November 7, 2019 (14:45–15:30)

ThermoFisher SCIENTIFIC

VENDOR SEMINAR:

Using Cutting-Edge Mass Spectrometry Technologies to Address New Food Safety Challenges

EU compliant routine quantitation of dioxin and dioxin-like compounds by GC-MS/MS with advanced electron ionisation source

Adam Ladak[1], *Jane Cooper*[2], *Richard Law*[2], *Alexander Schächtele*[3], *Tim Anderson*[1] *and Cristian Cojocariu*[2]
[1]*Thermo Fisher Scientific, Austin, TX*
[2]*Thermo Fisher Scientific, Runcorn, UK*
[3]*European Union Reference Laboratory (EURL) for Halogenated POPs in Feed and Food, Freiburg, Germany*
Corresponding author – E-mail: adam.ladak@thermofisher.com

Regulatory changes in Europe in 2014 allowed GC-MS/MS to be used for confirmatory analysis and control of maximum levels (MLs) and action levels (ALs) of dioxins and dioxin-like PCBs in food and feed samples. In this study, the performance of a Thermo ScientificTM TSQTM 9000 GC-MS/MS system equipped with an Advanced Electron Ionization (AEI) source was evaluated for the routine analysis of dioxins, dioxin-like PCBs and non-dioxin-like PCBs in solvent standards and food/feedstuff samples. Chromatographic separation was performed using a TG-Dioxin capillary GC column. Acquisition, processing, and reporting of the data were performed using Thermo Scientific™ Chromeleon™ 7.2 Chromatography Data System (CDS) software. Excellent agreement between the measured TEQ values and the supplied reference values from the EURL was obtained. A custom LOQ standard was also analysed at regular intervals throughout all PCDD/F sequences, in order to demonstrate the sensitivity required to maintain LOQs compliant with 1/5th maximum levels. Ion ratio tolerances were maintained at ±15% and RF deviation of less than 30% from the calibration average. System stability was tested by analysing dioxin samples continuously for two weeks.

Recent developments in the analysis of pesticides and contaminants in food using LC- and GC-Orbitrap Technology

Richard J Fussell[1], *Charles Yang*[2]
[1]*Thermo Fisher Scientific, Hemel Hempstead, UK*
[2]*Thermo Fisher Scientific. San Jose, CA, USA*
Corresponding author – E-mail: richard.fussell@thermofisher.com

This presentation will provide an update on the use of High Resolution Accurate Mass (HRAM) Orbitrap™ mass spectrometers for the targeted and screening analysis of GC, and LC, amenable pesticides and contaminants in food. The UHPLC-HRAM system offers a high degree of selectivity and sensitivity in full-scan acquisition, with a choice of MS2 fragmentation options for identification, while the Exactive™ GC-Orbitrap™- GC-MS system uses electron ionisation with a capability for

selected ion monitoring (SIM), if required. The high resolution and unrivalled mass accuracy of the Orbitrap technology reduces the risk of false detects and false negative results, and thus provides ultimate confidence in obtaining comprehensive and accurate results, even for complex samples.

Preliminary results of the analysis of 250 pesticides using an Orbitrap ID-X™ Tribrid™ Mass Spectrometer utilising Acquire-X, for automated generation of a background exclusion list will also be discussed. Exclusion of matrix components results in more accurate library matching and improved detection, quantification and identification of pesticides at lower levels compared to data dependent acquisition. This approach should be applicable to many food safety applications.