



Blood-borne Pathogens for First Responders

Meeting Objectives

This training session is required for any employee who is likely to be exposed to potentially infectious body fluids, such as:

- First-aid responders to industrial accidents
- Janitorial staff
- Maintenance personnel
- Personnel assigned to clean up after an industrial accident

All other employees only need some basic information regarding blood-borne pathogens: such as:

- How to report an accident
- Not to touch potentially infectious body fluids
- Who should clean up the blood, etc?

However, for awareness purposes, consider training all employees with the information contained in this safety training presentation.

Suggested Materials to Have on Hand

- Bring copies of the form employees use to decline the hepatitis B vaccination.
- Bring copies of your company's written blood-borne pathogens Exposure Control Plan.
- Bring examples of red "biohazard" bags.
- Bring your company's "Body Fluid Disposal Kit" that is most likely part of your first-aid kit.
 - Take it apart to show employees what it contains.

Introduction/Overview

In this training session, we will discuss:

- How to clean up body fluids, and
- How you can protect yourself from exposure,
- How you might be exposed to blood-borne pathogens and infectious diseases in a manufacturing environment,
- What to do if exposed to potentially infectious body fluids.

OSHA Regulations

The Blood-borne Pathogens Standard (29 CFR 1910.1030) and the Blood-borne Pathogens Compliance Directive (CPL2-2.69) require employers to identify the jobs, tasks, and activities that could expose employees to potentially infectious body fluids. These should be identified in the Exposure Control Plan.

What are Blood-borne Pathogens?

Blood-borne pathogens are micro-organisms present in human blood that can lead to diseases. There are many disease causing micro-organisms present in human blood, however, the most common disease causing micro-organism that are covered by OSHA's Blood-borne Pathogens Standard include:

- Human Immunodeficiency Virus (HIV)
- Hepatitis B Virus (HBV)



- Hepatitis C Virus (HCV)
- HIV

HIV is the virus that leads to Acquired Immunodeficiency Syndrome (AIDS). A person can carry HIV for many years and not have any symptoms until it turns into full-blown AIDS. AIDS attacks the person's immune system, which makes it difficult for the body to fight off common diseases.

Scientists and medical authorities agree that HIV does not survive well outside the body. When HIV-infected human blood or other body fluid is dried, the risk of environmental transmission is essentially reduced to zero because the virus has not survived.

HIV is found in very low quantities in saliva and tears from some AIDS patients. HIV has not been found in the sweat of HIV-infected persons. Contact with saliva, tears, or sweat has never been shown to result in the transmission of HIV.

HBV

About 1.25 million Americans are chronically infected with HBV, which means there are large numbers of infected people in the workforce. There are approximately 140,000 to 320,000 new infections each year in the United States.

HBV can lead to chronic liver disease, liver cancer, and even death. There are approximately 5,000 to 6,000 deaths each year from chronic liver disease or liver cancer.

An HBV vaccination has been available since 1982. The vaccine prevents hepatitis B disease and its serious consequences. The vaccine has been shown to be very safe when given to infants, children, and adults.

HBV can survive for at least 1 week in dried blood on environmental surfaces such as a worktable, knife, tools, broken glass, sharp metal, etc. This environmental contamination is an effective method of disease transmission for HBV. This is the primary reason for the importance of properly cleaning and disinfecting any blood-contaminated work surfaces, tools, etc.

HCV

An estimated 3.9 million Americans have been infected with HCV, of which 2.7 million are chronically infected. This means that a large number of people in the work environment are infected with the hepatitis C virus. 70 percent of infected persons will suffer from chronic liver disease. Hepatitis C is the leading indication for liver transplantation.

Drugs are licensed for the treatment of persons infected with chronic hepatitis C. However, the treatment is effective in only 10 percent to 40 percent of patients.

Identify Potential Exposure at Work

Exposure to blood-borne pathogens or potentially infectious body fluids in a manufacturing environment is very limited. The only time that any employee is exposed is when a co-worker suffers an injury that bleeds, such as a cut, abrasion, or amputation.

- All employees working near the injured employee could be exposed at the time of injury if blood spurts onto them.



- Before a work surface, such as a table, tool, or machine control panel, is decontaminated; an employee may touch the surface and be exposed to blood-borne pathogens.
- Employees assigned to clean up body fluids after an injury may also be exposed to blood-borne pathogens.
- First-aid responders could be exposed to blood-borne pathogens when administering first-aid treatments, such as applying pressure to a wound, wrapping an injury, etc.

Transmission of Blood-borne Pathogens

The possibility of the transmission of blood-borne pathogens is very low especially when working in a manufacturing environment.

The most likely scenario in the manufacturing environment is direct contact with contaminated blood.

Other possibilities of transmission, although very unlikely, include:

- Being cut or scraped by a sharp object that is contaminated with infected blood or infected body fluids. Essentially, the contaminated blood or body fluid is being injected directly into your bloodstream through the fresh cut.
- Contacting body fluids that contain infected blood
- Drug use with unclean needles
- Examples of sharp objects in a manufacturing environment that could be contaminated with blood include broken glass, a utility knife blade, the edge of sheet metal, etc.
- Other ways of transmission not usually associated with a manufacturing workplace include:
- Unprotected sexual contact

Routes of Entry

- Non-intact skin—the infected blood must make physical contact with skin that is damaged or not completely intact. Blood-borne pathogens could enter your bloodstream through a cut in the skin, abrasions or scratches on the skin, dermatitis or other skin rashes, and even hangnails.
- Mucous membranes—the infected blood could enter your body's bloodstream through a mucous membrane. Infected blood that is splashed into your eyes, mouth, or nose could result in a transmission of blood-borne pathogens.
- What are Infectious Body Fluids?
- Infectious body fluids that contain potentially infected blood could result in the transmission of a blood-borne pathogen. Potentially infectious body fluids include blood and other bodily fluids that can contain blood, such as:
 - Saliva
 - Vomit
 - Urine

This also includes other body fluids that could contain blood, but are not likely to be encountered in a manufacturing work environment, include semen, vaginal secretions, cell cultures, etc.

Exposure Control Plan

The best way to prevent the transmission of blood-borne pathogens in the manufacturing environment is to develop and implement an Exposure Control Plan.

- **Biohazard waste:** The Exposure Control Plan will describe how biohazard waste, including contaminated rags, PPE, broken glass, etc., will be handled in order to prevent other employees from making contact with the contaminated materials.



- **Decontamination:** The Exposure Control Plan will describe how to properly decontaminate equipment and work surfaces in order to destroy any hepatitis viruses that might be present in the dried blood.
- **Determine potential exposure:** Evaluate jobs, tasks, and no routine functions at your manufacturing facility to determine who or what job titles could potentially be exposed to potentially infected blood or body fluids.
- **Labels and signs:** The Exposure Control Plan will describe the labels and signs that are used to warn other employees not to touch certain bags or containers because they hold biohazard waste.
- **Personal protective equipment (PPE):** The Exposure Control Plan will describe the type of PPE that first-aid responders and cleanup personnel should wear in order to protect themselves from making contact with potentially infected blood.
- **Recordkeeping:** The Exposure Control Plan will also describe recordkeeping requirements per OSHA's Blood-borne Pathogens standard.
- **Safe work practices:** The Exposure Control Plan will describe safe work practices for first-aid responders and personnel assigned to clean up after an accident.
- **Training requirements:** The Exposure Control Plan will describe who is to be trained and what they are to learn in the training session.

Universal Precautions

OSHA defines universal precautions as “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 blood-borne pathogens.

When following universal precautions, and assuming all body fluids are infectious, workers avoid contact by placing protective barriers between themselves and potentially infectious body fluids.

Practicing universal precautions also requires cleanup and decontamination of the worker and equipment or tools. Always wash your hands after handling any type of body fluid, even when wearing gloves.

Protective Barriers

PPE is a vital part of preventing exposure to blood-borne pathogens. Remember, the concept of universal precautions includes avoiding contact with all potentially contaminated blood or body fluids. Use protective barriers, including PPE, to avoid contact with blood and body fluids.

- **Gloves:** Latex or nitrile gloves should be worn for all scenarios involving blood or body fluids. First responders must wear gloves when applying bandages or putting pressure on wounds. Cleanup personnel must wear gloves when cleaning up and decontaminating blood or body fluids.
- **Eye Protection:** Safety glasses, goggles, or even a face shield must be worn to protect your mucous membranes from potential splashes of blood. First-aid responders must protect their eyes because they may encounter spurting blood. Ideally you will also want to protect your entire face with a face shield in order to protect your nose and mouth from spurting blood.
- **Protective Clothing:** Protective suits or aprons are worn to protect your skin and clothing from spurting blood. Many “body fluid disposal kits” contain disposable aprons and even booties. Booties can be used to protect your shoes from the blood. Most clothing can be decontaminated by washing. However, blood can be difficult to remove from shoes.
- **Nose and Mouth Protection:** A dust mask or CPR mask will protect your nose and mouth. Wearing a dust mask will protect the mucous membranes of your nose and mouth from spurting blood. A CPR mask is designed to protect you just in case the victim vomits while you perform CPR.



- **Impromptu Barriers:** For many accidents in an industrial and manufacturing environment, the first-aid responders do not feel that they have time to get and then put on protective barriers such as gloves or aprons. Impromptu barriers in your workplace might include a piece of plastic, a clean plastic garbage bag, paper, your shirt, etc. The idea is to use something as a barrier between your skin and the victim's blood or body fluid.

Safe Work Practices

Remove contaminated PPE and clothing

Remove contaminated clothing and PPE as soon as possible. If blood has splashed onto your shoes, pants, or shirt, remove these items as soon as possible. Wash the skin that was under the contaminated clothing. Remove contaminated PPE, such as gloves, as soon as you have finished administering first aid or decontaminating equipment or work surfaces.

Wash up immediately after exposure

Thoroughly wash your hands, face, or any other areas of your skin that may have come into contact with potentially infected blood or body fluids. If you believe that blood or other potentially contaminated body fluids splashed into your eyes, go to an emergency eyewash station and flush your eyes immediately.

Disinfect contaminated equipment

Cleaning and disinfecting tools, work surfaces, and equipment that made contact with potentially infected blood or body fluids will prevent the next user from unknowingly coming into contact with the potentially infectious body fluid.

Dispose of contaminated items

Dispose of all items that cannot be decontaminated such as rags, paper towels, and disposable PPE. Place the items in an appropriately labeled bag or container to help prevent someone else from accidentally being exposed to the contaminated waste items.

Decontamination

An important part of preventing exposure to infected body fluids and blood-borne pathogens is to properly clean and disinfect equipment and work surfaces.

Remember, universal precautions assume the body fluids that contaminated the equipment or work surface are infected with blood-borne pathogens.

- Obtain a "Body Fluid Disposal Kit" which contains fluid cleanup materials such as:
 - Absorbent powder, which can be sprinkled on liquid body fluids that might contain blood. When the powder absorbs the fluid it can be scooped up and placed into the disposal bag.
 - Disinfectant solution
 - Disposal bag
 - PPE such as gloves, eye protection, an apron, and even foot covers
- Put on protective gloves, such as latex or nitrile gloves, and protective eyewear, such as glasses or goggles.
- Obtain disinfectant solution. If no disinfectant solution is available, a solution of 1/4 cup of bleach per gallon of water can be substituted.
- Wipe down all contaminated surfaces with the disinfectant solution in order to ensure that all blood-borne pathogens are killed.



- Dispose of all contaminated gloves, towels, rags, and used absorbent powder. Place it all in the disposal bag.

Biohazard Waste Disposal

Manufacturing facilities are not likely to generate regulated medical waste that requires proper disposal through a medical waste disposal company according to EPA regulations. Regulated medical wastes include:

- Potentially infected blood or body fluids that remain in liquid form.
- Contaminated liquids that are released when an absorbent paper towel or sponge is compressed.

If you think your company has medical waste from a severe injury or accident, contact a licensed medical waste disposal company.

- **Contact your local health department:** They may allow you to flush some blood contaminated materials down the toilet, much as we would discard contaminated tissue down the toilet. Ask them how they want you to dispose of blood contaminated materials that may be generated after an injury in the workplace.
- **Small cuts:** As a rule of thumb, items such as Band-Aids™ or tissues that we would typically throw in the wastebasket are not regulated medical wastes. Cleanup after a small injury would probably only generate small amounts of contaminated gauze, paper towels, and PPE. with the blood or body fluids completely absorbed.
- **Absorb all liquids:** Ensure that no liquids will be released if the absorbent materials are compressed. Use the absorbent powder in the blood-borne pathogens kit. The powder will turn the blood into a gel-like substance.
- **Double bag:** Place all contaminated items into a plastic bag and tie the bag shut. Then place the bag into another plastic bag and tie the second bag shut. Place contaminated sharp items, such as glass, into a small cardboard box or other solid container before placing it into the first bag in order to prevent the sharp materials from cutting the plastic bag. Then discard the double-bagged contaminated items in the Dumpster.

Label Waste Containers

Another way to prevent potential exposure to blood or body fluids is by appropriate labels on containers that hold items contaminated with blood or body fluids.

- **Non-regulated Medical Waste:** Although placing the waste materials into a labeled bag is always a good idea, it is not required if a labeled bag is not available.
 - Labels are not required for non-regulated waste materials that contain blood or body fluids. As long as liquids are absorbed so they are not released when compressed, the paper towels, Band-Aids™, gauze, and PPE can be disposed of in an unlabeled bag.
- **Regulated Medical Waste:** All regulated medical waste must be placed in a container that is properly labeled with the universal biohazard symbol. The term “Biohazard” must also be on the label. These labels meet EPA requirements for labeling regulated medical waste. Most “body fluid disposal kits” come with red bags marked with the biohazard symbol.

Exposure Incident

An exposure incident is a specific incident of contact with potentially infectious blood or body fluid. Employees must report any exposure to blood-borne pathogens.

After each accident, an accident investigation report must be completed. The report should include:

- Cleanup method
- Documentation of the spill location
- Waste disposal method
- Whether blood was spilled



- Who cleaned it up

Be sure to report all incidents involving blood or body fluid so the company can determine if any employee, such as the first-aid responder or clean-up person, was exposed, and then offer post-exposure medical evaluations if necessary. Document this determination of exposure.

If there was no infiltration of mucous membranes or open skin surfaces, it is not considered an occupational exposure. If an employee administering first aid is wearing the appropriate gloves and other protective equipment, an exposure incident does not exist.

Post-Exposure Evaluation

The post-exposure medical evaluation is designed to help determine if the exposed person was exposed to infected blood or body fluids.

The medical evaluation is completely confidential for both the exposed person and the exposure source. Not even the company will know the results of the testing.

The evaluation will document the route of exposure and identify the source individual. If the source individual gives consent, the evaluation includes testing his or her blood. The results of all testing is provided to both the source individual and the exposed employee by the medical personnel.

Hepatitis B Vaccination

The use of the HBV vaccine is strongly endorsed by medical, scientific and public health communities as a safe and effective way to prevent disease and death. There is no confirmed evidence that indicates the HBV vaccine can cause chronic illness. Reports of unusual illnesses following a vaccine are most often related to other causes and not related to the vaccine.

The hepatitis B vaccination must be offered, within 10 days of their initial assignment, to all potentially exposed employees, including:

- First-aid responders
- Janitorial personnel
- Personnel assigned to clean up after the accidents

The hepatitis B vaccination is paid for by the employer and consists of a series of three injections. Currently, there is no requirement for routine boosters; however this is still being assessed.

If you decline the hepatitis B vaccination, you will be asked to sign a form that states you waived your opportunity to receive the vaccination. However, even if you sign the form declining the offer, you may still change your mind later and accept the vaccination. The form basically states that at this time you do not want to have the shots.

Recordkeeping

- Medical records must be kept confidential and must be maintained for the length of employment plus 30 years.
- Medical records must be made available to each employee upon the employee's request.
- Medical records will contain the status of your hepatitis B vaccine, such as whether you received or declined the vaccine.
- The medical records will also contain information regarding any post-exposure evaluations or other specific information provided by the healthcare professionals.



Suggested Discussion Questions

1. Describe how blood-borne pathogens are transmitted.
2. Do you have any other questions?
3. How are medical waste containers labeled?
4. How do you dispose of contaminated PPE?
5. What do you do if you think you may have been exposed to blood?
6. What is the main premise of universal precautions?
7. What job tasks potentially expose workers to blood-borne pathogens?
8. What should you do if you get blood on your clothes?
9. What solution is used to decontaminate items?
10. What type of PPE should be worn when cleaning up blood?

Wrap-Up

Blood and body fluid could potentially contain serious disease, so remember to always protect yourself and avoid contact when possible. Wear PPE when responding to an accident or when cleaning up after an accident. Decontaminate all surfaces with a bleach solution. Dispose of blood-contaminated items properly. Report any potential exposure to blood or body fluids.

Sample Handout # 1

What are Blood-borne Pathogens?

Blood-borne pathogens are microorganisms present in human blood that can lead to diseases.

Human Immunodeficiency Virus (HIV)

HIV is the virus that leads to acquired immunodeficiency syndrome (AIDS).

HIV does not survive well outside the body.

Contact with saliva, tears, or sweat has never been shown to result in the transmission of HIV.

Hepatitis B Virus (HBV)

About 1.25 million Americans are chronically infected with hepatitis B.

Hepatitis B can lead to chronic liver disease, liver cancer, and even death.

A hepatitis B vaccination has been available since 1982.

The hepatitis B virus can survive for at least 1 week in dried blood on surfaces such as a worktable, knife, tools, broken glass, or sharp metal.

Hepatitis C Virus (HCV)

An estimated 3.9 million Americans have been infected with HCV.

Seventy percent of infected persons will suffer from chronic liver disease.

Drug treatment is effective in only 10 percent to 40 percent of patients.

