

Rutgers University Bloodborne Pathogens Guide

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Rutgers University Bloodborne Pathogens Guide

I. Introduction

A. Purpose

On July 6, 1993 New Jersey Public Employees Occupational Safety and Health Program (PEOSH) adopted Federal OSHA's "Occupational Exposure to Bloodborne Pathogens", 29CFR 1910.1030. A copy of the Bloodborne Pathogen Standard is attached as Appendix IV. The intent of the standard is to prevent the transmission of bloodborne pathogens in the workplace. The basic premise for infection control is the use of universal precautions. Protection is made available in the form of work practice controls, engineering controls, personal protective equipment, administrative controls, and immunization where possible. The standard achieves its goal by requiring employers to do the following:

- Develop a written Exposure Control Plan
- Provide methods to prevent exposure
- Offer Hepatitis B vaccinations
- Provide medical evaluation and follow-up
- Provide employee training
- Retain appropriate records
- Develop special precautions for HIV and HBV research laboratories

The purpose of this guide is to establish practices which minimize occupational exposure to bloodborne pathogens at Rutgers University. These practices may involve the safe handling, transport, manipulation, and disposal of blood and other potentially infectious materials. Because no single guide is applicable to all work environments, this document must be amended and modified for each specific work location. A Unit Specific Exposure Control Plan is attached as Appendix I. The Unit Specific Plan gives each work location the opportunity to enter information that is specific for that location. In compiling this guide Rutgers Environmental Health and Safety (REHS) has endeavored to gather the most current information from a variety of sources in order to present a sound bloodborne pathogen policy to the University community.

B. Scope

The Rutgers University Bloodborne Pathogens Guide applies to all employees who may have reasonably anticipated contact with blood or other potentially infectious materials as a result of performing their job duties. However, it does not cover an employee performing a "good samaritan" act such as assisting a co-worker with a nosebleed. A specific list of Rutgers University job titles covered by the standard is offered below.

C. Designation of Responsibility

- Employee - Follows safe work practices, attends required training, and is familiar with the University's Bloodborne Pathogens Guide which includes the Unit Specific Exposure Control Plan.
- Unit Supervisor - Identifies employees with occupational exposure and develops, within the framework of this guide, a written Unit Specific Exposure Control Plan to minimize or eliminate occupational exposure to bloodborne pathogens. Ensures that eligible employees follow the safety practices described in this guide and in the Unit Specific Exposure Control Plan.

Interacts with REHS to schedule employee training and to meet other regulatory requirements, e.g., coordinating with University Health Services to ensure that eligible employees receive the Hepatitis B vaccination. Unit supervisors also inform REHS of changes of employees with occupational exposure, e.g., hiring of new eligible employees, and changing of job tasks which may result in occupational exposure prior to such changes taking effect.

- University Biological Safety Officer - Reviews, updates, and audits the Rutgers University Bloodborne Pathogens Guide on an annual basis as well as interprets applicable federal, state, and local biosafety regulations and interacts with unit supervisors to schedule training and to assist them in meeting necessary requirements.
- University Occupational Safety Committee - Approves the Rutgers University Bloodborne Pathogens Guide on an annual basis and may set additional requirements to ensure the protection of Rutgers University employees, students, and the general public.

D. Definitions

Assistant Secretary - means the Assistant Secretary of Labor for Occupational Safety & Health, or designated representative.

Blood - means human blood, human blood components, and products made from human blood.

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

Clinical Laboratory - means a workplace where diagnostic or other screening procedures are performed on blood or other potential infectious materials.

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

Contaminated Laundry - means laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

Contaminated Sharps - means any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

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.

Director - means the Director of the National Institute for Occupational Safety & Health, U.S. Department of Health & Human Services, or designated representative.

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

Exposure Incident - means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

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

Licensed Healthcare Professional - is a person whose legally permitted scope of practice allows him or her to independently perform the activities required by paragraph (f) Hepatitis B Vaccination and Post-exposure Evaluation & Follow-up.

HBV - means hepatitis B virus.

HIV - means human immunodeficiency virus.

Occupational 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.

Other Potentially Infectious Materials - means:

- a. The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;
- b. Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and
- c. HIV - containing cell or tissue cultures, organ cultures, and HIV - or HBV - containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

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

Personal Protective Equipment - is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard is not considered to be personal protective equipment.

Production Facility - means a facility engaged in industrial-scale, large-volume or high concentration production of HIV or HBV.

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

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

Source Individual - means any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

Utilize - means the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

Universal Precautions - is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

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

II. Elements of the Bloodborne Pathogen Guide

The Bloodborne Pathogen Standard requires that the written Exposure Control Plan be capable of protecting eligible employees from the hazards associated with bloodborne pathogens. The University Bloodborne Pathogen Guide and the Unit Exposure Control Plan must be made available to all eligible employees and must contain the following elements:

- A. Identification of job classifications in which all or some employees have occupational exposure to bloodborne pathogens.
- B. Identification of tasks and procedures involving blood or other potentially infectious material performed by employees identified above.
- C. Specify the safety practices designed to eliminate or minimize occupational exposure of eligible employees.
- D. The Unit Specific Exposure Control Plan is attached to this guide as Appendix I. The plan will be updated by unit supervisors annually or whenever necessary to reflect changes in regulations or job tasks. The unit's plan will then be forwarded to REHS and approved by the University Biological Safety Officer.

III. Employee Exposure Determination

Employees are considered to have occupational exposure if it can be reasonably anticipated that they may come in contact with blood or other potentially infectious materials while performing their assigned duties. There are two categories of occupational exposure to blood and other potentially infectious materials, as defined by OSHA. Those job classifications in which all employees have occupational exposure and those job classifications in which some employees have occupational exposure. The following list of job classifications are considered to have occupational exposure:

A. Job classifications in which all employees may have exposure to bloodborne pathogens:

Department: Police

Job Classifications: Security Guard
Police Officer
Sergeant

Tasks: Assistance in emergency situations

Department: Fire and Emergency Services

Job Classifications: Emergency Medical Technicians
(full and part time)

Tasks: Emergency medical services

Department: University Health Services

Job Classifications: Physician
Nurse
Technologist

Tasks: Health care delivery

Department: Occupational Health Clinic

Job Classifications: Physician
Nurse
Technologist

Tasks: Health care delivery

Department: Intercollegiate Athletics

Job Classifications: Physicians
Athletic Trainer

Tasks: Health care delivery
First Aid and CPR

Department: Recreation

Job Classifications: Full/Permanent Lifeguard
Tasks: First Aid and CPR

Department: Douglass Developmental Disability Center

Job Classifications: Teacher

Assistant Teachers

Tasks: Care of autistic children

Department: Laboratories, Various

Job Classifications: Investigator

Research Assistant

Research Associate

Fellow

Technologist

Student

Tasks: Manipulation of laboratory samples.

B. Job classifications in which some employees may have exposure to bloodborne pathogens:

Department: Police

Job Classifications: Detective

Lieutenant

Captain

Chief

Tasks: Assistance in emergency situations

Department: Fire and Emergency Services

Job Classifications: Deputy Chief

Chief

Tasks: Emergency medical services

Department: University Health Services

Job Classifications: Ancillary staff

Tasks: Sample accession

Department: Occupational Health Clinic

Job Classifications: Ancillary staff

Tasks: Sample accession

Department: Intercollegiate Athletics

Job Classifications: Gymnasium Supervisor

Student Athletic Trainer

Tasks: First Aid and CPR

Department: Recreation

Job Classifications: Building Manager

Supervisor
Tasks: First Aid and CPR

Department: Auxiliary Services
Job Classifications: Food Service Manager
Assistant Food Service Manager
Director of Residence Life
Asst. Dir. of Residence Life
Housing Security Guards
Housing Mechanics
Tasks: First Aid

C. Job Classifications in which employees may have exposure to bloodborne pathogens as a collateral duty:

In some instances it can not be reasonably anticipated that an employee will come in contact with blood or other potentially infectious material. However, some employees may come in contact with blood or other potentially infectious material, in rare instances, as an ancillary duty that is not specified in their job description. These individuals will be provided with all necessary training, personal protective equipment, and post exposure medical evaluation and follow-up, if required. Examples of job classifications in this exposure category include:

Department: Recreation
Job Classifications: Director
Assistant Director
Coordinator
Student Lifeguard
Student Managers
Intramural Supervisors
Outdoor Sport Supervisor
Tasks: First Aid and CPR

Department: Auxiliary Services
Job Classifications: Residence Hall Director
Housing Manager
Tasks: First Aid

IV. Infection Control

- A. Transmission of Infectious Agents - Any route by which an infectious agent is spread from one source or reservoir to a susceptible individual. Microorganisms may be transmitted by several different routes. The four main routes of transmission are contact, vehicleborne, airborne, and vectorborne.
- i. Contact Transmission may be divided into three subgroups.
 - a. Direct Contact - Direct physical transfer between a susceptible host and an infected individual, e.g., sexually transmitted diseases.
 - b. Indirect Contact - Personal contact of a susceptible person with a contaminated inanimate material or object (fomite) such as used surgical instruments, needles, handkerchiefs, soiled clothes and bedding. See vehicleborne transmission, below.
 - c. Droplet Contact - Direct projection of droplet spray onto the conjunctiva or mucous membranes of the eyes, nose, or mouth of a susceptible person as a result of sneezing, coughing, spitting, singing, or talking by an infected person. This is considered droplet rather than airborne transmission due to the large size of the droplets (greater than 5 microns) and the short distance of travel (limited to approximately 1 meter). An example of droplet contact is the common cold.
 - ii. Vehicleborne Transmission - Transfer of an infectious agent to a susceptible host via contaminated items such as water, food, milk, or biological products such as blood, plasma, serum, tissues, and organs. Examples of vehicleborne transmission include Salmonella (contaminated food), Giardia (contaminated water), and HIV and HBV (contaminated blood).
 - iii. Airborne Transmission - The dissemination of microbial aerosols to a susceptible host via the respiratory tract. Microbial aerosols are generally of two types.
 - a. Droplet Nuclei - The small residues of dried respiratory droplets resulting from the evaporation of fluid from droplets emitted by an infected host (see contact transmission, above). Droplet nuclei are generally 1 to 5 microns in size. Their small size allows them to remain airborne for long periods of time, to be transported by mechanical ventilation systems, and to penetrate into the alveoli of the lung where infection may occur. An example of a disease transmitted by infectious droplet nuclei is tuberculosis.
 - b. Dust - Small particles of various sizes which may arise from clothes, bedding, contaminated floors, or soil, e.g., fungus spores separated from dry soil by wind or mechanical agitation.
 - iv. Vectorborne Transmission - The transfer of infectious microorganisms from an infected host to a susceptible individual via an arthropod or insect. The transfer may be simple mechanical transmission, e.g., soiled feet of a flying insect, or more complex biological transfer involving the propagation and/or development of the microorganism

within the vector prior to transmitting an infective form of the agent to man.

B. Transmission of the Hepatitis B Virus (HBV) and the Human Immunodeficiency Virus (HIV)

HIV and HBV are transmitted in a similar manner. Sexual contact, needle sharing, and perinatal transmission are the most frequent routes of transmission.

In the workplace, both viruses have been transmitted only by percutaneous inoculation (e.g., needle stick) or contact of an open wound, nonintact skin, or mucous membranes with contaminated blood, body fluids, or concentrated virus. There are documented cases of HBV being transmitted by human bites or contact of contaminated saliva with nonintact skin or mucous membranes. Although HIV has occasionally been isolated in saliva, tears, urine, and bronchial secretions there have been no known or reported cases transmitted after contact with these secretions. Blood is the most important source of HIV and HBV in the occupational setting.

C. Environmental Survivability

HIV and HBV are not capable of reproducing outside the human body, unlike bacteria which may do so under suitable conditions. In laboratory studies of HIV and HBV it is necessary for these viruses to infect specific human or primate cells in order to complete their life cycles and thereby reproduce.

One milliliter (ml) of blood from a HBV infected person may contain more than 100 million infectious viral particles. In a dried state, HBV may remain viable on surfaces for 1 week or longer. In contrast, one ml of blood from an HIV infected individual may contain several hundred to 10,000 infectious viral particles. Experiments conducted by the Centers for Disease Control and Prevention (CDC) have shown that viral concentrations of HIV have been reduced by drying by up to 99% within several hours.

D. Needle Sticks

The CDC defines occupational exposure to HIV and HBV as:

- Needle stick or cut with sharp instrument contaminated with blood
- Contact of Infected blood with mucous membrane
- Broken skin in contact with infected blood, semen, vaginal fluids, or other body fluids containing visible blood
- In the case of HBV only, via contaminated saliva.

Of the occupational exposures described above, Needle Sticks have been determined to be the most significant. As of December 31, 1994 there have been 42 documented occupational HIV seroconversions among healthcare workers nationwide reported to the CDC. Of these 42 seroconversions, 36 resulted from Needle Sticks or cuts (percutaneous exposure), 4 from mucous membrane and/or skin exposure, 1 from a combination of percutaneous and mucous membrane exposure, and 1 from an unknown route of exposure. Fortunately, only one infection occurs out of 250 infected Needle Sticks resulting in a 0.4% chance of becoming infected.

The number of workers who are infected with HBV is much greater than those who are infected with HIV. Every year more than 18,000 American workers are

infected with HBV on the job resulting in approximately 600 hospitalizations and 200 deaths. Approximately 10% of these occupationally acquired cases become chronic carriers and can therefore infect others. HBV is much more concentrated in the blood of an infected individual than is HIV. The chance of becoming HBV infected from a contaminated needle stick is approximately 30%.

V. Methods of Compliance, Exposure Control

A. Universal Precautions

In 1983 the CDC introduced the concept of "Universal Blood and Body Fluid Precautions" (Universal Precautions) to be applied in the care of all patients and in the handling of blood and body fluid specimens. This approach is based on the concept that all patients, blood, and body fluid specimens are to be handled as if they are known to be infected with HIV, HBV, or other bloodborne pathogens. Universal Precautions require that adequate safeguards, e.g., barrier precautions, be taken to eliminate or minimize any occupational exposure to blood and body fluids. Universal Precautions are intended to prevent parenteral, mucous membrane, and nonintact skin exposure to bloodborne pathogens. The concept of Universal Precautions has now been extended beyond the traditional healthcare setting. The OSHA Bloodborne Pathogen Standard requires the use of Universal Precautions in occupational settings where contact with blood or other potentially infectious materials may be reasonably anticipated.

B. Body Fluids to Which Universal Precautions Apply

Blood is the single most important source of HIV, HBV, and other bloodborne pathogens in the occupational setting. Universal Precautions also apply to the following body fluids:

- Semen
- Vaginal secretions
- Cerebrospinal fluid
- Synovial fluid
- Pleural fluid
- Pericardial fluid
- Peritoneal fluid
- Amniotic fluid
- Saliva in dental procedures
- Any body fluid that is visibly contaminated with blood
- All body fluids in situations where it is difficult to differentiate between body fluids.

C. Body Fluids to Which Universal Precautions Do Not Apply

Unless visibly contaminated with blood, the following body fluids are not considered as potentially infectious materials under the standard:

- Saliva
- Urine
- Feces
- Vomit

D. Handwashing

Handwashing is an important and basic component to any sound infection control program. Proper handwashing may be defined as a vigorous, brief (at least 30 seconds) rubbing together of all surfaces of the lathered hands, followed by rinsing under a stream of clean water. The purpose of handwashing is to remove any transient bacteria and other pathogens that are commonly found on the surface of the skin.

Standard soap is adequate for all handwashing activities at the University. Disposable liquid soap dispensers (with foot controls for clinical settings) are preferred. If bar soap is to be used, it should be placed on a rack that allows water to drain. Hands should be washed before and after each patient contact and after contact with any blood or other potentially infectious material. Hands should also be washed each time gloves are removed, even if the gloves appear intact. The daily use of hand cream is recommended to prevent overly dry skin due to repeated handwashing.

If any skin comes into contact with blood, body fluids, or other potentially infectious materials the skin should be washed immediately. In the case of a biological exposure, care should be taken not to scrub the skin vigorously as this may cause small breaks in the skin's surface and increase the chance of disease transmission. For more information see section entitled Needle stick and Mucous Membrane Exposure Policy.

- i. Handwashing Technique
 - a. Remove rings and watches before washing.
 - b. Hands should be positioned lower than arms to prevent back flow contamination.
 - c. Wet hands with warm running water. Running water is necessary to carry away dirt and debris.
 - d. Apply soap, lather well.
 - e. Rub hands together in a circular motion applying light friction. Include front and back of both hands, between fingers and knuckles, around and under fingernails, and the wrist area.
 - f. Rinse hands under running water.
 - g. Dry hands with clean dry paper towel.
 - h. Avoid direct contact of washed hands with faucet. If foot, elbow, or knee controls are unavailable, drape paper towel over faucet handle prior to turning off.
 - i. Discard soiled paper towel in waste receptacle.

E. Field Settings

All procedures that are applicable to clinical, laboratory, and other "housed" settings are desirable in the field. Field staff, e.g., Fire, Emergency Services, and Police, should wash their hands with antiseptic towelettes and dry them with clean paper towels after removing disposable gloves and after contact with blood or other potentially infectious materials. Do not re-use towelettes. Field staff should properly wash their hands with soap and running water at the first opportunity.

F. Hepatitis B Vaccination

Although the potential for occupational exposure to HBV is much higher than HIV, HBV infection is preventable by vaccination. A safe and effective vaccine to prevent HBV has been available since 1982. The original vaccine was plasma derived; made from the pooled sera of positive carriers. Currently, the vaccine most often used for protection against HBV is a genetically engineered yeast based vaccine called Recombivax. Vaccines produced through recombinant DNA technology are termed subunit vaccines. There is no risk of infection with subunit vaccines. Typically, the hepatitis B vaccine protects 90% of those who receive it for approximately 7 years.

The Hepatitis B vaccine is available to all eligible Rutgers employees through University Health Services under the supervision of the medical director. Unit supervisors will ensure that all eligible employees are offered the hepatitis B vaccine at no cost to them.

The vaccine is to be given after eligible employees receive initial training (described below) and sign the "Hepatitis B Vaccine Consent Form" (Appendix II) but no later than one month from the consent date. The vaccine will be given to new eligible employees within 10 days of the new assignment of duties with occupational exposure.

An eligible employee may decline the vaccine by signing the "Hepatitis B Vaccine Declination Form" (Appendix II). An eligible employee who initially declined the vaccination may change their mind at any time and request the vaccination by signing the "Hepatitis B Vaccine Consent Form".

G. Engineering Controls

Engineering controls refer to devices, mechanical or otherwise, that may be used to eliminate, minimize, or reduce occupational exposure to bloodborne pathogens. Engineering controls are usually designed to control contamination at the source thereby preventing the release of the contaminant into the workers environment. Additionally, engineering controls may be designed to minimize the effect of an accidental release of a contaminant into the work environment. Examples of engineering controls include:

- i. Biological Safety Cabinet - A ventilated and HEPA (high efficiency particulate air) filtered cabinet which provides a primary barrier between the worker and the potentially infectious material being manipulated. All manipulations of potentially infectious materials that have the potential to produce aerosols should be confined within a biological safety cabinet. Biological safety cabinets should be certified by an approved vendor upon set-up, whenever moved, and annually thereafter. There are a variety of types of biological safety cabinets as well as other laminar air flow devices. Please refer all questions regarding the proper type, use, and certification of biological safety cabinets to the University Biological Safety Officer, REHS, Livingston Campus.
- ii. Sharps Container - A closable, leak-proof, puncture-resistant container into which sharps are deposited for disposal. Please refer to section entitled "Handling of Sharps" and the "Rutgers University Policy for the Disposal of Regulated Medical Waste", Appendix V, for additional information.
- iii. Steam Autoclave - Steam autoclaves are generally considered to be the method of choice for decontaminating infectious laboratory waste. Gravity displacement autoclaves operate at 121 degrees C (15 lbs/in² pressure), while vacuum-type autoclaves operate at 132 degrees C (27 lbs/in² pressure). It is important to consider appropriate load characteristics and autoclave operating parameters in order to determine adequate decontamination time. Further, autoclave bags must not be over filled in order to allow proper steam/heat penetration into the bag during processing. In some instances it may be necessary to add a small amount of water to the load being decontaminated to assure steam penetration into the center of the load.
- iv. Mechanical Pipetting Device - A wide variety of mechanical pipetting devices are commercially available which allow for the measurement

and transfer of potentially infectious liquids while eliminating the need for mouth pipetting. Many of these devices utilize disposable tips and a high efficiency filtration system.

- v. Others - Other examples of engineering controls designed to eliminate or minimize occupational exposure to bloodborne pathogens may include: laboratory bench splash guards, self-sheathing needles, and centrifuge safety caps. An example of an engineering control designed to minimize the effect of an accidental release of contamination in the work environment is a non-recirculating (single pass) ventilation system. Specialized laboratory ventilation systems may have other specialized infection control characteristics including uni-directional air flow and air pressure differentials.

H. Work Practice Controls

Work practice controls refer to practices and procedures which reduce or eliminate the chance of occupational exposure to bloodborne pathogens. Examples of work practice controls include:

- Always wear the appropriate personal protective equipment for the task being performed (see Personal Protective Equipment, below).
- Wash hands promptly after removal of gloves, between patient contacts, and after handling blood or other potentially infectious material.
- Discard used needles and other sharps in appropriate sharps container (see Handling of Sharps, below).
- Do not recap, bend, or break used needles.
- Do not eat, drink, smoke, apply lip balm or makeup, and handle contact lenses in areas where occupational exposure to blood or other potentially infectious material may occur.
- Never store food or drink in refrigerators, freezers, cabinets, or on shelves, countertops, and bench tops, where blood and other potentially infectious materials may be present.
- Do not mouth pipette.
- Always use methods that prevent the splashing, splattering, spraying, or aerosolizing of blood or other potentially infectious materials. Examples of these methods may include covering the top of a vacutainer with a gauze pad prior to opening or performing all laboratory manipulations with the potential to generate aerosols in a biological safety cabinet or substituting a screw top container for those with corks or rubber stoppers.
- Use leak proof containers for the collection, handling, processing, storing, and shipping blood specimens or other potentially infectious materials.
- Use secondary containers when transporting or shipping blood specimens or other potentially infectious materials.
- Properly label all containers, refrigerators, freezers, incubators, and other units where blood and other potentially infectious material is stored (see Hazard Communication, below).
- Promptly decontaminate any work surfaces or equipment following exposure to blood or other potentially infectious material (see Cleaning, Disinfection, and Sterilization, below).

I. Handling of Sharps

Contaminated sharps such as needles, scalpel blades, broken test tubes, and other sharp instruments present the greatest risk of transmission of bloodborne pathogens in the workplace. Disposable syringes, scalpel blades, and other

sharp items should be deposited into an appropriate leak-proof, puncture-resistant, and labeled sharps container immediately after use. Disposable needles should never be recapped, bent, broken, sheared, or removed from disposable syringes. If an employee or co-worker sustains a needle stick the steps outlined in the section entitled Needle stick and Mucous Membrane Exposure Policy should be followed.

Sharps containers should be located in all work locations where it is reasonably anticipated that sharps are used. Sharps containers should only be filled to within one inch of the top of the container. Sharps containers should never be overfilled. Never attempt to force additional material into a full container. For more information, please refer to Rutgers University Policy for the Disposal of Regulated Medical Waste which is attached as Appendix V.

J. Personal Protective Equipment

Personal protective equipment are items that are worn to protect workers from exposure to blood and other potentially infectious materials. Personal protective equipment is especially important when exposure can not be prevented by other means, e.g., engineering and work practice controls. These items provide protection by establishing a barrier between the employee and the blood or other potentially infectious material. Adequate personal protective equipment shall be provided by the employer to all eligible employees at no cost to the employee. Personal protective equipment must be accessible and available in sizes which fit all employees. Personal protective equipment will be repaired or replaced as needed. Examples of personal protective equipment worn to protect workers from occupational exposure to blood and other potentially infectious material include:

- i. Gloves - Non-sterile single use examination gloves are appropriate for most, if not all, activities and procedures related to bloodborne pathogens performed at the university. This guide does not discuss gloves worn for purposes other than protection from bloodborne pathogens, e.g., chemicals. Gloves must be worn when there is the potential for exposure to blood or other potentially infectious material. Additionally, gloves should be changed after covering your mouth to sneeze or cough, before and after using the toilet and diaper changing, after contact with other body secretions, e.g., mucous and vomitus, before eating, drinking, smoking, applying make-up or lip balm, and before handling contact lenses.

Gloves must be changed after every patient/client interaction. Hands must be washed each time gloves are removed. Employees with non-intact skin should cover affected area with a suitable bandage prior to donning gloves. Hypoallergenic gloves, glove liners, powderless gloves or other alternatives shall be made available to those eligible employees who are allergic to the normal gloves provided. Certain gloves, such as utility gloves used by housekeeping departments, may be decontaminated and reused as long as the integrity of the gloves have not been compromised. However, even utility gloves have a finite service life. Utility gloves must be disposed of as soon as they begin to crack, peel, puncture, or show any other sign of deterioration.

To Remove Potentially Contaminated Disposable Gloves:

- Pinch with two fingers the outside of one glove (near the inner wrist) with the other gloved hand.

- Turn the glove inside out as it is pulled off.
 - Hold removed glove loosely in the still gloved hand.
 - Reach inside second glove with two fingers of the bare hand and pinch it.
 - Turn the glove inside out as it is removed, enclosing the first glove.
 - Properly discard the entire package.
 - Wash hands.
- ii. Protective Eyewear - Protective eyewear must be worn during procedures which generate aerosols or splatter or splash blood or other potentially infectious materials. In the laboratory, safety glasses must be worn at all times. Protective eyewear include items such as safety glasses with solid side shields, goggles, and full length face shields. The level of necessary protection shall be determined by the procedure being performed. In certain instances, e.g., emergency response and spill clean-up, a combination of protective eyewear, e.g., safety glasses and face shield, may be necessary. Protective eyewear must be properly cleaned after each exposure with blood or other potentially infectious material. When not in use, protective eyewear shall be stored in a clean and appropriate manner which prevents accidental contamination. REHS recommends that reusable protective eyewear meets the American National Standard Institute Standard Z87.1-1989 entitled Practice for Occupational and Educational Eye and Face Protection.
- iii. Face Masks - Similar to protective eyewear, face masks must be worn during procedures which generate aerosols or splatter or splash blood or other potentially infectious materials. Face masks may include single use disposable surgical masks, dust masks, or combination face masks with eye protection. Higher levels of respiratory protection may require medical evaluation and respirator fit testing. Please consult with REHS to determine adequate levels of respiratory protection for specific tasks.
- iv. Gowns - Protective gowns, aprons, lab coats, clinic jackets or similar outer garments must be worn during procedures which generate aerosols or splatter or splash blood or other potentially infectious material. Any gown or other protective outer garment that is visibly soiled with blood or other potentially infectious material should be immediately removed and properly disposed of (see Rutgers University Policy for the Disposal of Regulated Medical Waste, Appendix V). Gowns, lab coats and other protective outer garments should not be worn out of the clinic, lab, or other applicable work location. Reusable cloth gowns or other protective outer garment shall be cleaned and laundered on a regular basis at no cost to the employee.
- v. Field Settings - All procedures concerning personal protective equipment that are applicable in the clinic, laboratory, and other "housed" settings are desired in the field. All patrol and emergency vehicles must be equipped with the personal protective equipment, described above, necessary to protect eligible field employees from occupational exposure to blood or other potentially infectious materials. Examples of additional personal protective equipment which may be appropriate for field personnel include mouthpieces, resuscitation bags, and other ventilation devices used for CPR.

K. Cleaning, Disinfection, and Sterilization

- i. Cleaning refers to the physical removal of organic material or soil from objects. Cleaning is generally considered to be the first step when disinfecting or sterilizing reusable instruments or equipment. Organic materials may contain high concentrations of microorganisms. Additionally, organic materials may protect the microorganisms from the decontamination or sterilization process. The preferred method of cleaning is soap and water. A brush may be used to help remove foreign matter adhering to the surface being cleaned. An example of items requiring periodic cleaning include Reusable personal protective equipment such as safety glasses, goggles, and face shields.
 - ii. Disinfection refers to the destruction of most pathogenic organisms but not bacterial spores. Surfaces which come into contact with skin (e.g., stethoscopes, sphygmometer cuffs, otoscopes) rarely transmit diseases. However, the surfaces of these items should be periodically disinfected. Prior to disinfection, the surfaces of these items should be thoroughly cleaned. Commercial germicides approved for use and EPA registered as "hospital disinfectants", which are also tuberculocidal, are recommended by the CDC for disinfecting environmental surfaces. A 10% solution of household bleach: approximately 1 1/2 cups of household bleach in 1 gallon of tap water, may also be used for disinfection. Household bleach contains 5.25% sodium hypochlorite by weight. Once the bleach solution is mixed, the container should be affixed with a label stating the ingredients, the concentration, and the date. Reusable personal protective equipment soiled by blood or other potentially infectious material shall be cleaned and disinfected prior to reuse.
 - iii. Sterilization refers to the destruction of all microbial life, including a high percentage of bacterial spores. Sterilization is necessary for instruments, equipment, or objects that penetrate skin, come into contact with the bloodstream or other normally sterile areas of the body. An example of an object requiring sterilization is a Reusable syringe. Autoclaving is the preferred method of sterilization. Autoclave tape, bacterial culture vials, and chemical indicator strips may be used to assure adequate sterilization. Dry heat and immersion in EPA approved chemical sterilants are alternative sterilization methods that may be acceptable. Disposable (single-use) items have eliminated the need to reprocess and sterilize equipment in most instances.
- L. Housekeeping - Environmental surfaces such as walls, floors, and ceilings are not normally associated with the transmission of infections to patients and employees because they do not routinely come into contact with susceptible tissue (e.g., mucous membranes, conjunctiva of the eye) However, since dirt is a reservoir for disease and a potential vehicle for the transmission of infection, cleaning and removal of dust, dirt, and soil should be done routinely. Cleaning schedules and methods of decontamination will be determined by the type of area, the type of surface being cleaned, and the level of dirt or contamination present. However, all work environments will be maintained in a clean and sanitary condition.

Work surfaces contaminated by blood or other potentially infectious material shall be cleaned and decontaminated as soon as possible after the completion of the

procedure. Protective coverings such as plastic wrap, aluminum foil, lab table soakers, or other materials used to cover environmental surfaces and equipment shall be removed and replaced as soon as possible after contamination. Additionally, these materials will be removed and replaced on a regular basis (e.g., after each shift, daily, or weekly) depending on the frequency of contamination. Bins, pails, cans, and other similar receptacles which may become contaminated and are intended for reuse shall be frequently inspected, cleaned and decontaminated as required.

Broken glassware which may be contaminated shall never be picked up by hand. Rather, mechanical means such as forceps will be used. When picking up this type of material care must be taken not to aerosolize the blood or other potentially infectious contaminant. Additionally, adequate personal protective equipment shall be worn to protect the employee from accidental contamination. Spills of blood or other potentially infectious materials will be cleaned and decontaminated immediately. Procedures for cleaning spills of blood or other potentially infectious material are provided in Appendix VI.

- M. Regulated Medical Waste Disposal - The University currently meets all state and federal guidelines and regulations concerning the disposal of regulated medical waste. The definition of regulated medical waste as well as specific management and disposal techniques are described in Appendix V, Policy for the Disposal of Regulated Medical Waste. In general, contaminated sharps, after disposal in an appropriate sharps container, shall be decontaminated by physical means (e.g., autoclaving) or chemical means (e.g., 1:10 dilution of household bleach) prior to removal as regulated medical waste. All other contaminated items which meet the definition of regulated medical waste, shall be placed in an appropriate container and disinfected by chemical or physical means prior to appropriate disposal. Call REHS and/or refer to Appendix V for detailed information regarding the proper disposal of regulated medical waste at Rutgers University.
- N. Hazard Communication - In order to communicate the existence of a potential biological hazard to others all containers of regulated medical waste must be labeled with the international biohazard symbol, see legend below. These labels shall be fluorescent orange or orange-red with lettering and symbols printed in a contrasting color. These labels are commercially available from a variety of sources.

Biohazard warning labels shall also be affixed to refrigerators, freezers, incubators, and other containers used to store, transport, and ship blood or other potentially infectious material.

Entrance doors to work areas in clinical, academic, and research laboratories where blood and other potentially infectious materials are in use shall be posted with the biohazard warning label. In addition to the biohazard symbol, these labels shall include the name of the infectious agent in use, any special requirements for entrance to the area, and the name and telephone number of the laboratory director or other responsible person, see label below.

- O. HIV and HBV Research Laboratories and Production Facilities - All research laboratories and production facilities engaged in the culture, production, concentration, experimentation, and manipulation of HIV or HBV shall meet the criteria set forth in 29 CFR 1910.1030(e) (Section (e) of the Bloodborne Pathogen Standard). Additionally, these laboratories shall conform with biosafety level 2 standards, practices, equipment and facilities established by the U.S. Department of Health and Human Services, Public Health Service, Centers for

Disease Control and Prevention, and National Institutes of Health in Biosafety in Microbiological and Biomedical Laboratories, HHS Publication No. (CDC) 93-8395, 3rd Edition, May 1993. Further, these laboratories will follow operational guidelines established by the Centers for Disease Control and Prevention's Agent Summary Statement for Human Immunodeficiency Virus and Report on Laboratory-Acquired Infection with Human Immunodeficiency Virus, MMWR, April 1, 1988, Vol. 37, No.S-4. In some instances, depending on the concentration of the virus being grown, biosafety level 3 standards, practices, equipment, or facilities may be required.

- P. Needle Stick and Mucous Membrane Exposure Policy - A needle stick may be defined as a skin puncture with a needle or other sharp object that has been used to inject a patient, draw blood from a patient, or penetrate a patient's skin or mucous membrane. Alternatively, a needle stick may be defined as a skin puncture with a needle or other sharp object that has been used to manipulate blood or other potentially infectious material in the laboratory or other setting. Needle sticks with an unused sterile needle or needles used to draw up medications are not considered needle sticks in the context of the Bloodborne Pathogen Standard, however, needle sticks of this type should be reported to the employee's supervisor. A mucous membrane exposure may be defined as a splash, spray, or aerosolization of blood or other potentially infectious material that comes into direct contact with an employee's eyes, nose, or mouth or penetrates an employee's open wound or sore.

In the event of a needle stick or mucous membrane exposure the following procedures shall be followed:

- i. Employee

Immediately clean the exposed area. The skin should be thoroughly washed with soap and running water. Vigorous scrubbing should be avoided as this may damage the skin and increase the chance of disease transmission. Exposed mucous membranes should be thoroughly rinsed with copious amounts of running water.

Immediately after cleaning the exposed area, notify the unit supervisor. All information concerning the exposure incident, including the name of the source patient, if applicable, should be reported.

Report to University Health Services for medical evaluation and follow up by the Occupational Health Physician.

New Brunswick: Hurtado Health Center - College Ave. Campus
11 Bishop Place
New Brunswick, NJ 08901
(732) 932-8254

Newark: Blumenthal Hall
249 University Ave
Newark, NJ 07102
(973) 353-5231

Camden: Camden Health Ctr.
326 Penn Street
Camden, NJ 08102
(856) 225-6005

If University Health Services is closed, or if you are at an off-campus location report to the nearest hospital emergency room or private physician for immediate medical care. The employee should report to University Health Services as soon as possible for medical evaluation and follow up by the Occupational Physician.

ii. Supervisor

- Assure that injured employee receives appropriate emergency medical attention.
- Assure proper protocol is followed while maintaining appropriate medical confidentiality.
- Alert University Health Service Occupational Physician of the incident as well as the need for source patient/individual counseling, if applicable.
- Assure that injured employee promptly presents to University Health Services for medical evaluation and follow up.
- Provide a description to University Health Service of the exposed employee's duties as they relate to the exposure incident.
- Document the route(s) of exposure and circumstances under which the exposure occurred and provide that information to University Health Service.
- Complete the [Rutgers University Online Accident / Incident Report](#) within the shift the incident occurred.

iii. University Health Service

- Assures confidentiality of all medical information.
- Inspects contact site of exposed employee and ensures that proper immediate care is provided.
- If applicable, counsels source patient/individual and obtains informed consent for HIV antibody testing and authorization for the use of confidential HIV related information. These procedures shall conform with established University Health Service protocols and New Jersey Department of Health guidelines.
- Provide post-test counseling for exposed employee and source patient/individual, if applicable.
- Provide the exposed employee with a confidential medical evaluation and follow-up including: Documentation of source individual's HIV and HBV status as determined by serological testing, if applicable.
- Review of all medical records, including vaccination status, relevant to the appropriate treatment of the exposed employee.
- Collection and testing of the exposed employee's blood for serological status.
- Provide post-exposure prophylaxis, when necessary, as recommended by the U.S. Public Health Service.
- Advise employee with respect to medical risks, treatment options, vaccination status, and results of medical evaluation and serological testing. Documentation to this effect shall be entered into employee's medical chart.
- Provide the unit supervisor with documentation that the exposed employee has been evaluated at Occupational Health, and that the appropriate treatment and follow up has been offered.

Q. Training - All employees with reasonably anticipated occupational exposure will participate in a training program provided at no cost to the employee and conducted during normal working hours. The purpose of the training is to alert employees of the potential hazards posed by bloodborne pathogens and to assist employees in eliminating or minimizing occupational exposure to bloodborne pathogens in their work environment. Training will be offered to eligible employees initially and upon assignment to new duties in which exposure to blood or other potentially infectious material may be reasonably anticipated. Refresher training will be offered to all eligible employees on an annual basis. Training can be provided by REHS or by individual departments with the assistance of REHS, if necessary. At the end of a Bloodborne Pathogen training session an employee will be able to:

- Obtain a copy of the Rutgers University Bloodborne Pathogen Guide including the regulatory text and the Unit Specific Exposure Control Plan.
- Define bloodborne pathogen, and cite examples.
- Understand modes of transmission of bloodborne pathogens as well as basic epidemiology and symptoms of bloodborne diseases.
- Identify tasks and situations that may involve exposure to blood or other potentially infectious material.
- Take measures to eliminate, minimize, or reduce exposure to blood or other potentially infectious material by using appropriate work practice controls, engineering controls, and personal protective equipment. Demonstrate the limitations associated with each control method described above.
- Recognize the benefits of the Hepatitis B vaccination for employees who have potential exposure to blood and other potentially infectious materials. Additionally, employees will know how to obtain the HBV vaccination, understand information regarding its safety, efficacy, method of administration, and that it is offered at no cost.
- Take appropriate measures in response to an exposure incident or a spill of blood or other potentially infectious material. Additionally, employees will understand the post-exposure medical evaluation and follow-up required after an exposure incident.
- Recognize the international biohazard symbol as well as other signs and labels pertinent to this standard and understand their appropriate use.

R. Recordkeeping - The Bloodborne Pathogen Standard Requires that employer's maintain medical records and training records for all eligible employees.

i. Medical Records - A medical record will be established and maintained for each eligible employee. Medical records will be maintained in a confidential manner by University Health Service for the duration of the employee's employment plus 30 years.. Medical records will not be disclosed or reported without the employee's written permission to any person within or outside Rutgers University. However, medical records may be made available, upon request, to the Assistant Secretary of Labor, U.S. Department of Labor. Medical records will include at least the following:

- Employee's name, social security number, and job title.

- The employee's HBV vaccination status including the dates of all vaccinations and all medical records relative to the employee's ability to receive the vaccine.
 - Results of medical examinations, medical testing, and post-exposure evaluation and follow-up.
 - University Health Service's written opinion limited to the information described above.
- ii. Training Records - REHS will maintain training records relative to the training requirements of the Bloodborne Pathogen Standard. Training records will be maintained for the duration of the employee's employment plus 30 years. Training records may be made available, upon request, to the Assistant Secretary of Labor, U.S. Department of Labor, or an authorized representative. Training records will include:
- The employee's name social security number, and job title.
 - Dates and summaries of the training sessions.
 - Names and qualifications of persons conducting the training

Emergency Response - In the space below, please list and note the location of all equipment on hand in this laboratory/work location to safely and effectively clean and decontaminate a spill of blood or other potentially infectious material:

Equipment	Location

Emergency Contacts - In the space below, please list the telephone numbers of the applicable emergency contacts for this laboratory/work location:

Police Departments:

New Brunswick - Rutgers University Police Department
From Private and Pay Phones: Dial 911 or 732 - 932 – 7111
From University Offices: Obtain an Outside line then dial 911
For Hearing Impaired: Dial 732 - 932 - 6639 for TDD
For non-emergencies call 732 - 932 – 7211

Camden - Rutgers University Police Department
From Private and Pay Phones: Dial 911 or 856 - 225 – 6111
From any Campus Phone: Dial 8 or 6111
For non-emergencies call 856- 225 – 6009

Newark - Rutgers University Police Department
From Private and Pay Phones: Dial 911 or 973 - 353 – 5111
From any Campus Phone: Dial 80 or 5111
For non-emergencies call 973 - 353 – 5581

Farms, Research Stations, and other Rutgers University Facilities
Obtain an Outside line then dial 911

University Health Services:

New Brunswick: Hurtado Health Center - College Ave. Campus	(732) 932-8254
Newark: Blumenthal Hall	(973) 353-5231
Camden: Camden Health Ctr.	(856) 225-6005

Rutgers Environmental Health & Safety (REHS):	(732) 445-2550
Other	

Appendix 2

HEPATITIS B VACCINATION INFORMATION FORM

Name: _____

Date: _____ Department: _____

Job Title: _____

Campus Phone Number (s): _____ Cell Phone Number (s): _____

Email Address: _____

Supervisor's Name: _____ Supervisor's Phone Number(s) _____

- I have never received or completed the Hepatitis B vaccine series and wish to have it. (Please call the Occupational Health Department at (732) 932-8254 to make an appointment)
- I have already received the complete Hepatitis B vaccine series.
- I have not received the Hepatitis B vaccine and do not want it.
(Please read and complete the section below)

HEPATITIS B VACCINATION DECLINATION

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 vaccination, 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: _____

Witness (Trainer's Signature): _____

Date: _____

Appendix 3

[Bloodborne Pathogen Standard \(29 CFR 1910.1030\)](#)

Appendix 4

[Rutgers University Policy for the Disposal of Regulated Medical Waste](#)

Appendix 5

Rutgers University Procedures for Cleaning and Disinfecting Spills of Blood or Other Potentially Infectious Material

All work locations covered under the standard (those where employees may be reasonably anticipated to come into contact with blood or other potentially infectious material) must have equipment available to safely and effectively clean-up spills of blood or other potentially infectious material. This equipment must include, at a minimum:

- Personal Protective Equipment (PPE)
 - Disposable Gloves
 - Protective Eyewear
 - Disposable Face Mask
 - Disposable Gown or Apron
 - Antiseptic Towelettes
- Spill Clean-Up Equipment
 - Disposable Absorbent Material (e.g., Paper Towels or Lab Table Soakers)
 - Red Medical Waste Bag for Disposal
 - Appropriate Germicidal Solution
 - Forceps or Other Mechanical Means for Picking-Up Broken Glass

Spill Kits may be assembled by eligible employees in various work locations. Alternatively, a variety of spill kits are currently available commercially. The pre-packaged spill kits are particularly well suited for use in police, fire, and other emergency service vehicles. Two examples of commercially available spill kits are the Clothing and Biosafety Spill Kit (item #23828 Lab Safety Supply Catalog) and the Vital 1 Emergency Response Pack (item #17-206-6 Fisher Scientific Catalog). Regardless of the type of spill kit used, the steps, described below, should be taken when cleaning and decontaminating spills of blood or other potentially infectious materials:

A. Cleaning and Decontaminating Spills of Blood or Other Potentially Infectious Body Fluids

1. Put on appropriate personal protective equipment (PPE) including double gloves, gown, protective eyewear, and face mask.
2. Control access to area. Prevent people from walking through affected area and thereby tracking the blood or other potentially infectious material to other areas.
3. Contain spill. Use paper towels or other absorbent material to contain spill.
4. Use forceps, plastic scoop, or other mechanical means to remove any broken glass or other sharp objects from the spill area. Take care not to create aerosols. Place these items into a small cardboard box, thick walled plastic bag, or other container that will prevent them from puncturing the red bag (or your hand). Place the contained sharp items into the red bag for disposal. Do not seal bag.
5. Apply appropriate disinfectant. To avoid creating aerosols, never spray disinfectant directly into spilled material. Instead, gently pour disinfectant on top of paper towels covering the spill or gently flood affected area first around the perimeter of the spill, then work disinfectant slowly into spilled material.
6. Allow several minutes of contact time with disinfectant.
7. Pick-up all absorbent material and place carefully in red bag for disposal. Do not seal red bag.
8. Clean affected area again with disinfectant and new paper towels. Place used paper towels in red bag for disposal. Do not seal red bag.

9. Dry area. Place used paper towels in red bag for disposal. Do not seal red bag.
10. many commercially available spill kits are equipped with a powder that solidifies the spill and a small plastic scoop used to pick-up the solidified spill. If you are using such a kit follow the directions that come with the kit. Avoid creating aerosols when cleaning blood spills regardless of the type of spill kit used.
11. Once spill is completely cleaned, place all used spill control equipment in the red bag for disposal. Do not seal red bag.
12. Remove PPE and place in red bag for disposal. Remove PPE in the following order:
 - a. Remove soiled gown.
 - b. Remove outer pair of disposable gloves.
 - c. Remove face mask and protective eyewear.

Do not remove PPE from face with soiled gloves. Remove soiled outer gloves first and place them in the red bag for disposal. Use clean inner glove to remove PPE from face. This prevents the introduction of blood or other potentially infectious material to the mucous membranes of the face via a contaminated glove.

13. Once all used PPE, spill control equipment, and other potentially contaminated items are in the red bag seal bag securely for disposal. See [Appendix 5](#) for information concerning the proper disposal of regulated medical waste at Rutgers University.
14. Wash hands.

B. Cleaning and Decontaminating Laboratory Spills of Potentially Infectious Microorganisms

Many laboratories are involved in the culture, growth, and manipulation of potentially infectious microorganisms. When spilled, concentrated cultures of potentially infectious microorganisms present a risk of disease transmission to laboratory workers. All laboratories (research, diagnostic, or other) working with potential pathogens must have a written plan for dealing with spills or other releases of such materials.

Spill kits specifically designed for the clean-up and decontamination of biological spills in laboratories are commercially available and may be obtained through the Lab Safety Supply Catalog and other similar publications. Spills in the laboratory may be divided into two categories: those occurring within the biosafety cabinet and those occurring outside the biosafety cabinet.

1. Spills Occurring Within the Biosafety Cabinet

When an infectious material is spilled within the biosafety cabinet it should be cleaned-up immediately by the individual performing the work. If the cabinet is certified and working properly (and not overfilled with lab equipment which limits the cabinet's air flow) there is little risk of aerosolization of the material into the general laboratory environment.

When cleaning and decontaminating a spill within a biosafety cabinet care should be taken not to move hands and arms into and out of the cabinet unnecessarily. This action creates turbulence that reduces the laminar air flow characteristics and effectiveness of the biosafety cabinet.

A suitable disinfectant and laboratory wipes should always be available within the cabinet or on the supply cart or table directly adjacent to the biosafety cabinet. Additionally, employees working with potentially infectious microorganisms must wear adequate personal protective equipment (PPE).

To effectively clean and decontaminate a spill within the biosafety cabinet:

- a. With cabinet running, cover affected area immediately with lab wipes or other available absorbent material.
- b. Using a prepared spray bottle of a disinfectant appropriate for the material being worked with, gently spray disinfectant on top of covered spill.
- c. Allow sufficient contact time.
- d. Pick-up absorbent material and place in small autoclave bag inside biosafety cabinet. Do not seal bag.
- e. Clean affected area again with disinfectant. If chlorine bleach is used, the affected area should be cleaned one final time with 70% Ethanol. the chlorine bleach will pit and corrode the stainless steel work area inside the biosafety cabinet.
- f. Place sealed bag in biohazardous waste receptacle.

2. Spills Occurring Outside the Biosafety Cabinet

Spills of infectious agents, especially those requiring biosafety level 2 containment or higher, outside the biosafety cabinet present a considerable risk of infection to laboratory workers. The laboratory in which the spill occurs should be vacated immediately by all occupants. Any laboratory worker requiring medical attention should be escorted to University Health Services for medical evaluation and treatment. The laboratory supervisor should report the spill to REHS as soon as possible.

The laboratory should remain vacant for at least 30 minutes. This allows aerosolized droplets to settle and the building's ventilation system to exhaust droplets which are airborne to the external environment. In some instances (e.g., buildings with recirculating ventilation systems) the ventilation system servicing the affected portion of the building may need to be shut down to prevent the dissemination of contamination.

In general, the steps taken to clean and decontaminate spills of an infectious agent outside the biological safety cabinet are identical to those taken when cleaning spills of blood and other potentially infectious material. Additional precautions may need to be taken depending on the particular properties of the spilled agent as well as the volume of the spill. A more thorough discussion of the cleaning and decontamination of spills of infectious material in laboratories may be found in the biosafety section of the Rutgers University Health and Safety Manual.