

Forever Chemicals – Workflows to detect PFAS in Water, Soil and Food

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Per- and polyfluoroalkyl substances (PFAS) are a set of manufactured substances that have been used since the 1940s in various industrial and consumer products like nonstick cookware, stain repellent clothing, food contact materials, detergents and other cleaning products, and firefighting foams. They have been widely detected in drinking water, wastewater, ground and surface water, soil, food, body fluids and other complex matrices. This contamination of the environment with PFAS is a serious concern worldwide, due to their ubiquitous presence, persistence, and toxicity. Their chain of strong fluorine-carbon bonds makes these chemicals persistent and bio-accumulative – linking them to health hazards in humans and wildlife.

Therefore, PFAS testing methods, like EPA methods for chemical analysis of water and wastes, are needed for quantification and screening of PFAS in the environment, for example, for water and soil quality. Key challenges in the analysis of per and poly-fluoroalkyl substances (PFAS) are the potential of adsorption of target compounds or the introduction of interferences during sample handling. To address the clients' needs to fulfil PFAS regulations and overcome analytical challenges, Agilent provides start-to-finish solutions that covers a growing list of PFAS. These solutions include sample containment, sample preparation, extraction, and liquid chromatography/mass spectrometry (LC/MS) analysis.

During this presentation, we will provide you an overview about Agilent's workflows for PFAS analysis in water, food, and soil, implementing different LC/MS instrument according to required sensitivity and targeted or non-targeted strategies to detect the "Forever Chemicals" in various matrices.

References:

Ultra-Trace Quantification of Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water; Agilent AppNote 5994-5797EN, Anumol, T.; Batoon, P.; Parry, E.

Analysis of Per and Polyfluoroalkyl Substances in Edible Fish Tissue Using Agilent Captiva EMR–Lipid and LC/MS/MS; Agilent AppNote 5994-5227EN, Pulster, E.; Giardina, M.

Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Solid Samples, Agilent AppNote 5994-5667EN, Giardina, M.; Juck, M.