



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2002KY4B

Title: Occurrence and distribution of mercury in Mammoth Cave National Park

Project Type: Research

Focus Categories: Groundwater, Sediments, Solute Transport

Keywords: mussel, karst, water quality

Start Date: 03/01/2002

End Date: 02/28/2003

Federal Funds: \$9,725

Non-Federal Matching Funds: \$19,474

Congressional District: Kentucky Second

Principal Investigator:

Cathleen Joyce Webb

Western Kentucky University

Abstract

This proposed research is part of a larger program of mercury-related work that the principal investigator has undertaken this year. Atmospheric deposition of mercury from power plant emissions, a major input of mercury into the environment, is coming under closer scrutiny by regulatory agencies. With increasing demand for power, applications for many new coal-fired power plants are currently being considered, an understanding of the existing levels of mercury is critical, particularly in a karst aquifer system (such as in South-central Kentucky) where transport of contaminants can be rapid.

The overall vision and scope of this project are to understand the physical and geochemical processes that govern the fate and transport of mercury in a karstic aquifer system. Mercury mobility in surface water and ground water are of great concern because of toxic effects on the environment. Mercury is a persistent, bioaccumulative toxin, with significant impacts on aquatic species, such as mussels. The specific research in this proposal will examine mercury transport in ground water and surface water in Mammoth Cave National Park. Results will be complemented by an investigation of the extent of bioaccumulation of mercury in fish and mussels. Finally, attempts will be made to correlate levels and distribution of mercury in fish and mussels with levels of mercury measured in the atmosphere, water and sediments of the study site.