PERFLUORINATED CHEMICALS AND ALKYLPHENOLS IN FISH FROM URBANISED AND INDUSTRIALISED REGIONS OF THE YANGTZE RIVER, CHINA

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Whereas global production of PFOS and related chemicals fell sharply over the last decade, production in China increased from around 50 tonnes in 2003 to over 200 tonnes per annum in 2006, of which approximately half was exported to the EU, Japan and Brazil. PFOS was recognised as a widespread contaminant in waters of the Yangtze River (among others) as early as 2003 and sediments from the estuary have recently yielded some of the highest PFOS concentrations ever recorded. Both PFOS and PFOA have also been reported in tap water in several cities along the Yangtze and PFOS recorded in the tissues of sturgeon from the river. The current study documents the presence of PFOS and other perfluorinated chemicals in the livers of catfish and carp, both important food fish, collected from four urbanised and industrialised locations along the Yangtze river; Chongqing, Wuhan, Nanjing and Ma'anshan. PFOS accounted for between 45% and 99% of the total PFC concentrations for both species, with concentrations in the range 1.8-41.6 ug/kg (ww) for individual carp livers and 18.4-39.7 ug/kg (ww) for composite catfish livers. Perfluoroundecanoic acid (PFUnA) was the predominant PFCA in all but one sample. Concentrations of alkylphenols were also determined, the most abundant being nonylphenol (85-95% of total) with concentrations in the range 9.2-85.0 ug/kg (ww) for individual carp livers and 23.9-60.6 ug/kg (ww) for the composite catfish livers. Although these levels currently fall within the range reported for similar species in other countries (and towards the lower end of the range in the case of PFOS), production trends for such chemicals in China lead to significant concerns for the future contamination of wildlife and aquatic food resources.