



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003DE30B

Title: Removal and Inactivation of Water-Borne Viruses Using Permeable Iron Barriers

Project Type: Research

Focus Categories: Water Quality, Toxic Substances, Geochemical Processes

Keywords: drinking water, pathogens, viruses, remediation strategies, human health

Start Date: 07/01/2003

End Date: 02/28/2005

Federal Funds: \$19,510

Non-Federal Matching Funds: \$39,020

Congressional District: At large

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Abstract

Microbiological contamination of drinking water continues to be one of the greatest challenges in public health risk management in the 21st century. Among the different classes of microbial pathogens, viruses are of particular importance as they are smaller than bacteria and protozoa, far more mobile in subsurface environments, and also more resistant to the currently available water treatment technologies. The United States Environmental Protection Agency (USEPA) in the proposed Ground Water Rule (GWR) identifies viruses as the target organisms because they are responsible for approximately 80% of water-borne disease outbreaks for which infectious agents were identified.

The proposed research will evaluate the feasibility of using elemental iron in a continuous-flow treatment barrier to remove and inactivate waterborne viruses. We hypothesize that iron can be used to remove viruses from water because elemental iron can continuously generate and renew the surface iron oxides and oxyhydroxides through corrosion in water, and iron oxides and oxyhydroxides have been shown to inactivate viruses