Occupational Exposure to Bloodborne Pathogens

- 29 CFR 1910.1030
Objectives

- Provide an overview of the Bloodborne Pathogens Standard
- Highlight OSHA’s requirements regarding bloodborne pathogens, including needlestick safety provisions
Bloodborne Pathogens Standard applies to all employees with occupational exposure to blood and other potentially infectious materials.
Scope

- The standard covers many types of occupations including those in:
  - Healthcare facilities
  - Non-healthcare facilities
  - Permanent and temporary worksites
Temporary Operations

- Trauma or rescue scene
- Mobile blood banks
- Crime scenes
- Collateral duties
Multi-Employer Worksites

- Employment agencies
- Personnel services
- Home health services
- Independent contractors
- Independent practices
Employees Potentially At Risk

- Physicians and surgeons
- Nurses
- Phlebotomists
- Medical examiners
- Dentists and dental workers
- Some laundry and housekeeping employees
- Clinical/diagnostic laboratory workers
- Medical technologists
- Nursing home personnel
- Dialysis personnel
13 NCAC 7F.0207(a)(4): "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 collateral first aid duties by an employee in the areas of construction, alteration, or repair, including painting and decorating**"
Standard Specific Definitions 1910.1030(b)

- Blood
- Bloodborne pathogens
- OPIM
- Contaminated
- Occupational exposure
- Exposure incident
- Regulated waste
- SESIP
- Needleless system
Blood

- Human blood
- Human blood components
- Products made from human blood
Bloodborne Pathogens

- Pathogenic organisms that are present in human blood, and
- Can cause disease in humans

**Includes but not limited to:**
- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)
- Human immunodeficiency virus (HIV)
Hepatitis

- Inflammation of the liver, which may be caused by a viral infection, poisons, or the use of alcohol or other drugs

- Types of viral hepatitis
  - Hepatitis A, B, C, D, E, G

- Outcomes range from acute flu-like illness to jaundice, extreme fatigue and nausea to advanced hospitalization to death

- Types of viral bloodborne hepatitis
  - Hepatitis B, C, D, G
Human Immunodeficiency Virus

- Human Immunodeficiency Virus (HIV) is the virus that causes Acquired Immune Deficiency Syndrome (AIDS)

- AIDS is a serious condition that affects the body's immune system; the body's natural ability to fight infection
Other Bloodborne Pathogens

- Malaria
- Syphilis
- Babesiosis
- Brucellosis
- Leptospirosis
- Arboviral infections
- Relapsing fever
- Creutzfeld-Jakob Disease
- Human T-Lymphotrophic Virus Type 1 and 2
- Viral hemorrhagic fevers
Other Potentially Infectious Materials (OPIM)

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

- The presence or the reasonably anticipated presence of blood or OPIM on an item or surface
Occupational Exposure

- Reasonably anticipated contact with blood or OPIM
- May result from the performance of an employee’s duties
- Occurs by skin, eye, mucous membrane, or parenteral contact
Exposure Incident

A specific contact with:

- Blood or OPIM
- Results from the performance of an employee’s duties
- Contact with:
  - Eye, mouth, or other mucous membrane
  - Non-intact skin
  - Parenteral contact

1910.1030(b)
Regulated Waste

- Items contaminated with blood or OPIM which would release these substances in a liquid or semi-liquid state if compressed
- Pathological and microbiological wastes containing blood or OPIM
- Contaminated sharps

- Items caked with dried blood or OPIM and capable of releasing these materials during handling
- Liquid or semi-liquid blood or OPIM
“SESIP”

- “Sharps with Engineered Sharps Injury Protection”

- Non-needle sharp or a needle with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident
Hypodermic Syringes

- “Self-Sheathing” safety feature

Before

Self-sheathed protected position

After
Hypodermic Syringes

- “Retractable Technology” safety feature

![Diagram of before and after syringe configurations with a retracted protected position.]
Phlebotomy Needle

- “Self-Blunting” safety feature

Before

After

Blunted protected position
“Add-On” Safety Feature

Attached to syringe needle

Attached to blood tube holder
Retracting Lancets

- Safety features

Before | During | After

Before | During | After

In use | After use
Disposable Scalpels

- Safety features

Retracted position

Protracted position

Protracted position
Needleless Systems

- The most direct method of preventing needle-stick injuries
Needleless Systems

Device that does not use a needle for:

- Collection of bodily fluids
- Administration of medication/fluids
- Any other procedure with potential percutaneous exposure to a contaminated sharp
Exposure Control Plan (ECP) 1910.1030(c)
Exposure Control Plan

Written plan designed to eliminate or minimize employee exposure that contains:

- Exposure determination

- Schedule and method of implementing paragraphs (d) through (h) of the standard

- Procedures for evaluating circumstances surrounding an exposure incident

(cont...)
Exposure Control Plan

- Must be accessible to employees
- Reviewed and updated annually or more often if changes occur
- Available to OSHA and NIOSH representatives
New Provisions

- The ECP must also be updated to include:
  - Changes in technology that reduce/eliminate exposure
  - Annual documentation of consideration and implementation of safer medical devices

- Solicitation of non-managerial employees
Employer is required to identify job classifications where occupational exposure can occur:

- Job classification in which **ALL** have occupational exposure
- Job classification in which **SOME** have occupational exposure
- List of all tasks and procedures in which occupational exposure occurs

Must be made without regard to the use of PPE
Methods of Compliance

- General - universal precautions
- Engineering and work practice controls
- Personal protective equipment
- Housekeeping
Universal Precautions

- An approach to infection control
- Originated by CDC
- Concept:
  - All human blood and certain human body fluids are to be treated as if known to be infectious for HIV, HBV, or other bloodborne pathogens
Selection is dependent on the employer’s exposure determination.

The employer must:
- Identify worker exposures to blood and OPIM
- Review all processes and procedures with exposure potential
- Re-evaluate when new processes or procedures are being used

(cont...
Engineering and Work Practice Controls

The employer must:

- Evaluate available engineering controls (safer medical devices)
- Train employees on safe use and disposal
- Implement use of appropriate engineering controls/devices

(cont...)

(training)
The employer must:

- Document evaluation and implementation in ECP
- Review, update ECP annually
- Review devices and new technologies on an annual basis
- Implement *new* device use, as appropriate and available
- Update employee training for new devices and/or procedures and document in ECP

(Cont...)
Examples of Engineering Controls

- Needleless systems, e.g., IV connectors
- Sharps with sharps injury protection
- Puncture-resistant sharps containers
- Mechanical needle recapping devices
- Biosafety cabinets
- Mechanical pipetting devices
Work Practice Controls

● Altering behaviors

● Function
  − Protection is based on employer and employee behavior
  − Protection not dependent on installation of a physical device such as protective shield

(cont...)
Work Practice Controls

- **Washing hands**
  - Employers shall provide readily accessible hand-washing facilities
  - When not feasible, appropriate antiseptic hand cleansers shall be provided
  - When gloves are removed
  - ASAP after contact with body fluids

(cont...)
Do Not Bend or Break

Contaminated Needles (cont...)
Place contaminated reusable sharps in appropriate container until processing, containers should be:

- Puncture-resistant
- Labeled or color-coded
- Leak proof on sides and bottom
- Stored or processed in a safe manner

(cont...)
Work Practice Controls

- Using mechanical devices or one-handed techniques to recap or remove contaminated needles when necessary.
- Prohibiting eating, drinking, smoking, etc.
- Food and drink must not be kept in the same storage as potentially infectious material.
- Performing all procedures involving blood or OPIM so as to minimize splashing, spattering, and droplet generation.
- Prohibiting mouth pipetting or suctioning of blood or OPIM.

(cont...
Personal Protective Equipment

- Specialized clothing or equipment that is worn by an employee for protection against a hazard
  - General work clothes (uniforms, pants, shirts and blouses) not intended to function as protection against a hazard are not considered personal protective equipment (PPE)
Examples of Types of PPE

- Gloves
- Gowns
- Face shields
- Eye protection
- Mouthpieces and resuscitation devices
PPE Provisions

- Employer must provide appropriate PPE at no cost to the employee
- Employer must ensure that PPE is worn by employees
- Must be accessible and in appropriate sizes for employees at the worksite

(cont...)
PPE Provisions

- PPE must be cleaned, repaired, replaced, and disposed of by employer

- PPE must be removed before leaving work area and when becomes contaminated
  - Cannot wash PPE at home!!!
PPE - Gloves

- Gloves shall be worn when:
  - Potential contact with blood and OPIM, mucous membrane and non-intact skin
  - Performing vascular access procedures
  - Handling or touching contaminated surfaces
PPE - Gloves

- Disposable (single use) gloves must be replaced when contaminated, torn or punctured

- Disposable (single use) gloves shall not be washed or decontaminated for reuse

- Utility gloves may be cleaned and re-used as long as they continue to provide a barrier for employee
Housekeeping - General

Employer shall develop and implement a written schedule for cleaning and decontamination at the worksite.

Schedule is based on the:
- Location within the facility
- Type of surface to be cleaned
- Type of soil present
- Tasks or procedures being performed
Contaminated work surfaces shall be decontaminated:

- After completion of procedures
- After contact with blood or OPIM and
- At end of work shift

(cont...)
**Appropriate Disinfectants**

- **Household bleach (5% NaOCl₂)**
  - 1:10 - 1:100 in H₂O

- **EPA registered disinfectants**
  - List A: EPA’s registered antimicrobial products as sterilants
  - List B: EPA registered tuberculocidal products effective against *Mycobacterium spp*
  - List C: EPA’s registered antimicrobial products effective against human HIV-1 Virus
  - List D: EPA’s registered antimicrobial products effective against human HIV-1 and Hepatitis B virus
  - List E: EPA’s registered antimicrobial products effective against *Mycobacterium spp*, human HIV-1 and Hepatitis B virus
  - List F: EPA’s registered antimicrobial products against Hepatitis C virus
  - List G: EPA’s registered antimicrobial products for medical waste treatment
Regulated Waste 1910.1030(d)(4)(iii)[1]

- Contaminated sharps disposal
  - Must be discarded in containers that are:
    » Closable
    » Puncture-resistant
    » Leak proof (on sides and bottom)
    » Labeled or color-coded
  - During use, the sharps container must be:
    » Placed near the work area
    » Maintained upright during use
    » Routinely replaced

(cont...)

When moving, the sharps container must be:
» Closed immediately
» Placed in a secondary container if leaking

Reusable sharps containers shall not be opened, emptied, or cleaned manually or in any manner which presents a risk of percutaneous injury to employees
Regulated Waste

- Other regulated waste containment
  - Must be put into containers that are:
    » Closable
    » Leak proof
    » Labeled or color-coded
    » Closed prior to removal

- If outside contamination occurs, it shall be placed in a secondary container that meets the criteria above
Contaminated Laundry

Contaminated laundry must be handled as little as possible with a minimum of agitation

- Bagged or containerized at its location of use
  » It can NOT be rinsed there
- Placed and transported in bags or containers that are labeled or color-coded
- Placed in a container that will prevent soak-through to the exterior

1910.1030(d)(4)(iv)
Paragraph (e) applies to research laboratories and production facilities engaged in the culture, production, concentration, experimentation, and manipulation of HIV and HBV

- Does not apply to clinical or diagnostic laboratories
- Requirements apply in addition to other requirements in the standard

(cont...)
HIV and HBV Research Laboratories and Production Facilities

- HIV and HBV production facilities shall meet specific criteria as outlined in paragraph (e).

- HIV and HBV research laboratories and production facilities have additional training requirements for their employees.
The Hepatitis B vaccination and post-exposure evaluation and follow-up including prophylaxis shall be:

- Available to employees at a reasonable time and place and without cost
- Performed by or under the supervision of a licensed physician or healthcare professional
- Provided according to current recommendations of the U.S. Public Health Service
No Cost to the Employee

- No out of pocket expense

- Employer may not require employee to use his/her health care insurance to pay for series unless:
  - Employer pays all of the cost of health insurance, and
  - No cost to employee in form of deductibles, co-payments, or other expenses
Hepatitis B Vaccination

Hepatitis B vaccination shall be made available:
- After employee has received required training, and
- Within 10 days of initial assignment to all employees with occupational exposure

(cont...)
Hepatitis B Vaccination

● Exceptions

− If the employee has previously completed the complete Hepatitis B vaccination series, or

− Immunity is confirmed through antibody testing, or

− The vaccine is contraindicated for medical reasons

(cont...)

1910.1030(f)(2)(i)
Participation in prescreening not prerequisite for receiving Hepatitis B vaccination

Hepatitis B vaccination provided even if employee declines but later accepts treatment

Employee must sign statement when declining Hepatitis B vaccination

Hepatitis B vaccination booster doses must be available to employees if recommended by the USPHS
Post-Exposure and Follow-Up

- Documentation of exposure routes and how exposure incident occurred
- Identification and documentation of source individual’s infectivity, if possible
- Collection and testing of employee’s blood for HBV and HIV serological status (employee’s consent required)
- Post exposure prophylaxis when medically indicated
- Counseling
- Evaluation of reported illnesses
Source Individual

- Source individual’s test results shall be made available to the exposed employee (not the employer)

- Employee should also be given information about applicable disclosure laws and regulations concerning source individual’s identity and infection status
Exposed Employee

- Exposed employee’s blood shall be collected as soon as feasible after consent is obtained.

- If employee consents to baseline blood collection, but not to HIV serological testing, sample shall be preserved for 90 days.
Information Provided to Healthcare Professionals

- A copy of the Bloodborne Pathogens Standard
- A description of the employee’s duties relevant to the exposure incident
- Documentation of the route of exposure and the circumstances under which the exposure incident occurred
- Results of the source individual’s blood test, if available
- All appropriate medical records relevant to the employee
Healthcare Professional’s Written Opinion

- Within 15 days after evaluation is completed
- Written opinion for Hepatitis B vaccination is limited to whether the employee requires or has received the Hepatitis B vaccination
- Written opinion for post-exposure evaluation and follow-up includes information that the employee has been:
  - Informed of the evaluation results, and
  - Informed of any medical conditions that require further treatment
Communication of Hazards to Employees 1910.1030(g)

- Warning labels and signs
- Information and training
Warning Labels

- Must be affixed to:
  - Regulated waste containers
  - Refrigerators and freezers containing blood or OPIM
  - Other containers used to store, transport or ship blood or OPIM
Labels and Signs

- Label shall include the following legend

![Biohazard Symbol]

- Labels shall be fluorescent orange or orange-red or predominately so, with lettering and symbols in a contrasting color
Must be posted at the entrance to HIV and HBV research laboratories and production facilities work area

Same color scheme as for labels

(Name of Infectious Agent)
Special Requirements for entering the area
(Name, Phone number of the responsible person)
Training shall be provided:

- At the time of initial assignment to tasks where occupational exposure may occur, *and*
- At least annually thereafter
Training Program Elements 1910.1030(g)(2)(vii)

- Contents of standard
- Epidemiology of bloodborne diseases
- Modes of transmission
- Exposure control plan
- Job duties with exposure
- Types of control
- Protective equipment
- Hepatitis B vaccination program
- Emergency procedures
- Post-exposure procedures
- Signs/labels (color-coding)
- Question session
Information and Training

- Person conducting the training shall be knowledgeable in the subject matter covered in the training program as it relates to the workplace.

- Employees in HIV and HBV laboratories and production facilities shall receive other initial training and demonstrate proficiency in handling human pathogens or tissue culture.
Recordkeeping

- Medical records
- Training records
- Sharps injury log
Medical Records

Must contain:

- Employee name and social security number
- Employee Hepatitis B vaccination status
- Examination results, medical testing, and post-exposure follow-up procedures
- Healthcare professional’s written opinion
- Information provided to the healthcare professional

Be maintained for employment + 30 yrs
Training records shall include:

- Training dates
- Training session content and summary
- Names and qualifications of trainers
- Names and job titles of all trainees

Be maintained for 3 years from the date of training
The employer shall create and maintain a sharps log

- For documenting percutaneous injuries from contaminated needles
- Must be recorded and maintained separate from the OSHA 300 log and must remain confidential
- At a minimum, for each incident the log must contain:
  » Type and brand of device involved (if known)
  » Department or work area of incident
  » Description of incident

Mandatory for those keeping records under 1904
Exemptions

● 29 CFR 1904, Appendix A to Subpart B:
  − List of partially exempt industries

● Not required to keep OSHA injury and illness records unless asked in writing by:
  − OSHA
  − BLS
  − State agency operating under authority of OSHA or BLS

● Does not exempt them from responsibility to report 1+ fatalities or 3+ hospitalized
Availability of Records

- Training records shall be provided upon request for examination and copying to:
  - Employees
  - Employee representatives
  - Director of NIOSH
  - OSHA
Availability of Records

- Medical records shall be provided upon request for examination and copying to:
  - Employee
  - Anyone with written consent of employee
  - NIOSH
  - OSHA

(cont...)

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Thank You For Attending!

Final Questions?