proper use of autoclave for waste decontamination purposes); • Review of hazardous waste labeling and Pick-Up procedures as they apply to the work area (refer to the MSU Waste Disposal Guide and Biohazardous Waste Management Plan). For employees working at off campus facilities such as Sparrow Hospital, review the facility's medical waste management plan requirements.
-------------------------------	--

GUIDELINES

This information is most effectively captured with a fill-in section outlining what waste items are generated, how they are segregated, and how waste is handled for treatment and disposal.

Solid Biohazardous Waste: In the healthcare setting, these are disposable items other than sharps that are contaminated with blood/OPIM to the degree that this material can drip off or flake off the item. In the lab setting, these are disposable items that are contaminated with biological material, regardless of the level of contamination. These items must be placed in leakproof receptacles lined with a biohazard bag. These receptacles must be labeled with the biohazard symbol and be covered with a lid when not in use.

Solid biohazardous waste generated by your department includes the following items:

Solid biohazardous waste is treated for disposal by the following means:

Note: If using an autoclave for waste treatment, please review autoclave operation procedure as well as waste treatment procedure posted by all campus autoclaves that are approved for biohazardous waste treatment.

Sharps Waste: These are items that are sharp enough to puncture the skin and are biologically contaminated. Additionally, all needles, syringes, and IV tubing with needles attached must be disposed of as sharps regardless of their contamination status. These items must be placed in an appropriately sized sharps container for disposal. Containers must be permanently closed and disposed of within 90 days of first use or when they are ¾ full, whichever comes first. Containers should have a waste tag or sharps label attached if disposal through EHS.

Sharps waste generated by your department includes the following items:

Sharps containers are disposed of by the following means:

Other wastes: Refer to the MSU Bloodborne Pathogens Exposure Control Plan or the MSU Biohazardous Waste Management Plan for further information if you are generating pathological or liquid wastes.

Further procedural points for review related to waste treatment and disposal (i.e. medical waste hauler pickup procedures, disposal of liquid or pathological wastes, etc.)

Site-Specific Training Topic	Disinfection & Spill Response/Exposure Incident Response/Exposure Control Plan <ul style="list-style-type: none"> • Review of work area's procedure for handling spills of potentially infectious materials (including location and availability of biohazard spill kits); • Review of exposure incident response procedure; • Location of the Exposure Control Plan.
-------------------------------------	---

GUIDELINES

Disinfection should be performed as prescribed in the MSU Bloodborne Pathogens Exposure Control Plan (i.e. whenever there is visible contamination, following a spill, at the conclusion of work with blood/OPIM, etc.). Personnel should be trained on the proper and effective preparation and use of the disinfectant in your work area. This training should include chemical hazard information as outlined on the material safety data sheet (MSDS) for the product. *Note: The product must be an EPA-registered for the destruction of Hepatitis B virus and HIV.* Disinfectants in use include:

Spill response procedures will vary depending on the work environment. If personnel are not designated spill responders, they must be informed of the procedure to follow in the event of a blood/OPIM spill. This will generally include isolation of the affected area and calling the designated responders.

If personnel are expected to perform spill cleanup, it is essential that they know where the spill kit is located, how to use it, and how to dispose of the waste following such a cleanup. It is strongly advised that personnel are given a hands-on training related to this task.

The spill response procedure for the work area is/the location of the spill kit is:

The procedure for spill waste disposal is:

The procedure for restocking the kit is:

Exposure Response

Actions to take in the event of an exposure should be reviewed. A Report of Claimed Occupational Injury or Illness form must be completed. If there is an identifiable source, the department's source protocol must be followed. Assure that personnel know what these forms are and where they may be accessed. For on-campus exposure incidents, personnel should report to Olin Primary Care at the MSU Student Health Center. For off campus exposure incidents, personnel should report to Sparrow Hospital Emergency Room or the closest emergency room. Upon arrival, the employee should identify themselves as an MSU employee who has had a BBP exposure in order to receive expeditious assessment. If your department is off-campus, identify your emergency care facility:

Location of the Exposure Control Plan

The MSU Bloodborne Pathogens Exposure Control Plan is available on the EHS website at www.orcbs.msu.edu. A hard copy of the Plan may be printed to keep along with site-specific procedures and/or BBP Task Procedure forms. Identify the location(s) for this plan: (i.e. computer and BBP binder on the lab's administrative bookshelf)

BLOODBORNE PATHOGENS TASK PROCEDURE

This form is to list engineering controls, work practices, and PPE to reduce your risk of **Bloodborne Pathogens Exposure**. The information provided here should adequately reflect what the affected employees need to know and practice in order to protect themselves on the job.

Date	
Principal Investigator/Supervisor	
Address	
Phone Number	

Job Task

Name the task that involves bloodborne pathogens risk:

Task Description (Methods)

Describe the way the task is performed, similar to how you would write step-by-step instructions:

Hazards

List hazards including biological hazards:

Engineering Controls

List items used to limit your risk of exposure, like physical or mechanical items:

Personal Protective Equipment

List items worn by the person performing the task/procedure:

Work Practices

Describe ways to perform the task that limit the risk:

SAMPLE

BLOODBORNE PATHOGENS TASK PROCEDURE Blood Spill Clean-up

This form is to list engineering controls, work practices, and PPE to reduce your risk of **Bloodborne Pathogens Exposure**. The information provided here should adequately reflect what the affected employees need to know and practice in order to protect themselves on the job.

Date	1/15/10
Principal Investigator/Supervisor	Dr. Smith
Address	100 MSU Way
Phone Number	555-1212

Job Task

Name the task that involves bloodborne pathogens risk:

Blood spill clean-up without sharps

Task Description (Methods)

Describe the way the task is performed, similar to how you would write step-by-step instructions:

Close off area to traffic. Notify supervisor and others of spill. A BBP trained responder must clean-up the spill. Refer to spill procedure that is attached to spill kit. Put on appropriate PPE (personal protective equipment). Prepare disinfectant (1:10 bleach to water solution). Line the spill bucket with the biohazard bag. Cover the spill with absorbent powder. Remove absorbent with disposable broom and dustpan. Dispose of contaminated absorbent/dustpan/broom in biohazard bag. Spray the area with disinfectant and allow proper contact time prior to removing with paper towel. (bleach:10 minutes) Dispose of contaminated towel in biohazard bag. Repeat disinfection process. Remove outer pair of gloves and dispose in biohazard bag. Remove splash goggles. (Disinfect with antimicrobial wipe or dispose of into biohazard bag) Wipe down contaminated surfaces with an antimicrobial wipe. Remove inner pair of gloves and dispose of into biohazard bag. Close the bag and dispose of biohazardous waste by submitting a biohazard waste pick up request from EHS. Wash hands with soap and water. Replenish the spill kit with supplies and return the kit to designated location. Inform others that spill clean-up is complete and area has been disinfected.

Hazards

List hazards including biological hazards:

Bloodborne Pathogens - blood, Caustic chemical - disinfectant

Engineering Controls

List items used to limit your risk of exposure, like physical or mechanical item:

Disposable dustpan and broom, biohazard bag, and spill kit.

Personal Protective Equipment

List items worn by the person performing the task/procedure:

Two pairs of nitrile gloves, splash goggles, lab coat

Work Practices

Describe ways to perform the task that limit the risk: close off area, ensure correct PPE is worn. Use engineering controls to pick up the absorbed spill. If the spill is too large to clean-up with this kit, contact EHS. Wash hands with soap and water immediately after completion of spill clean-up.

Bloodborne Pathogens Train-the-Trainer Program Summary

What is the goal of the program?

The goal of the Train-the-Trainer program is to establish a minimum standard in bloodborne pathogens (BBP) training curriculums among MSU departments that perform their own BBP training. This will be accomplished by providing additional training and resource materials for individuals who are designated as qualified trainers in such departments.

Trainers will attend an annual Train-the-Trainer seminar provided by [EHS](#) to enhance their knowledge of bloodborne pathogens, the MSU Exposure Control Plan and MIOSHA's regulatory requirements.

Trainers will also receive training materials to use in their presentations that cover the minimum required elements for initial BBP training. Upon request, the [EHS](#) biological safety staff will work with trainers to develop department-specific training.

What will the Train-the-Trainer seminar cover?

The Train-the-Trainer course will include a review of all topics covered in [EHS's Bloodborne pathogens](#) initial training course. Specifically, the following topics will be addressed:

- Regulatory requirements of MIOSHA's "Bloodborne Infectious Diseases" standard
- MSU's Exposure Control Plan (ECP)
- Principles of exposure control
- Personal protective equipment selection
- Biohazardous waste handling
- Exposure incident response
- Recordkeeping

How will the program be maintained?

Trainers who have attended the seminar will receive updated information from [EHS](#) regarding the Exposure Control Plan and regulatory requirements on an ongoing basis to include in the training.

Trainers will be required to attend an annual update meeting in order to maintain their status as departmental BBP trainers. This annual meeting is essential to assure that all trainers receive information regarding any program changes and to exchange ideas for increasing the effectiveness of BBP programs at MSU.

For further information contact [EHS](#) at 355-0153.

Appendix F: Resource Information Related To Safer Sharps Devices

- Safer Sharps Device Evaluation Form
- Safer Sharps Devices Annual Review Form
- Sharps Injury Log

MSU Environmental Health and Safety Safer Sharps Device Evaluation Form

Evaluator's Name: _____ Job Title: _____

Department: _____ Date: _____

Supervisor's Name: _____ Telephone #: _____

Name of Device: _____

Name of Manufacturer: _____

Applications of device: _____

Number of times used: _____

Keep this form with your departmental records.

Please circle the most appropriate answer for each question. A rating of one (1) indicates the highest level of agreement with the statement, five (5) the lowest. Not applicable (N/A) may be used if the question does not apply to this product.

Please explain all problems with the device in the comments section.

	Agree	.Disagree				
1. The safety feature can be activated using a one-handed technique.	1	2	3	4	5	N/A
2. The user's hands remain behind the needle/sharp until activation of the safety mechanism is complete.	1	2	3	4	5	N/A
3. The safety feature does not interfere with normal use of this product.	1	2	3	4	5	N/A
4. Use of this product requires you to use the safety feature.	1	2	3	4	5	N/A
5. A clear and unmistakable change (either audible or visible) occurs when the safety feature is activated.	1	2	3	4	5	N/A
6. The device is easy to handle while wearing gloves.	1	2	3	4	5	N/A
7. The device is easy to handle when wet.	1	2	3	4	5	N/A
8. This device does not require more time to use than a non-safety device.	1	2	3	4	5	N/A
9. The safety feature operates reliably.	1	2	3	4	5	N/A
10. The exposed sharp is blunted or covered after use and prior to disposal.	1	2	3	4	5	N/A
11. The safety feature works well with a wide variety of hand sizes and with a left-handed person as easily as with a right-handed person.	1	2	3	4	5	N/A

MSU Environmental Health and Safety

Safer Sharps Device Evaluation Form

Continued on back page.

Continued from Page 1:

Agree .Disagree

- | | | | | | | |
|--|---|---|---|---|---|-----|
| 12. Use of this product does not increase the number of sticks to the patient. | 1 | 2 | 3 | 4 | 5 | N/A |
| 13. Sterilization (if applicable) of this device is as easy as a standard device. | 1 | 2 | 3 | 4 | 5 | N/A |
| 14. The product stops the flow of blood after the needle is removed from the catheter (or after the butterfly is inserted) and just prior to line connections or hep-lock capping. | 1 | 2 | 3 | 4 | 5 | N/A |
| 15. The product does not require extensive training to be operated correctly. | 1 | 2 | 3 | 4 | 5 | N/A |
| 16. The device can be used without causing more patient discomfort than a conventional device. | 1 | 2 | 3 | 4 | 5 | N/A |

Additional questions for I.V. Connectors:

Agree .Disagree

- | | | | | | | |
|---|---|---|---|---|---|-----|
| 17. Use of this connector eliminates the need for exposed needles in connections. | 1 | 2 | 3 | 4 | 5 | N/A |
| 18. The safety feature allows you to collect blood directly into a vacuum tube, eliminating the need for needles. | 1 | 2 | 3 | 4 | 5 | N/A |
| 19. The connector can be secured (locked) to Y-sites, hep-locks, and central lines. | 1 | 2 | 3 | 4 | 5 | N/A |

Additional questions for Vacuum Tube Blood Collection Systems:

Agree .Disagree

- | | | | | | | |
|---|---|---|---|---|---|-----|
| 20. The safety feature works with a butterfly. | 1 | 2 | 3 | 4 | 5 | N/A |
| 21. The inner vacuum tube needle (rubber sleeved needle) does not present a danger of exposure. | 1 | 2 | 3 | 4 | 5 | N/A |

Please rate the quality of the in-service training: Exc. Good Fair Poor

Would you recommend using this device? Yes No

Comments: _____

MSU Environmental Health & Safety (EHS)

Safer Sharps Devices Annual Review Form

SHARPS CURRENTLY IN USE

Name of Sharp	Manufacturer	Size(s) in Use	Is it a Safety Sharp? (Yes or No)	Are there evaluation forms on file for this device?	If not using a safety device, state the reason

In accordance with the MIOSHA Bloodborne Infectious Diseases Standard, I certify that I have reviewed the new commercially available safer sharps and considered evaluation and use. I will evaluate new devices per MSU's Bloodborne Pathogens Exposure Control Plan and keep all evaluation forms with department records.

Supervisor Signature/Date

MSU Environmental Health & Safety (EHS)

Safer Sharps Devices Annual Review Form

Department: _____

Clinic (if applicable): _____

Address: _____

Date: _____

Supervisor or PI: _____

Telephone #: _____

All sharps that are being used where there is exposure to blood or OPIM must be reviewed on an annual basis. During your annual review of devices, you must inquire about new or prospective safer options.

The purpose of this form is to document:

1. Annual consideration of new safer sharps devices;
2. To determine which sharps devices are currently in use;
3. To document the criteria used in the selection of the safer sharps device in use.

Please complete the table on page 2 of this form by filling out the appropriate information on each of the sharp devices that you are using. This includes all scalpels, syringes with needles, IV's with needles attached, capillary tubes, and lancets.

| **For assistance in** your annual review **of safety sharps**, the following website may be helpful:

www.healthsystem.virginia.edu/internet/epinet/safetydevice.cfm

(The International Healthcare Worker Safety Center at the University of Virginia Health System)

Keep this form with your departmental records

Please complete a log for each employee exposure incident involving a sharp.

Name of Claimant: _____ Social Security No. _____

Name of Supervisor: _____ Telephone: _____

Date of Birth: _____ Male Female

Department: _____ Building and area of injury: _____

Date of Injury: _____ Time of Injury: _____ a.m or p.m

Fill in the one circle corresponding to the most appropriate answer.

<p>Description of the exposure incident:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Job classification:</p> <p><input type="radio"/> MD <input type="radio"/> Nurse</p> <p><input type="radio"/> Medical assistant</p> <p><input type="radio"/> Phlebotomist/Medical Lab Tech</p> <p><input type="radio"/> Housekeeper/Laundry</p> <p><input type="radio"/> Research Lab Tech</p> <p><input type="radio"/> Student, type _____</p> <p><input type="radio"/> Other _____</p>	<p>Department/Location:</p> <p><input type="radio"/> Patient Room</p> <p><input type="radio"/> Procedure room</p> <p><input type="radio"/> Clinical laboratory</p> <p><input type="radio"/> Research laboratory</p> <p><input type="radio"/> Medical/outpatient clinic</p> <p><input type="radio"/> Service/utility area</p> <p><input type="radio"/> Other _____</p>
<p>Procedure:</p> <p><input type="radio"/> Draw venous blood <input type="radio"/> Heparin/saline flush</p> <p><input type="radio"/> Draw arterial blood <input type="radio"/> Cutting</p> <p><input type="radio"/> Injection, through skin <input type="radio"/> Suturing</p> <p><input type="radio"/> Start IV/set up heparin lock</p> <p><input type="radio"/> Unknown/not applicable</p> <p><input type="radio"/> Other _____</p>		<p>Did the exposure incident occur:</p> <p><input type="radio"/> During use of sharp <input type="radio"/> Disassembling</p> <p><input type="radio"/> Between steps of a multistep procedure</p> <p><input type="radio"/> After use and before disposal of sharp</p> <p><input type="radio"/> While putting sharp into disposal container</p> <p><input type="radio"/> Sharp left in an inappropriate place (table, bed, etc.)</p> <p><input type="radio"/> Other _____</p>
<p>Body Part: (check all that apply)</p> <p><input type="radio"/> Finger <input type="radio"/> Face/head</p> <p><input type="radio"/> Hand <input type="radio"/> Torso</p> <p><input type="radio"/> Arm <input type="radio"/> Leg</p> <p><input type="radio"/> Other _____</p>	<p>Identify sharp involved: (if known)</p> <p>Type: _____</p> <p>Brand: _____</p> <p>Model: _____</p> <p>e.g. 18g needle/ABC Medical/"no stick" syringe</p>	<p>Did the device being used have engineered sharps injury protection?</p> <p><input type="radio"/> yes <input type="radio"/> no <input type="radio"/> don't know</p> <p>Was the protective mechanism activated?</p> <p><input type="radio"/> yes-fully <input type="radio"/> yes-partially <input type="radio"/> no</p> <p>Did the exposure incident occur:</p> <p><input type="radio"/> before <input type="radio"/> during <input type="radio"/> after activation</p>
<p>Exposed employee: If sharp had no engineered sharps injury protection, do you have an opinion that such a mechanism could have prevented the injury?</p> <p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> N/A</p> <p>Explain: _____</p>		<p>Exposed employee: Do you have an opinion that any other engineering, administrative or work practice control could have prevented the injury?</p> <p><input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> N/A</p> <p>Explain: _____</p>

This form will be completed by the Environmental Health & Safety (EHS) Office through interviews and maintained in the Human Resources department.

Appendix G: HIV and HBV Research Laboratories

Appendix G: HIV and HBV Research Laboratories

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

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

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

Security:

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

Sharps:

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

Work Practice Controls:

1. Certified biological safety cabinets or other appropriate combinations of personal protective equipment or physical containment devices, such as any of the following, shall be used for all activities with other potentially infectious material that poses a threat of exposure to droplets, splashes, spills, or aerosols:
 - a. Special protective clothing
 - b. Respirators
 - c. Centrifuge safety cups
 - d. Sealed centrifuge rotors
 - e. Containment caging for animals

- 2 Report all spills or accidents resulting in an exposure incident immediately to the principle investigator or other responsible person and to the ORCBS at 355-0153.
- 3 Spills must be contained and cleaned up immediately by employees that are trained and equipped to work with potentially concentrated infectious material.

Engineering controls:

1. Use biosafety cabinets or other physical containment devices within the containment module to conduct all activities that involve other potentially infectious material. Do not conduct this work on the open bench.
Note: Biological safety cabinets shall be certified when installed, at least annually, and when they are relocated.
2. Each laboratory shall contain a sink for washing hands and an eye wash station that are readily available in the work area. The eyewash must supply a sufficient quantity of water to completely flush the eyes. A 15-minute supply of continuous free-flowing water is acceptable. The hands must be free to hold the eyelids open to aid in the complete flushing of the eyes.
3. HEPA (high-efficiency particulate air) filters, or equivalent filters, and disinfectant traps must be used to protect vacuum lines. Check filters and traps routinely, and maintain or replace as necessary.
4. When transporting contaminated material, use containers that are durable, leakproof, labeled or color-coded, and closed before leaving the work area.
5. An autoclave for the decontamination of regulated wastes shall be available. All infectious liquid, solid waste, and all waste from work areas including animal rooms, shall be decontaminated before disposal by autoclaving or incineration.

Personal Protective Equipment:

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

Administrative:

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

Appendix H: MIOSHA Documents Related to the Exposure Control Plan

- “Bloodborne Infectious Diseases” Standard
- The Bloodborne Infectious Diseases Rules:
Requirements for Training



**DEPARTMENT OF LABOR & ECONOMIC GROWTH
DIRECTOR'S OFFICE
OCCUPATIONAL HEALTH STANDARDS**

Filed with the Secretary of State on June 30, 1993 (as amended November 14, 1996)
(as amended June 28, 2001)

These rules take effect on October 18, 2001

(By authority conferred on the director of the department of consumer and industry services by sections 14 and 24 of 1974 PA 154, MCL 408.1014 and 408.1024, and Executive Reorganization Order Nos. 1996-1 and 1996-2, MCL 330.3101 and 445.2001)

R 325.70001, R 325.70002, R 325.70004, and R 325.70015 of the Michigan Administrative code are amended as follows:

Visit our web site at: www.michigan.gov/mioshastandards

PART 554. BLOODBORNE INFECTIOUS DISEASES

TABLE OF CONTENTS

R 325.70001 Scope.....	1	R 325.70012 HIV and HBV research laboratories and production facilities.....	6
R 325.70002 Definitions.....	1	R 325.70013 Vaccinations and postexposure follow-up.....	7
R 325.70003 Exposure determination.....	3	R 325.70014 Communication of hazards to employees.....	8
R 325.70004 Exposure control plan.....	3	R 325.70015 Recordkeeping.....	9
R 325.70005 Universal precautions.....	3	R 325.70016 Information and training.....	9
R 325.70006 Engineering controls.....	3	R 325.70017 Appendices; effect.....	10
R 325.70007 Work practices.....	3	R 325.70018 Availability of rules; permission to reproduce...10	
R 325.70008 Protective work clothing and equipment.....	4	APPENDIX A--INFORMATION SHEET.....	11
R 325.70009 Housekeeping.....	5	APPENDIX B--SAMPLE WAIVER STATEMENT WHEN AN EMPLOYEE DECLINES THE HEPATITIS B VACCINATION.....	11
R 325.70010 Regulated waste disposal.....	6		
R 325.70011 Laundry.....	6		

R 325.70001 Scope.

Rule 1. These rules apply to all employers that have employees with occupational exposure to blood and other potentially infectious material.

R 325.70002 Definitions.

Rule 2. As used in these rules:

- (a) **“Act”** means 1974 PA 154, MCL 408.1001 et seq.
- (b) **“Biologically hazardous conditions”** means equipment, containers, rooms, materials, experimental animals, animals infected with HBV or HIV virus, or combinations thereof that contain, or are contaminated with, blood or other potentially infectious material.
- (c) **“Blood”** means human blood, human blood components, and products made from human blood.
- (d) **“Bloodborne pathogens”** means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
- (e) **“Clinical laboratory”** means a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious material.
- (f) **“Contaminated”** means the presence or the reasonably anticipated presence of blood or other potentially infectious material on an item or surface.

- (g) **“Contaminated laundry”** means laundry which has been soiled with blood or other potentially infectious materials or which may contain sharps.
- (h) **“Contaminated sharps”** means any contaminated object that can penetrate the skin, including any of the following:
 - (i) Needles.
 - (ii) Scalpels.
 - (iii) Broken glass.
 - (iv) Broken capillary tubes.
 - (v) Exposed ends of dental wires.
- (i) **“Decontamination”** means 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.
- (j) **“Department”** means the department of consumer and industry services.
- (k) **“Director”** means the director of the department or his or her designee.
- (l) **“Disinfect”** means to inactivate virtually all recognized pathogenic microorganisms, but not necessarily all microbial forms, on inanimate objects.
- (m) **“Engineering controls”** means controls, for example, sharps disposal containers, self-sheathing needles, or safer medical devices, such as sharps with engineered sharps injury protections

- and needleless systems, that isolate or remove the bloodborne pathogen hazard from the workplace.
- (n) **“Exposure”** means 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. “Exposure” does not include incidental exposures which may take place on the job, which are neither reasonably nor routinely expected, and which the worker is not required to incur in the normal course of employment.
- (o) **“Exposure incident”** means a specific eye, mouth, other mucous membrane, nonintact skin, or parenteral contact with blood or other potentially infectious material that results from the performance of an employee’s duties.
- (p) **“Handwashing facilities”** means facilities that provide an adequate supply of running, potable water, soap, and single-use towels or a hot-air drying machine.
- (q) **“Licensed health care professional”** means a person whose legally permitted scope of practice allows him or her to independently perform the activities required by R 325.70013 concerning hepatitis B vaccination and post-exposure evaluation and follow-up.
- (r) **“Needleless systems”** means a device that does not use needles for any of the following:
- (i) The collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established.
 - (ii) The administration of medication or fluids.
 - (iii) Any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.
- (s) **“Other potentially infectious material”** means any of the following:
- (i) Any of the following human body fluids:
 - (A) Semen.
 - (B) Vaginal secretions.
 - (C) Amniotic fluid.
 - (D) Cerebrospinal fluid.
 - (E) Peritoneal fluid.
 - (F) Pleural fluid.
 - (G) Pericardial fluid.
 - (H) Synovial fluid.
 - (I) Saliva in dental procedures.
 - (J) Any body fluid that is visibly contaminated with blood.
 - (K) All body fluids in situations where it is difficult or impossible to differentiate between body fluids.
 - (ii) Any unfixed tissue or organ, other than intact skin, from a living or dead human.
 - (iii) Cell or tissue cultures that contain HIV, organ cultures, and culture medium or other solutions that contain HIV or HBV; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.
- (t) **“Parenteral”** means exposure occurring as a result of piercing mucous membrane or the skin barrier, such as exposure through subcutaneous, intramuscular, intravenous, or arterial routes resulting from needlesticks, human bites, cuts, and abrasions.
- (u) **“Personal protective equipment”** or **“PPE”** means specialized clothing or equipment that is worn by an employee to protect him or her from a hazard. General work clothes, such as uniforms, pants, shirts, or blouses, that are not intended to function as protection against a hazard are not considered to be personal protective equipment.
- (v) **“Production facility”** means a facility that is engaged in the industrial-scale, large-volume production of HIV or HBV or in the high-concentration production of HIV or HBV.
- (w) **“Regulated waste”** means any of the following:
- (i) Liquid or semiliquid blood or other potentially infectious material.
 - (ii) Contaminated items that would release blood or other potentially infectious material in a liquid or semiliquid state if compressed.
 - (iii) Items which are caked with dried blood or other potentially infectious material and which are capable of releasing these materials during handling.
 - (iv) Contaminated sharps.
 - (v) Pathological and microbiological waste that contains blood and other potentially infectious material.
- (x) **“Research laboratory”** means a laboratory that produces or uses research laboratory-scale amounts of HIV or HBV. A research laboratory may produce high concentrations of HIV or HBV, but not in the volume found in a production facility.
- (y) **“Sharps with engineered sharps injury protections”** means a nonneedle sharp or a needle device which is used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, and which has a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.
- (z) **“Source individual”** means any living or dead individual whose blood or other potentially infectious material may be a source of occupational exposure to an employee. Examples of a source individual include all of the following:
- (i) A patient of a hospital or clinic.
 - (ii) A client of an institution for the developmentally disabled.
 - (iii) A victim of trauma.
 - (iv) A client of a drug or alcohol treatment facility.
 - (v) A resident of a hospice or nursing home.
 - (vi) Human remains.
 - (vii) An individual who donates or sells his or her blood or blood components.
- (aa) **“Standard operating procedures (SOPs)”** means any of the following that address the performance of work activities so as to reduce the risk of exposure to blood and other potentially infectious material:
- (i) Written policies.
 - (ii) Written procedures.
 - (iii) Written directives.
 - (iv) Written standards of practice.
 - (v) Written protocols.
 - (vi) Written systems of practice.
 - (vii) Elements of an infection control program.
- (bb) **“Sterilize”** means the use of a physical or chemical procedure to destroy all microbial life, including highly resistant bacterial endospores.
- (cc) **“Universal precautions”** means a method of infection control that treats all human blood and other potentially infectious material as capable of transmitting HIV, HBV, and other bloodborne pathogens.
- (dd) **“Work practices”** means controls that reduce the likelihood of exposure to bloodborne pathogens by altering the manner in which a task is performed.

R 325.70003 Exposure determination.

Rule 3. (1) An employer shall evaluate routine and reasonably anticipated tasks and procedures to determine whether there is actual or reasonably anticipated employee exposure to blood or other potentially infectious material. Based on this evaluation, an employer shall categorize all employees into category A or B as follows:

- (a) Category A consists of occupations that require procedures or other occupation-related tasks that involve exposure or reasonably anticipated exposure to blood or other potentially infectious material or that involve a likelihood for spills or splashes of blood or other potentially infectious material. This includes procedures or tasks conducted in nonroutine situations as a condition of employment.
 - (b) Category B consists of occupations that do not require tasks that involve exposure to blood or other potentially infectious material on a routine or nonroutine basis as a condition of employment. Employees in occupations in this category do not perform or assist in emergency medical care or first aid and are not reasonably anticipated to be exposed in any other way.
- (2) An exposure determination shall be made without regard to the use of personal protective clothing and equipment.
- (3) An employer shall determine and document a rationale for an exposure determination.
- (4) An employer shall maintain a list of all job classifications which are determined to be category A.

R 325.70004 Exposure control plan.

Rule 4. (a) If an employee is determined to be in category A, then an employer shall establish a written exposure control plan to minimize or eliminate employee exposure.

- (b) An exposure control plan shall contain all of the following information:
 - (i) The exposure determination required by R 325.70003(1).
 - (ii) The schedule and method of implementation for each of the applicable rules of these rules.
 - (iii) The contents or a summary of the training program required by R 325.70016.
 - (iv) The procedures for the evaluation of circumstances surrounding exposure incidents as required by R 325.70013(5).
 - (v) Task-specific standard operating procedures (SOPs) that address all of the following areas:
 - (A) Employee recognition of reasonably anticipated exposure to blood and other potentially infectious material.
 - (B) Appropriate selection, use, maintenance, and disposal of personal protective equipment.
 - (C) Contingency plans for foreseeable circumstances that prevent following the recommended SOPs.
- (c) General employer policies or task-specific SOPs shall address the management of inadvertent exposures such as needlesticks or mucus membrane exposures.
- (d) The exposure control plan shall be reviewed at least annually and updated as necessary. A review shall consider changes in employees' tasks and procedures and the latest information from the centers for disease control or the department. See appendix A for addresses of these agencies. The

review and update of the exposure control plans shall comply with both of the following provisions:

- (i) Reflect changes in technology that eliminate or reduce exposure to bloodborne pathogens.
 - (ii) Document annually consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize occupational exposure.
- (e) An employer shall ensure that only a person who has knowledge of applicable control practices is authorized to write and to review an exposure control plan.
 - (f) An employer shall ensure that the exposure control plan is made available to the director or a representative of the director for examination and copying upon request.
 - (g) An employer shall ensure that a copy of the exposure control plan is accessible to category A employees in accordance with R 325.3451 et seq.
 - (h) An employer, who is required to establish an exposure control plan shall solicit input from non-managerial employees responsible for direct patient care who are potentially exposed to injuries from contaminated sharps in the identification, evaluation, and selection of effective engineering and work practice controls and shall document the solicitation in the exposure control plan.

R 325.70005 Universal precautions.

Rule 5. Universal precautions shall be observed to prevent contact with blood and other potentially infectious materials. If differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

R 325.70006 Engineering controls.

Rule 6. (1) Engineering controls shall be used in combination with work practice controls to minimize or eliminate employee exposure to blood and other potentially infectious material. Where exposure remains after use of engineering and work practice controls, personal protective equipment shall also be used.

(2) Engineering controls shall be examined and maintained or replaced on a regular schedule to ensure their effectiveness.

(3) An employer shall provide handwashing facilities which are readily accessible to employees. When provision of handwashing facilities is not feasible, an employer shall provide an appropriate antiseptic hand cleanser with clean cloth or paper towels or antiseptic towelettes.

R 325.70007 Work practices.

Rule 7. (1) After implementing appropriate engineering controls, an employer shall further reduce the likelihood of exposure to blood and other potentially infectious material by developing and implementing work practices for each task.

(2) At a minimum, work practices shall ensure all of the following:

- (a) All personal protective equipment shall be removed before leaving the work area and shall be placed in an appropriately designated area or container for storage, washing, decontamination, or disposal.
- (b) If a garment is penetrated by blood or other potentially infectious materials, the garment shall be removed immediately or as soon as feasible.
- (c) An employee shall wash his or her hands immediately after removing gloves or other protective clothing, as soon as possible after hand contact with blood or other potentially infectious

material, and upon leaving the work area. Hand-washing shall be completed using the appropriate facilities, such as utility or rest room sinks. Waterless antiseptic hand cleansers shall be provided on responding units to use when hand-washing facilities are not available. When hand-washing facilities are available, hands shall be washed with warm water and soap or antiseptic cleanser. When hand-washing facilities are not available, a waterless antiseptic hand cleanser shall be used. The manufacturer's recommendations for the product shall be followed. When antiseptic cleaners or towelettes are used, employees shall wash their hands with soap and water as soon as feasible.

- (d) An employer shall ensure that employees wash their hands and any other skin with soap and water following contact of such body areas with blood or other potentially infectious material, or flush mucous membranes with water, immediately or as soon as feasible after contamination.
- (e) Used needles and other contaminated sharps shall not be sheared, bent, or broken and shall not be recapped or resheathed where other disposal methods are practical. Used needles and other sharps shall not be recapped, resheathed, or removed unless the employer can demonstrate that no alternative is feasible or that such action is required by a specific medical procedure. Needle recapping or removal shall be accomplished by use of a mechanical device or a 1-handed technique. The disposal of needles and sharps shall be accomplished in accordance with the provisions of R 325.70010.
- (f) Eating, drinking, smoking, applying cosmetics or lip balm, or handling contact lenses is prohibited in laboratories and other work areas where there is a reasonable likelihood of exposure.
- (g) Food and drink shall not be stored in refrigerators, freezers, shelves, cabinets, or on countertops or benchtops where blood or other potentially infectious material is present or in other areas of possible contamination.
- (h) All procedures that involve blood or other potentially infectious material shall be performed in a manner that minimizes splashing, spraying, and aerosolization of blood or other potentially infectious material.
- (i) Mouth pipetting or suctioning is prohibited.

R 325.70008 Protective work clothing and equipment.

Rule 8. (1) Protective work clothing and equipment shall be provided and used as follows:

- (a) When there is occupational exposure, an employer shall provide, at no cost to the employee, and assure that an employee uses, appropriate personal protective clothing and equipment, such as any of the following:
 - (i) Gloves.
 - (ii) Gowns.
 - (iii) Fluid-proof aprons.
 - (iv) Laboratory coats.
 - (v) Head and foot coverings.
 - (vi) Faceshields or mask and eye protection.
 - (vii) Mouthpieces.
 - (viii) Resuscitation bags.
 - (ix) Pocket masks.
 - (x) Other ventilation devices.

Personal protective equipment will be considered as appropriate only if it does not permit blood or other

potentially infectious material to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time that the protective equipment will be used.

- (b) An employer shall ensure that an employee uses appropriate personal protective equipment unless the employer shows that the employee temporarily and briefly declined to use PPE when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance the use of PPE would have prevented the delivery of health care or public safety services or would have posed an increased hazard to the safety of the worker or coworker. When the employee makes this judgment, the circumstances shall be investigated and documented to determine if changes can be made to prevent future occurrences.
- (c) Where splashes can be reasonably anticipated, face shields or protective eyewear and masks shall be provided. If the conditions of exposure include the likelihood that clothing will become soaked with blood, protective outer garments, such as impervious gowns, shall be worn. Appropriate protective equipment shall be used in all of the following instances:
 - (i) In performing invasive procedures when the health care worker has cuts, scratches, or other breaks in his or her skin.
 - (ii) Where there is a high risk of skin or mucous membrane contamination with blood, for example, when performing invasive procedures on an uncooperative patient.
 - (iii) In phlebotomy when performing finger or heel sticks in infants and children.
 - (iv) When persons are receiving training in invasive procedures.
- (d) An employer shall assure that appropriate protective equipment and clothing in the appropriate sizes are readily accessible at the worksite or issued to employees at no cost to the employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to employees who are allergic to the gloves normally provided. See appendix A for more information.
- (e) An employer shall provide for the cleaning, laundering, or disposing of protective clothing and equipment required by this rule.
- (f) An employer shall repair or replace required protective clothing and equipment as needed to maintain their effectiveness.
- (g) Gloves shall be worn by an employee if there is a reasonable anticipation of direct skin contact with blood, other potentially infectious material, mucous membranes, or nonintact skin of patients; when performing vascular access procedures, except as specified in subdivision (h) of this subrule; and when handling items or surfaces that are soiled with blood or other potentially infectious material. Gloves shall be made of material that is appropriate for a particular task. Disposable (single-use) gloves, such as surgical or examination gloves, shall be replaced as soon as practical if contaminated or as soon as feasible if torn, punctured, or ineffective as barriers. Disposable gloves shall not be washed or decontaminated for reuse. Gloves shall be changed between patient contacts. Utility gloves shall be discarded if any are

cracked, peeling, discolored, torn, or punctured or exhibit other signs of deterioration, but may be decontaminated for reuse if the integrity of the glove is maintained. Tear and puncture-resistant gloves shall be provided for procedures which involve a high risk of laceration, but which do not require a high degree of dexterity. See appendix A for supplemental information.

- (h) If an employer of a volunteer blood donation center judges that routine gloving for all phlebotomies is not necessary, the employer shall do all of the following:
- (i) Periodically reevaluate this policy.
 - (ii) Make appropriate gloves available to all employees who wish to use them for phlebotomy.
 - (iii) Not discourage the use of gloves for phlebotomy.
 - (iv) Require that gloves be used for phlebotomy in the following circumstances:
 - (A) When the employee has cuts, scratches, or other breaks in the skin on his or her hands or wrists.
 - (B) When the employee judges that hand contamination with blood may occur, for example when performing phlebotomy on an uncooperative patient.
 - (C) When the employee is receiving training in phlebotomy.
- (i) Masks and eye protection or chin-length face shields shall be worn as appropriate if splashes, sprays, spatters, droplets, or aerosols of blood or other potentially infectious material may be generated and if there is a likelihood for eye, nose, or mouth contamination. If there is a significant risk of eye protection breakage or unintended removal, protective eyewear that is suitable for the work to be performed, as required by General Industry Safety Standard Part 33., being R 408.13301 et seq. of the Michigan Administrative Code, and R 325.60001 et seq. of the Michigan Administrative Code, shall be worn.
- (j) Gowns, lab coats, aprons, clinic jackets, or similar outer garments shall be worn where appropriate if there is a reasonably anticipated exposure. Such clothing shall protect all areas of exposed skin that have a significant likelihood for contamination. The type of characteristics will depend upon the task and degree of exposure anticipated.
- (k) Surgical caps or hoods and shoe covers or boots shall be worn where appropriate if there is a reasonable anticipation of gross contamination, for example in autopsies and orthopedic surgery.
- (l) To minimize the need for direct mouth-to-mouth resuscitation, pocket masks, resuscitation bags, or other ventilation devices shall be provided in strategic locations and to trained personnel where the need for resuscitation is likely.

R 325.70009 Housekeeping.

Rule 9. (1) An employer shall assure that the worksite is maintained in a clean and sanitary condition. An employer shall determine and implement an appropriate written schedule for cleaning and for the method of decontamination based on all of the following:

- (a) The location within a facility.
- (b) The type of surface to be cleaned.
- (c) The type of soil present.
- (d) The tasks or procedures being performed.

(2) All equipment and environmental and working surfaces shall be maintained in a sanitary condition as follows:

- (a) Work surfaces shall be cleaned and appropriately decontaminated with an appropriate disinfectant in all of the following instances:
 - (i) After completion of procedures.
 - (ii) When surfaces are overtly contaminated.
 - (iii) Immediately when blood or other potentially infectious material is spilled.
 - (iv) At the end of the work shift if the surface may have become contaminated since the last cleaning. See appendix A for supplemental information.
- (b) Protective coverings such as plastic wrap, aluminum foil, or plastic-backed, absorbent paper may be used to cover equipment and environmental surfaces. These coverings shall be removed and replaced at the end of the work shift if contaminated or as soon as feasible when they become overly contaminated.
- (c) Equipment that may become contaminated with blood or other potentially infectious material shall be examined before servicing or shipping and shall be decontaminated as necessary unless the employer can demonstrate that decontamination is not feasible. If decontamination is not feasible, the employer shall ensure that a readily observable label which states the portions of the equipment that remain contaminated and which is in compliance with the provisions of R 325.70014(2)(h) is attached to the equipment. The employer shall ensure that all affected employees, the servicing representative, or the manufacturer, as appropriate, is notified that equipment decontamination is not feasible and is notified of the portions of the equipment that remain contaminated before handling, servicing, or shipping so that appropriate precautions will be taken.
- (d) All bins, pails, cans, and similar receptacles which are intended for reuse and which have a reasonable likelihood for becoming contaminated with blood and other potentially infectious material shall be inspected and decontaminated on a regularly scheduled basis and shall be cleaned and decontaminated immediately, or as soon as possible, upon visible contamination.
- (e) Broken glassware that may be contaminated shall not be picked up directly with the hands. It shall be cleaned up using mechanical means, such as a brush and dust pan, tongs, cotton swabs, or forceps.
- (f) Specimens of blood or other potentially infectious material shall be placed in a closable leakproof container during collection, handling, processing, storing, transporting, or shipping. If contamination of the outside of a primary container is likely, a second leakproof container shall be placed over the outside of the first and closed to prevent leakage during handling, processing, storing, transporting, or shipping. If puncture of the primary container is likely, it shall be placed within a leakproof, puncture-resistant secondary container. All containers shall be labeled or color-coded in accordance with the provisions of R 325.70014.
- (g) Reusable items, including reusable sharps, that have been contaminated with blood or other potentially infectious material shall be washed and decontaminated before reprocessing. The order in

which washing and decontamination shall be performed shall be chosen so as to minimize exposure to blood or other potentially infectious material. Reusable sharps shall not be stored or processed in a manner that requires reaching by hand into containers where sharps have been placed.

R 325.70010 Regulated waste disposal.

Rule 10. (1) All regulated waste that is being disposed of shall be placed in closable, leakproof containers or bags that are color-coded or labeled as required by the provisions of R 325.70014. If outside contamination of the container or bag is likely to occur, then a second leakproof container or bag that is closable and labeled or color-coded shall be placed over the outside of the first and closed to prevent leakage during handling, storage, and transport.

(2) Immediately after use, contaminated sharps shall be disposed of in closable, leakproof, puncture-resistant, disposable containers that are labeled or color-coded according to the provisions of R 325.70014. These containers shall be easily accessible to personnel; shall be located in the immediate area of use or where sharps are likely to be found, unless needles are mechanically recapped and transported through nonpublic corridors to the container; and shall be replaced routinely and not allowed to overflow.

(3) The disposal of all medical waste shall be in compliance with the provisions of sections 13801 to 13831 of Act No. 368 of the Public Acts of 1978, as amended, being §§333.13801 to 333.13831 of the Michigan Compiled Laws, and known as the medical waste regulatory act.

R 325.70011 Laundry.

Rule 11. (1) Laundry that is or may be soiled with blood or other potentially infectious material or that may contain contaminated sharps shall be treated as if it were contaminated and shall be handled as little as possible with a minimum of agitation.

(2) Contaminated laundry shall be bagged at the location where it was used and shall not be sorted or rinsed in areas where patients are cared for.

(3) Contaminated laundry shall be placed and transported in bags or containers labeled or color-coded in accordance with the provisions of R 325.70014. If laundry is wet and presents the likelihood for soaking through or leaking from the bag, it shall be placed and transported in leakproof bags.

(4) An employer shall ensure that laundry workers wear protective gloves and other appropriate personal protective work clothing while handling contaminated laundry.

(5) An employer shall ensure that all contaminated laundry is cleaned and laundered in such a way that any bloodborne pathogens present are inactivated or destroyed.

(6) When an employer follows universal precautions in the handling of all soiled laundry, alternative labeling or color coding is sufficient if it permits all employees to recognize the containers that are required to be in compliance with universal precautions.

(7) When an employer ships contaminated laundry off-site to a facility that does not use universal precautions in the handling of all laundry, the shipping employer shall use bags or containers that are labeled or color-coded in accordance with the provisions of R 325.70014.

R 325.70012 HIV and HBV research laboratories and production facilities.

Rule 12. (1) This rule applies to research laboratories and production facilities that are engaged in the culture, production, concentration, experimentation, and

manipulation of HIV and HBV. This rule applies to such laboratories and facilities in addition to the other requirements of these rules. This rule does not apply to clinical or diagnostic laboratories that are engaged solely in the analysis of blood, tissues, or organs.

(2) Research laboratories and production facilities shall be in compliance with all of the following requirements:

- (a) All infectious liquid or solid waste shall be incinerated or decontaminated by a method known to effectively destroy bloodborne pathogens before being disposed of.
- (b) Laboratory doors shall be kept closed when work involving HIV or HBV is in progress.
- (c) Contaminated materials that are to be decontaminated at a site away from the work area shall be placed in a durable, leakproof, labeled or color-coded container that is closed before being removed from the work area.
- (d) Access to the work area shall be limited to authorized persons only. Written policies and procedures shall be established whereby only persons who have been advised of the biohazard, who meet any specific entry requirements, and who comply with all entry and exit procedures shall be allowed to enter the work areas and animal rooms.
- (e) When other potentially infectious material or infected animals are present in the work area or containment module, a hazard warning sign that incorporates the universal biohazard symbol shall be posted on all access doors. The hazard warning sign shall be in compliance with the provisions of R 325.70014(1).
- (f) All activities that involve other potentially infectious material shall be conducted in biological safety cabinets or other physical containment devices within the containment module. Work with such material shall not be conducted on the open bench.
- (g) Laboratory coats, gowns, smocks, uniforms, or other appropriate protective clothing shall be used in the work area and animal rooms. Protective clothing shall not be worn outside of the work area and shall be decontaminated before being laundered.
- (h) Special care shall be taken to avoid skin contamination with other potentially infectious materials. Gloves shall be worn when handling infected animals and when making contact with other potentially infectious materials is unavoidable.
- (i) All waste from work areas, including animal rooms, shall be incinerated or decontaminated by a method known to effectively destroy bloodborne pathogens before disposal.
- (j) Vacuum lines shall be protected with high-efficiency particulate air (HEPA) filters, or equivalent filters, and liquid disinfectant traps. Filters and traps shall be checked routinely and maintained or replaced as necessary.
- (k) Hypodermic needles, syringes, and other sharp instruments shall be used only when a safer alternate technique is not feasible. Only needle-locking syringes or disposable syringe with needle units that have a needle as an integral part of the syringe shall be used for the injection or aspiration of other potentially infectious material. Extreme caution shall be used when handling needles and syringes to avoid autoinoculation and the generation of aerosols during use and disposal. A needle shall not be bent, sheared, replaced in the sheath or guard, or removed from the syringe after being used. The needle and syringe shall be

promptly placed in a puncture-resistant container and decontaminated, preferably by autoclaving, before being discarded or reused.

- (l) A spill or accident that results in an exposure incident shall be immediately reported to the laboratory director or another responsible person. Spills shall immediately be contained and cleaned up by appropriate professional staff who are trained and equipped to work with potentially concentrated infectious material.
- (m) A biosafety manual shall be prepared or adopted and reviewed and updated at least annually. Personnel shall be advised of potential hazards and shall be required to read and follow instructions on practices and procedures.
- (n) Both of the following containment equipment requirements shall be complied with:
 - (i) Class I, II, or III certified biological safety cabinets or other appropriate combinations of personal protection or physical containment devices, such as any of the following, shall be used for all activities with other potentially infectious material that poses a threat of exposure to droplets, splashes, spills, or aerosols:
 - (A) Special protective clothing.
 - (B) Respirators.
 - (C) Centrifuge safety cups.
 - (D) Sealed centrifuge rotors.
 - (E) Containment caging for animals.
 - (ii) Biological safety cabinets shall be certified when installed, at least annually, and when they are relocated.
- (3) HIV and HBV research laboratories shall be in compliance with both of the following requirements:
 - (a) Each laboratory shall contain a sink for washing hands and an eye wash station that are readily available in the work area.
 - (b) An autoclave for the decontamination of regulated wastes shall be available.
- (4) HIV and HBV production facilities shall be in compliance with all of the following requirements:
 - (a) The work areas shall be separated from areas that are open to an unrestricted traffic flow within the building. Passage through 2 sets of doors shall be the basic requirement for entry into the work area from access corridors or other contiguous areas. Physical separation of the high-containment work area from access corridors or other areas or activities may also be provided by a double-doored room for changing clothes, an airlock, or other access facility that requires passing through 2 sets of doors before entering the work area. Showers may be included as part of the changing room.
 - (b) The interior surfaces of walls, floors, and ceilings shall be water-resistant so that they can be easily cleaned. Penetrations in these surfaces shall be sealed or capable of being sealed to facilitate decontamination of the work area.
 - (c) Each work area shall contain a sink for washing hands. The sink shall be foot-operated, elbow operated, or automatically operated and shall be located near the exit door of the work area.
 - (d) Access doors to the work area or containment module shall be self-closing.
 - (e) An autoclave for the decontamination of infectious wastes shall be available within, or as near as possible to, the work area.
 - (f) A ducted exhaust air ventilation system shall be provided. This system shall create directional

airflow that draws air into the work area through the entry area. The exhaust air shall not be recirculated to any other area of the building, shall be discharged to the outside, and shall be dispersed away from occupied areas and air intakes. The proper direction of the airflow into the work area shall be verified.

(5) Additional training requirements for employees in HIV and HBV research laboratories and HIV and HBV production facilities are specified in R 325.70016(6).

R 325.70013 Vaccinations and postexposure follow-up.

Rule 13. (1) An employer shall assure that all medical evaluations and procedures are performed by or under the supervision of a licensed physician or other licensed health care professional and that all laboratory tests are conducted by an accredited laboratory.

(2) An employer shall assure that all evaluations, procedures, vaccinations, and postexposure prophylaxes are provided without cost to the employee, at a reasonable time and place, and according to current recommendations of the United States public health service, unless in conflict with provisions of this rule.

(3) An employer shall assure that all employees will receive appropriate counseling with regard to medical risks and benefits before undergoing any evaluations, procedures, vaccinations, or postexposure prophylaxes.

(4) Within 10 working days of the time of initial assignment and after the employee has received training required by the provisions of R 325.70016(5)(i), an employer shall make all of the following available to each category A employee:

- (a) A hepatitis B vaccination. If an employee initially declines vaccination, but at a later date, while still covered under these rules, decides to accept the HBV vaccine, the employer shall provide the vaccine at that time. If a booster dose or doses are recommended by the United States public health service at a future date, the booster dose or doses shall be made available.
- (b) HBV antibody testing for employees who desire such testing before deciding whether or not to receive HBV vaccination. If an employee has previously received the complete HBV vaccination series, is found to be immune to HBV by virtue of adequate antibody titer, or the vaccine is contraindicated for medical reasons, then the employer is not required to offer the HBV vaccine to that employee.
- (c) An employer shall not make participation in a prescreening program a prerequisite for receiving hepatitis B vaccination.
- (d) An employer shall assure that an employee who declines to accept hepatitis B vaccination signs a waiver statement with all of the following provisions:
 - (i) Understanding of risk.
 - (ii) Acknowledgment of opportunity of vaccination at no cost.
 - (iii) Declining vaccination.
 - (iv) Future availability of vaccination at not cost if desired, if still in at risk status. See appendix B for a sample of an acceptable waiver statement.

(5) An employer shall provide each exposed employee with an opportunity to have a confidential medical evaluation and follow-up subsequent to a reported occupational exposure incident to blood or other potentially infectious material. The evaluation and follow-up shall include, at a minimum, all of the following elements:

- (a) Documentation of the route or routes of exposure and the circumstances under which the exposure incident occurred.
- (b) Identification and documentation of the source individual, unless the employer can establish that identification is infeasible or prohibited by state or local law, shall include all of the following:
 - (i) The source individual's blood shall be tested as soon as feasible and after consent is obtained to determine HBV and HIV infectivity. If consent is not obtained, the employer shall establish that legally required consent cannot be obtained. If the source individual's consent is not required by law, his or her blood, if available, shall be tested and the results documented.
 - (ii) If the source individual is already known to be infected with HBV or HIV, testing need not be repeated.
 - (iii) Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.
- (c) Collection and testing of blood or HBV and HIV serological status shall include both of the following:
 - (i) The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained.
 - (ii) If the exposed employee consents to baseline blood collection, but not to HIV testing at that time, the sample shall be preserved for not less than 90 days. If within the 90 days the employee elects to have the baseline sample tested, such testing shall be done as soon as feasible.
- (d) Postexposure prophylaxis, when medically indicated, as recommended by the United States public health service.
- (e) Counseling on risk reduction and the risks and benefits of HIV testing in accordance with state law.
- (f) Evaluation of reported illnesses.
- (6) An employer shall ensure that the health care professional who is responsible for the hepatitis B Vaccination is provided with a copy of these rules and appendices. An employer shall ensure that the health care professional who evaluates an employee after an exposure incident is provided with all of the following information:
 - (a) A description of the affected employee's duties as they relate to the employee's exposure incident.
 - (b) Documentation of the route or routes of exposure and the circumstances under which exposure occurred.
 - (c) Results of the source individual's blood testing, if available.
 - (d) All medical records which are relevant to the appropriate treatment of the employee, including vaccination status, and which are the employer's responsibility to maintain.
 - (e) A description of any personal protective equipment used or to be used.
- (7) For each evaluation pursuant to the provisions of this rule, an employer shall obtain, and provide an employee with a copy of, the evaluating health care professional's written opinion within 15 working days of the completion of the evaluation. The written opinion shall be limited to the following information:

- (a) The health care professional's recommended limitations upon the employee's use of personal protective clothing or equipment.
- (b) Whether hepatitis B vaccination is indicated for an employee and if the employee has received such vaccination.
- (c) A statement that the employee has been informed of the results of the medical evaluation and that the employee has been told about any medical conditions which have resulted from exposure to blood or other potentially infectious material and which require further evaluation or treatment. The written opinion obtained by the employer shall not reveal specific findings or diagnoses that are unrelated to the employee's ability to wear protective clothing and equipment or receive vaccinations. Such findings and diagnoses shall remain confidential.
- (8) Medical records that are required by these rules shall be maintained in accordance with the provisions of R 325.70015.

R 325.70014 Communication of hazards to employees.

Rule 14. (1) An employer shall post signs at the entrance to work areas specified in R 325.70012. The signs shall bear the following legend:



[Name of infectious agent]

[Special requirements for entering the area]

[Name and telephone number of the laboratory director or other responsible person]

These signs shall be fluorescent orange-red with lettering and symbols in a contrasting color.

(2) Labels shall be in compliance with all of the following requirements:

- (a) Warning labels shall be affixed to containers of regulated waste, refrigerators and freezers that contain blood or other potentially infectious material, and other containers that are used to store or transport blood or other potentially infectious material, except as provided in subdivision (e) or (f) of this subrule.
- (b) Labels that are required pursuant to the provisions of this rule shall include the follow legend:



- (c) Labels shall be fluorescent orange or orange-red or predominately orange or orange-red, with lettering or symbols in a contrasting color.
- (d) Labels shall either be an integral part of the container or shall be affixed as close as safely possible to the container by string, wire, or

adhesive or by another method that prevents the loss of labels or the unintentional removal of labels.

- (e) Red bags or red containers may be substituted for labels.
 - (f) Containers of blood, blood components, or blood products which are labeled as to their contents and which have been released for transfusion or other clinical use are exempted from the labeling requirements of this rule.
 - (g) 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 labeling requirements.
 - (h) Labels required for contaminated equipment shall be in accordance with the provisions of this subrule and shall also describe which portions of the equipment remain contaminated.
 - (i) Regulated waste that has been decontaminated need not be labeled or color-coded.
- (3) All biologically hazardous conditions shall be identified in an identical manner.

R 325.70015 Recordkeeping.

Rule 15. (1) An employer shall establish and maintain medical records for each category A employee in accordance with R 325.3451 et seq.

(2) An employer shall ensure that medical records contain, at a minimum, all of the following information:

- (a) The name and social security number of the employee.
- (b) A copy of the employee's hepatitis B vaccination status, including the dates administered and medical records relating to the employee's ability to receive a vaccination as required by R 325.70013.
- (c) A copy of the medical history and all results of physical examinations, medical testing, and follow-up procedures as they relate to either of the following:
 - (i) The employee's ability to wear protective clothing and equipment and receive vaccination.
 - (ii) Postexposure evaluation after an occupational exposure incident.
- (d) The employer's copy of the physician's written opinion.
- (e) A copy of the information provided to the physician as required by R 325.70013(6).

(3) An employer shall assure that employee medical records that are required by this rule are kept confidential and are not disclosed or reported without the employee's express written consent to any person within or outside the workplace, except as required by this rule or as may be required or permitted by law.

(4) An employer shall maintain employee medical records for not less than the duration of employment plus 30 years in accordance with R 325.3451 et seq.

(5) An employer shall develop and maintain training records for each category A employee. Training records shall be maintained for 3 years beyond the date that the training occurred.

(6) Training records shall include all of the following information:

- (a) The dates of the training sessions.
- (b) The contents or a summary of the training sessions.
- (c) The names and qualifications of persons who conduct the training.
- (d) The names and job titles of all persons who attend the training sessions.

(7) An employer shall assure that all records that are required to be maintained by these rules shall be made available, upon request, to representatives of the department or the director for examination and copying.

(8) An employer shall ensure that employee training records are provided, upon request, for examination and copying to employees, employee representatives, and the director in accordance with R 325.3451 et seq.

(9) An employer shall ensure that employee medical records are provided, upon request, for examination and copying to the subject employee, to anyone who has the written consent of the subject employee, and to the director in accordance with R 325.3451 et seq.

(10) An employer shall comply with the requirements that involve the transfer of records set forth in R 325.3451 et seq.

(11) If an employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, then the employer shall notify the director, not less than 3 months before disposing of the records, and shall transmit the records to the director if required by the director to do so within the 3-month period.

(12) All of the following provisions apply to a sharps injury log:

- (a) An employer shall establish and maintain a sharps injury log for the recording of percutaneous injuries from contaminated sharps. The information in the sharps injury log shall be recorded and maintained in a manner that protects the confidentiality of the injured employee. At a minimum, a sharps injury log shall contain all of the following information:
 - (i) The type and brand of device involved in the incident.
 - (ii) The work unit or work area where the exposure incident occurred.
 - (iii) An explanation of how the incident occurred.
- (b) The requirement to establish and maintain a sharps injury log applies to any employer who is required to maintain a log of occupational injuries and illnesses under R 408.22101 et seq., being Part 11. Recording and Reporting of Occupational Injuries and Illnesses.
- (c) A sharps injury log shall be maintained for the period required by R 408.22101 et seq., Part 11. Recording and Reporting of Occupational Injuries and Illnesses.

R 325.70016 Information and training.

Rule 16. (1) An employer shall ensure that all category A employees participate in a training program provided at no cost to the employees and during working hours.

(2) Training shall be provided at the time of initial assignment to category A work or within 90 days after the effective date of these rules, whichever is later, and at least annually thereafter. If an employee has received training on bloodborne pathogens in the year preceding the effective date of these rules, only training with respect to requirements of this rule that were not included in the previous training need to be provided.

(3) An employer shall provide additional training when changes, such as the modification of tasks or procedures or the institution of new tasks or procedures, affect an employee's occupational exposure. The additional training may be limited to addressing the new exposures created.

(4) Material appropriate in content and vocabulary to the educational level, literacy, and language background of employees shall be used.

(5) The training program shall contain all of the following elements:

- (a) Accessibility of the copy of these rules and an explanation of the contents of these rules, including appendices.
 - (b) A general explanation of the epidemiology and symptoms of bloodborne diseases.
 - (c) An explanation of the modes of transmission of bloodborne pathogens.
 - (d) An explanation of the employer's exposure control plan, including the standard operating procedures, and how an employee can access the written plan.
 - (e) An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious material.
 - (f) An explanation of the use and limitations of practices that will prevent or reduce exposure, including appropriate engineering controls, work practices, and personal protective equipment.
 - (g) Information on all of the following with respect to personal protective clothing and equipment:
 - (i) Types.
 - (ii) Proper use.
 - (iii) Limitations.
 - (iv) Location.
 - (v) Removal.
 - (vi) Handling.
 - (vii) Decontamination.
 - (viii) Disposal.
 - (h) An explanation of the basis for selecting protective clothing and equipment.
 - (i) Information on the hepatitis B vaccine and postexposure prophylaxis, including all of the following information:
 - (i) Availability.
 - (ii) Efficacy.
 - (iii) Safety.
 - (iv) The benefits of being vaccinated.
 - (v) Method of administration.
 - (vi) That vaccination is free of charge.
 - (j) Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious material.
 - (k) An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident, and the medical follow-up and counseling that will be made available.
 - (l) An explanation of the signs and labels or color coding required by the provisions of R 325.70014.
- (6) Employees in HIV or HBV research laboratories and HIV/HBV production facilities shall receive the following initial training in addition to the training requirements specified in subrule (5) of this rule:
- (a) Employees shall be trained in, and demonstrate proficiency in, standard microbiological practices and techniques and in the practices and operations specific to the facility before being allowed to work with HIV and HBV.
 - (b) Employees shall be experienced in the handling of human pathogens or tissue cultures before working with HIV and HBV.
 - (c) A training program shall be provided to employees who have not had experience in handling human pathogens. Initial work activities shall not include the handling of infectious agents. A progression of work activities shall be assigned as techniques are learned and proficiency is developed. An employee shall participate in work activities that involve infectious agents only after proficiency has been demonstrated.
- (7) Training shall be conducted in the following manner:
 - (a) All employees in category A positions shall receive initial training and annual retraining.
 - (b) Training sessions shall afford employees ample opportunity for discussion and the answering of questions by a knowledgeable trainer.
 - (c) The training shall include opportunities for supervised practice with personal protective equipment and other equipment which is designed to reduce the likelihood for exposure and which will be used in the employee's work.
 - (d) The person or persons who conduct training shall be knowledgeable in all of the following areas:
 - (i) The information presented in the training session.
 - (ii) The employer's exposure control plan.
 - (iii) Conditions of the work environment that affect the implementation of the exposure control plan.
 - (e) An employer shall maintain written documentation of attendance at training.
 - (f) An employer may reduce the training specified in subrule (5) of this rule to allow for the previous training of an employee who has received the training from other employment or another academic source. In such cases, the previous training shall be evaluated and documented. At a minimum, an employer shall provide an employee with workplace-specific training that covers the exposure control plan and SOPs.

R 325.70017 Appendices; effect.

Rule 17. Appendices A and B to these rules are informational and are not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations. Appendices A and B may be obtained from the Michigan Department of Consumer and Industry Services, Occupational Health Division, P.O. Box 30649, Lansing, Michigan 48909.

R 325.70018 Availability of rules; permission to reproduce.

Rule 18. (1) Copies of these rules are available to affected employers and employees from the Michigan Department of Consumer and Industry Services, Occupational Health Division, P.O. Box 30649, Lansing, Michigan 48909.

(2) Permission to reproduce any of these documents in full is granted by the director.

APPENDICES TO MIOSHA STANDARD FOR BLOODBORNE INFECTIOUS DISEASES (R 325.70001 - R 325.70018)

APPENDIX A--INFORMATION SHEET

Occupations with Potential for Exposure

The hazard of exposure to infectious materials affects employees in many types of employment and is not restricted to the healthcare industry. In the list below are a number of job classifications that may be associated with tasks that have occupational exposure to blood and other potentially infectious materials. The scope of the standard is not limited to employees in these jobs. At the same time, employees in the following jobs are not automatically covered unless they have reasonably anticipated occupational exposure:

- Barbers
- Beauticians
- Chiropractors
- Correctional officers
- Day care center workers
- Dental care workers
- Dentists
- Dialysis personnel
- Emergency medical technicians
- Fire fighters
- Foster home workers
- Health care facility support staff
- Housekeepers
- Institutional home workers
- Janitors
- Laboratory workers
- Laundry workers
- Law enforcement employees assigned to provide emergency first aid
- Maintenance workers
- Medical assistants
- Medical health residential workers
- Morticians
- Nursing personnel (professional and nonprofessional)
- Optometrists
- Paramedics
- Phlebotomists
- Physician assistants
- Physicians
- Plumbers
- Podiatrists
- Police officers
- Tattooists

Addresses – Centers for Disease Control CDC and Michigan Department of Consumer and Industry Services (MDCIS)

For current guidelines, contact:

National Prevention Information Network
P.O. Box 6003
Rockville, Maryland 20850
Phone: 1-800-458-5231
Internet Address: www.cdcpin.org
E-mail Address: info@cdcpin.org

and

Michigan Department of Consumer and Industry
Services, Occupational Health Division
P.O. Box 30649
Lansing, Michigan 48909
(517) 322-1608

Engineering Controls

Engineering controls including ventilation systems and enclosures such as glove boxes, ventilation cabinets, laboratory hoods and tight fitting lids SHOULD be used to effectively isolate and contain spatters, splashes, mists and aerosols of blood, and other potentially infectious material generated from tissue homogenizers, sonicators, vortex mixers, centrifuges and other items capable of generating splashes, spatters, mists and aerosols. Engineering controls such as self-retracting needles, self-sealing capillary tubes and break resistant tubes should be used to prevent contact with blood or other potentially infectious material.

Disinfectants

Appropriate disinfectants for hospital cleaning including sodium hypochlorite diluted between 1:10 and 1:100 with water or other equally effective disinfectant. Antiseptics available and safe for hands include alcoholic foam cleansers, disposable alcoholic tissue wipes, or even washcloths soaked with 70-90% alcohol. It should be noted that waterless antiseptics are most effective in the absence of gross soil.

Occupations Requiring Tear and Puncture Resistant Gloves

Some occupations which may require tear and puncture resistant gloves are morticians, pathologists, mortuary workers, emergency medical technicians, corrections officers, fire fighters, police officers and other law enforcement occupations.

Gloves

Hypoallergenic gloves may include latex but should not be limited to latex and the new improved glove types (such as vinyl) may be available on the market in the future.

Inappropriate "baggy" gloves, for example, as used by bakers, etc., are not meant for contact with blood of the potentially infectious material.

APPENDIX B--SAMPLE WAIVER STATEMENT WHEN AN EMPLOYEE DECLINES THE HEPATITIS B VACCINATION

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 Name (print): _____

Employee Signature: _____

Date: _____



Michigan Occupational Safety and Health Administration
PO Box 30643
Lansing, Michigan 48909-8143
Ph: 517.322.1814
Fx: 517.322.1775

The Department of Labor & Economic Growth will not discriminate against any individual or group because of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. If you need assistance with reading, writing, hearing, etc., under the Americans with Disabilities Act, you may make your needs known to this agency.

Total Units Printed:
Total Printing Cost:
Cost Per Unit:



Part 554 Bloodborne Infectious Diseases Standard Requirements for Training

Initial and annual training is required for all part-time, temporary and full-time employees exposed to blood or other potentially infectious material. Requirements for this training are delineated in the bloodborne infectious diseases rules and are discussed below.

First, training must be conducted at the time of initial assignment or prior to any exposure. If new or revised tasks or procedures are instituted at a future date, then additional training must be given prior to their implementation.

Trainer Qualifications

The person conducting the training must be knowledgeable in the subject matter. In addition to demonstrating expertise in the area of occupational health and the transmission of bloodborne pathogens, the trainer must be familiar with the manner in which the elements in the training program relate to the particular workplace. Specialized courses or degree programs would aid in certifying the trainer's knowledge. Persons with strong medical backgrounds such as healthcare professionals (i.e., nurses, physicians and their assistants, infection control practitioners, emergency medical technicians, dental professionals, industrial hygienists and epidemiologists) are good candidates for trainers as long as they are knowledgeable in the subject matter.

A question and answer period must be provided in the training session. The trainer must present the training in a manner appropriate to the employee's educational, literacy and language background so that the employee understands the training.

Training Content

In addition to the above requirements for training, the content of the training program is regulated. An overview of the bloodborne infectious diseases rules is required. A basic understanding of the reasons for the rules including an explanation of the epidemiology and symptoms of bloodborne disease and their modes of transmission is required. Current statistics regarding the epidemiology of the bloodborne pathogens can be requested from the Communicable Disease Epidemiology Division, Michigan Department of Community Health, P.O. Box 30035, 3500 North Martin Luther King, Jr., Boulevard, Lansing, Michigan 48909 or call (517)335-8165.

The trainer should present information on the more common bloodborne diseases including hepatitis B, AIDS, hepatitis C and syphilis. The modes of transmission should include both those common to the workplace (i.e., needle punctures, contact with non-intact skin, splashes and splatters into the eyes, nose or mouth) and personal risk factors (i.e. sexual activity and intravenous drug abuse). The employee must be trained to recognize those work tasks which



could result in exposure such as tasks which result in direct contact with street clothing or skin, or result in splashing and splattering into the eyes, nose or mouth.

To minimize exposure, employers must include non-managerial, exposed employees in the identification, selection and evaluation of appropriate, commercially available and effective safer medical devices. Effective training on new techniques and practices regarding the selected safer medical devices is required. Hands-on training is particularly recommended. Prohibited work practices must be communicated (i.e., no eating or drinking in contaminated areas).

If safer medical devices and work practice controls have not eliminated exposure, personal protective equipment (PPE) is required. PPE training must include the basis for selection, use and limitations. For example, single use examination gloves for blood drawing or utility gloves for blood cleanup would be necessary for use in differing tasks. Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment must also be detailed.

Information on the hepatitis B vaccination including information on its efficacy, safety, method of administration, the benefits of being vaccinated and that the vaccine and vaccination will be offered free of charge also needs to be included in the training program. Additionally, information on postexposure evaluation and follow-up and procedures to follow if an exposure incident occurs shall be provided. The trainer needs to keep current with information from the U.S. Public Health Service Centers for Disease Control and Prevention (CDC). Publications such as the Morbidity and Mortality Weekly Report can be easily accessed at the following CDC website: www.cdc.gov/epo/mmwr regarding these requirements.

Other elements of the training program include information on emergencies which the employee may encounter during work and an explanation of signs, labels or color coding as required by the rules. Finally, an explanation of the employer's exposure control plan and where to obtain it is required.

Training Records

Training records must also be maintained by employers. These records must include dates of the training sessions, contents or a summary of the training sessions, names and qualifications of the trainers and the names and job titles of all persons attending the training sessions. Records must be maintained for 3 years from the date of training and must be provided upon request for examination and copying to employees, employee representatives and the Michigan Department of Consumer and Industry Services. To obtain additional information related to the Bloodborne Infectious Diseases standard contact the Michigan Department of Energy, Labor & Economic Growth, Michigan Occupational Safety and Health Administration, Consultation Education and Training: (517) 322-1809.