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by Tomoko TSURUTA and Soichi IMANAKA ... (18)

Solid-phase extraction-liquid chromatography/mass-spectrometry (SPE-LC/MS) is adopted as an official analytical method for PFOS and PFOA in drinking water. But it has potential risks of background contamination in the analytical blank and losses of these analytes in sample preparation, resulting in underestimation of sample concentrations. In this study, we developed a method for the determination of PFASs in water samples without prior sample concentration. Our study showed the methanol concentration in sample solution is crucial for the variation of peak areas in the chromatograms, i.e. accurate analysis of the targeted 21 PFASs. It also revealed that the dilution with methanol before centrifugation for the sedimentation of suspended samples was needed to determine PFASs precisely. Performance parameters of the developed method was assessed based on the Japanese guideline for method validation of drinking water analysis and was confirmed that all the parameters met the criteria set by the guideline in standard curve validation tests and recovery tests for 20 target PFASs, with the exception of PFODA. The results suggested that the method was applicable to measure 20 PFASs in tap water and surface water.

Purification Plant Renewals to Extend Useful Life

..... by Yuichi NOZAKI, Naoya AOKI, Hitoshi UMANO, Masatoyo WADA and Nobukazu IBARAKI ... (30)

Tokyo purification plants constructed in Japan's period of high economic growth are all due for renewal. In accordance with this, we investigated these facilities' future long-term viability based on inspections of their degradation status. We revised purification plant renewal plans based on the results of those investigations. Based on degradation predictions made using purification plant inspection data with a focus on neutralization, abrasion and steel corrosion associated with water penetration impacting the durability of concrete structure, this paper concludes that these facilities can be viable to use for over 100 more years through preventive maintenance that extends the life of the facilities. Moving forward, we aim to extend useful life of facilities and to equalize renewal term of their facilities through preventive maintenance. Then, we will proceed systematically renewal work with reducing annual operating costs by revising the 60 years renewal interval for purification plant to 90 years.