

Perfluorinated Compounds in Creeks from Pierce County, Washington

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Background

- Used since 1950's in industry for their unique chemical properties that help make products water proof.
- Products such as Teflon, Scotchgard, Stainmaster, and Gor-Tex.
- No known natural degrading process
- Significant levels have been measured in surface water, animal tissue, and blood samples all over the world
- These acids have up to seven different chain lengths or formsall with different properties.



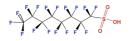


Figure 2 Structure of PFOS



Hudsontrail.com





Figure 5 Image courtesy of

Figure 4 Image courtesy of Mercola.com

Objectives

- Measure concentration of PFAs in streams in various urban and industrial sites
- . Compare data with recent data collected in the Puget Sound

Hypothesis

- . Concentration measurements will be higher in industrial areas than urban settings
- Concentrations will be higher than previous studies of larger bodies of water.



Figure 6 Map of Selected Sampling Sites

Methods

Sampling

Sites chosen for industrial and urban settings and sampled in triplicate with field blanks of Nano Pure water















Preparation

Water samples were prepared to be analyzed by performing Solid Phase Extraction (SPE) in the lab.

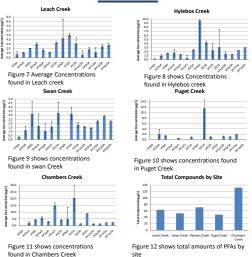


Analysis

Samples were analyzed using an Agilent 6460 Liquid Chromatography Tandem Mass spectrometer (LCMSMS)



Results



- •Figure 12 shows that the industrial sites, Hylebos and Chambers, show the highest levels of PFAs
- •The levels shown here are higher than measurements taken from Puget Sound.
- •Figures 7 through 11 show that each site has specific forms of PFAs while others do not however, all sites contain measured levels of PFOA and PFOS.

Discussion

- •Industrial areas may exhibit higher levels of contaminants due to heavy activity and chemical practices associated with production.
- •These levels were taken from small creeks and streams, they are expected to be higher than larger bodies of water like Puget Sound due to their proximity to the pollution source and dilution processes as these creeks and steams drain into the Sound
- •PFOA and PFOS are the most common and stable of the PFAs

Acknowledgments

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Citations

Langlois A. 2006. Mass Spectrometric Isomer Characterization of Perfluorinated compounds in Technical mixture, water and human blood[dissertation]. Aus Issoudun (France). Basal. P 4-15, 37