

CHEMICAL HAZARDS: Part 1 –Handling of Hazardous Chemicals

Cal/OSHA defines a hazardous chemical as, “a chemical that poses one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard” [California Code of Regulations, Title 8, Section 5194(c)]. A complete list of all hazardous chemicals classified by state law can be found in the Additional Training Resources section of this module. Refer to your practice’s Hazard Communication Program for details on the list of chemical hazards in your practice. The Hazard Communication Program will describe the system your employer has established to tell you about these hazards.

Safe Handling of Hazardous Chemicals

The following precautions are recommended to prevent unnecessary risk when dealing with hazardous chemicals:

- Know what materials in your work area are hazardous and how you can protect yourself from unnecessary exposure. If you are not sure, consult your Hazard Communication Program or ask your supervisor or safety coordinator.
- Use hazardous materials in accordance with SDS requirements. Be especially cautious with reproductive toxins and carcinogens.
- Never mix one product with another unless specifically directed to do so on the label instruction or other documentation.
- Avoid inhalation of hazardous materials.
- Wear appropriate protective clothing, gloves, and eye protection.
- Launder protective clothing on a regular basis, and start each shift with a clean lab coat or smock.
- Tie back or confine long hair. Secure articles of clothing, such as ties or jewelry, that might come into contact with hazardous chemicals.
- Wash thoroughly after handling hazardous materials and before leaving the work area.
- Do not eat or drink in areas where food can become contaminated with hazardous substances, including laboratory supplies and biologicals. Human food cannot be stored in refrigerators where chemicals, blood, fecal samples, vaccines, antibiotics, etc., are stored. A separate refrigerator should be designated for food storage.
- Know where supplies for cleaning up a hazardous materials spill are stored.

Storage of Hazardous Chemicals

You should be aware of some basic rules when storing hazardous chemicals. Consideration must be given to the possibility of leaking containers, breakage due to accidents, fire or earthquakes, and other conditions that can allow chemicals to mix. The following factors should be taken into consideration when storing chemicals:

1. All chemicals and other hazardous substances should be stored in clean, cool, dry, well-ventilated areas away from heat and direct sunlight.
2. Keep chemicals separated by compatibility.
 - Acids should not be stored next to bases.
 - Flammable liquids, such as alcohol, should not be placed next to oxidizers or corrosives, such as cleaners and disinfectants.

- Oxidizers, such as benzoyl peroxide, hydrogen peroxide, oxygen, and chlorine, should not be stored with combustible or flammable materials, fuels, or reducing agents such as zinc.
 - Bromine, mercuric salts, sodium iodide and other light-sensitive chemicals should be stored in amber bottles or wrapped in aluminum foil. This will inhibit decomposition.
 - Peroxide-forming chemicals, such as ethyl ether, should be stored in airtight bottles. Be sure to mark containers with the date received and date opened. Discard any remaining product at the end of the designated shelf life. See section on Ether (later in this chapter) for more details.
3. Toxic compounds such as arsenicals, cyanides, formaldehyde, and chloroform should be placed in closed, non-breakable secondary containers or set in trays. This will confine the chemical if the primary container develops a leak.

The California Code of Regulations pertaining to storage of Hazardous Chemicals can be accessed here:

<https://www.dir.ca.gov/title8/5164.html>

In the Event of a Hazardous Chemical Spill

Immediately refer to the Safety Data Sheet for the chemical to determine how to address contact or contamination.

Spills on Yourself: Take off any contaminated clothing. Flush skin or eyes with water for at least 15 minutes. Report the accident immediately to your supervisor or safety coordinator and seek medical attention as appropriate. Contaminated clothing must be laundered before reuse. If the clothing is not salvageable, refer to the appropriate SDS for disposal directions. (Some chemicals may require disposal as a hazardous waste.)

Small Spills: Keep people from walking through the spill area until the spill area until the spill is thoroughly cleaned. Report the spill to your supervisor or safety coordinator. Clean up the spill immediately using appropriate personal protective equipment when required. Refer to the SDS for specific instructions.

Toxic Particulates: Use a moist towel to slowly push particles from the edge of the spill toward the center. Carefully scoop the material into a doubled plastic bag. Do not use brooms or other equipment that is used for regular housekeeping.

Strong Acids: Sprinkle the recommended absorbent (SDS) over acid spills, then neutralize with a sodium bicarbonate solution, slaked lime (calcium hydroxide), or soda ash (sodium carbonate).

Flammable and Caustic Solutions: Sprinkle an inert absorbent substance, such as kitty litter, over the spill. Refer to the SDS for details.

Other Toxic Liquids: Many hazardous liquids can be soaked up with a rag, towel, or absorbent material. A broom or squeegee specifically designated for hazardous spills can sometimes be used to place the material into doubled plastic bags. Check the appropriate SDS to see if the material needs to be treated as a hazardous waste. Radiographic fix, for example, must be prevented from entering the sewer system and must be transported by a licensed hazardous waste hauler. In some cases, decontamination of the area may be required; check the appropriate SDS for details on a specific substance.

Large Spills: Evacuate the room and close the door. If the substance is flammable, remove all ignition sources before closing the room. Notify your supervisor or safety coordinator immediately.

Always consult the appropriate SDS for specific instructions. Be sure to restock spill-kits or clean-up supplies.

HAZARDOUS CHEMICAL SAFETY QUESTIONS

Do employees know where the practice's list of hazardous chemicals is located?

Are employees trained on how to operate emergency eye wash stations and showers?

Are all employees trained on how to use personal protective clothing and equipment when handling chemicals (i.e. gloves, eye protection, etc)?

Do employees know where and how to safely store hazardous chemicals when not in use?

Do employees know the practice's procedure for reporting and cleaning up hazardous chemical spills?

Are employees prohibited from eating in areas where hazardous chemicals are present?

ADDITIONAL TRAINING RESOURCES

Cal/OSHA List of Hazardous Chemicals: <https://www.dir.ca.gov/title8/339.html>

OSHA Label and Pictogram guidance: <https://www.osha.gov/Publications/OSHA3636.pdf>