€TRAINING

Measurement Uncertainty in Testing ISO-IEC 17025

28 July - 1 August 2024
Istanbul (Turkey)
Sheraton Istanbul Levent

Measurement Uncertainty in Testing ISO-IEC 17025

REF: O2382 DATE: 28 July - 1 August 2024 Venue: Istanbul (Turkey) - Sheraton Istanbul Levent Fee: 6375 Euro

Introduction

This course reviews the basic concepts and accreditation requirements associated with measurement traceability, measurement assurance, and measurement uncertainty as well as their interrelationships. A basic process for the effective evaluation of a calibration service supplier or reference material producer will be discussed and participants will apply the process through a practical exercise.

Metrology terminology and basic statistics will be introduced, including a discussion on probability density functions and how they are used to quantify an uncertainty component. The NIST 8-Step Process for Estimating and Reporting Measurement Uncertainty will be presented.

Course Objectives:

At the end of this course, Participants will be able to:

- Define and understand the concept of measurement uncertainty
- Identify the sources of measurement uncertainty in their testing laboratory
- Estimate the measurement uncertainty of their tests
- Express the measurement uncertainty of their tests in a way that is consistent with ISO-IEC 17025
- Measurement Uncertainty for Quantitative Microbiological Testing
- Measurement uncertainty in testing ISO-IEC 17025
- Sources of uncertainty in chemical measurement, Evaluation Methods, Structure of Analytical Procedure, Process for Estimating Uncertainty, and reporting of uncertainty.
- Requirements of ISO-IEC 17025 for measurement uncertainty

Targeted Audience

- This course is intended for scientists, engineers, and managers working in testing laboratories that are accredited to ISO-IEC 17025. Participants should have a basic understanding of statistics and probability.

Course Outlines:

Unit 1: Generic Practical examples:

- Weighing

- Volume Preparation

- Calibration Curve

- Application of GC-MS

- Estimation of Bias Based on the Recovery Data

Unit 2:

- What is measurement uncertainty?

- Why is measurement uncertainty important?

- What are the benefits of understanding and managing measurement uncertainty?

- What are the requirements of ISO-IEC 17025 for measurement uncertainty?

- Case study: How measurement uncertainty was used to improve the quality of test results in a real-world laboratory

Unit 3:

- What are the different sources of measurement uncertainty?

- How do you estimate Type A uncertainties?

- How do you estimate Type B uncertainties?

- What is an uncertainty budget?

- How do you combine Type A and Type B uncertainties?

- How do you express the expanded uncertainty of a test result?

Unit 4:

- How does sampling uncertainty contribute to the overall uncertainty of a test result?

- How does calibration uncertainty contribute to the overall uncertainty of a test result?

- How does the uncertainty of the test method contribute to the overall uncertainty of a test result?

- How do you estimate the uncertainty of data analysis?

- Case study: How uncertainty was estimated and reported in a real-world test report

Unit 5:

- How do you report uncertainty in test reports in a way that is consistent with ISO-IEC 17025?

- How can you use uncertainty to improve the quality of your test results?

- Case study: How uncertainty was used to improve the quality of test results in a real-world laboratory