TRAINING TITLE
BASIC PETROLEUM CHEMISTRY

Training Duration
5 days

Training Venue and Dates

PE374	Basic Petroleum Chemistry	5	17-21 Feb. 2025	$5,500	DUBAI, UAE

In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees

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

Training Certificate
Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION
This course provides a foundational understanding of the chemical processes and components involved in the petroleum industry. It covers the basic principles of petroleum chemistry, including the formation of crude oil, the chemical composition of petroleum, and the various refining processes. Participants will learn about hydrocarbons, additives, and other compounds found in petroleum, as well as how these components impact the quality and performance of petroleum products. The course also explores key topics such as crude oil distillation, refining processes, and the production of fuels, lubricants, and other petroleum-based products.

TRAINING OBJECTIVES

By the end of this course, participants will be able to:

- Understand the basic chemical composition of petroleum and its various components.
- Learn about the formation of crude oil and natural gas.
- Gain insight into the refining processes used to convert crude oil into useful products.
- Explore the chemical structure of hydrocarbons and their importance in petroleum products.
- Understand the role of additives in enhancing the performance of petroleum products.

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- Learn how to assess the quality of petroleum products based on their chemical properties.
- Gain a foundational understanding of petrochemicals and their applications.

WHO SHOULD ATTEND?

- Individuals new to the petroleum industry who need a basic understanding of petroleum chemistry.
- Engineers, technicians, and operators involved in the refining and processing of petroleum products.
- Quality control professionals in the oil and gas industry.
- Environmental professionals interested in the chemical impact of petroleum products.
- Students and professionals pursuing a career in petroleum, petrochemical, or energy sectors.
- Researchers and consultants in the petroleum field.

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

COURSE PROGRAM:

Day 1: Introduction to Petroleum Chemistry

- Overview of petroleum and its significance in the energy industry.
- The chemical composition of crude oil: Hydrocarbons, sulfur, nitrogen, oxygen compounds, and trace elements.
- Basic principles of chemistry relevant to petroleum: Atomic structure, bonding, and molecular interactions.

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- The formation of crude oil and natural gas from organic matter over millions of years.
- Properties of crude oil: API gravity, sulfur content, viscosity, and its significance in refining and product use.

Day 2: Hydrocarbons and Their Chemical Structure

- Understanding hydrocarbons: Saturated vs. unsaturated hydrocarbons.
- Alkanes, cycloalkanes, and aromatic hydrocarbons: Definitions, properties, and examples.
- The significance of different hydrocarbon structures in refining and product quality.
- The role of carbon and hydrogen in petroleum chemistry.
- The impact of chemical composition on the performance and behavior of petroleum products (e.g., fuels, lubricants).

Day 3: Refining Processes and Chemical Changes

- Overview of the petroleum refining process: Distillation, cracking, reforming, and treating.
- The role of distillation in separating crude oil into fractions based on boiling points.
- Chemical processes involved in refining: Catalytic cracking, hydrocracking, and reforming.
- The chemical principles behind the production of gasoline, diesel, jet fuel, and other refined products.
- The role of additives in enhancing fuel and lubricant performance (e.g., detergents, antioxidants, and anti-corrosion agents).

Day 4: Petroleum Products and Their Chemical Properties

- Common petroleum products: Gasoline, diesel, kerosene, LPG, lubricants, and waxes.
- Chemical properties of key petroleum products: Viscosity, volatility, flash point, and boiling range.
- The chemical structure of fuels and how it affects their performance in engines and other machinery.
- Properties of lubricants: Viscosity index, pour point, and oxidative stability.
- Evaluating the quality of petroleum products based on their chemical properties.

Day 5: Petrochemicals and Future of Petroleum Chemistry

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- Introduction to petrochemicals: Production of chemicals derived from petroleum (e.g., ethylene, propylene, benzene).
- The chemical processes involved in the production of petrochemicals and their industrial applications.
- Environmental considerations: The chemistry of pollution, emissions, and waste from petroleum products.
- The future of petroleum chemistry: Innovations in refining technologies, biofuels, and sustainable alternatives.
- Review of key concepts and open Q&A session.

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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