

## COURSE OVERVIEW HE0021

### Lab Chemicals Handling & Storage

#### Course Title

Lab Chemicals Handling & Storage

#### Course Date/Venue

Session 1: January 05-09, 2025/Boardroom 1,  
Elite Byblos Hotel Al Barsha, Sheikh  
Zayed Road, Dubai, UAE

Session 2: April 06-10, 2025/Business Meeting,  
Crowne Plaza Al Khobar, Al Khobar,  
KSA



#### Course Reference

HE0021

#### Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

#### Course Description



***This practical and highly-interactive course includes real-life case studies where participants will be engaged in a series of interactive small groups and class workshops.***

This course is designed to provide participants with a detailed and up-to-date overview of Lab Chemicals Handling and Storage. It covers the basics of chemical properties including physical and chemical changes; the labels and material safety data sheets (MSDS) including the routes of exposure and their effects; the various types of PPE like gloves, lab coats, goggles, etc; the laboratory safety equipment and various classes of chemicals like acids, bases, oxidizers, flammables, etc; the hazard communication and storage color codes; the compatibility of chemicals and proper storage and handling of chemicals sensitive to temperature changes; the common reactions that can pose hazards; and the best practices to minimize spillage and exposure.



During this interactive course, participants will learn the safety carriers in handling larger containers and carboys; the proper disposal methods for different classes of chemicals; the spill response, chemical inventory management and safe methods to move chemicals from one location to another; the expiration dates of chemicals and the types, proper usage, and maintenance of storage containers and secondary containment; the importance of ventilation in storage areas and handling highly reactive, perishable, or sensitive chemicals; the flammable storage and proper storage, use, and handling of gas cylinders; the safe lab layout emergency protocols, regular check-ups, maintenance, and compliance with safety standards.



## Course Objectives

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

- Apply and gain an in-depth knowledge on lab chemicals handling and storage
- Discuss the basics of chemical properties including physical and chemical changes
- Identify the labels and material safety data sheets (MSDS) including the routes of exposure and their effects
- Use various types of PPE like gloves, lab coats, goggles, etc and laboratory safety equipment
- Classify various classes of chemicals like acids, bases, oxidizers, flammables, etc as well as hazard communication and identify storage color codes
- Recognize the compatibility of chemicals and apply proper storage and handling of chemicals sensitive to temperature changes
- Identify the common reactions that can pose hazards and implement best practices to minimize spillage and exposure
- Use safety carriers in handling larger containers and carboys and apply proper disposal methods for different classes of chemicals
- Carryout spill response, chemical inventory management and safe methods to move chemicals from one location to another
- Determine and manage the expiration dates of chemicals and identify the types, proper usage, and maintenance of storage containers and secondary containment
- Discuss the importance of ventilation in storage areas and handle highly reactive, perishable, or sensitive chemicals
- Use flammable storage and apply proper storage, use, and handling of gas cylinders
- Design a safe lab layout, employ emergency protocols and perform regular check-ups, maintenance, and compliance with safety standards

## Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Howard Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.

## Who Should Attend

This course provides an overview of all significant aspects and considerations of lab chemicals handling and storage 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.

**Course Certificate(s)**

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

**Certificate Accreditations**

Certificates are accredited by the following international accreditation organizations: -


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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.

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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 Fee**

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



### 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. Nikolas Karnavos, MSc, BSc, is an Senior HSE Consultant & International Expert in Water Treatment Technology with over 35 years of extensive experience within the Oil, Gas, Refinery and Petrochemical industries. His expertise widely covers Oil & Gas Operational Safety, Process Safety Management, Hazards Inherent in Oil & Gas, Plant Operation & Maintenance, Risk Management, Start-up & Shutdown, Fire & Explosion in the Oil & Gas Industries, Transport Operations Safety, Maritime Transport, Fire Proofing, Lifting & Rigging Equipment, Wastewater Treatment, Oilfield Water Treatment, Best Practice in Sewage & Industrial Wastewater Treatment & Environmental Protection, Treating & Handling Oily Water, Water Chemistry for Power Plant, Industrial Water Treatment in Refineries & Petrochemical Plants, Water Pollution Control, Permitting & Enforcing Drilling for Groundwater, Reverse Osmosis Treatment Technology and Chlorination System. Further, he is also well-versed in Laboratory Control of a Wastewater Treatment Plant, Environmental Online Analyzers (Air & Water), Gas Chromatography and various instrumental methods of analysis such as Water Analysis & Quality Control, Water and Wastewater Chemical Analysis, Statistical Data and Laboratory Analysis, Gas Analysis, Qualitative Fuel Analysis, Environmental Chemical Analysis, Laboratory Environmental Analysis including Water Quality Testing, Water Testing (ICP & Ion Chromatography), Process Water and Wastewater Effluents, Oily Sludge Treatment, Atomic Absorption and Spectroscopic Methods in Analytical Chemistry, Analytical Method Development and Methods of Environmental Measurements (Water, Air, Liquid & Solid Wastes).**

Mr. Karnavos was the **Laboratory Manager** of **Exxon** wherein he was responsible for **ISO 17025 certification**, upgrading laboratory equipment in **refinery, petrochemical and polypropylene** plants, upgrading and extending LIMS, handling the transition plan process of the existing laboratory to a new as well as formulating and executing the plans for applied research and technology transfer. During his career life, he had occupied several significant positions as the **Laboratory Analyst, Laboratory Professor, Quality Manager, Partner & Managing Director, Environmental Engineer, Process Engineer, Environmental Management Corporate Department Head and Quality Control & Plastics Application Head** with different international companies like the **AQUACHEM, Hellenic Petroleum (EXXON)** and **Technological Institute**.

Mr. Karnavos holds a **Master's** degree in **Chemical Engineering** and **Bachelor's** degree in **Mechanical Engineering** and **Petroleum Engineering** from the **Aristotelian University of Thessaloniki, Technological Institute and KATEE Kavala** respectively. He is an **Accredited Trainer** for the Organization for the Certifications & Vocational Guidance (**EOPPEP**) and an **Accredited Environmental Auditor** from the **IEMA**. Further, he is the **President** of Greek **Association of Chemical Engineers** and an active member of various professional engineering bodies internationally like the **IEMA, Technical Chamber of Greece** and the **CONCAWE**. He also **published numerous books and scientific papers** and delivered various trainings and workshops worldwide.

### 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 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:

#### **Day 1**

0730 – 0800	<i>Registration &amp; Coffee</i>
0800 – 0815	<i>Welcome &amp; Introduction</i>
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Basic Chemistry:</b> <i>Basics of Chemical Properties Including Physical &amp; Chemical Changes</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<b>Labels &amp; Material Safety Data Sheets (MSDS):</b> <i>Introduction to MSDS &amp; their Importance in the Laboratory</i>
1030 – 1230	<b>Routes of Exposure:</b> <i>How Chemicals can Enter the Body (Inhalation, Ingestion, Absorption &amp; Injection) &amp; their Effects</i>
1230 – 1245	<i>Break</i>
1245 – 1320	<b>The Importance of Personal Protective Equipment (PPE):</b> <i>Overview of Various Types of PPE Like Gloves, Lab Coats, Goggles, etc</i>
1320 - 1420	<b>Laboratory Safety Equipment:</b> <i>Fume Hoods, Eyewash Stations &amp; Emergency Showers</i>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day One</i>

#### **Day 2**

0730 – 0830	<b>Chemical Classification:</b> <i>Introduction to Various Classes Like Acids, Bases, Oxidizers, Flammables, etc.</i>
0830 - 0930	<b>Hazard Communication:</b> <i>Symbols, Labels &amp; Warnings for Each Chemical Classification</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Storage Color Codes:</b> <i>Understanding the Color Codes Associated with Chemical Storage</i>
1100 – 1230	<b>Compatibility &amp; Segregation:</b> <i>Which Chemicals can be Stored Together &amp; Which Cannot</i>

1230 – 1245	<i>Break</i>
1245 – 1320	<b>Temperature Sensitive Chemicals: Proper Storage &amp; Handling of Chemicals Sensitive to Temperature Changes</b>
1320 - 1420	<b>Common Chemical Reactions: An Overview of Common Reactions that can Pose Hazards</b>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Two</i>

**Day 3: Tuesday, 16<sup>th</sup> of July 2024**

0730 – 0830	<b>Techniques for Safe Pouring: Best Practices to Minimize Spillage &amp; Exposure</b>
0830 - 0930	<b>Use of Safety Carriers: Handling Larger Containers &amp; Carboys</b>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Waste Management: Proper Disposal Methods for Different Classes of Chemicals</b>
1100 – 1230	<b>Spill Response: Steps to Take in the Event of Minor &amp; Major Spills</b>
1230 – 1245	<i>Break</i>
1245 – 1320	<b>Chemical Inventory Management: Importance of Regular Inventory Checks &amp; Outdated Chemical Disposal</b>
1320 - 1420	<b>Transportation Inside the Lab: Safe Methods to Move Chemicals from One Location to Another</b>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Three</i>

**Day 4: Wednesday, 17<sup>th</sup> of July 2024**

0730 – 0830	<b>Shelf Life &amp; Expiration: Determining &amp; Managing the Expiration Dates of Chemicals</b>
0830 - 0930	<b>Storage Containers &amp; Secondary Containment: Types, Proper Usage &amp; Maintenance</b>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Ventilation &amp; Storage: Importance of Ventilation in Storage Areas</b>
1100 – 1230	<b>Special Storage Considerations: Handling of Highly Reactive, Perishable or Sensitive Chemicals</b>
1230 – 1245	<i>Break</i>
1245 – 1320	<b>Flammable Storage: Cabinets, Grounding &amp; Other Safety Measures</b>
1320 - 1420	<b>Gas Cylinder Safety: Proper Storage, Use &amp; Handling of Gas Cylinders</b>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Four</i>

**Day 5: Thursday, 18<sup>th</sup> of July 2024**

0730 – 0830	<b>Designing a Safe Lab Layout: Strategic Placement of Equipment, Chemicals, &amp; Safety Stations</b>
0830 - 0930	<b>Emergency Protocols: Evacuation, Chemical Exposure &amp; Fire Safety</b>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Ongoing Training: The Importance of Refresher Courses &amp; Staying Updated with New Safety Guidelines</b>
1100 – 1230	<b>Inspection &amp; Audits: Regular Check-Ups, Maintenance &amp; Ensuring Compliance with Safety Standards</b>

1230 – 1245	Break
1245 – 1300	<b>Feedback &amp; Reporting Mechanisms: Encouraging a Culture of Safety Through Feedback &amp; Incident Reporting</b>
1300 – 1345	<b>Course Review &amp; Q&amp;A: Recap of the Major Topics Covered During the Week &amp; an Opportunity for Participants to Ask Questions</b>
1345 – 1400	<b>Course Conclusion</b>
1400 – 1415	<b>POST-TEST</b>
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

### Practical Sessions/Site Visit

This practical and highly-interactive course includes real-life case studies and exercises:-



### Course Coordinator

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