

4 - Laboratories: Safety Training

EH&S – MGA

Goals: This safety session should teach you that:

- A. OSHA has a standard regulating the use of hazardous chemicals in laboratories that requires each lab to develop a Chemical Hygiene Plan focusing on protecting employee health.
- B. Laboratories tend to use a greater number of chemicals and change operations more frequently than industrial chemical users.
- C. To protect yourself from health and physical hazards, you should read and understand the lab's Chemical Hygiene Plan.

OSHA Regulation: 29 CFR 1910.1450 and 29 CFR 1910.1200

1. The Chemical Hygiene Plan will establish standard operating procedures for handling toxic chemicals and include the following:

- A. Ways of reducing employee exposure, including engineering controls, the use of personal protective equipment (PPE), and proper hygiene practices
- B. A proper general ventilation system and fume hoods to protect workers
- C. Employee information and training, including emergency procedures
- D. Requirements for approval of new lab activities and procedures
- E. Responsibility of lab management and workers for chemical hygiene
- F. Provision for medical consultations and examinations of workers
- G. Special precautions for work with particularly hazardous substances

2. Because few laboratory chemicals are without hazards, it is important to minimize all chemical exposure.

- A. Workers should wear proper PPE to avoid skin contact.
- B. A good ventilation system is an important engineering control to prevent exposure to airborne chemicals.
- C. Proper hygiene practices include knowing how to deal with emergencies like spills or accidental eye contact, ingestion, or skin contact.
- D. Safety equipment should include an easily accessible safety shower, an eyewash fountain, and a fire extinguisher.
- E. The lab should monitor employee exposure to ensure that permissible exposure limits (PELs) set by OSHA are not exceeded.

3. A general ventilation system should include laboratory hoods with an adequate exhaust system according to the actual work performed.

- A. Laboratory air should be continually replaced to prevent buildup of toxic fumes.
- B. Performance of the ventilation system should be monitored regularly.
- C. Provisions should be made for rapid escape of lab personnel in case of electrical failure.

4. Proper training for lab workers should include the following:

- A. How to read safety data sheets (SDSs) and labels that give the health and physical hazards associated with a particular chemical
- B. Where to locate SDSs, which must be accessible to all workers at any time
- C. How to deal with accidental spills or other emergencies
- D. Hazards of any especially toxic chemicals, such as carcinogens or corrosives
- E. The proper PPE to wear when working with a certain chemical
- F. Proper use of respirators when required to maintain exposure below PELs

5. Lab management personnel should establish safe operating procedures and proper chemical hygiene.

- A. Any changes in procedure should require prior approval.
- B. Procedures should include provisions for proper storage of chemicals, proper accident and spill control, and proper waste disposal.
- C. Special precautions should be set up when employees will be working with chemicals that have high acute or chronic toxicity.
- D. Workers should remove all PPE on leaving a controlled area, dispose of it properly, and wash hands, forearms, face, and neck thoroughly.
- E. Workers should never eat, drink, or smoke in a controlled area, and food or beverages should never be kept in areas with hazardous chemicals.

6. Proper monitoring should measure exposure of employees to hazardous chemicals to ensure that PELs are not exceeded.

- A. A qualified physician should advise on frequency of medical exams for workers dealing with particularly hazardous chemicals.
- B. Labs should keep accurate records of substances stored, used, dates of use, and names of users.

Summation:

Understanding the laboratory's Chemical Hygiene Plan will help to protect you from the physical and health hazards of the chemicals that are being used. Being aware of the hazards is the first step in keeping yourself safe and healthy.