

Chemical Safety Training

Safety Training Series



Enterprise Business Center of Louisiana

Introduction

- Welcome to Chemical Safety Training
- Importance of lab safety to prevent accidents and injuries
- Training Topics: hazard identification, handling, storage, PPE, emergency procedures, and waste disposal.



Chemical Hazard Identification

- Hazard Communication Standard (HCS) ensures employees are aware of chemical hazards.
- Safety Data Sheets (SDS) provide detailed information on chemical properties, hazards, and safety precautions.
- Globally Harmonized System (GHS) labels use pictograms, signal words, and hazard statements to communicate risks.



Chemical Hazards

Identifying chemical hazard such as:

- Flammable: Easily ignites and burns (ex. Ethanol, acetone)
- Corrosive: Causes damage to skin and materials (ex. Hydrochloric acid, sodium hydroxide)
- Toxic: Harmful or fatal if inhaled, ingested, or absorbed (ex. Mercury, cyanide)
- Reactive: Can explode or produce dangerous reactions (ex. Sodium metal, peroxides)



Proper Chemical Handling

- Always read SDS before using any chemical
- Use proper techniques or transferring chemicals, such as using fume hoods for volatile substances
- Never mix incompatible chemicals (ex. Ammonia and bleach produce toxic gas)
- Label all containers clearly to avoid confusion and prevent accidents
- Keep chemical exposure time to a minimum and work in well-ventilated areas



Personal Protective Equipment (PPE)

Essential PPE includes:

- Gloves (latex, nitril, chemical-resistant depending on substance)
- Safety goggles or face shields for eye protection
- Lab coats and aprons to protect clothing and skin
- Respirators when working with airborne hazards
- Inspect PPE for damage before use
- Ensure proper fit and maximize protection



Chemical Storage Guidelines

- Store chemicals in designated, well-ventilated area with proper signage
- Segregate incompatible chemicals (ex. Acids away from bases, oxidizers away from flammable)
- Use proper containers for storage, ensuring they are tightly sealed and labeled
- Maintain storage temperature requirements to prevent degradation or reactions
- Regularly inspect storage areas for leaks, corrosion, or expired chemicals



Spill and Accident Response

- Assess the spill size and hazard level before responding
- Use appropriate spill kits for different types of spills (acid neutralizers, absorbents for solvents, etc.)
- Contain the spill using absorbent materials and prevent spreading
- Report all spills immediately to supervisors and follow emergency protocols
- Clean affected areas thoroughly and dispose of waste properly



Waste Disposal and Environmental Considerations

- Separate chemical waste into categories (organic, inorganic, hazardous, non-hazardous)
- Label all waste containers with contents and hazard information
- Follow institutional and regulatory guidelines for disposal (EPA, OSHA regulations)
- Never pour chemicals down the drain unless explicitly approved
- Consider recycling or neutralizing certain chemicals when feasible



Emergency Procedures

- Fire safety:
 - Know the location and operation of fire extinguishers
 - Use appropriate extinguishers for different fire types (Class B for flammable liquids, Class C for electrical fires)
- First aid for chemical exposure:
 - Flush eyes with water for at least 15 minutes if exposed
 - Wash affected skin immediately and remove contaminated clothing
 - Seek medical attention for severe exposures
- Know evacuation routes, emergency exits, and safety showers/eyewash stations
- Report incidents immediately and document any exposure



Safety Best Practices

- Never work alone with hazardous chemicals; use the buddy system
- Keep workspaces clean and free from clutter to prevent accidents
- Conduct regular safety drills to prepare for emergencies
- Keep lab safety equipment (spill kits, first aid kits, fire extinguishers) accessible and well-maintained
- Report unsafe conditions, malfunctioning equipment, or near-misses promptly



Conclusion and Questions

- Summary of key safety principles:
 - Understanding chemical hazards
 - Using PPE and proper handling techniques
 - Storing and disposing of chemicals correctly
 - Following emergency and accident response procedures
- Importance of continuous learning and adherence to safety protocols
- Open floor for questions and discussion

