

**November 8, 2017 (14:45-15:30)**



**VENDOR SEMINAR:**

## **Using Advanced Mass Spectrometry Technologies to Address New Food Safety Challenges**

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**Comprehensive multi-class veterinary medicines workflow solution using a new best-in-class triple quadrupole mass spectrometer**

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Thermo Fisher Scientific introduces the Vet Drugs Explorer - an off-the-shelf validated workflow solution for the analysis of over 160 multi-class veterinary medicines in animal matrices by a new highly sensitive and robust LC-triple quadrupole mass spectrometer. This new system incorporates a high capacity ion transfer tube and segmented quadrupoles to increase ion flux, and an improved detector design to increase sensitivity and linear dynamic range. This advanced technology enables quantification and identification of residues at low regulatory levels. The integrated workflow solution includes everything from sample preparation to report using the new system, and is ideal for new and existing residue testing laboratories. Data on the validation of the method in cattle muscle, salmon, and milk matrices, will be presented.

## **GC-Orbitrap-MS: a new way to simultaneously determine different halogenated POPs?**

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The coupling of gas chromatography (GC) to ultra-high resolution mass spectrometry (UHRMS) using the Orbitrap technology opens up a broad spectrum of possible applications in environmental and food/feed analysis. Although known for several decades and widely used as plasticisers or flame retardants [1], short-chain chlorinated paraffins (SCCPs) have only been recently added to Annex A of the Stockholm Convention list of persistent organic pollutants (POPs) [2].

Caused by previous efforts to ban SCCPs, medium-chain CP (MCCP) production increased, often to replace SCCPs [3]. As SCCPs alone consist of several thousand congeners with only four different carbon chain lengths to choose from, quantification of SCCPs and MCCPs in samples is a highly

complex problem. In addition to that, other halogenated POPs like polychlorinated biphenyls (PCBs) are known to co-elute and add to the complexity of any analysis.

With this in mind, experiments focused on selectivity were performed using full-scan acquisition and negative chemical ionisation (NCI) at 60,000 and 120,000 resolution (FWHM,  $m/z$  200). In this presentation, the results for mixtures of different CP and PCB standards will be shown as well as a comparison of food samples that were analysed with and without separation of co-eluting POPs during sample clean-up. Our results demonstrate that GC in combination with ultra-high resolution Orbitrap-MS enables the determination of CPs without having to fear mass interferences from both other CP homologues and PCBs, indicating the same for other halogenated compounds.

- [1] Tomy GT (2010) *The Handbook of Environmental Chemistry*, Vol. 10, Springer, London.
- [2] Stockholm Convention on Persistent Organic Pollutants, UNEP-POPS-COP.8/14, final report not yet published as of 24.07.2017.
- [3] Gluege J, Wang Z et al (2016) *Science of the Total Environment*, 573 1132-1146.

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