ID 05.1

The challenge of assessing contaminants of emerging concern and microplastics

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The list of contaminants of emerging concern (CECs) has steadily increased during the last decades including a broad spectrum of organic and inorganic compounds showing different physicochemical and toxicological properties. Some of the more prominent groups include persistent and mobile organic compounds (PMOCs), polar pesticides, pharmaceuticals, flame retardants, a significant number of chemical groups employed as plastic additives, personal care products, anthropogenic particles including nanomaterials and micro-and nano plastics, among others. For the analysis of organic chemicals liquid chromatography separations coupled with mass spectrometry analysers (LC-MS), have been the techniques of choice for environmental analysis. Nowadays, thanks to its unique ability to measure analytes based on accurate mass, full-spectrum high-resolution mass spectrometry (HRMS) can simultaneously gain qualitative and quantitative information on a virtually unlimited number of analytes.

In this presentation, several examples of the analysis of CECs using targeted, non-targeted and suspected screening approaches will be presented, together with recent assessment of their potential negative impacts in the environment and human health.

Keywords:
CECs, PFASs, nanomaterials, natural toxins, micro-nano plastics