



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: NM1661

Title: Genetic Techniques for the Verification and Monitoring of Dihaloethane Biodegradation in New Mexico Aquifers

Focus Categories: Groundwater, Toxic Substances

Keywords: horizontal gene transfer, carcinogen, natural attenuation, biodegradation, xenobiotic, PCR, EDC, EDB

Start Date: 03/01/2001

End Date: 02/28/2002

Federal Funds: \$25,000

Non-Federal Matching Funds: \$24,950

Congressional District: 2nd

Principal Investigator:

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Abstract

Fresh water supplies throughout the world are threatened by the release of the dihaloethanes 1,2-dibromoethane (EDB) and 1,2-dichloroethane (EDC). Dihaloethanes are carcinogens know to form adducts with glutathione, which can bind to DNA. According to the EPA's toxic release inventory database, approximately 2670 pounds of EDB and 433,000 pounds of EDC were released onto land and into water between 1987 and 1993 in America. In New Mexico, approximately 175 locations have or have had EDB or EDC contaminated soil and groundwater, the primary drinking water source. The primary source of EDB and EDC contamination in New Mexico is associated with petroleum refining industries and fuel dispensing systems. A rapid and reliable scan for the presence of a gene necessary to degrade EDB and EDC will provide a means of verifying the capacity of natural systems to degrade these contaminants. The proposed research will provide an example of how biotechnology can aid the development of bioremediation methods.