COURSE OVERVIEW HE0020
Pollution Control in Process Industry

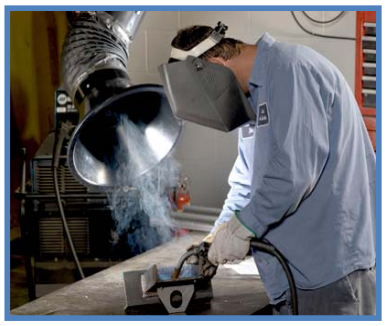
Course Title
Pollution Control in Process Industry

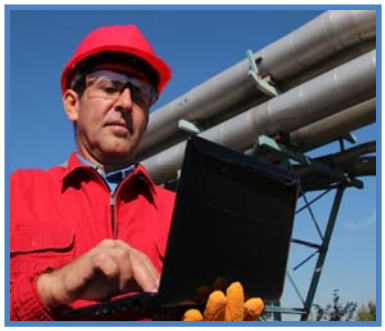
Course Date/Venue
Session 1: June 29-July 03, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: December 07-11, 2025/Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA

Course Reference
HE0020

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description





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

Hydrocarbon represents 63% of the total energy supply in the world. The challenge is to meet world energy demands, whilst minimizing adverse impact on the environment by conforming to current good practice and international regulations. Petroleum operations and petrochemical manufacturing have the potential for a variety of impacts in the environment. These impacts depend upon the stage of the process, the size and complexity of the project or the plant, the nature and sensitivity of the surrounding environment and the effectiveness of planning, pollution prevention, mitigation and control techniques.

The major environmental concerns associated with petroleum operations and petrochemical manufacturing are the release of toxic, reactive, flammable or explosive Highly Hazardous Chemicals (HHC) from the process. Other major concerns are oil spills, drilling waste fluids or muds, drilling waste solids, produced water, and volatile organics. Components of these waste streams of particular environmental concern include components from the reservoir like hydrocarbons (aliphatic and aromatic), chemicals, heavy metals and radioactive materials (NORMS), and chemical additives.

The petroleum and petrochemical industries have worked for a long time to meet the challenge of providing environmental protection. Much has already been achieved but the industry recognizes that even more can be accomplished. The continued sharing of best practices, and the application of comprehensive management systems by petroleum and petrochemical companies and their contractors and suppliers are essential.

This course is designed to provide an overview of the environmental issues in the petroleum and petrochemical industries, and of the best approaches to achieving high environmental performance. Management systems and practices, technologies and procedures that prevent and minimize impact will be described. The ISO 14001 standard will be discussed in addition to other standards. Positive experiences with EMS and opportunities for improvement will be covered. The course will include material on systems and effluents monitoring in terms of both technology and rationale. Upon completion of this course, participants will have gained an understanding of the potential sources for environmental impact, and how these may be controlled and monitored technically and within the framework of ISO 14001 and API Standards.

Course Objectives

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

- Apply systematic techniques on pollution control in process industry
- Discuss what types of wastes are generated by the various processes of petroleum operations and petrochemical manufacturing and implement the framework of pollution control
- Apply the environmental management systems, ISO 14001 and API regulations
- Carryout environmental auditing, site inspection and environmental impact assessment (EIA)
- Employ the various international legislation and regulations related to environmental issues
- Distinguish the various stages of the petroleum and petrochemical processes and their wastes including the wastes from utilities
- Identify the importance and benefits of waste minimization and employ the most desirable waste management practices and the waste management hierarchy of preference
- Apply the water and air pollution control processes and implement the proven techniques involved in solid waste treatment and the radioactive scale handling and disposal
- Manage oil spills professionally and employ proven technology in oil spill control and treatment
- Use the best practicable environmental options and apply the modern environmental monitoring techniques and processes

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 pollution control in process industry for a wide audience, such as petroleum and petrochemical operational staff and engineers, HSE staff, environmental officers, supervisors and managers, environmental scientists and engineers, chemical suppliers, and facilities design engineers. Further, those involved in development, manufacture and marketing of process plant and instruments for pollution control should learn more about the industry requirements and various alternative solutions. Also, those involved in legal and insurance aspects of pollution may benefit from the cross-disciplinary content of the course and its intended audience.

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

Course Fee

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

Accommodation

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

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: -

- 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 **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, 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 workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Introduction*** *Reducing the Environmental Footprint of Petroleum and Petrochemical Operations*
0900 - 0930	***Overview of Industry Discharges*** *Definition of Industry Pollutants • Six Major Pollutants • Consumptions & Emissions*
0930 – 0945	*Break*
0945 – 1030	***The Changing Framework of Pollution Control*** *Role of Government • Corporate Environmental Compliance • What is Cleaner Production? • Difference between Traditional Pollution Control and Cleaner Production • How is Cleaner Production achieved? • The Cleaner Production (CP) Programme • Effective and Progressive Framework*
1030 – 1230	***Environmental Management Systems*** *ISO 9000 & ISO 14001 • Quality, Environment, Safety & Health (QESH) • Overview of ISO 9001:2000 • What is an EMS? • Benefits of an EMS • Elements of a typical EMS • ISO 14001*
1230 – 1245	*Break*
1245 – 1420	***Environmental Auditing*** *Definition • Compliance Audit vs. EMS Audit • Developed Standards for Environmental Auditing • EMAS Audit*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Environmental Impact Assessments*** *Environmental Aspect Definition • Environmental Impact Definition • Typical Aspects to Consider*
0930 – 0945	*Break*
0945 – 1100	***Industry Codes of Practice & Guidelines*** *International Association of Oil and Gas Producers Guidelines and Standards • NGOs and IGOs Guidelines • American Petroleum Institute (API) Guiding Principles • World Bank Guidelines • Environmental Performance Evaluation (EPE) • Legal Implications of Standards • Group Exercise*
1100 – 1230	***Legislation*** *Typical National and Provincial/State Legislation • European Community (EC) Air Quality Framework Directive and Daughter Directives • European Commission and Council Directives • EC Water Framework Directive (2000/60/EC) • EC Integrated Pollution Prevention and Control Directive (IPPC) • European Pollutant Emissions Register (EPER) • 'Greenhouse Gas Emissions Trading Directive' (2003/87/EC)*

1230 – 1245	Break
1245 – 1420	***Exploration Issues*** *Drilling for Oil & Gas During the Early Days • Seismic Surveying • Planning a Seismic Survey • Environmental Impact Assessment (EIA) • Environmental Concerns at the Early Stage of Exploration • The EcoSeis System • Drilling & Exploration Waste Streams • Technology Progress: New Field Discoveries • Technology Progress: Remote Sensing • Technology Progress: 3-D Seismic Technology • Technology Progress: Horizontal, Directional, and Multilateral Drilling • Technology Progress: Slimhole Drilling • Technology Progress: Coiled Tubing (CT)*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	Lunch & End of Day Two

Day 3

0730 – 0930	***Production Processes & Wastes*** *Sustainable Development • Aim of Waste Management • What is Waste? • Categories of Generated Gas & Oil Processes • Classification of Wastes • Group of Oil & Gas Wastes • Steps in Developing a Waste Management Plan • Decommissioning/Abandonment - the Brent Spar Debacle • Future Technology: Minimizing Water Production • Putting Wastes to Good Use*
0930 – 0945	Break
0945 – 1100	***Utilities Processes & Wastes*** *Effective Energy Management • The Compressed Air Checklist • The Electricity Checklist • The Insulation Checklist • The Refrigration Checklist • The Steam System Checklist • The Boiler and Furnace Checklist*
1100 – 1230	***Continuous & Periodic Waste Production*** *Continuous Waste Production • Periodic Waste • Group Brainstorming Exercise*
1230 – 1245	Break
1245 – 1420	***Water Pollution Control Processes*** *Water Pollution Facts • Process for Cleaning Up Produced Water*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	Lunch & End of Day Three

Day 4

0730 – 0930	***Air Pollution Control Processes*** *"Big 6" Air Pollutants • Sulphur Dioxide • Particles (PM10) • Carbon Monoxide • Nitrogen Dioxide (NO2) • Ozone (O3) • Volatile Organic Compound (VOC's) • Toxic Organic Micro Pollutants • Lead and Heavy Metals • Acid Deposition • Sources of Particulate Matter (PM) in Refineries • Types Of PM in Flue Gas • Process Heaters and Boilers: Emission Reduction • Catalytic Crackers and Cokers: Possible Particulate Matter Abatement Techniques • Refinery Sulphur Dioxide Emission Reduction • Develop a Greenhouse Gas Protocol Initiative • Air Pollution - is Progress Being Made? • Case Study - Combustion and Thermal Efficiency: The Example of the Steam Boiler*

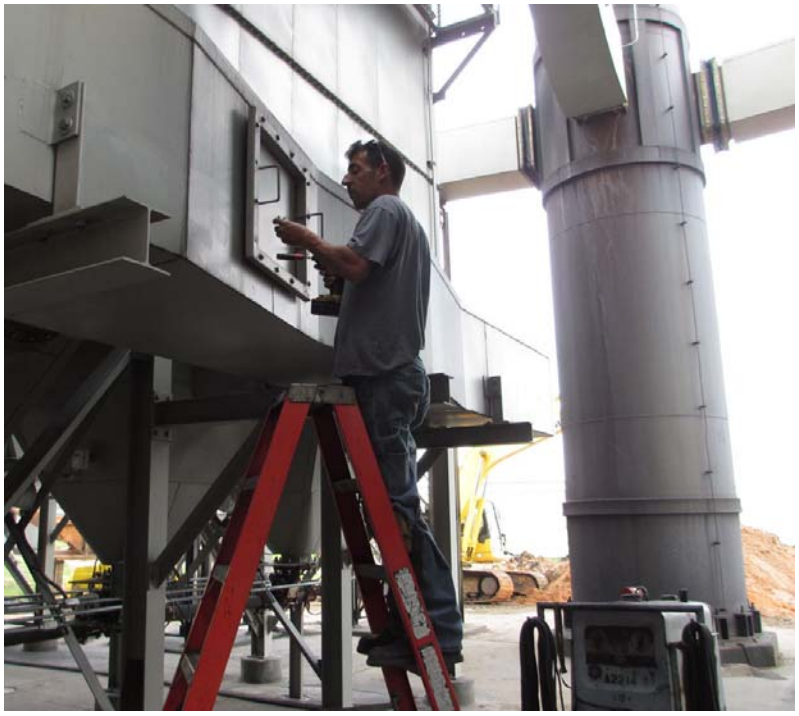
0930 – 0945	Break
0945 – 1100	***Solid Waste Treatment*** Typical Waste Types • Landfill • Salt Mines & Cavern Disposal • Incineration • Disposal of Spent Catalysts • Selection of Waste Disposal Routes, Sites and Carriers • Documentation and Labelling of Wastes • Hydrogen recovery
1100 – 1230	***Radioactive Scale Handling & Disposal*** Naturally Occurring Radioactive Material (NORM) • Forms of NORM • NORM Characterization and Classification • Handling and Disposal of NORM Waste • Potential Health Risks from Radiation • Handling and Occupational Safety Requirements • Waste Packaging • Equipment Decontamination • Waste Processing • Transportation • Disposal Options
1230 – 1245	Break
1245 – 1420	***Oil Spill Control and Treatment*** How do you Report an Oil Spill? • Spill Prevention, Control and Countermeasures (SPCC)
1420 – 1430	***Recap*** Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Four

Day 5

0730 – 0930	***Best Practicable Environmental Options*** "Best Available Techniques" (Bat) • Best Options for Co2 Reduction • Best Options for Sox Reduction • Best Options For Nox Reduction • Best Options for Voc, Benzene & Pah Reduction • Best Options for Pm Reduction • Best Options for Co Reduction
0930 – 0945	Break
0945 – 1100	***Process & System Condition Monitoring*** Condition Monitoring in the Reliability Centered Maintenance (RCM)
1100 – 1230	***Environmental Monitoring*** Different types of monitoring • The Global Reporting Initiative (GRI) • Case Study 1: Du Pont • Case Study 2: City of Cape Town
1230 – 1245	Break
1245 – 1345	***Continuous Improvement*** Summary • Open Forum
1345 – 1400	***Course Conclusion*** Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1400 – 1415	***POST-TEST***
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Practical Sessions

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



Course Coordinator

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