A Novel Membrane System for Stimulating the In Situ Bioremediation of Tetrachloroethene. (S09-hozalski163414-Oral)

Authors:

- R.M.Hozalski - *University of Minnesota*
- X.Ma - *University of Minnesota*
- L.W.Clapp - *University of Minnesota*
- P.J.Novak - *University of Minnesota*
- M.J.Semmens - *University of Minnesota*

Abstract:

Many soils and groundwaters throughout the United States are contaminated with chlorinated solvents such as tetrachloroethene (PCE). One approach for cleanup of such sites is to stimulate biological reductive dechlorination in order to convert the PCE to the relatively innocuous chemical ethene. For biological reductive dechlorination of PCE to occur, typically an electron donor such as hydrogen (H2) must be supplied to drive the reduction reaction. A promising H2 delivery approach under development in our laboratory involves use of gas-permeable hollow-fiber membranes installed in wells or in trenches. The membranes are supplied with H2 gas to passively enrich groundwater flowing past the membranes in dissolved H2. The main goal of this research was to evaluate the ability of this membrane system to support dechlorination of PCE in groundwater aquifers. Bench-, pilot-, and field-scale experiments were performed to evaluate the effectiveness of the membrane technology for remediating aquifers contaminated with chlorinated solvents. The focus of this presentation will be on the pilot-scale soil column experiments.

Corresponding Author Information:

Raymond Hozalski
University of Minnesota
Dept. of Civil Engineering, 500 Pillsbury Dr. SE
Minneapolis, MN 55455-0116

phone: 612-626-9650
fax: 612-626-7750
e-mail: hozal001@umn.edu

Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 10:10 am

Keywords:

tetrachloroethene, membranes, groundwater, bioremediation