

*Session 4.1 (Wed, 14-217, 10:15-10:45) [Session Highlight]***Calibration of aquatic passive samplers: Accounting for changes in chemical uptake rates when exposed to variations in environmental flow conditions**

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Abstract: Passive sampling techniques facilitate the time-integrated measurement of pollutant concentrations through the use of a selective receiving phase. Accurate quantification using passive sampling devices rely on the implementation of methods that will negate the effects of environmental factors such as flow, salinity and temperature. Work undertaken at the National Research Centre for Environmental Toxicology (Entox) includes: Calibration and deployment of various passive sampling devices in routine monitoring of water borne pollutants (including: herbicides, pesticides, pharmaceuticals & personal care products); Development of a method for monitoring water flow velocity (i.e. the passive flow monitor abbreviated as PFM); Evaluation of flow and salinity effects on the uptake kinetics of phosphate by an adsorbent passive sampler and whether the PFM can be used to accurately predict time averaged phosphate concentrations under various (and varying) flow and salinity conditions.

Entox has developed and implemented a range of passive sampling techniques that can be employed in the detection and quantification of a range of pollutants. We endeavor to extend upon the techniques currently employed to develop new approaches for emerging pollutants.

To demonstrate novel applications we will present a case study where a modified and validated Polar Organic Chemical Integrative Sampler (POCIS) with a weak anion exchange sorbent is employed for passive sampling of perfluorinated compounds (PFCs) in water. The aim of this study was to evaluate the influence of water flow rate and calibration conditions on the uptake of PFCs by the POCIS. The sampling rates derived ($0.08 - 0.28 \text{ L day}^{-1}$) are comparable to sampling rates determined in a previous study under different conditions. The results presented provide a further example of advances in passive sampling techniques that can help researchers elucidate potential aquatic exposure routes of emerging pollutants.

Keywords: passive sampling devices, passive flow monitor, emerging pollutants, Polar Organic Chemical Integrative Sampler (POCIS)