TRAINING PROGRAM

Applied Successful Laboratory Techniques

Introduction:

It is very important to lab staff, technicians, supervisors and managers to learn how to create the success in their lab. The course provides basic laboratory analysis methods for crude oil, hydrocarbon gas, and water. It is designed to provide an introduction and practical application of safety and quality in the laboratory. It is designed also to understand basics of lab analysis, how to apply quality standards, how to do health and safety risk assessments, how to develop the technical, and methods in the lab and how to evaluate the lab results.

Who Should Attend?

Lab Managers, Supervisors, Tem Leaders, Chemists and Technicians, Health & Safety and Environmental Professionals, Laboratory Seniors, Technologists, Analytical Laboratory Professionals, Laboratory Staff, Superintendents, Supervisors, Engineers, Chemists and Analysts, Auditors, Research Directors, Chemical Engineers, Health & Safety Professionals Instrument Engineers, Research and Development Scientists, and Quality Assurance/Control Managers, anyone responsible for implementing, maintaining and reviewing laboratory quality systems

Course Objectives:

By the end of this course delegates will be able to:

- The knowledge and skills for understanding laboratory technical
- Requirements of quality laboratory and procedure of safety methods
- Understanding of the roles of the quality and technical performance in the laboratory
- Understanding of the roles of quality standards
- Develop the technical, and methods in the analytical lab and how to evaluate the lab results

Course Outline:

Introduction

- Laboratory, terminology and roles
- Laboratory and personnel responsibility
- Prepare to work on laboratory
- Equipment
- Chemicals
- Instruments
- Laboratory housekeeping

Laboratory Safety Guideline

- Laboratory safety equipment
- Safe lab environment
- Personal protection equipment (PPE)
- Identification of hazardous chemicals
- Safe work practices and procedures
- Handling gases, chemicals and flammable liquids
- Laboratory waste disposal
- Spill and hazard waste management

Oilfield Sampling

- Handling

- Labelling
- Preparations
- Reservation and stores

Type of Laboratory Analysis

- Physical analysis
- Chemical analysis
- Qualitative analysis
- Quantitative analysis

Methods of Laboratory Analysis

- Classical methods
- Instrumental methods
- Spectroscopy technique
- Chromatography technique
- Electrochemical technique

Choosing the Right Instrument & Chemical Measurement

- Types of methods
- Selection of methods
- Calibration
- Reference material, blank correction
- Maintenance and troubleshooting
- Routine maintenance
- Equipment maintenance

Crude Oil Analysis

- Evaluation of crude oil
- Carbon residue, asphaltene content
- Density (specific gravity)
- Distillation
- Light hydrocarbons
- Metallic constituents
- Salt content
- Sulfur content
- Viscosity and pour point

- Water and sediment
- Wax content

Water Analysis

- pH acidity and alkalinity
- Temperature
- Density
- Turbidity
- Total Hardness
- P, M & OH alkalinity
- Specific conductance
- Total solids (TS)
- Total dissolved solids (TDS)
- Total suspended solids (TSS)
- Dissolved oxygen (DO)
- Oxygen demand (COD, BOD)
- Organic contaminants
- Toxic organic compounds
- Radioactive contaminants
- Nutrients
- Chloride
- Cyanide
- Pathogenic microorganisms
- Sulphite
- Phosphate
- Oil and grease in water
- Inorganic chemicals

Hydrocarbon Gas Analysis

- Gas-handling facilities and treatment
- Physical and chemical properties of hydrocarbon gases
- Composition of hydrocarbon gases
- Testing and analysis of hydrocarbon gases
- Composition of hydrocarbon gases by gas chromatography

Mathematical Evaluation of Data

- Reporting results

- Significant figure rules
- Laboratory certification
- The evaluation of results and methods

Quality Control

- Laboratory Information Management Systems (LIMS)
- Quality control and assurance
- Quality Audit (internal and external)
- Lab quality requirements (ISO 17025)