Chemical Handling: Safe Handling of Chemicals

16 – 20 August 2027
Washington DC (USA)



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Introduction

The Chemical Handling: Safe Handling of Chemicals course provides a comprehensive theoretical foundation for safely managing chemicals in refinery and industrial environments. It addresses the critical safety principles, regulatory requirements, and standardized practices governing chemical use across operations. The course emphasizes controlled handling, storage, transportation, and disposal to minimize risks to personnel, assets, and the environment. Participants will develop a structured understanding of chemical hazards and the methods used to prevent incidents. International standards and refinery best practices form the backbone of the learning framework. The scope extends from routine chemical tasks to emergency response and environmental protection obligations.

Targeted Groups

This Chemical Handling: Safe Handling of Chemicals training targets professionals seeking specialized knowledge and skills:

- Refinery operations technicians working with process chemicals
- Maintenance and mechanical personnel to handle hazardous substances.
- HSE officers and safety supervisors in industrial facilities.
- Laboratory and quality control staff handling chemical reagents.
- Chemical warehouse and logistics personnel.
- Engineering staff involved in chemical system design.
- Environmental and waste management coordinators.
- Contractors working within refinery chemical areas.

Course Objectives

Participants will achieve the following objectives by completing the Chemical Handling: Safe Handling of Chemicals course:

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- Understand chemical safety rules applied in refinery environments.
- Identify chemical hazard classes using global classification systems.
- Apply safe chemical storage and segregation principles.
- Execute proper chemical handling and transportation practices.
- Interpret Safety Data Sheets accurately for operational use.
- Recognize chemical exposure routes and associated health risks.
- Apply hazard identification and risk control methodologies.
- Select appropriate personal protective equipment for chemical tasks.
- Respond effectively to chemical spills and exposure incidents.
- Comply with international regulations and refinery procedures.
- Apply environmental protection requirements for chemical waste.
- Promote safe behavior and personal accountability during chemical work.

Targeted Competencies

Participants will gain the following competencies during the program:

- Accurate classification of hazardous chemicals used in refineries.
- Practical understanding of safe chemical handling procedures.
- Ability to assess chemical risks in daily operations.
- Competence in PPE selection based on chemical compatibility.
- Awareness of emergency response actions for chemical incidents.
- Application of control measures to prevent accidents.
- Understanding of regulatory compliance requirements.
- Capability to manage chemical storage and labeling systems.
- Environmental responsibility in chemical waste handling.
- Adoption of proactive safety behavior in chemical-related tasks.

Studying Scenarios

In this training, participants will develop their skills through the analysis of the following scenarios:

- Chemical receipt and inspection at refinery storage areas.
- Incorrect storage leads to incompatible chemical reactions.
- Handling flammable chemicals during routine operations.
- Response to chemical spills in confined spaces.
- Exposure incidents involving corrosive substances.
- Selection of incorrect PPE during chemical transfer.
- Emergency use of eyewash and safety shower systems.

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Course Content

Unit 1: Fundamentals of Chemical Safety and Regulations

- Definition and scope of chemical handling in industrial environments.
- Overview of chemical hazards in refinery operations.
- International chemical safety regulations and frameworks.
- Application of GHS and CLP classification systems.
- Understanding hazard pictograms and signal words.
- Legal duties of employers and employees in chemical safety.
- Role of chemical safety procedures in accident prevention.

Unit 2: Chemical Hazard Identification and Risk Assessment

- Types of chemical hazards in refinery processes.
- Physical hazards associated with flammable and reactive chemicals.
- Health hazards from toxic and corrosive substances.
- Environmental hazards linked to chemical releases.
- Interpretation and practical use of Safety Data Sheets.
- Hazard identification using Job Safety Analysis techniques.
- Risk assessment methods for chemical-related tasks.
- Implementation of the hierarchy of controls for chemicals.

Unit 3: Safe Storage, Handling, and Transportation of Chemicals

- Principles of chemical storage design and layout.
- Segregation of incompatible chemicals.
- Labeling and identification requirements for chemical containers.
- Temperature, ventilation, and containment controls.
- Safe handling practices during chemical transfer and dosing.
- Use of approved containers and transfer equipment.
- Internal transportation of chemicals within refinery areas.
- Control measures to prevent leaks, spills, and exposures.

Unit 4: Personal Protective Equipment and Emergency Equipment

- Types of PPE used in chemical handling operations.
- Selection criteria based on chemical compatibility.
- Limitations and proper use of chemical-resistant gloves.
- Respiratory protection for chemical vapors and gases.
- Protective clothing for corrosive and toxic chemicals.
- Inspection and maintenance of PPE.
- Use of emergency showers and eyewash stations.
- Spill kits and containment tools for chemical incidents.

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Unit 5: Incident Response, Environmental Protection, and Safety Culture

- Immediate actions during chemical spills and leaks.
- Response to chemical burns, inhalation, and exposure.
- Incident reporting and escalation procedures.
- Environmental impacts of improper chemical handling.
- Chemical waste segregation and temporary storage.
- Compliance with environmental management standards.
- Prevention of soil and water contamination.
- Building a zero-incident mindset in chemical operations.

Final Insights & Key Takeaways

Safe chemical handling is a critical foundation for protecting personnel, assets, and the environment within refinery operations. This course reinforces disciplined practices, regulatory compliance, and responsible behavior to achieve sustainable and incident-free chemical management.