



Analytical Chemistry

State-of-the-art Instrumentation and Methodology for CWA Verification Analysis

Preparation of different sample types and isolation of CWC-related and other toxic chemicals with modern equipment and adequate technology and methodology :



Extraction Techniques

- Accelerated Solvent Extraction (ASE)
- Solid Phase Extraction (SPE)
- Solid Phase Microextraction (SPME)
- Hollow Fiber - Liquid Phase Microextraction (HF-LPME)
- Liquid-Liquid Extraction (LLE)
- Ultrasonic Extraction (USE)

Derivatisation Methods

- Silylation (BSTFA, MTBSTFA)
- Methylation (TMSDAM, CH_2N_2)
- Thiolation (Butanethiol, Dimercaptotoluene)
- Specific Derivatisations (Alcoholysation)

Evaporation / Concentration Techniques

- TurboVap™ Concentrator
- Vacuum Concentrator
- Nitrogen Stream Evaporation
- Rotary Evaporator

Separation and identification of chemicals with a combination of chromatographic and spectrometric analytical techniques together with spectral libraries and reference chemicals:

Gas Chromatography (GC)

- GC Injection Techniques: Liquid, Thermal Desorption, Headspace, SPME
- GC-AED (Atomic Emission Detector)
- GC-PFPD (Pulsed Flame Photometric Detector)
- GC-dFPD (Dual Flame Photometric Detector)
- GC-NPD (Nitrogen Phosphorus Detector)
- GC-ECD (Electron Capture Detector)

Liquid Chromatography (LC)

- LC-DAD (Diode Array Detector)
- LC-SPE (LC Coupling with Solid Phase Extraction)

Mass Spectrometry (MS)

- GC-MS (EI, Methane-CI and Isobutane-CI)
- LC-MS/MS (ESI and APCI)

High Resolution Mass Spectrometry (HR-MS)

- LC-UHR-QTOF (ESI, APCI, APCI Direct Probe)
- GC-HR-QTOF (EI, Methane-CI)

Nuclear Magnetic Resonance Spectroscopy (NMR)

- 600 MHz NMR with different CryoProbes:
 - CPQCI for ^1H - ^{31}P , ^{13}C , ^{15}N , and Deuterium (lock)
 - CPBBO for ^1H , ^{19}F , and NMR nuclei from ^{31}P to ^{15}N

