# COURSE OVERVIEW HE0110 Hazardous Materials

#### **Course Title**

Hazardous Materials

#### **Course Date/Venue**

September 08-12, 2024/Boardroom 1, Elite Byblos Hotel, Al Barsha, Sheikh Zayed Road, Dubai, UAE

### Course Reference

HE0110

#### **Course Duration/Credits**

Five days/3.0 CEUs/30 PDHs

#### Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using one of our state-of-the-art simulators.



Hazardous chemicals are ubiquitous as air, carbohydrates, enzymes, lipids, minerals, proteins, vitamins, water and wood. Naturally occurring hazardous chemicals are supplemented by man-made substances. There are about 70,000 chemicals in use with another 500-1000 added each year. Their properties have been harnessed to enhance the quality of life, thus chemicals are found in virtually all workplaces. Besides the benefits, chemicals also pose dangers to man and the environment.



Society must strike a balance between the benefits and risks of hazardous chemicals. In the workplace it is a management responsibility to ensure practices control the dangers, and it is for employees to collaborate in implementing the agreed procedures. Management must also prevent uncontrolled environmental releases and ensure all wastes are disposed of safely and with proper regard for their environmental impact. The aims of this course are to raise awareness and to help participants identify, assess and control the hazards of chemicals to permit optimum exploitation whilst minimizing the dangers.

















The hazards of chemicals stem from their inherent flammable, explosive, toxic, carcinogenic, corrosive, radioactive or chemical-reactive properties. The effect of exposure on personnel may be acute (fatal) or prolonged that result in an occupational disease or systemic poisoning. However, whether a hazardous condition develops in any particular situation also depends upon the physical properties of the chemical (or mixture of chemicals), the scale involved, the circumstances of handling or use, e.g. provision of control and safety devices, local exhaust ventilation, general ventilation, personal protection, atmospheric monitoring and systems of work generally.

This course is designed to cover occupational, industrial and environmental hazards associated with hazardous materials and chemicals. It includes chemical spills, fires and explosions since they inevitably involve chemical compounds. Further, the course will present information on the nature of hazardous materials and chemicals and help participants reduce or eliminate potential exposure to hazardous materials and chemicals in their work environment.

#### **Course Objectives**

Upon the successful completion of this course, each participant will be able to:-

- Apply systematic techniques in hazardous material handling (HAZMAT) and hazardous material communication (HAZCOM) including handling, storage, disposal, monitoring, response, SDS and spill clean-up of hazardous materials and chemicals
- Discuss the physicochemistry of vapour pressure, gas-liquid solubility, density differences of liquids, surface area effects in mass transfer or heterogeneous reactions and chemical reaction kinetics
- Recognize the hazards of toxic chemicals including its types, risk control and specific precautions
- Employ control measures for flammable chemicals and prevent hazards arising in reactive chemicals processing
- Enumerate the various cryogens, compresses gases and radioactive chemicals including its characteristics
- Carryout proper monitoring techniques for environmental pollution, gases, vapours, particulates, water quality, sampling strategies and incident investigation
- Discuss safety by design including design procedures, layout, storage, piping arrangements, fire protection, installation and operation of hazardous chemicals
- Apply effective operating procedures for the commissioning, operation, maintenance, spillage, personal protection and monitoring standards of hazardous chemicals
- Identify the classification, packaging, labelling and specific information for marketing hazardous chemicals
- Employ the safe transport of chemicals by road, rail, air and sea and determine the modes of transport for liquids, gases and solids
- Acquire knowledge on the monitoring and protection of chemicals and the environment including the legislative control governing these chemicals, proper waste management and environmental impact assessment

















#### **Exclusive Smart Training Kit - H-STK®**



Participants of this course will receive the exclusive "Haward Smart Training Kit" (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes electronic version of the course materials, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a Tablet PC.

#### **Who Should Attend**

This course provides an overview of all significant aspects and considerations of hazardous materials and chemicals handling, storage, SDS, disposal, monitoring, response and spill clean-up for those who are dealing with hazardous materials and chemicals in the workplace such as managers, engineers and other technical staff. This course is also suitable for health, safety and environmental (HSE) personnel.

#### Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures

20% Practical Workshops & Work Presentations

30% Hands-on Practical Exercises & Case Studies

20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

#### **Accommodation**

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

#### **Course Fee**

**US\$ 5,500** per Delegate + **VAT**. This rate includes H-STK<sup>®</sup> (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.













#### **Course Certificate(s)**

(1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Certificates are valid for 5 years.

#### Recertification is FOC for a Lifetime.

#### **Sample of Certificates**

The following are samples of the certificates that will be awarded to course participants:-







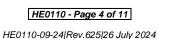






















(2)Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

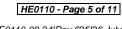






















#### **Certificate Accreditations**

Certificates are accredited by the following international accreditation organizations: -



The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the ANSI/IACET 2018-1 Standard which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET 2018-1 Standard.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking Continuing Education Units (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award 3.0 CEUs (Continuing Education Units) or 30 PDHs (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.



#### **British Accreditation Council (BAC)**

Haward Technology is accredited by the British Accreditation Council for Independent Further and Higher Education as an International Centre. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

















#### Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. Francis Almeida, PgDip, BSc, NEBOSH-ENV, NEBOSH-IGC, NEBOSH-IFC, NEBOSH-IOGC, NEBOSH-PSM, is a Senior Health, Safety & Environmental (HSE) Consultant with over 30 years of practical experience within the Oil and Gas industry. He is a NEBOSH Approved Instructor for various certification programs. His expertise lies extensively in the areas of Accident/Incident Investigation & Risk Management, NEBOSH Environmental Management, NEBOSH International General Certificate, NEBOSH

Fire Safety & Risk Management International Certificate, NEBOSH International Oil & Gas Certificate, NEBOSH Process Safety Management, HAZOP & HAZID, HAZMAT & HAZCOM Storage & Disposal, As Low as Reasonably Practicable (ALARP), Process Hazard Analysis (PHA), Process Safety Management (PSM), Hazardous Materials & Chemicals Handling, Pollution Control, Environment, Health & Safety Management, Process Risk Analysis, Effective Tool Box Talks, Construction Sites Safety, HSSE Management System, HSSE Audit & Inspection, HSEQ Procedures, Authorized Gas Testing, Confined Space Entry & Rescue, Risk Management, Quantitative & Qualitative Risk Assessment, Working at Height, Firefighting Techniques, Fire & Gas Detection System, Fire Fighter & Fire Rescue, Fire Risk Assessment, HSE Industrial Practices, Manual Handling, Rigging Safety Rules, Machinery & Hydraulic Lifting Equipment, Warehouse Incidents & Accidents Reporting, Incident & Accident Investigation, Emergency Planning, Emergency Response & Crisis Management Operations, Waste Management Monitoring, Root Cause Analysis, Hazard & Risk Assessment, Task Risk Assessment (TRA), Incident Command, Job Safety Analysis (JSA), Behavioral Based Safety (BBS), Fall Protection, Work Permit & First Aid and various international codes and standards such as the ISO 9001, OHSAS 18001, ISO 14001, SA8000, ISO 9001-2000 and ISO 9002. He was the Offshore Safety Specialist of Chevron wherein he was in-charged in HSE inspections, hazard analysis, incident investigation and implementing corrective actions.

During his career life, Mr. Almeida has gained his practical and field experience through his various significant positions and dedication as the Quality Manager, HSE Specialist/Acting On-Scene Commander, Quality Auditor, Quality Supervisor, QHSE Engineer, Metallurgical Engineer, HSE Coordinator, Suppliers Auditor, Senior Instructor/Consultant, Oil & Gas Construction Specialist, Business Administration Specialist and Oil & Gas Management Technology Specialist for various international companies and institutions such as the IBEC, Lopes & Almeida, IMA, EXPRO Group, UNESA, Vetco Aibel, ABB Oil & Gas, Brazilian Aluminum Foundry, DNV and ABIFA.

Mr. Almeida has a Bachelor degree in Metallurgical Engineering and a Post Graduate Diplomas in Safety Engineering and Industrial Administration. Further, he is a Certified Instructor/Trainer, an Approved Lead Tutor in NEBOSH Environmental Management Certificate, NEBOSH International General Certificate, NEBOSH International Oil & Gas Certificate and NEBOSH Process Safety Management Certificate and an Approved Practical Assessor/Lead Tutor in NEBOSH Fire Safety & Risk Management. Moreover, he is a Certified ISO 9001:2000 Lead Auditor, a Certified Internal Verifier/Assessor/Trainer by the Institute of Leadership and Management (ILM) and has further delivered numerous trainings, courses, seminars, conferences and workshops globally.



















# **Course Program**

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Sunday, 08th of September 2024 Day 1.

Day 1:	Sunday, 08" of September 2024
0730 - 0800	Registration & Coffee
0800 - 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
	General Principles of Chemistry
0830 - 0900	Atoms & Molecules • Periodic Table • Valency • Chemical Bonds •
	Oxidation/Reduction • Physical State • Acids • Bases • Halogens
0900 - 0915	Break
	General Principles of Chemistry (cont'd)
0915 - 1030	Metals ● Oxygen & Sulphur ● Nitrogen, Phosphorus, Arsenic & Antimony
0913 - 1030	• PH • Salts • Organic Chemistry • Combustion Chemistry • Chemical
	Reactivity
	Physicochemistry
	Vapour Pressure • Gas-Liquid Solubility • Liquid-To-Vapour Phase
1030 - 1200	Change ● Solid-to-Liquid Phase Change ● Density Differences of Gases &
	Vapours • Density Differences of Liquids • Immiscible Liquid-Liquid
	Systems • Vapour Flashing
1200 – 1215	Break
	Physicochemistry (cont'd)
	Effects of Particle or Droplet Size • Surface Area Effects in Mass Transfer or
1215 – 1420	Heterogeneous Reactions • Enthalpy Changes on Mixing of Liquids •
	Critical Temperatures of Gases • Chemical Reaction Kinetics • Corrosion •
	Force & Pressure • Expansion & Contraction of Solids
1420 – 1430	Recap
1430	Lunch & End of Day One

Monday, 09th of September 2024 Dav 2:

Day Z.	monday, 03 of deptember 2024
0730 – 0900	Toxic Chemicals
	Hazard Recognition • Types of Toxic Chemicals • Hazard Assessment •
	Risk Assessment of Carcinogens • Risk Control • Control of Substances
	Hazardous to Health ● Specific Precautions ● SDS
0900 – 0915	Break
0915 – 1030	Flammable Chemicals
	Ignition & Propagation of a Fame Front • Control Measures • Fire
	Extinguishment • Fire Precautions • SDS
1030 - 1200	Reactive Chemicals
	Water-Sensitive Chemicals • Toxic Hazards From Mixtures • Reactive
	Hazards from Mixtures • Oxidizing Agents • Explosive Chemicals •
	General Principles for Storage • Hazards Arising in Chemicals Processing •
	SDS
1200 – 1215	Break
1215 – 1420	Cryogens
	Liquid Oxygen • Liquid Nitrogen and Argon • Liquid Carbon Dioxide •
	Liquefied Natural Gas • SDS
1420 - 1430	Recap
1430	Lunch & End of Day Two





















Day 3: Tuesday, 10<sup>th</sup> of September 2024

Day J.	ruesuay, 10 of deptember 2024
0730 - 0900	Compressed Gases  Acetylene • Air • Ammonia • Carbon Dioxide • Carbon Monoxide • Chlorine • Hydrogen • Hydrogen Chloride • Hydrogen Sulphide • Liquefied Petroleum Gases • Methane • Nitrogen • Nitrogen Oxides •
	Oxygen • Ozone • Sulphur Dioxide
0900 - 0915	Break
0915 - 1030	Monitoring Techniques  Selected General Analytical Techniques for Monitoring Environmental  Pollution ● Gases & Vapours ● Particulates ● Monitoring Water Quality  • Monitoring Land Pollution ● Monitoring Air Pollution
1030 - 1200	Monitoring Techniques (cont'd)  Flammable Gases • Toxic Particulates • Official Methods • Sampling  Strategies • Selected Strategies for Determining Employees' Exposure to  Airborne Chemicals • Pollution Monitoring Strategies in Incident  Investigation
1200 – 1215	Break
1215 – 1420	Radioactive Chemicals  Hazards ● Types of Radiation ● Control Measures ● SDS
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4: Wednesday, 11<sup>th</sup> of September 2024

	Safety by Design
0730 - 0900	Design Procedures • Layout • Storage • Equipment Design • Piping
	Arrangements ● Fire Protection ● Installation & Operation
0900 - 0915	Break
	Operating Procedures
0915 - 1030	Commissioning • Operation • Maintenance • Pressure Systems •
	Emergency Procedures • Spillage • SDS
	Operating Procedures (cont'd)
1030 – 1200	First Aid • Personal Protection • Medical Screening • Monitoring
	Standards • Training
1200 – 1215	Break
1215 – 1420	Marketing
	Classification • Packaging • Labelling • Information • SDS
1420 - 1430	Recap
1430	Lunch & End of Day Four

Day 5: Thursday, 12<sup>th</sup> of September 2024

0730 – 0900	Transport of Chemicals  Road Transport ● Rail Transport ● Air Transport ● Sea Transport ●  Modes of Transport for Liquids, Gases & Solids ● Loading & Unloading ●  Container Filling/Discharging ● SDS
0900 - 0915	Break
0915 – 1030	Chemicals & the Environment: Monitoring & Protection  Legislative Control ● Waste Management ● Environmental Impact  Assessment ● Control of Atmospheric Emissions ● SDS ● Liquid Effluent  Treatment Operations ● Control of Solid Waste ● Monitoring & Auditing















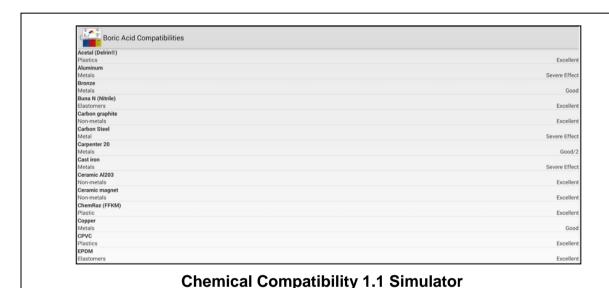


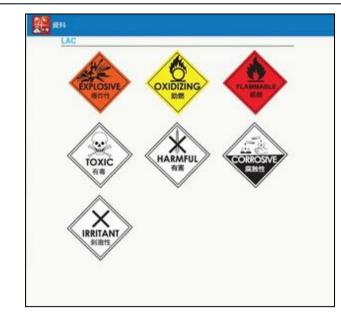


1030 - 1200	Chemical Spill Clean Up
1200 – 1215	Break
1215 - 1300	Chemical Spill Clean Up (cont'd)
1300 - 1315	Course Conclusion
1315 - 1415	COMPETENCY EXAM
1415 - 1430	Presentation of Course Certificates
1430	Lunch & End of Course

#### **Simulators (Hands-on Practical Sessions)**

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using one of our state-of-the-art simulators; "Chemical Compatibility 1.1 Simulator", "Chemical Safety Database Simulator", "CAMEO Chemicals Suite Simulator" or "ERG 2020 Simulator".



























#### **CAMEO Chemicals Suite Simulator**



## **Course Coordinator**

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org

















