

Safe Chemical Handling



Categories of Hazardous Chemicals

- Corrosive
- Flammable
- Toxic
- Reactive
- Biological (infectious)
- Carcinogen (cancer-causing)
- Radioactive

Physical States of Hazardous Materials

- Liquid
- Solid
- Gas
- Vapor



How to Handle Chemicals Properly

- Use cautions
- Always follow procedures
- Read all labels
- Keep yourself and the work area clean
- Plan ahead

Routes of Exposure

- Inhalation
- Ingestion
- Absorption
- Injection



Symptoms of Possible Overexposure

- Eye discomfort
- Breathing difficulty
- Dizziness
- Headache
- Nausea
- Vomiting
- Skin irritation

Incompatible Chemicals

- Flammables and oxidizers
- Flammables and any ignition source
- Acids and cyanides
- Strong acids and strong alkalines
- Concentrated acids and water
- Organic solvents and corrosives
- Corrosives and other reactive materials

Agencies That Regulate Hazardous Chemical Storage

- Occupational Safety and Health Administration (OSHA)
- National Fire Protection Association (NFPA)
- Environmental Protection Agency (EPA)
- Department of Transportation (DOT)

Handling Flammable Chemicals

- Keep containers closed when not in use
- Keep away from ignition sources
- Avoid contact with incompatible materials
- Only transfer to approved containers
- Bond all receiving containers
- Clean up spills and dispose of waste properly

Proper Storage of Flammable Chemicals

- Ensure that storage areas meet regulatory requirements
- Replace all bung caps with drum vents after receiving containers
- Ground all drums properly
- Store quantities in approved storage rooms and cabinets
- Store only in small quantities

General Safety Tips

- Never eat, drink, or smoke while using hazardous chemicals
- Use personal protective equipment as required
- Make sure all chemical containers are properly labeled
- Always wash up after using chemicals

General Safety Tips (cont.)

- Never smell or taste a chemical to identify it
- Know all emergency procedures and equipment
- Always read labels' MSDSs prior to use
- Store all hazardous chemicals properly
- Always use hazardous chemicals as intended

Primary Container Labels

- Identity of the hazardous chemical
- Appropriate hazard warnings
- Name and address of the manufacturer or importer
- Target organ effects

Secondary Container Labels

- Identity of the hazardous chemical
- Hazard warning information



Handling Chemical Emergencies

- Know emergency phone numbers
- Know how to control the spill
- Know proper equipment shutdown procedure
- Know proper evacuation routes and assembly areas

What Emergency Personnel Should Know

- Emergency cleanup and disposal measures
- Required protective equipment
- Use of cleanup equipment
- Firefighting and other emergency measures (i.e., first aid)
- Use of other emergency equipment

First Aid for Chemicals in the Eyes

- Don't rub the eyes
- Hold eyelids open and flush with water for 15 minutes
- Be careful not to contaminate the other eye
- Seek additional medical attention

First Aid for Chemicals on the Skin

- Flush area with lukewarm water for 15 minutes
- Remove clothing and jewelry from burn area
- Seek additional medical attention

First Aid for Chemical Inhalation

- Move victim to fresh air
- Get immediate help



First Aid for Chemical Ingestion

- Induce vomiting only if told to do so by Poison Control
- Get immediate medical attention

Quiz

1. Two primary routes of exposure to hazardous chemicals are _____ and _____.
2. Gas, liquids, and aerosols are the three states of hazardous materials. **True or False**
3. The Department of Transportation does not regulate hazardous chemicals. **True or False**
4. Two dangerous incompatible materials are _____ and cyanides.

Quiz (cont.)

5. Flammables and oxidizers should never be stored together. **True or False**
6. Secondary container labels should include _____ and hazard warning information.
7. Three symptoms of overexposure to hazardous chemicals are _____, _____, and _____.
8. Carcinogens are chemicals that cause birth defects in unborn children. **True or False**

Quiz (cont.)

9. Flammables should always be used away from sources of _____.
10. If a chemical has been used by a company before, the containers do not have to be labeled.

True or False

Quiz Answers

1. The primary routes of exposure to hazardous chemicals are inhalation, ingestion, absorption, and injection.
2. False. Liquids, solids, gases, and vapors are the four states of hazardous materials.
3. False. The Department of Transportation does regulate hazardous chemicals.
4. Two dangerous incompatible materials are acids and cyanides.
5. True. Flammables and oxidizers are incompatible and should never be stored together.

Quiz Answers (cont.)

6. Secondary container labels should include the identity of the material and hazard warning information.
7. Three symptoms of overexposure to hazardous chemicals are eye discomfort, breathing difficulty, dizziness, headache, nausea, vomiting and skin irritation.
8. False. Carcinogens are chemicals that can cause cancer.
9. Flammables should always be used away from sources of ignition.
10. False. Even if a chemical has been used before, it must always be labeled if it is hazardous.