

Nonpassive Syringe Sampler

Syringe Sampler

Summary

Media:	Groundwater, porewater
Study Type:	NA
Technology:	Nonpassive syringe sampler
Peer Reviewed:	Yes
Publication Date:	Nov–Dec 2007

Study Description

This was an evaluation of bagged and bagless syringe-based H₂ samplers in saturated sediments (porewater) and monitoring wells. The concentration of H₂ was used as an indicator of anoxic terminal electron-accepting process (TEAP) and for characterization of microbial communities to evaluate biodegradation.

Low-density polyethylene (LDPE) bagged syringe samplers and bagless syringe samplers were installed in organic-rich, methanogenic-saturated sediment with additional comparisons in controlled laboratory setting. Bagless samplers were deployed in sulfate-amended (gypsum) sediment.

Bagged and bagless syringe samplers were installed in an anoxic screened interval of a 2-inch diameter monitoring well and packer-isolated intervals in fractured bedrock borehole at two Department of Defense sites.

Remedial Phase

Study on laboratory and field testing of bagged and bagless syringe-based H₂ samplers.

Outcome

A two-week deployment time was appropriate for bagged and bagless samplers from laboratory tests. Bagged samplers accurately differentiated between methanogenic and sulfate-reducing sediments in field tests and iron reduction in laboratory tests. Bagless samplers in sulfate-amended (gypsum) sediment contained H₂ concentrations consistent with sulfate reduction. Comparable H₂ concentrations were found between bagged and bagless H₂ samplers in monitoring well and packer-isolated fractured bedrock borehole and samples collected using the pumped bubble strip sampling method.

Case Study Source

D.A. Vroblesky et al. 2007. A Simple Pore Water Hydrogen Diffusion Syringe Sampler, *Groundwater* 45 (6): 798–802.

<https://doi.org/10.1111/j.1745-6584.2007.00362.x>

References

R.W. Gillham. 1982. Syringe Devices for Ground-Water Sampling, *Groundwater Monitoring and Remediation*.

<https://doi.org/10.1111/j.1745-6592.1982.tb00832.x>