Hazardous Substance Handling

1. **Identification of Workplace Hazard**

   All chemical or hazardous substance handling is potentially a source of employee injury or illness because the term hazardous substance can cause a physical or health hazard. Physical hazards include flammability, explosivity, reactions between incompatible materials and similar problems. Health hazards include a substance's ability to harm humans through injury to skin and eyes or produce a toxic effect on internal organs.

   Management as well as employees need to be aware of the hazards of the chemicals used in the workplace disclosed by manufacturers on labels and Material Safety Data Sheets (MSDSs) and how to safely work with the materials. There usually is a combination of work practices, protective equipment and engineering controls (isolation or ventilation) to control chemical exposures and assure safe use of even the most hazardous substances.

2. **Management and Trainer Information**

   Management should be aware that any presence of hazardous substances in the workplace requires implementation of a hazard communication program that meets the requirements of the Cal/OSHA Hazard Communication Standard (HCS) [8 CCR §5194]. This means the employer must assure that the following elements are satisfied:

   • A written program must be maintained, which means a document that describes the employer's HCS program and how each element is satisfied. It should include the physical location of MSDS, procedures for employee access to information and employees who are responsible for program administration.

   • An inventory or list of hazardous substances must be maintained to identify materials in the employer's operations that are subject to the program and to verify MSDS presence. Some employers use the inventory as a means of organizing MSDSs or they divide the list by work area.

   • Maintaining an MSDS is required for each hazardous substance on the inventory. The MSDS is required to be accessible upon employee request, which suggests a hard copy or prompt access through an electronic system. The MSDS must be the one provided by the supplier of the substance and the most current version. If a new or substitute MSDS is provided, it should be reviewed to determine whether significant new hazard information is being provided which must be shared with affected employees within 30 days.

   • Labels must be present on all containers (including tanks, vessels and even personal use containers unless one employee will be the sole user and not leave the material unattended). A label must specify the identity of the hazardous substance (MSDS name) and appropriate hazard warnings.

   • Employee training must be provided initially before first exposure to hazardous substances and subsequently whenever there is a change pertaining to the employee's chemical exposure.

   • Through their training, employees must be made aware of the employer's hazard communication program, how to access MSDSs, safe work practices and controls for normal operations and emergencies, and how to recognize a potential over-exposure situation.
Employers also need to assure that appropriate work practices, personal protective equipment (PPE) and engineered controls are in place to minimize hazards including contact with and airborne exposures which may pose a physical or health hazard. A number of Cal/OSHA standards address employee protection from chemical hazards including permissible exposure limits [8 CCR §5155] to airborne contaminants.

Employers should assure that the following conditions have been evaluated and employees protected to the extent required to prevent chemical-related incidents and over-exposures.

**General Chemical Hazard Prevention**

1. Exposure limits for airborne contaminants and physical agents used in the workplace have been reviewed and exposures controlled. Control procedures for toxic materials, where appropriate include respirators, ventilation systems and handling practices.

2. Hazardous substances are handled in properly designed and exhausted booths or similar locations as appropriate.

3. Ventilation equipment is provided for removal of contaminants from such operations as production, grinding, buffing, spray painting, and/or vapor degreasing and it is operating properly.

4. Employee complaints about dizziness, headaches, nausea, irritation or other symptoms of discomfort when they use solvents or other chemicals are addressed immediately.

5. Employee complaints about dryness, irritation or sensitization of the skin are addressed immediately.

6. Respirators are used pursuant to a protection program including employee instruction on the proper use and limitations of the respirators, NIOSH approval for a particular application, and regular inspection, cleaning, sanitizing and maintenance.

7. Other PPE has been selected pursuant to appropriate documented hazard assessment and selection procedures.

8. If internal combustion engines are used (forklifts, etc.), carbon monoxide is kept within acceptable levels.

9. Vacuuming is used, rather than blowing or sweeping dusts whenever possible for clean-up.

10. Employees are trained in the safe handling practices of hazardous chemicals and are aware of the potential hazards of chemicals stored or used in the workplace.

11. Eyewash fountains and safety showers are provided in areas where corrosive or severely irritating chemicals are handled.

12. All containers including vats, storage tanks and smaller containers are labeled as to their contents and the appropriate hazard warnings.

13. Employees are required to use personal protective clothing and equipment when handling chemicals (gloves, eye protection, respirators, etc.).

14. Hazardous chemicals are kept in closed containers when not in use.
Standard operating procedures have been established to be followed when cleaning up chemical spills and appropriate supplies are available and training provided.

### Flammable and Combustible Materials

1. Flammable and combustible materials are properly stored and used, and covered metal containers are provided to contain materials and debris.

2. Bulk drums of flammable liquids are grounded and bonded to containers for dispensing.

3. Storage rooms and use areas where flammable substance vapors may accumulate are provided with explosion-proof lighting and electrical equipment, and adequate ventilation.

4. Adequate fire suppression systems are installed and properly functioning.

5. Proper size and types of portable fire extinguishers are near areas where flammable liquids are handled or stored.

### 3. Employee Safe Work Practices

Employees should be required to comply with the following safe work practices:

1. Follow safe work practices when handling hazardous substances.

2. Wear the required PPE for the task and material being handled.

3. If ventilation systems are provided, make sure they are operating properly when handling hazardous substances.

4. If there are any problems with a ventilation system or PPE or if any signs or symptoms of over-exposure occur, immediately notify your supervisor.

5. If you have any questions concerning hazards and properties of hazardous substances, safe work practices or other questions, consult the MSDS or ask your supervisor.

6. Use only approved and labeled containers for hazardous substance use and storage. Keep such containers firmly closed at all times when not in use.

7. Separate any incompatible materials by distance or physical means.

8. Do not blow or sweep dry hazardous substances. Use a vacuum with an appropriate filter.

9. Know where the closest emergency eyewash/safety shower is located at all times when handling corrosive or irritating substances.

10. Know how and when to safely use a portable fire extinguisher or do not use one.

11. Do not block access, even momentarily, to any emergency device (eyewash/safety shower or fire extinguisher).

12. Use bonding wires provided when dispensing flammable liquids from bulk containers.
4. **Items Subject to Periodic Schedule Inspections**

The employer's periodic scheduled inspections should consider the following items during workplace inspections.

(1) Have employees been trained in hazards of substances they work with and elements of the employer's hazard communication program?

(2) Are employees wearing all required PPE necessary for the materials handled? Is the equipment being properly used?

(3) Are the engineered controls functioning properly?

(4) Is there any sign of a potential over-exposure to a hazardous substance?

(5) Are the employees expressing any concerns regarding their chemical handling tasks?

(6) Are emergency eyewash/safety shower and fire extinguishers operable upon inspection (monthly) and immediately accessible?

(7) Are all containers properly labeled?

(8) Are all containers and vessels of flammable liquids and hazardous substances closed when not in use.

(9) Are fire suppression systems and other flammable liquid protective devices (grounding and bonding systems) in good condition and being used by employees?