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# Organization of Quality Control for Geological Exploration QAQC

## INTRODUCTION

- This highly participative training course will help participants to cultivate their analytical testing skills in the context of the highly demanding Geological Exploration sector. Obtaining accurate results within predefined time limits is a critical requirement for laboratories operating in this sector. Geological Exploration decisions and scheduling of activities often rely on laboratory results. It is therefore necessary that laboratory personnel are adequately trained and competent to carry out the specific tests required.
- This Organization of Quality Control for Geological Exploration QA/QC training course aims at providing you with testing and quality assurance skills necessary to safeguard the quality and integrity of your laboratory results.
- Participants attending the Organization of Quality Control for Geological Exploration training course will develop the following competencies:
  - Set the foundations for developing a Quality-conscious culture in the laboratory
  - Understand the basic principles of sample stability
  - Develop and implement an effective Quality Control system in the lab
  - Understand the concept of Data Analysis, Quality and Control
  - Select the most appropriate test method for a specific parameter
  - Develop and monitor the use of Quality Control charts

## PROGRAMME OBJECTIVES

This Organization of Quality Control for Geological Exploration training course aims to enable participants to achieve the following objectives:

- Understand the principles of operation of Testing Laboratories
- Become familiar with the concepts of GLP and Laboratory Accreditation
- Apply appropriate method selection and validation for specific parameters
- Understand and apply the concepts of Internal QC and External QA
- Use QC charts to establish method performance and monitoring criteria
- Develop ability to investigate QC failures and apply risk management to decision making

## WHO SHOULD ATTEND?

- Chemists performing testing activities within laboratories involved in Geological Exploration activities
- Laboratory personnel involved in sample preparation activities
- Internal and External auditors of laboratory operations
- Testing laboratory consultants
- QA officers of organisations involved in baseline studies and Environmental Impact Assessment Studies (EIA)

## TRAINING METHODOLOGY

- The Organization of Quality Control for Geological Exploration training course will combine presentations with interactive practical exercises, supported by video materials, and case studies. Delegates will be encouraged to participate actively by relating their laboratory experience to the course contents.

## PROGRAMME SUMMARY

- The Organization of Quality Control for Geological Exploration training course covers essential skills such as ability to apply fit-for-purpose testing methods to satisfy specific analysis requirements in this sector. It also introduces the concept of risk management in all operational aspects of a testing laboratory, with the aim to minimise QC failures while at the same time safeguarding the accuracy and integrity of test results.

## Programme Outline

### Introduction to the operation of a testing laboratory

- Legal status of testing laboratories
- Independent Private vs Public laboratories
- Laboratories operating within an organisation
- Organisational chart of a testing lab
- Job descriptions and responsibilities
- Scope of testing activities and market segment

### Quality Assurance (QA) in Testing Laboratories

- What is QA? Is it necessary? How is it achieved?
- Personnel training and on-going competence criteria
- Accreditation according to ISO17025 vs GLP (Good Laboratory Practice)
- The requirements of accreditation in relation to QA

## Sample preparation and analysis

- Sampling and sample preparation techniques
- Rules on sample integrity and the sample stability concept
- Sample homogenisation and sample reduction in the lab
- Selection of testing method / the fitness-for-purpose principle
- Test method instrumentation and performance criteria
- Method validation and method verification

## Quality Control of laboratory analytical work

- Use and selection of calibration standards and blanks
- Internal Quality Control (IQC) and External Quality Assurance (EQA)
- QA techniques: Duplicate analysis, spiking, matrix recovery
- QC charts and trending in relation to Risk Management
- Non-conforming work and Root Cause Analysis
- Internal – External Audits and their role in QA

## Reporting of results

- Authorization of Test Results
- Uncertainty of Measurement (UoM)
- Test Certificates according to ISO17025 requirements
- Automated report generation through LIMS
- Regulatory Compliance Conformity statements
- Expression of Opinions and Interpretations (O&I's)

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