



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2002NJ5B

Title: Destruction of Volatile Organic Compounds Using the Photo-Chemical Remediation Reactor

Project Type: Research

Focus Categories: Water Quality, Water Quantity, Non Point Pollution

Keywords: VOCs, Volatile Organic Compounds, PCE, tetrachloroethylene, TCE, trichloroethylene, carcinogen, photo-chemical remediation, PCR, Trichloroethane, TCA, RPT, Reductive Photo-Thermal

Start Date: 03/01/2002

End Date: 03/01/2003

Federal Funds: \$30,000

Non-Federal Matching Funds: \$29,777

Congressional District: 6th

Principal Investigator:

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Abstract

Common subsurface contaminants such as PCE or TCE (trichloroethylene) are carcinogens and have low water solubilities; these chemicals post a serious long-term health threat to precious groundwater supply. As a result, a substantial amount of effort has been expended to develop efficient and economical treatment technologies to remove or destroy these contaminants.

A new method for destruction of organic contaminants is the photo-chemical remediation (PCR) technology.

The PCR technology is based on the synergistic effect obtained when ultra-violet (UV) photo-initiation is combined with an oxidizing atmosphere.

For this research, we proposed to use the funding for further experimentation on the reactor and to include other common groundwater contaminants such as TCE and TCA (trichloroethane), as well as perform destruction experiments using mixtures of PCE, TCE, and TCA. Furthermore, we will modify the existing reactor to include an air-stripper to mimic an actual groundwater remediation scenario. The project will also include a demonstration remediation experiment using PCE contaminated groundwater from the Busch Campus site.

PCR technology has commercial potential for a variety of remedial operations that are important to New Jersey industries.