Initiatives to develop analytical methods for per- and polyfluoroalkyl substances (PFAS)

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Per- and polyfluoroalkyl substances (PFAS) have drawn worldwide attention in recent years. Consequently, it is urgent to understand their environmental impact, dynamics, and product-related emissions. NMIJ is working on the development of certified reference materials (CRMs) and analytical methods to obtain reliable measurements of PFAS in various matrices. In particular, the development of analytical methods for PFAS in solid matrices requires the extraction of target analytes from solids into solvents, which is a complicated and time-consuming procedure. We are therefore focusing on pressurized liquid extraction, a method that automatically extracts PFAS from solids in a short time using small amounts of solvents under high temperature and pressure conditions, and are optimizing the conditions to enable efficient extraction of multiple PFAS. In the future, we will expand the target to around 30 compounds and verify the effectiveness of this method by comparing it with the shaking extraction technique used in the domestic official method. Moreover, given the current focus on the need to manage the total fluorine content of PFAS, we have also started to evaluate the quantitative assessment and characterization of total fluorine content using PFAS CRM.

Reference: Hanari et al., *Bunseki Kagaku* **74**, 7, 2025 (in Japanese)
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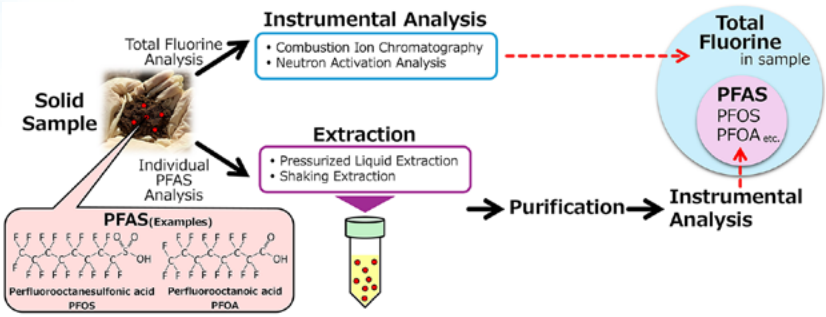

Different extraction and instrumental approaches for determination of PFAS and total fluorine content