

Optimization and validation of a method for the determination of PFAS in soil

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Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are ubiquitous anthropogenic contaminants in the environment due to their widespread use in various industrial applications and as compounds in everyday products. As the carbon-fluorine bond is one of the strongest, these synthetic chemicals are highly resistant to degradation leading to their persistence in the environment. The complexity of PFAS lies in their ability to be produced with varying chain lengths, side chains, and functional groups, leading to a vast array of possible combinations. Because of these properties PFAS are also known as ‘Forever Chemicals’ and pose significant risks to both the environment and human health due to their persistence, bioaccumulation and toxicity. Studies have discovered significant amounts of them in blood and soils of remote areas, without the presence of industries and human activities in the wider area. Different sources including air, water and landfill lead to the concentration in soils, while some may end in plants through roots. Although several methods have been developed for the determination of PFAS in water and foods, not enough studies have been in soils so it is crucial to ensure accurate, sensitive, and reliable analytical results. The aim of this study is to develop, optimize and validate a method for the determination of more than fifty PFAS in soils. At this presentation the development and optimization of the method will be shown. During the optimization process a number of parameters like extraction technique, extraction solvent and weight of the sample have been tested. For the separation and quantification have been used state of the art technology liquid chromatography-tandem mass spectrometry (LC-MS/MS) Sciex QTRAP 6500+.

References:

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