



Water in Oil and Gas Production

ABOUT THE COURSE

Operators usually consider formation water an undesirable byproduct of oil and gas production. Water production can significantly reduce the value of a hydrocarbon asset. It can accelerate equipment damage and increase water handling and disposal cost.

However, samples and analysis of that same water can provide vital information for the field development plan, including optimization of completion design, materials selection and hydrocarbon recovery. Water properties contain a wealth of information that can be used to impact field economics. Formation water analysis plays a role in dynamic modeling of reservoirs, quantifying reserves and calculating completion costs, including both subsurface and surface equipment—capex. Water analysis also helps operators estimate operating costs—opex, such as the cost of chemicals used to treat water.

This course establishes a foundation of knowledge regarding water sampling, water chemistry and water analysis tools.

The chemistry of the main water related problems of mineral scales, corrosion, bacteria, and oily water will be reviewed both from the theoretical and practical aspects.

You will learn how to participate in creation of an integrated monitoring program to select and to apply appropriate monitoring techniques.

Water injection and disposal systems and typical water quality specifications will be reviewed as well. Emphasis will be placed on understanding type of samples, possible problems in conducting analysis and you will be able to apply the knowledge you gained to propose solutions.

DESIGNED FOR

This training course is designed for chemists, lab staff, managers, engineers, and operators needing to understand water related problems in oil and gas production and their solutions.

YOU WILL LEARN

- The basics of oilfield water chemistry
- Water sampling and analysis
- Fundamentals on formation of inorganic scales, corrosion, emulsions
- How to monitor corrosion, scale, and bacterial growth in produced water and water injection/disposal systems
- What is considered under injection water quality
- Fundamentals on water treatment chemicals
- How to carry out analyses to select treatment chemicals and to test performance/effectiveness of treatment chemicals
- Laboratory safety responsibilities

COURSE OUTLINE

- Water chemistry fundamentals
- Water sampling and analyses
- Scale formation
 - Common scales
 - Prediction of scale formation
 - Prevention of scale formation
 - Case study
- Corrosion
 - Theory of corrosion
 - Corrosion rate prediction
 - Control methods
 - Monitoring
 - Case study
- Discharge and injection
 - Factors affecting water quality
 - Injection water quality requirements- how good must injection water quality be
 - Water quality control and its importance in water flooding operations
 - Treating chemicals
 - Most common oilfield chemicals
 - Chemicals selection
 - Monitoring of chemical performance efficiency
 - Data gathering and presentation of results
 - Monitoring
 - Case study
- Laboratory safety responsibilities