

PRODUCTION CHEMISTRY

OVERVIEW

Changes in fluid properties or chemistry during the production, processing and transport of oil and gas can have a major impact on asset integrity and operations. The formation of solid deposits or stable emulsions as a result of these changes often leads to loss of production or even complete plant shutdown.

The three-day course provides an overview of the science and technologies involved in oil and gas production. Case studies from around the world, together with exercises based on real field experiences, will be used to show how production chemistry can help to manage production systems more cost-effectively.



At the end of the course you will appreciate what's needed to predict, monitor and mitigate the effects of waxes, asphaltenes, hydrates, mineral scale, soaps and emulsions.

OBJECTIVES

By reviewing actual field case studies and working interactively on exercises to identify best practices, at the end of the course you will know how:

- ❖ Process fluids affect typical production and process equipment.
- ❖ To determine where challenges might exist.
- ❖ To identify key options to avoid flow assurance issues.
- ❖ Mitigation strategies can be implemented.
- ❖ To review chemical intervention programmes.

TRAINERS

Oil Plus's trainers have over 30 years' production chemistry problem solving experience gained from working with operators worldwide. We have a similar number of years presenting training courses in North America, Europe, the Middle East, Africa, India, South East Asia and Australia.

WHO SHOULD ATTEND

Process engineers, reservoir engineers, production chemists, corrosion engineers, chemical specialists and laboratory personnel with little or no chemistry background, will also benefit.

Anyone wishing to improve their understanding of production chemistry in the oil industry.

CONTENT DELIVERY

English

REQUIRED TOOLS

Laptop computer and calculator.

CONTENT

- ❖ **Introduction** – A review of oil and gas production processes.
- ❖ **Basic geology and fluid properties** – How geology influences water injection, the importance of water characterisation and specification, injection system design.
- ❖ **Waxes** – What is wax, the problems it can cause and how to prevent or deal with wax deposition.
- ❖ **Asphaltenes** – An overview of the properties of asphaltenes, what causes them to precipitate, the problems this can cause and what to do about it.
- ❖ **Soaps** – The different types of soaps that form in oilfields, their associated problems and current ideas on how to control their formation.
- ❖ **Emulsions** – A look at their formation, the problems they can cause, the testing methods used for emulsion formation and the selection of demulsifiers.
- ❖ **Inorganic scale and its control** – This module explains why scale forms, the effect they have in oilfields and the management and mitigation options available.
- ❖ **Hydrates** – Problems, properties and various prevention, inhibition and remediation methods.
- ❖ **Corrosion and corrosion control** – A general introduction to corrosion including stress corrosion cracking, corrosion monitoring and preventative strategies that are currently in use.
- ❖ **Macro and microbial control** – An overview of processes, problems and solutions associated with microorganisms in oil and water systems. We also explain the importance of good microbiological sampling and monitoring.
- ❖ **Chemicals and their selection** – This section provides a summary of the types, applications and selection of oilfield chemicals.
- ❖ **System monitoring** – The final module provides a practical understanding of oil and water quality, together with how to troubleshoot, de-bottleneck and implement maintenance programmes.

COURSE DURATION

3-Days

COURSE COST & DATES

Available upon request – contact mail@oilplusltd.com



PRODUCTION CHEMISTRY TRAINING COURSE

DAY 1		DAY 2		DAY 3	
Time	Subject	Time	Subject	Time	Subject
08.30	Delegate registration and coffee	08.30	Morning coffee	08.30	Morning coffee
09:00	SESSION 1 Production Processes <ul style="list-style-type: none"> Oil and gas production processes Water and solids Oily water separation Gas treatment Basic Geology and Fluid Properties <ul style="list-style-type: none"> Introduction Water-rock cycle Sedimentary rocks Oil and gas source rocks Structural process and petroleum traps Fluid properties Oil recovery Reasons for waterflooding Impact of waterflooding Rock properties in waterflood management 	09:00	SESSION 1 Inorganic Scale and Scale Control <ul style="list-style-type: none"> Introduction Why scales form Scale in the oilfield Common scaling minerals Dealing with scale Sea water sulphate removal Scale removal Case histories High temperature application 	09:00	SESSION 1 System Monitoring <ul style="list-style-type: none"> Introduction General facilities and well operating data Water quality monitoring philosophy Water sampling Monitored water quality parameters Data use Common errors in monitoring
10:00	Coffee break	10:00	Coffee break	10:00	Coffee break
10:30	SESSION 2 Water Injection <ul style="list-style-type: none"> Introduction Source water characteristics Key parameters Injection specification – recommended studies Source water surveys Injection water compatibility studies Compatibility with formation water Water injection treatment equipment 	10:30	SESSION 2 Hydrates <ul style="list-style-type: none"> Introduction Hydrate properties Hydrate formation and prevention Case studies Natural gas transportation using hydrates 	10:30	SESSION 2 Questionnaires
12:30 13:30	Lunch break	12:30 13:30	Lunch break	12:30 13:30	Lunch break
13:30	SESSION 3 Waxes <ul style="list-style-type: none"> Introduction Precipitation and deposition Sampling and analysis Modelling Wax associated problems Remediation and prevention Asphaltenes <ul style="list-style-type: none"> Introduction Asphaltene properties Formation and deposition Asphaltene associated problems Analysis and monitoring techniques Asphaltene inhibition 	13:30	SESSION 3 Corrosion and Corrosion Control <ul style="list-style-type: none"> Introduction Sources of corrosion Factors influencing corrosion Corrosion prevention and control Iron sulphide scales and Schmoos 	13:30	SESSION 3 Assignment
15:00	Coffee break	15:00	Coffee break	15:00	Coffee break
15:30	SESSION 4 Emulsions <ul style="list-style-type: none"> Introduction Emulsion problems (formation & separation) Emulsion testing and demulsification Product selection and monitoring techniques Soaps <ul style="list-style-type: none"> Introduction Soap and naphthenate properties Soap forming fluid characteristics Formation and deposition of soaps Soap associated problems Soap analysis and control 	15:30	SESSION 4 Oilfield Microbiology <ul style="list-style-type: none"> Introduction Types of Bacteria Control Reservoir souring and prediction Bacterial identification and analysis Chemical disinfection Resistance to chemical action Biocide testing and evaluation Control in sea water and non-seawater injection systems H₂S scavenging 	15:30	SESSION 4 Course Wrap-up <ul style="list-style-type: none"> Review and discussion Feedback forms Certificates
16:30	Finish	16:30	Finish	16:30	Finish

The course will start promptly at 08:30 am, finishing around 16:30 pm. Beverages, lunches and snacks will be provided during the week.

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