



PFAS in Groundwater White Paper

Dual Membrane Passive Diffusion Bag Sampler (DMPDB)

Summary

Media:	Groundwater
Study Type:	Summary of multiple studies
Technology:	Equilibration
Peer Reviewed:	No
Publication Date:	July 2022

Study Description

This case study serves to inform the industry of the capability of the DMPDB to provide accurate and representative samples of groundwater for a wide range of contaminants and specifically for PFAS, at a lower cost, with reduced contaminated wastewater and increased ease of use compared to pumping and purge techniques. The design and function of the DMPDB sampler is presented along with examples of its performance for sampling a wider range of analytes, beyond VOCs, to include metals, ions, semivolatile organic compounds (SVOCs), inorganics, and contaminants of emerging concern—1,4 dioxane and PFAS. The paper provides a summary of field- and bench-scale test results using a passive technique for PFAS sampling in groundwater monitoring wells—that is, an adaptation of a passive diffusion bag sampler (PDB). Data are provided from controlled bench tests and from five independent, side-by-side field tests on the performance of the DMPDB for PFAS sampling.

Remedial Phase

Site assessment and long-term monitoring

Outcome

Bench-scale and five independent side-by-side field tests comparing PFAS concentrations from the DMPDB sampler to results obtained from controls and low-flow samples show that:

- DMPDBs produced field results for PFAS that are comparable to those from low-flow pumping, even at single-digit ng/L concentrations.
 - Results showed very strong positive correlations for PFOS, PFOA, and PFNA, which are often listed as the most significant PFAS of concern.
- DMPDBs showed several PFAS-sampling benefits over low-flow pumping, including:
 - Eliminating purge wastewater, and therefore reducing investigation-derived waste
 - Increasing the sample interval accuracy
 - Collecting samples with less turbidity, and therefore less analytical bias and noise
- DMPDBs significantly reduced time, equipment, and costs associated with PFAS sampling.

Case Study Source

Varhol, Brad, and Alyssa Varhol. 2022. "A Dual Membrane Passive Diffusion Bag Sampler for PFAS in Groundwater." EON Products. July. <https://www.eonpro.com/wp-content/uploads/2022/08/A-DMPDB-for-Sampling-PFAS-in-Groundwater-White-Paper-72022.pdf>.