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## Safety Concerns and OSHA Standards



### LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- Discuss the requirements of a chemical hygiene plan.
- Identify mechanisms for minimizing exposure to hazards in the veterinary practice laboratory.
- Describe general concerns related to laboratory design.
- Identify, use, and care for personal protective equipment.
- Discuss criteria for evaluating Internet resources.

### OUTLINE

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### KEY TERMS

Biohazard

Bloodborne pathogen

Chemical Hygiene Plan (CHP)

Engineering controls

Material Safety Data Sheet (MSDS)

Occupational Safety and Health Administration (OSHA)

Personal Protective Equipment (PPE)

Zoonoses

A comprehensive laboratory safety program is essential to ensure the safety of employees in the clinical laboratory area. The safety policy should include procedures and precautions for the use and maintenance of equipment. Safety equipment and supplies—such as eyewash stations (Fig. 1.1), fire extinguishers, spill cleanup kits (Fig. 1.2), hazardous and **biohazard** waste disposal containers (Fig. 1.3), and protective gloves—must be available. All employees working in the clinical laboratory must be aware of the location of these items and thoroughly trained in their use. Laboratory safety policies must be in writing and placed in an accessible location within the clinical laboratory area. Signs should be posted to notify employees that eating, drinking, applying cosmetics, and adjusting contact lenses in the laboratory are prohibited.

**TECHNICIAN NOTE** Written laboratory safety policies must be accessible to all employees in the clinical laboratory area.

In the United States, the **Occupational Safety and Health Administration (OSHA)** mandates specific laboratory practices

that must be incorporated into the laboratory safety policy. Many other countries have similar regulations. The regulations are focused on protecting the health and safety of employees. OSHA is responsible for determining and enforcing protective standards. Some states have regulations that supersede the federal OSHA regulations. In those cases, the state regulations are at least as stringent as the federal ones. Some state and federal regulations also contain exemptions for facilities that have 10 or fewer employees. The regulations specifically include requirements for employers to do the following:

- Comply with all relevant OSHA standards.
- Correct any safety and health hazards in the workplace.
- Educate employees about any potential workplace hazards.
- Provide training to employees regarding health and safety hazards.
- Provide required **personal protective equipment (PPE)** to employees.
- Maintain accurate records of work-related injuries and illnesses.
- Post specific OSHA posters, citations, and injury and illness data (Fig. 1.4).





**Fig. 1.1** Sink-Mounted Eyewash Station. This type of station is preferable to wall-mounted eyewash bottles that require regular refilling and that may not be of adequate volume to properly flush the eyes.



**Fig. 1.2** Spill Cleanup Kit. These kits generally contain biohazard bags, personal protective equipment, absorbent materials, and disinfectants.



**Fig. 1.3** Biohazard waste disposal containers are available in a variety of sizes. This rigid type is generally used for the disposal of sharps (e.g., scalpel blades, hypodermic needles).

**Job Safety and Health**  
**It's the law!**

**OSHA**  
Occupational Safety and Health Administration  
U.S. Department of Labor

**EMPLOYEES:**

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of retaliation or discrimination by your employer for marking safety and health complaints or for exercising your rights under the OSH Act.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violations.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records and records of your exposures to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the OSH Act that apply to your own actions and conduct on the job.

**EMPLOYERS:**

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the OSH Act.

This free poster available from OSHA -  
The Best Resource for Safety and Health

Free assistance in identifying and assessing hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

1-800-321-OSHA (6742)  
www.osha.gov

**Fig. 1.4** OSHA requires that this Job Safety and Health poster or an equivalent state version be posted in all workplaces. (From United States Department of Labor, Occupational Safety and Health Administration.)

Depending on the specific types of equipment present and the tests performed in the veterinary practice laboratory, veterinary technicians can be exposed to a variety of potential hazards. These include biologic and physical hazards as well as hazards to the musculoskeletal system related to improper ergonomics.

## HAZARD CONTROL

Methods for minimizing potential workplace hazards can be categorized as one of four types: 1) **engineering controls**, 2) administrative controls, 3) procedural controls, and 4) PPE. Engineering controls are focused on changing the work environment to eliminate or minimize exposure to a hazard. An example would be the use of a fume hood when handling hazardous chemicals. Administrative controls involve the creation of specific protocols to minimize worker exposure to hazards; these protocols include those found in a **Chemical Hygiene Plan (CHP)**, which is discussed in more detail later in this chapter. Procedural controls involve the development of policies that modify worker behavior. Examples would include the restriction

from mouth pipetting and the substitution of less hazardous materials when feasible. When engineering, administrative, and procedural controls are not fully effective for the removal of a hazard, PPE would be required.

## OSHA STANDARDS

There are a large number of specific standards related to veterinary practice contained in the Occupational Safety and Health Act. These standards can be found in the Code of Federal Regulations (CFR) in the section designated as Title 29. Each standard is also designated with a part number. For example, the standard regarding formaldehyde for use in locations other than clinical laboratories is designated as 29 CFR 1910.1048 to indicate Title 29, Part 1910.1048; this standard also has several appendices. The vast majority of the standards that apply specifically to workplace safety are found in Part 1910, which is divided into subparts designated with letters A through Z. Summary information regarding some of the OSHA standards with application to the veterinary practice laboratory is contained in this chapter.

### Occupational Exposure to Hazardous Chemicals in Laboratories Standard

The OSHA standard titled Occupational Exposure to Hazardous Chemicals (29 CFR 1910.1450) is commonly referred to as the Laboratory Standard. This standard requires that each employer designate an employee as the Chemical Hygiene Officer; this individual is responsible for the implementation of the required CHP. The CHP must contain specific details about the chemical hazards present in the workplace, the scope and extent of worker training and documentation of that training, criteria for the use of PPE, precautions for handling hazardous chemicals, monitoring of exposure, and specific actions required when exposure occurs, including the medical care required.

**TECHNICIAN NOTE** Hazards associated with chemicals are described in Material Safety Data Sheets.

### The Hazard Communication Standard

The OSHA Hazard Communication Standard (29 CFR 1910.1200) contains requirements for employers to evaluate potential chemical hazards and to communicate information about those hazards and appropriate protective measures to employees that would be potentially exposed to those hazards. Information must be communicated to employees in writing and must include a list of all hazardous chemicals to which they may be exposed. Worker training programs regarding the use of PPE when dealing with hazardous chemicals are included in this standard. The standard mandates the placement of specific types of labels on containers of hazardous chemicals; it also requires that the employer maintain **Material Safety Data Sheets (MSDSs)** for all chemicals and that these MSDSs be accessible to employees (Fig. 1.5). MSDSs are provided by manufacturers of potentially hazardous chemicals, and they must contain specific information. The minimum information required by OSHA is as follows:



Fig. 1.5 Material Safety Data Sheets must be available to employees.

#### BOX 1.1 Components of the Material Safety Data Sheet

Section 1. Chemical Product & Company Information  
 Section 2. Composition/Information on Ingredients  
 Section 3. Hazards Identification  
 Section 4. First Aid Measures  
 Section 5. Fire Fighting Measures  
 Section 6. Accidental Release Measures  
 Section 7. Handling and Storage  
 Section 8. Exposure Controls/Personal Protection  
 Section 9. Physical and Chemical Properties  
 Section 10. Stability and Reactivity  
 Section 11. Toxicological Information  
 Section 12. Ecological Information  
 Section 13. Disposal Considerations  
 Section 14. Transport Information  
 Section 15. Regulatory Information  
 Section 16. Other Information

- Manufacturer's name and contact information
- Hazardous ingredients/identity information
- Physical/chemical characteristics
- Fire and explosion hazard data
- Reactivity data
- Health hazard data
- Precautions for safe handling and use
- Control measures

Additional information may also be present. OSHA recommends the use of a specific 16-section format for MSDSs, which is summarized in Box 1.1.

#### Container Labeling

The Hazard Communication Standard contains detailed information about the proper labeling of containers of chemicals (Fig. 1.6). When chemicals are removed from their primary container and placed in secondary containers for use, the secondary label must also contain specific information. The secondary label is required when the material is not used within the work shift of the person who filled the container, when the person who filled the container leaves the work area, or when the container is moved to a different work area from where it was filled and is