Assessment of Perfluorinated Compounds in Fish from U.S. Rivers

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Background

EPA’s National Rivers and Streams Assessment (NRSA) is one of a series of probability-based surveys designed to assess the condition of U.S. waters. The Office of Water (OW) is responsible for planning and implementing the NRSA with support from the Office of Research and Development (ORD). Under the NRSA framework, the Office of Science and Technology within OW is collaborating with three ORD laboratories to conduct a study of contaminants of emerging concern (CECs) in fish, including perfluorinated compounds (PFCs). Field teams collected fish samples at a statistical subset of 163 urban river sites across the U.S. during 2008 and 2009. Fillet tissue samples from 162 of those sites were analyzed for 13 PFCs.

Why Study PFCs in Fish?

Perfluorinated compounds (PFCs) are a group of synthetic chemicals used to make consumer and industrial products resist oil, grease, stains, and water. Their unique physical and chemical properties prompted their use in non-stick cookware, waterproof clothing, fabric stain protection, and firefighting foams. PFCs are known to accumulate in fish and are of concern because they are persistent, bioaccumulative, and toxic. They have been associated with developmental toxicity, estrogenic effects, thyroid hormone disruption, immune system effects, and cancer in rodent studies.

Study Design

Assessment of PFCs in fish from U.S. urban rivers included:

- Sampling 163 randomly selected urban river sites (1st-order based on 1,000,000-scale Strahler order) in the lower 48 states during 2008 and 2009.
- Collecting one fish composite sample (i.e., 5 similarly sized adult fish of the same species that are consumed by humans) from each site.
- Analyzing fish fillet samples for 13 perfluorinated compounds (PFCs), including perfluorooctanoate (PFOA) and perfluorooctanesulfonate (PFOS).

National Rivers and Streams Assessment

Urban River Sampling Locations

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For more information visit: http://water.epa.gov/scitech/swguidance/fishstudies/