Session: Fluorinated POPs

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Perfluorinated compounds (PFCs) are synthetic, fully fluorinated, straight chain or branched fatty acid analogues with terminal sulfonate, carboxylate, amine, amide or alcohol groups. Many PFFAs have unique molecular properties such that they are both oleophobic and hydrophobic and as a result, do not mix with either water or oil. Thus, fluorinated chemicals exhibit both water and oil repellency when absorbed on textile and paper. One PFFA that has been of particular concern due to chemical properties, persistence and distribution in the environment is perfluorooctane sulfonate (PFOS). PFOS is a fluorine-saturated, eight carbon straight chain fatty acid with a terminal sulfonate that has been found to be resistant to hydrolysis, photolysis, microbial degradation, and metabolism by animals. Due to its chemical properties, PFOS and its precursors have been used in over 200 products and applications. Industrial and consumer products include stain-resistant coatings for fabrics and carpet, oil-resistant coatings for paper products, fire-fighting foams, mining and oil well surfactants, floor polishes and insecticide formulations. Because of its wide spread usage, PFOS and related compounds can be released into the environment from product manufacturing processes, supply chains, product use and disposal. Methods for the identification and quantification of PFCs are difficult and currently limited by a lack of authentic standards, particularly isotopically enriched internal standards. In addition, interferences and high

background concentrations have limited the understanding of the environmental fates of these compounds.

A total of 17 presentations were made, 7 oral and 10 in poster sessions. A number of the papers presented in the session reported improved methods, particularly solid phase extraction methods that are superior to the previously used ion-pairing methods. Several of the presentations presented methods to improve method detection limits and minimize background contamination of blanks. These improved methods have now been applied to measure concentrations of PFC in surface water, especially of seawater. Papers presented information on concentrations of PFCs in the Great Lakes and the State of New your, the North Sea, the Pacific and Atlantic Oceans. Several papers reported concentrations of PFOS, PFOA and other analogous PFCs in human and wildlife tissues. Specifically one paper presented information on concentrations in food, while two papers presented concentrations of PFCs. Six papers presented information on PFCs in human blood including populations in Italy, India, Northern Canadian Populations, Sri Lanka, Sweden and Korea. Three papers focused on PFCs in the arctic. One paper investigated the release of PFCs in light water fire fighting foam while another investigated concentrations in indoor air. There continue to be more papers on analytical methods and environmental fate monitoring but few papers on the toxic effects or risks associated with PFCs. There was only one paper on the toxicity of PFCs, which investigated the toxicity of PFOS to birds.