



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004NE72B

Title: Remediation of PCB-Contaminated Soils and Sediment using Zerovalent Iron and Surfactants

Project Type: Research

Focus Categories: Toxic Substances, Sediments, Treatment

Keywords: PCB, Zerovalent Iron, Surfactants

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds: \$18,126

Non-Federal Matching Funds: \$44,736

Congressional District: North Central Region

Principal Investigator:
Steve Douglas Comfort

Abstract

A critical need in Nebraska, the U.S., and nationwide is the development of cost-effective and environmentally safe technologies for remediating PCB-contaminated soils and sediments. The upper Hudson River is one of the most extensively PCB-polluted waterways in the U.S. Approximately 30 years of wastewater discharge from two General Electric (GE) plants has resulted in a 40-mile stretch of river in need of remediation. Although political wrangling among various agencies has delayed remedial actions, it appears inevitable that certain areas of the Hudson River, as well as many other coastal/estuarine zones, will eventually be dredged to remove PCB hot spots. These dredged sediments as well as many polluted inland soils surrounding leaking electrical transformers will require treatment and disposal. While a variety of treatment options such as thermal, nucleophilic substitution, and soil washing have been proposed, each has its limitations and associated costs. This proposal will develop an alternative treatment for ex-situ treatment of PCB-laden soils/sediments by abiotically treating dewatered sediment and soils with zerovalent iron (Fe⁰), surfactants and additional catalysts in static unsaturated windrows. Our research group has successfully demonstrated this approach at the bench, pilot and field-scale by remediating pesticide and munitions contaminated

soils. We now seek to expand the use of zerovalent iron and surfactants to the treatment of heavily contaminated PCB soils/sediments.