ADVANCED CERTIFICATE

IN CHEMICAL SAFETY AND

HAZARDOUS CHEMICAL HANDLING

PROFESSIONAL TRAINING PROGRAMME

Advanced knowledge and practical skills for identifying, assessing, handling, storing, transporting and managing hazardous ch emicals safely.

CHEMICAL HAZARD RECOGNITION • RISK ASSESSMENT • SAFE HANDLING
STORAGE & COMPATIBILITY • SPILL RESPONSE • WASTE MANAGEMENT

COURSE BROCHURE

1. Course Overview

The Advanced Certificate in Chemical Safety and Hazardous Chemical Handling is a professional training programme designed to equip participants with the advanced knowledge and practical skills required to identify, assess, handle, store, transport, and manage hazardous chemicals safely in industrial, commercial, laboratory, and other occupational environments.

The programme focuses on chemical hazard recognition, exposure prevention, risk assessment, safe chemical handling practices, chemical compatibility, Safety Data Sheet (SDS) interpretation, chemical labelling, storage controls, spill response, emergency preparedness, and hazardous waste management. It emphasises preventing chemical exposure, fires, explosions, environmental contamination, occupational injuries, and other incidents associated with improper management of hazardous substances.

Participants examine relevant provisions of the United States Occupational Safety and Health Administration (OSHA) standards, the United Kingdom's Control of Substances Hazardous to Health (COSHH) Regulations, the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR), and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

The course develops understanding of chemical hygiene, workplace exposure controls, emergency response arrangements, and the hierarchy of controls. Participants learn to recognise chemical hazards, evaluate workplace risks, select appropriate control measures, and implement safe systems of work consistent with applicable legislation and organisational procedures.

INDUSTRY RELEVANCE

Suitable for manufacturing, oil and gas, mining, construction, laboratories, healthcare, chemical processing, warehousing, environmental services, and other industries where hazardous chemicals are used, stored, or handled.

2. Course Objectives

- Understand the fundamental principles of chemical safety and hazardous chemical management.
- Identify toxic, corrosive, flammable, reactive, oxidising, and environmentally hazardous substances.
- Interpret chemical labels, hazard pictograms, signal words, hazard statements, precautionary statements, and Safety Data Sheets.
- Conduct chemical risk assessments and identify potential routes of exposure.
- Apply engineering, administrative, and personal protective measures to prevent chemical exposure.
- Understand safe procedures for chemical receipt, handling, transfer, storage, use, and disposal.
- Recognise chemical incompatibilities and prevent dangerous reactions, fires, explosions, and uncontrolled releases.
- Understand the application and limitations of chemical protective equipment and respiratory protection.
- Apply chemical hygiene principles in laboratory and industrial environments.
- Develop procedures for chemical spills, accidental releases, and chemical emergencies.
- Understand hazardous waste segregation, containment, and disposal.
- Interpret relevant OSHA, COSHH, DSEAR, and GHS requirements within their applicable scopes.
- Promote a positive chemical safety culture through training, supervision, inspection, documentation, and continuous improvement.

3. Professional Competency Development

Upon successful completion of the programme, participants should be able to demonstrate competency in the following areas.

A. Chemical Hazard Identification and Classification

Identify hazardous chemical properties and distinguish physical, health, and environmental hazards. Recognise substances that may cause poisoning, burns, respiratory irritation, sensitisation, organ damage, fire, explosion, or dangerous reactions.

B. Safety Data Sheets and Chemical Labelling

Interpret the 16-section Safety Data Sheet format commonly used under GHS-aligned systems, including composition, hazards, first aid, firefighting, accidental release, handling, storage, exposure controls, stability, reactivity, and disposal.

C. Chemical Risk Assessment and Exposure Control

Evaluate chemical handling activities and exposure routes such as inhalation, skin absorption, ingestion, and injection. Apply the hierarchy of controls, prioritising elimination, substitution, and engineering controls.

D. Safe Chemical Handling and Transfer

Apply safe procedures for dispensing, mixing, diluting, decanting, transferring, and using hazardous chemicals with suitable containers, secondary containment, ventilation, spill prevention, compatibility, and clear instructions.

E. Chemical Storage and Compatibility Management

Identify incompatible chemicals and establish suitable segregation, labelling, containment, and storage for flammable liquids, corrosives, oxidisers, water-reactive substances, toxic chemicals, and gas-releasing substances.

F. Personal Protective Equipment and Exposure Monitoring

Understand selection, limitations, inspection, use, and maintenance of chemical-resistant gloves, protective clothing, eye and face protection, and other PPE, including when specialist monitoring or respiratory protection may be required.

G. Laboratory Chemical Hygiene

Apply chemical hygiene principles including safe work practices, fume hood awareness, storage, waste management, emergency equipment readiness, and control of laboratory chemical exposure.

H. Fire, Explosion, and Dangerous Atmospheres

Recognise flammable vapours, combustible materials, ignition sources, static electricity, and incompatible substances. Understand hazardous-area risk assessment and preventive and protective measures.

I. Chemical Spill and Emergency Response

Distinguish minor incidental spills from releases requiring specialist response. Understand notification, isolation, evacuation, containment, decontamination, and the need for trained and equipped responders.

J. Hazardous Chemical Waste Management

Apply safe waste segregation, container compatibility, labelling, temporary storage, spill prevention, and authorised disposal procedures. Avoid unsafe mixing and disposal practices.

K. Chemical Safety Documentation and Auditing

Maintain chemical inventories, SDS records, risk assessments, inspection checklists, training records, incident reports, and safe operating procedures. Identify gaps and recommend corrective actions.

4. Target Group

This programme is suitable for professionals and personnel responsible for chemical safety, occupational health and safety, hazardous materials management, industrial operations, and laboratory activities.

- Health, Safety and Environment (HSE) officers and managers.
- Chemical safety officers and hazardous materials coordinators.
- Laboratory technicians, supervisors, and laboratory managers.
- Industrial and chemical process operators.
- Manufacturing and production personnel.
- Oil and gas, mining, and petrochemical workers.
- Environmental health and safety professionals.
- Warehouse and chemical storage supervisors.
- Maintenance and cleaning personnel who work with hazardous chemicals.
- Emergency response and spill response personnel.
- Waste management and environmental services personnel.
- Quality assurance and regulatory compliance professionals.
- Safety trainers, supervisors, and operational risk assessors.
- Contractors and employees who regularly use, transfer, or store hazardous substances.

The course may also benefit individuals preparing for responsibilities involving chemical inventories, workplace chemical risk assessments, hazardous substance controls, and chemical emergency preparedness.

5. International Standards and Regulatory Reference Frameworks

1. OSHA 29 CFR 1910 Subpart H – Hazardous Materials

Applicable general industry requirements concerning hazardous materials, including relevant provisions on flammable liquids, process safety management where applicable, compressed gases, safe storage, handling procedures, and prevention of chemical incidents.

2. OSHA 29 CFR 1910.120 – HAZWOPER

Applicable requirements for hazardous waste operations and emergency response, including site-specific safety planning, hazard assessment, exposure controls, emergency arrangements, and training. The course distinguishes HAZWOPER activities from routine chemical handling.

3. OSHA 29 CFR 1910.1450 – Laboratory Standard

The Chemical Hygiene Plan, standard operating procedures, employee information and training, exposure control, and employer and laboratory personnel responsibilities in covered laboratory settings.

4. UK COSHH Regulations

Assessing and controlling exposure to hazardous chemicals, fumes, vapours, dusts, and other harmful substances, including suitable and sufficient risk assessment, control, maintenance, monitoring, information, and training.

5. UK DSEAR

Identification and control of fire, explosion, and similar energy-releasing risks, including risk assessment, reduction, ignition control, mitigation, hazardous areas, and emergency arrangements.

6. Globally Harmonized System (GHS)

The international framework for classifying and communicating chemical hazards using standardised labels and Safety Data Sheets, hazard classes, pictograms, signal words, hazard statements, and precautionary statements.

7. Applicable National Legislation and Industry Best Practices

Relevant national occupational safety legislation, chemical management requirements, environmental controls, dangerous goods requirements, organisational procedures, local laws, and workplace-specific risks.

REGULATORY SCOPE NOTE

OSHA standards apply within their relevant United States jurisdiction and scope; COSHH and

DSEAR are UK regulations. They are reference frameworks and are not automatically legally applicable in every country. GHS is implemented through national or regional measures. The course does not, by itself, confer OSHA-authorised training status, HAZWOPER qualification, or regulatory approval.

6. Training Methodology and Assessment

The programme may be delivered through classroom-based instruction, virtual learning, blended training, or other arrangements offered by the training provider.

- Instructor-led presentations and technical discussions.
- Chemical hazard identification exercises.
- Safety Data Sheet and chemical label interpretation.
- Chemical risk assessment workshops.
- Chemical compatibility and storage case studies.
- PPE selection and safe handling demonstrations.
- Spill response and emergency scenario exercises.
- Laboratory and industrial chemical hygiene case studies.
- Incident investigation and root-cause analysis.
- Practical exercises involving chemical inventory and inspection documentation.

Assessment

Assessment may include written examinations, assignments, case studies, practical demonstrations, and scenario-based exercises. Participants may be assessed on their ability to identify hazards, recommend appropriate controls, interpret chemical safety information, and respond appropriately to chemical handling and storage scenarios.

PRACTICAL SAFETY REQUIREMENT

Any practical activities involving hazardous substances must be appropriately risk-assessed, supervised, and conducted with suitable facilities, equipment, and protective measures.

7. Certificate Award

Participants who successfully complete the programme and meet the applicable attendance and assessment requirements will be awarded the:

ADVANCED CERTIFICATE IN CHEMICAL SAFETY AND HAZARDOUS CHEMICAL HANDLING

The certificate recognises successful completion of the training programme and the development of knowledge and practical competency in chemical safety and hazardous chemical handling.

MODULE 1: CHEMICAL HAZARD IDENTIFICATION & CLASSIFICATION

1	OSHA Hazard Communication Standard (1910.1200)
2	UK COSHH hazard identification requirements
3	GHS chemical classification
4	Physical, health & environmental hazards
5	Chemical incompatibility & reactivity
6	SDS (Safety Data Sheet) interpretation
7	Chemical labeling requirements (OSHA + GHS + COSHH)
8	Hazard pictograms & signal words
9	Chemical exposure pathways
10	Chemical hazard communication systems

References: *OSHA 29 CFR 1910.1200 (HazCom) • UK HSE COSHH Essentials*

MODULE 2: CHEMICAL STORAGE, SEGREGATION & INVENTORY CONTROL

1	OSHA chemical storage requirements
2	UK COSHH storage guidelines
3	Segregation of incompatible chemicals
4	Flammable & combustible liquid storage
5	Corrosive & oxidizer storage
6	Gas cylinder storage & handling
7	Chemical inventory management
8	Secondary containment systems
9	Spill containment & control

10	Chemical storage inspections

References: *OSHA 29 CFR 1910.106 (Flammable Liquids) • UK HSE Chemical Storage Guidance*

MODULE 3: SAFE CHEMICAL HANDLING PROCEDURES

1	OSHA safe handling requirements
2	COSHH safe handling procedures
3	Transfer & dispensing of chemicals
4	Handling corrosives, toxics & oxidizers
5	Safe use of flammable chemicals
6	Chemical mixing & dilution safety
7	Laboratory chemical handling (OSHA 1910.1450)
8	Handling compressed gases
9	Hot work & chemical hazards
10	Chemical handling documentation

References: *OSHA 29 CFR 1910.1450 (Chemical Hygiene Standard) • UK HSE COSHH Safe Handling Procedures*

MODULE 4: CHEMICAL EXPOSURE CONTROL & PPE

1	OSHA exposure limits (PEL, REL, TLV)
2	UK Workplace Exposure Limits (WELs)
3	Engineering controls (ventilation, fume hoods)
4	Administrative controls
5	PPE selection for chemical hazards
6	Respiratory protection (OSHA 1910.134)
7	Chemical-resistant gloves & suits

8	Eye & face protection
9	PPE inspection & maintenance
10	Exposure monitoring & air sampling

References: *OSHA 29 CFR 1910.134 (Respiratory Protection) • UK EH40 Workplace Exposure Limits*

MODULE 5: CHEMICAL SPILL RESPONSE, EMERGENCY PROCEDURES & FIRST AID

1	OSHA emergency response requirements (HAZWOPER)
2	UK COSHH emergency procedures
3	Spill classification (minor vs major)
4	Spill kits & neutralization agents
5	Containment & cleanup procedures
6	Decontamination procedures
7	Chemical fire response (NFPA guidance)
8	First aid for chemical exposure
9	Emergency eyewash & shower use
10	Incident reporting & documentation

References: *OSHA 29 CFR 1910.120 (HAZWOPER) • UK HSE COSHH Emergency Procedures*

MODULE 6: CHEMICAL WASTE MANAGEMENT & ENVIRONMENTAL PROTECTION

1	OSHA hazardous waste handling
2	UK COSHH waste disposal requirements
3	Chemical waste classification
4	Storage & labeling of chemical waste

5	Waste minimization strategies
6	Disposal of flammable waste
7	Disposal of corrosive & toxic waste
8	Environmental protection measures
9	Waste documentation & manifests
10	Regulatory compliance audits

References: *OSHA Hazardous Waste Operations Standard • UK HSE Chemical Waste Disposal Guidance*

PROGRAMME SUMMARY

Build Advanced Chemical Safety Capability

This programme combines chemical hazard knowledge, regulatory awareness, practical risk control, emergency preparedness, documentation, and continuous improvement. It is designed to support safer chemical management across industrial, commercial, laboratory, healthcare, warehousing, environmental, and operational settings.

CORE LEARNING THEMES

Hazard classification • SDS interpretation • Chemical compatibility • Storage and segregation • Exposure control • PPE • Spill response • Fire and explosion prevention • Waste management • Auditing and documentation

Qualification

ADVANCED CERTIFICATE IN CHEMICAL SAFETY AND HAZARDOUS CHEMICAL HANDLING

Awarded to participants who successfully complete the programme and meet the applicable attendance and assessment requirements.

PROFESSIONAL TRAINING FOR SAFER WORKPLACES

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