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S C I E N T I F I C

VENDOR SEMINAR:

Recent Developments in the Determination of Trace Element Contaminants, and Residues of Polar Pesticides in Food

Fast and Comprehensive Analysis of Elemental Contaminants in Food using ICP-OES and ICP-MS

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Elemental Contaminants such as arsenic, cadmium, mercury or lead can enter the food chain via a series of pathways including, but not limited to, industrial pollution or environmental contamination. Analytical techniques to determine the concentration of these contaminants in food samples need to be versatile, sensitive and fast. Inductively coupled plasmas coupled to optical emission spectroscopy (ICP-OES) or mass spectrometry (ICP-MS) satisfies all of the aforementioned needs.

Whilst ICP-OES provides outstanding robustness for a variety of sample matrices and the ability to detect both traces as well as major elements in one run, ICP-MS enables the determination of elemental contaminants in the ultra-trace range. For some analytes, such as arsenic for example, different chemical forms (or species) can be found in different sample types. Therefore, the total concentration may not be enough to estimate potential hazards and speciation analysis is required. Different chromatographic techniques such as ion chromatography (IC) can be hyphenated easily to element selective detectors ICP-MS. In this presentation, comprehensive and fast solutions for the analysis of trace elements in food samples are highlighted, including the use of ICP-OES and interference free detection at low levels using ICP-MS.

Recent developments in integrated workflows for the multi-residue analysis of polar anionic pesticides and metabolites

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Laboratories are constantly challenged to analyse more classes of pesticides at lower concentrations in more different commodities and with the expectation that residues will not go undetected. One of the most challenging groups of pesticides is the polar anionic pesticides, such as glyphosate, perchlorate, chlorate and the like, which often occur as residues in food, but are not always included in pesticide monitoring programs. This presentation will provide the latest information on the development of the Thermo Scientific[TM] Anionic Pesticides Explorer: a new validated and integrated IC-MS/MS based workflow for the robust, sensitive and reliable routine determination of polar anionic pesticides and metabolites at low µg/kg levels in a single run. The workflow uses a modified QuPPe extraction with solid phase extraction clean-up. Results for wheat

leek and baby-food matrices are compliant with SANTE guidelines, and EU MRLs. Quantification limits are ≤10ug/kg with % RSDs typically <10 %. Recovery data obtained with and without internal standards will be presented.