

## 256 Spatial Distribution and Loadings of Particle Sorbed and Dissolved Perfluorinated Compounds in the Basin of Tokyo Bay

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A number of studies on perfluorinated compound (PFC) pollution in water environment have been reported. However, the information on many types of PFCs including their partitioning behavior in water environment is limited. We analyzed over 30 types of PFCs including precursors both in dissolved phase and particle solid phase in 50 samples of river water collected from entire part of Tokyo Bay basin. PFCs were detected from suspended solids (SS) with the range of  $< 0.003 - 4.4$  ng/L ( $0.11 - 2470$  ng/g-dry SS). The concentrations of PFCs in SS (ng/L) were one to two order(s) of magnitude lower than that of PFCs in dissolved phase. The predominant PFCs in SS were PFOS (median: 0.24 ng/L), PFNA (median: 0.17 ng/L) and PFUnDA (median: 0.12 ng/L). Longer chain PFCAs (C12 – C17) were frequently detected above LOQ from SS samples (56 – 80%) whereas those in dissolved phase were lower than LOQ (> 60% samples) in most samples. Relatively high levels of PFCs (total of 35 PFCs) in SS were observed in urbanized area, such as building and traffic area. The concentration of PFCAs including PFOA and PFNA were significantly correlated with the geographic index such as artificial area ( $R^2$  of linear regression curve in double logarithmic plot: 0.09 – 0.55). On the other hand, PFOS and FOSA were significantly correlated with arterial traffic area ( $R^2$  in double logarithmic plot: 0.29 – 0.55). These spatial trends were similar with the case in dissolved PFCs, though  $R^2$  in regression analysis were lower compared with the case in dissolved PFCs. The dissolved PFCs were more appropriate indicator to obtain the information on PFC sources. We have estimated the loadings of PFCs into Tokyo Bay from 6 main rivers and found that more than 90% of total PFCs flowed into Tokyo Bay as dissolved phase. However, 40.0 – 83.5 % of long chain PFCAs, such as PFDoDA, PFTrDA, PFTeDA and PFPeDA were transported as particle phase. Rain runoff event might increase the loadings of PFCs in SS. We should pay more attention to particle phase PFCs, especially for longer chain PFCs.