

**TRAINING TITLE**

**CHEMICAL NATURE OF OILFIELD CHEMICALS**

**Training Duration**

**5 day**

**Training Venue and Dates**

Ref. No. PE391	Chemical Nature of Oilfield Chemicals	5	08-12 Sep. 2025	\$5,500	DUBAI, UAE
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In any of the 4 or 5-star hotels. The exact venue will be informed later.

**Training Fees**

- \$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch

**Training Certificate**

**Define** Management Consultants Certificate of course completion will be issued to all attendees.

**TRAINING DESCRIPTION**

This comprehensive 5-day program is designed to provide professionals in the oil and gas industry with a deep understanding of the chemical properties, applications, and interactions of chemicals used throughout oilfield operations. Whether you are involved in exploration, drilling, production, or well stimulation, this course will equip you with the knowledge to enhance operational efficiency, safety, and environmental compliance through the effective use of oilfield chemicals.

**TRAINING OBJECTIVES**

**By the end of the course, participants will be able to understand**

- **Understand the Role of Chemicals:** Learn about the essential chemicals used in oilfield operations, their purpose, and how they interact with the environment and infrastructure.
- **Master Chemical Types and Functions:** Gain in-depth knowledge of drilling fluids, production chemicals, well stimulation chemicals, and enhanced oil recovery (EOR) agents.

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- **Chemical Interactions and Applications:** Explore how the chemical nature of these substances affects their performance in real-world applications, and how to optimize their use for maximum efficiency.
- **Hands-on and Practical Insights:** Learn through hands-on sessions and case studies, equipping you with the practical skills to manage and apply these chemicals in your operations.
- **Address Environmental and Safety Concerns:** Understand the regulatory landscape, safety protocols, and environmental considerations when handling and applying oilfield chemicals.

### **WHO SHOULD ATTEND?**

This course is intended for:

- Engineers and field professionals working in oil and gas operations (drilling, production, reservoir management).
- Chemists, technical specialists, and laboratory staff involved in oilfield chemical testing and application.
- Environmental and safety managers responsible for chemical handling and regulatory compliance.
- Supply chain and procurement personnel looking to understand the technical specifications of oilfield chemicals.

### **TRAINING METHODOLOGY**

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

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**COURSE PROGRAM:**

**Day 1: Introduction to Oilfield Chemicals and Their Role**

- **Overview of the Oil and Gas Industry**
  - Exploration, drilling, production, and refining processes.
  - Types of oilfield operations and their chemical needs.
- **Introduction to Oilfield Chemicals**
  - Definition and classifications: Drilling fluids, production chemicals, and wellbore treatments.
  - Key functions and importance in oilfield operations (enhance performance, safety, environmental compliance).
- **Basic Chemistry Concepts for Oilfield Applications**
  - Molecular structure, bonding, and reactions.
  - The importance of solubility, polarity, and reactivity in oilfield chemicals.

**Day 2: Drilling Fluids and Additives**

- **Overview of Drilling Fluids (Mud)**
  - Water-based vs. oil-based vs. synthetic-based fluids.
  - Functions: Cooling, lubrication, pressure control, and cuttings removal.
- **Types of Additives Used in Drilling Fluids**
  - Thickeners (e.g., bentonite).
  - Surfactants and wetting agents.
  - Gelling agents and viscosifiers.
  - pH control agents and corrosion inhibitors.
- **Chemical Interactions in Drilling Fluids**
  - Rheology and fluid behavior.
  - Chemical interactions between drilling fluid and formation.

**Day 3: Production Chemicals**

- **Introduction to Production Chemicals**
  - Overview of their role in oil and gas production (flow assurance, corrosion inhibition, scaling prevention).
- **Chemical Categories in Production**
  - Corrosion inhibitors.
  - Scale inhibitors (e.g., barium sulfate, calcium carbonate).
  - Biocides and bactericides.
  - Demulsifiers and surfactants for separation.
- **Chemical Nature and Mechanisms**
  - Molecular structure and reactivity in production environments.
  - Mechanisms of action and efficiency.

**Day 4: Well Stimulation and Enhanced Oil Recovery (EOR) Chemicals**

- **Overview of Well Stimulation**
  - Hydraulic fracturing, acidizing, and their chemical needs.

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- Chemical agents used in well stimulation (e.g., acids, proppants, and foaming agents).
- Enhanced Oil Recovery (EOR) Chemicals
  - Polymer flooding, surfactant flooding, and CO<sub>2</sub> injection.
  - Chemical nature of EOR agents and their interaction with oil reservoirs.
- Environmental and Safety Considerations
  - Chemical safety in handling and environmental impact.
  - Regulations and best practices.

**Day 5: Emerging Trends and Future of Oilfield Chemicals**

- Innovations in Oilfield Chemistry
  - Green chemistry and sustainable practices.
  - Biodegradable and eco-friendly chemicals.
- Future Challenges and Opportunities
  - Advances in nanotechnology for oilfield applications.
  - Digitalization and data-driven approaches to chemical optimization.
- Case Studies and Applications
  - Real-world examples of successful chemical solutions.
  - Group discussion on specific challenges and innovations.

**NOTE:**

**Pre-& Post Tests will be conducted.**

**Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.**

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