

## **“Quantifying Uncertainty Arising from Sampling in Chemical Analysis”**

**Know the sampling uncertainty for better decisions.**

Course Duration: 2 days

### **Course Overview:**

This comprehensive 2-day course, "Quantifying Uncertainty Arising from Sampling in Chemical Analysis," equips you with the knowledge and practical skills to understand, evaluate, and minimize uncertainty introduced during sampling.

Led by expert instructor, this program delves into the critical aspects of sampling uncertainty, aligning with ISO 17025 requirements, and empowers you to enhance the overall quality of your laboratory's measurements.

### **Who Should Attend:**

This course is designed for laboratory professionals, including:

- Chemists
- Analysts
- Laboratory Managers
- Quality Assurance Officers
- Anyone involved in chemical sampling and analysis

### **Course Objectives:**

Upon completion of this course, you will be able to:

- Incorporate primary sampling into uncertainty budgets for the entire measurement process.
- Design and plan experiments to evaluate sampling uncertainty.
- Apply appropriate methods and statistical procedures to evaluate uncertainty in sampling protocols.
- Implement protocols for ensuring sampling quality that is fit for purpose.

- Understand and apply ISO 17025 requirements related to sampling uncertainty.

### **Course content:**

- Errors in the analytical process: understanding the sources of error and their impact on measurement uncertainty.
- ISO 17025 requirements: ensuring compliance with international standards for laboratory competence.
- Sampling in the measurement process: the critical role of sampling and its contribution to overall uncertainty.
- Uncertainty arising from the sampling process: identifying and quantifying the factors affecting sampling uncertainty.
- Approaches and methods for estimating uncertainty in sampling: experimental designs, analysis of variance (ANOVA), range statistics; robust ANOVA
- Validation and quality assurance in sampling: implementing best practices for reliable and representative sampling.

Improve your laboratory's decision-making process. This course delivers practical training on quantifying uncertainty arising from sampling, a critical component of measurement accuracy.

**For further information, please contact: Metrochem Consultancy Services (002505991-X), 28 Jalan USJ 2/4B, 47600 Subang Jaya  
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