Passive sampler for monitoring per- and poly-fluoroalkyl substances (PFAS)

Widespread contamination of environmental waters by persistent contaminants called per- and poly-fluoroalkyl substances (PFAS) has become a global issue. Effective monitoring techniques are paramount to assess human and environmental exposure to these contaminants and mitigate risk. The Microporous Polyethylene Tube (MPT) passive sampler was developed to improve our ability to measure PFAS in the environment. The MPT passive sampler provides a cost-effective quantitative technique for reliable and sensitive monitoring of a wide range of PFAS.

MPT Passive sampler

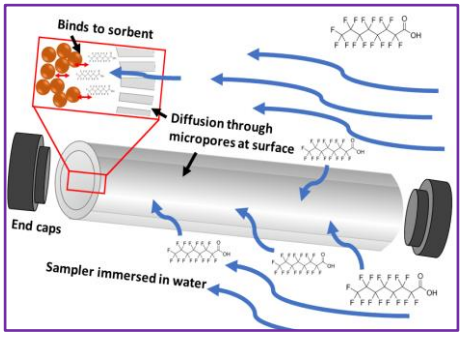
The Microporous Polyethylene Tube (MPT) passive sampler is a versatile cost-effective device designed to measure time-weighted averaged freely dissolved per- and poly-fluoroalkyl substances (PFAS) concentrations in surface, ground, storm and waste waters. It can be used to:

- Determine PFAS concentrations
- Assess spatial-temporal trends
- Assess environmental fate
- Assess mass flux at contaminated sites
- Aid risk assessments

PFAS

Per- and poly-fluoroalkyl substances (PFAS) are a large group of manufactured chemicals produced since the 1950s. PFAS were used to make fire suppression aqueous film-forming foams (AFFF) and everyday consumer products that resist heat, stains, grease, and water.

The structure of PFAS made up of carbon-fluorine bonds results in chemical compounds that are highly persistent in the environment. PFAS are of concern around the world because they can persist for a long time in humans and in the environment.



Schematic of the MPT passive sampler

Comprehensive application

Being time integrative, the MPT passive sampler provides a unique solution and understanding of exposures and ongoing loads of PFAS in dynamic systems, such as surface and wastewaters. The device is compact, durable, simple and easy to deploy.

The MPT sampler was calibrated and rigorously validated at a range of Australian Defence and US Department of Defense sites and applied and validated across a range of surface, ground, and wastewater environments;

- Providing equivalent sensitivity to grab sampling (typical detection limit of 1 µg/L)
- Applicable for linking with standardised analytical methods
- Suitable for identification of PFAS of emerging concern
- Suitable for deployments ranging from several days to several weeks

Open-access solution

The MPT passive sampler technology has been published and is available to all. Open access free material available includes:

- MPT sampler deployment guides
- MPT sampler preparation and extraction Standard Operating Procedures (SOPs)
- Good practice guidelines for the use and interpretation of passive sampler data, including parameters for converting PFAS results into µg/L time-weighted average water concentrations

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