

Biosafety



Biosafety training is mandatory for researcher and employees prior to initiating works with agents classified at Biosafety Levels 1 & 2

BL 1 agents are not associated with disease in adult human, but increased precaution may be appropriate.

Example:

E. coli nonpathogenic laboratory strain and S.cerevisiae is used

Biosafety Level 1

“Good Microbiological Techniques”

- No eating, drinking, applying makeup, etc.
- No mouth pipetting
- Safety glasses worn
- Lab coats
- Wash you hands
- Safe handling of sharps
- Decontaminate cultures and waste
- Laboratory access limited when work is in progress

Biosafety Level 2

- **Class 2** agents are associated with human disease which is rarely serious and for which preventative or therapeutic interventions are often available.
- Some examples would include:
 - *E. coli*, pathogenic strains
 - Adenovirus
 - Herpes simplex virus
 - Chicken pox
 - Moloney murine retrovirus, amphotropic

Biosafety Level 2

- BSL 1 practices in effect
- Biohazard or restricted access sign on door
- Door closed – negative air pressure
- Limit/restrict access to laboratory
- **Minimize aerosols**
- Biosafety cabinet for aerosol control
- **PPE required: gloves, lab coats, respirators in some cases**
- High degree of precaution with sharps
- Decontaminate surfaces and equipment

Who is required to take bloodborn pathogens training?

Bloodborne Pathogens training is Required annually for laboratory and clinic personnel working with human materials, including blood, body fluids, unfixed tissues, human cell lines or bloodborne pathogens.

Examples of Bloodborne Pathogens

- Viruses (the BIG 3):
 - Hepatitis B Virus (HBV)
 - Hepatitis C Virus (HCV)
 - Human Immunodeficiency Virus (HIV)
- Other bloodborne pathogens



Hepatitis B Virus (HBV)

- Risk factor: contact with infected blood or OPIM
- HBV can survive outside of the body up to 7 days in dried blood
- Approximately 280,000 people are infected annually as reported by Centers for Disease Control and Prevention (CDC)
- 1.2 million Americans are chronically infected with HBV (per CDC)
- Causes inflammation of the liver
- 2/3 of infected people become symptomatic
- Symptoms may include:
 - Fatigue
 - Stomach pain
 - Loss of appetite
 - Nausea, vomiting
 - Jaundice (yellowing of skin)



Universal Precautions

Refers to a method of bloodborne disease control which requires that all human blood and OPIM be treated as if known to be infectious with HIV, HBV or other bloodborne pathogens regardless of the perceived low risk of the patient or patient population.

Use Universal Precautions When Handling Blood or Other Potentially Infectious Material (OPIM)



Wear gloves and other appropriate personal protective equipment (PPE)



Wash hands after removing gloves



Use sharps containers for all sharps



Dispose of all waste materials properly



Do not pipette by mouth

Use mechanical pipetting devices



Do not apply cosmetics or handle contact lenses

Do not eat or drink in the area

Wash Your Hands!

- Wash hands with soap for 10-15 seconds after removing gloves



Sharps Disposal

- Place all sharp objects in puncture resistant containers (sharps container)

- Needles
- Scalpel blades
- Glass slides



- DO NOT break, bend or recap needles!
- Do not handle broken glass with your hands; use a broom and dust pan and put glass into puncture resistant container for proper disposal



Hepatitis B Vaccination

- HBV vaccination series must be offered free of charge to all employees who are determined to have occupational exposure
 - HBV vaccination must be offered to such employees within 10 working days of initial assignment
 - Previous vaccination must be documented by the original health care giver
 - If written verification is not available, a blood titer may be taken at CHC
- Students who are determined to be at risk of exposure, are encouraged to be vaccinated at their own expense.
- Employees and students can decline to be vaccinated or can be vaccinated at a later date
 - An official letter of declination must be signed and maintained by the PI or supervisor (form is available from Biosafety Officer)



DECONTAMINATION AND CLEANUP

Disinfecting Work Area

- Before beginning work, wipe down the work area with 70% ethanol (EtOH) or freshly made 10% bleach
- Always wear gloves when working with blood or OPIM
- Wear other PPE as warranted for the situation (lab coat, eye protection, etc.)
- At the end of work session, wipe down the work area with 70% ethanol or freshly made 10% bleach
- Dispose of gloves and contaminated materials properly into biohazard bags



Accidental Spill Cleanup of Blood or OPIM

- Isolate the spill area
- Put on disposable gloves and other PPE as warranted
- Place paper towels over the spill
- Small spills: saturate the paper towels with disinfectant (eg. 10% fresh bleach solution) for 10 minutes minimum
- Large spills: saturate towels with concentrated bleach for 15-30 minutes
- Gather all waste and dispose into biohazard bags
- Clean area again with 10% bleach, soap & water
- Autoclave biohazard bags to decontaminate



WHAT IS AN EXPOSURE INCIDENT?

An exposure incident is 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.

- Accidental puncture with needle, glass, scalpel or other sharp contaminated with the pathogen
- Contact between broken or damaged skin and infected body fluids
- Contact between mucous membrane (eyes, nose, mouth) and infected body fluids

If You Are Exposed to Human Blood or OPIM

- Cleanse all exposed skin with soap and water for 15 minutes
- Rinse mucous membranes or eyes with water for 15 minutes
- Record the location and time of incident
- Report the incident to your supervisor
- Seek evaluation within 2 hours of exposure
- fill out accident report

