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CHAPTER 7.4 BIOSAFETY AND BLOODBORNE PATHOGENS

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:

- a. Leave it alone. Without the proper training and equipment, you risk getting a bloodborne disease.
- b. Block off the area to prevent others from contacting it.
- c. 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.
- d. 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:

- a. 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.
- b. 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).
- c. Other potentially infectious materials (OPIM) is an OSHA definition and includes:
 - (1) 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.
 - (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead).
 - (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.

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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 will evaluate the use of any new potentially biohazardous or pathogenic materials. Employees, or visitors, who bring biohazardous materials onto JSC or plan to implement a process using biohazardous materials shall have approval as follows.
 - (1) For ground-based tests, visit the Occupational Health SharePoint site at <https://nasa.sharepoint.com/sites/jsc-oh/SitePages/BLOODBORNE.aspx> and review the instructions for Biosafety Review. Contact Occupational Health via email at jsc-dl-occ-health@mail.nasa.gov for any additional questions.
 - (2) For all ISS and Artemis (Orion, Gateway, Human Lander System (HLS)) requests, please submit data via the electronic hazardous materials summary table (eHMST) tool. If you do not have access to this tool, please submit a NAMS request for access to JSC – CMC External Tools.
- b. Occupational Health evaluates all areas and duties where civil servant, or contractor workers could be occupationally exposed to bloodborne pathogens. Organizational management shall help in evaluating these areas.

7.4.6. Biosafety levels and precautions to take for each

7.4.6.1 Classes of biohazards or biological materials are Biohazard 1, 2, 3, or 4. The following requirements apply:

- a. Employees shall never bring any biosafety level (BSL) 2 materials on site without the prior approval of JSC Occupational Health (Ground-based) or Environmental Sciences Branch (Flight-based).
- b. BSL 3 or 4 materials are prohibited on site.
- c. Employees shall follow the requirements in Table 1, Summary of Laboratory BSLs found in the BMBL.

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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 meet the requirements in OSHA’s Bloodborne Pathogens Standard, 29 CFR 1910.1030. Occupations likely to need an exposure control plan include but are not limited to:

- a. Medical personnel.
- b. Custodial staff.
- c. Childcare staff.
- d. Certain emergency responders.
- e. Medical researchers.

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 standard 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. Use “safer” needle devices when available.

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- b. Never shear, bend, or break used needles.
- c. Never recap or re-sheath by hand.
- d. Never remove used needles from disposable syringes.
- e. Dispose of used needles in an approved biohazard container.
- f. Never overfill sharps containers.

7.4.10. Housekeeping precautions

7.4.10.1 Housekeeping is an important part of keeping you and others safe, 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 section 7.4.12 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.

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- 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 follow the requirements in OSHA’s Bloodborne Pathogens Standard, 29 CFR 1910.1030.

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:

- a. Nitril or vinyl gloves.
- b. 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:

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

7.4.15. Training to work safely with blood and body fluids

- a. Employees must be trained when first 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 “Standard Precautions” of the Centers for Disease Control and Prevention.
- b. 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.
- c. Occupational Health provides a SATERN course for those employees with occupational exposure to bloodborne pathogens at JSC. While it covers most of the elements required by the OSHA standard, it does not provide specific training on your employer's exposure control plan, specific selection and location of personal protective equipment, and other employer specific practices. Your employer must cover those items.

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 on-site JSC Clinic as soon as possible for a follow-up visit. Follow the table below:

<i>If the exposure is . . .</i>	<i>Then . . .</i>
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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.
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 affected/exposed 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.

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- 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

7.4.19.1 You can find more information on bloodborne pathogens in these documents and websites or contact the JSC Clinic (x34111):

- 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
- e. JSC Occupational Health, [Bloodborne Pathogens](https://nasa.sharepoint.com/sites/jsc-oh/SitePages/BLOODBORNE.aspx) at URL:
<https://nasa.sharepoint.com/sites/jsc-oh/SitePages/BLOODBORNE.aspx>.

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.