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Chapter 7.4 Biosafety and Bloodborne Pathogens

This could be you . . .

A janitor was stuck by a hypodermic needle left in a trash can.

An employee found blood drops around his work area.

7.4.1 Applicability of this chapter

You are required to follow this chapter if you work with, or may be exposed to, biohazards, including blood and “other potentially infectious materials,” as a part of your job. JSC has adopted the recommendations found in the Centers for Disease Control and Prevention and National Institutes of Health “Standard Precautions” (previously known as Universal Precautions) and “Biosafety in Microbiological and Biomedical Laboratories” (BMBL) for controlling biohazards in the workplace. If you don’t work with blood or body fluids but find them in your work area, follow paragraph 7.4.2 below. Paragraph 20 lists the responsibilities for supervisors.

7.4.2 What to do if you discover blood or other potentially infectious body fluids

7.4.2.1 If you find blood or other potentially infectious body fluids, you shall:

- Leave it alone. Without the proper training and equipment, you risk getting a bloodborne disease.
- Block off the area to prevent others from contacting it.
- Report it to Emergency Dispatch Center at x33333 or (281) 483-3333 and to the facility manager. They will send janitorial personnel trained in bloodborne pathogens to clean it up.
- If the incident is an emergency, call x33333 or (281) 483-3333, JSC’s emergency number.

7.4.3 Biohazards and bloodborne pathogens

7.4.3.1 The following definitions apply to this chapter:

- Biological hazards or biohazards* are those infectious agents that present a risk of death, injury, or illness to employees. Bloodborne pathogens and other potentially infectious materials (subparagraphs b and c below) are considered biohazards.
- Bloodborne pathogens* are pathogenic microorganisms present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).
- Other potentially infectious materials (OPIM)* is an OSHA definition and includes:
 - 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 visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.
 - Any unfixed tissue or organ (other than intact skin) from a human (living or dead).

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(3) HIV-containing cell or tissue cultures, organ cultures.

(4) HIV- or HBV-containing culture medium or other solutions.

(5) Blood, organs, or other tissues from experimental animals infected with HIV or HBV.

7.4.4 OSHA and NASA requirements for bloodborne pathogens and biosafety

Employees whose job descriptions include possible exposure to blood or OPIM shall follow OSHA 29 CFR 1910.1030, "Bloodborne Pathogens," and NPR 1800.1, Chapter 4.

7.4.5 How to determine whether you work in a job that exposes you to biohazards or bloodborne pathogens

- a. JSC Human Health and Performance Directorate has a Biosafety Review Board that evaluates the use of any new potentially biohazardous or pathogenic materials. The Biosafety Review Board audits laboratories yearly for safe handling and storage of bloodborne pathogens and biological materials. Anyone, employees or visitors, who brings biohazardous materials onto JSC or who plans to implement a process using biohazardous materials shall have approval from the Biosafety Review Board per JSC 63828, "Biosafety Review Board Operations and Requirements Document," before use or implementation.
- b. Occupational Health evaluates all areas where civil service or contract workers could be exposed to bloodborne pathogens. Organizational management shall help in evaluating these areas.

7.4.6 Biosafety levels and precautions to take for each

Employees shall never bring any biosafety level (BSL) 2 materials on site without the prior approval of the Biosafety Review Board. BSL 3 or 4 materials are prohibited on site. Classes of biohazards or biological materials are Biohazard 1, 2, 3, or 4. Employees must also follow the requirements in the table below for the biosafety level matching the biohazard classification when working with any biohazardous material in a laboratory or clinical setting. BSL 3 and 4 are listed in the event of clinical case.

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BSL . . .	<i>Involves these agents . . .</i>	<i>Follow these practices . . .</i>	<i>Use this safety equipment (primary barriers) . . .</i>	<i>Use these facilities (secondary barriers) . . .</i>
1	Not known to cause disease in healthy adults	Standard micro-biological practices	None required	Open bench-top sink required
2	Associated with human disease, hazard = auto-inoculation, ingestion, mucous membrane exposure	BSL 1 practice plus: Limited access; biohazard warning signs; "sharps" precautions; biosafety manual defining any needed waste decontamination or medical surveillance policies	Class I or II biosafety cabinets (BSCs) or other physical containment devices used for manipulating any agents that cause splashes or aerosols of infectious materials PPE: laboratory coats; gloves; face protection as needed	BSL-1 plus: Autoclave available
3	Indigenous or exotic agents with potential for aerosol transmission; disease may have serious or lethal consequences	BSL-2 practice plus: Controlled access; decontaminate all waste; decontaminate lab clothing before laundering; baseline serum	Class I or II BSCs or other physical containment devices used for manipulating any agents PPE: protective lab clothing; gloves; respiratory protection as needed	BSL-2 plus: Physical separation from access corridors; turn off ventilation.
4	Dangerous or exotic agents that pose a high risk of life-threatening disease, aerosol-transmitted lab infections; or related agents with unknown risk of transmission	BSL-3 practice plus: Change clothing before entering; shower on exit; decontaminate all material when exiting facility	Conduct all procedures in Class III BSCs or Class I or II BSCs with full-body, air-supplied, positive-pressure personnel suit	Same as BSL-3

7.4.7 Exposure control plan

7.4.7.1 Any organization or company whose employees may be exposed to blood and OPIM shall have a written exposure control plan tailored to the work area and designed to minimize worker exposure. You must update the written exposure control plan yearly. The plan shall contain, as a minimum, the items listed in 29 CFR 1910.1030(c), and shall include but not be limited to:

- Exposure determination and hazard analysis, which describe the occupation and tasks with exposure. Occupations likely to need an exposure control plan include, but not limited to:
 - (1) Medical personnel.

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- (2) Custodial staff.
- (3) Childcare staff.
- (4) Certain emergency responders.
- (5) Medical researchers.
- b. Methods to comply with applicable requirements.
- c. Communicating hazards to exposed employees.
- d. Recordkeeping.
- e. The procedures to follow after an exposure to blood or other infectious materials.
- f. Hepatitis B vaccination option.

7.4.8 Precautions to take when working with blood or other potentially infectious materials

7.4.8.1 Employees who work with any of the blood or body fluids listed above shall observe these “universal precautions: ”

- a. Treat all blood and body fluids as infectious. Urine, feces, saliva, breast milk, and vomit are not considered potentially infectious materials unless they are visibly contaminated with blood.
- b. Always wear appropriate personal protective equipment (PPE), such as gloves, lab coats or aprons, and eye or face shields for the task at hand.
- c. Wash hands with biocidal soap immediately after removing PPE or coming in contact with blood or body fluids.
- d. Remove all PPE before leaving the work area and place in the appropriate container for storage, decontamination, or disposal.
- e. Never eat, drink, smoke, apply cosmetics, or handle contact lenses in the work area.
- f. Never store blood or OPIM in refrigerators or freezers where food and drink are stored.
- g. Minimize splashing and spraying blood or other infectious materials while handling them, while cleaning equipment, or during any other clean-up procedure.
- h. Never pipet or suction by mouth.
- i. Make sure all ventilation hoods and biological safety cabinets are inspected at least every year.

7.4.9 Precautions when using needles

7.4.9.1 Employees who use needles with blood or other infectious materials shall observe these precautions:

- a. Never shear, bend, or break used needles.
- b. Never recap or re-sheath by hand.
- c. Never remove used needles from disposable syringes.

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- d. Dispose of used needles in an approved biohazard container.
- e. Never overfill sharps containers.

7.4.10 Housekeeping precautions

7.4.10.1 Housekeeping is an important , so employees shall observe these requirements:

- a. Disinfect all work surfaces with an appropriate biocide at the end of each work shift or when they are contaminated.
- b. Replace protective coverings, such as foil or plastic wrap used to protect equipment, at the end of the work shift or when they become contaminated.
- c. Disinfect all waste containers labeled biohazard on a regular schedule and clean them when they are visibly contaminated.
- d. Never pick up broken glassware with bare hands. Use tongs or a brush and dustpan. Dispose of broken glassware in a puncture-proof biohazard container so it won't injure other workers.
- e. Place all specimens in a closeable, leak-proof container and label the container before storing or transporting.
- f. Use a secondary container if the first container is likely to be damaged.

7.4.11 Disposal precautions

7.4.11.1 Disposal is an important part of protecting others, so employees shall observe these requirements:

- a. Place all infectious waste in closeable, leak-proof containers that are color-coded or labeled as described in paragraph 12 below.
- b. Keep infectious waste separate from other waste.
- c. Wear protective gloves when handling infectious waste.
- d. Make sure infectious waste is picked up and transported by trained personnel only and is disposed of in a biological incinerator. In emergencies, first responders may take properly bagged waste to the JSC Clinic for disposal during working hours.
- e. Minimize handling contaminated laundry. Bag it at the site in a properly labeled container and take it to a laundry facility for cleaning.
- f. Keep records of biomedical waste disposal for at least 3 years.
- g. Close and date the sharps container once it is full. Closed and dated sharps containers may only be opened by a waste treatment facility.
- h. Label each container ready for shipment with the name and address of the generator, the weight and contents of the container, and either the date of shipment or an identification number for the shipment.

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7.4.12 Labeling requirements for blood and body fluids

Labels shall be fluorescent orange or orange-red and include the word BIOHAZARD and the biohazard symbol in a contrasting color. Place this warning sign on all containers of infectious waste, and on refrigerators or freezers containing infectious materials. Use red bags or containers in addition to labels for containers of infectious waste.

7.4.13 Protective clothing and equipment to use when working with blood and potentially infectious materials

7.4.13.1 Employees shall wear the following protective equipment:

- Gloves, latex or another type (nitrile, vinyl) if allergic to latex
- Lab coat or apron and eye and face protection if splashing or spraying is possible.

7.4.14 Hepatitis B virus vaccination

7.4.14.1 The JSC Clinic provides HBV vaccine to all on-site contractor and civil service employees in the job classifications listed in the exposure control plan for the work area, subject to the following:

- Concurrence from the Occupational Health Officer is required before employees may get the vaccine.
- The vaccine shall be offered at no cost within 10 working days of being assigned duties that could expose an employee to blood or other potentially infectious materials. Employees may decline this vaccine when it is offered by signing a declination form, which is available at the JSC Clinic. Employees can get the vaccine from the JSC Clinic later if they change their minds, still free of charge.

7.4.15 Training to work safely with blood and body fluids

Employees must be trained within 10 working days of being assigned duties that could expose them to blood or other potentially infectious materials and yearly thereafter to safely handle blood and body fluids listed in the “Universal Precautions” of the Centers for Disease Control and Prevention.

Training shall include the requirements of 29 CFR 1910.1030. If an organization conducts its own training the content must be approved and audited by Occupational Health.

7.4.16 What to do if exposed to blood or other infectious materials

Employees exposed to blood or body fluids shall get medical treatment immediately. Getting proper treatment within 2 hours of exposure might prevent you from contracting a bloodborne disease. If treated at an outside medical facility, go to the site clinic as soon as possible for a follow-up visit. Follow the table below:

<i>If the exposure is . . .</i>	<i>Then . . .</i>
An emergency where you need an ambulance	<ul style="list-style-type: none"> Call x33333 or (281) 483-3333 at JSC, Sonny Carter Training Facility, and Ellington Field, 911 at any off-site location, or x5911 at White Sands Test Facility.

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To the eye, mouth, other mucous membrane, or non-intact skin	<ul style="list-style-type: none"> • Flood the area with water for 15–20 minutes or wash with soap. • Go to the JSC Clinic or emergency room if the Clinic is closed for post-exposure follow-up.
To intact skin	<ul style="list-style-type: none"> • Immediately and thoroughly wash the affected area with biocidal soap. • Go to the JSC Clinic or emergency room if the Clinic is closed for post-exposure follow-up.

7.4.17 Clinic actions for exposure

7.4.17.1 The JSC Clinic will provide a confidential medical evaluation to employees who have been exposed and will:

a. Document the:

- (1) Route(s) of exposure.
- (2) HBV, HCV, and HIV antibody status of the source individual, if known.
- (3) The circumstances under which the exposure occurred.
- (4) “First-aid” or “prophylactic” measures received.

b. Collect and test the source individual’s blood to determine the presence of HIV, HCV, or HBV infection, if the source individual can be identified and permission is given. The employee will be informed of applicable laws and regulations about disclosing the identity and infectious status of the source individual.

c. Collect blood from the exposed employee as soon as possible after the exposure incident to determine HBV, Hepatitis C, and HIV antibody status.

d. Follow up with the employee on:

- (1) Antibody or antigen testing.
- (2) Counseling.
- (3) Evaluation of reported illnesses.
- (4) Safe and effective post-exposure treatment under standard recommendations for medical practice.

7.4.18 JSC medical records for bloodborne pathogens

a. The JSC Clinic keeps all medical exposure records for the duration of employment plus 30 years.

b. These medical records are available to the employee and others with the employee’s written consent.

c. The Clinic will file an injury report (JSC Form 340) for any exposure. The Safety Office will send a copy to the supervisor or company.

7.4.19 For more information on biohazards and bloodborne pathogens

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7.4.19.1 You can find more information on bloodborne pathogens in these documents or contact the JSC Clinic:

- a. 29 CFR 1910.1030
- b. "Universal Precautions" guidelines from the Centers for Disease Control and Prevention
- c. "Biosafety in Microbiological and Biomedical Laboratories," published by the Centers for Disease Control and Prevention and the National Institutes of Health
- d. "Medical Waste Management," Texas Administrative Code (TAC), Title 30, Part 1, Chapter 330, Subchapter Y

7.4.20 Responsibilities for bloodborne pathogen safety

7.4.20.1 As a *supervisor*, you are responsible for:

- a. Controlling all exposures to bloodborne pathogens through a written exposure control plan designed to minimize worker exposure.
- b. Making sure your employees follow the requirements of this chapter and your exposure control plan.
- c. Making sure your employees are trained in protecting themselves from bloodborne pathogens.
- d. Providing adequate PPE.
- e. Offering to all employees the Hepatitis B vaccination and training within 10 working days of being assigned to a job in which they could be exposed.