



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** NE2701

**Title:** Investigation of Microbially-Influenced Copper Corrosion in Nebraska Drinking Water Systems

**Focus Categories:** Treatment, Groundwater

**Keywords:** copper corrosion, groundwater, water quality standards, drinking water

**Start Date:** 03/01/2001

**End Date:** 02/28/2002

**Federal Funds:** \$14,999

**Non-Federal Matching Funds:** \$36,272

**Congressional District:** 1

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**Abstract**

As of August 1999, a total of 58 communities in Nebraska had copper concentrations exceeding the U.S. EPA action level of 1.3 mg/L for copper in drinking water (NDHHS, 1999). Because the primary source of copper in drinking water is corrosion of plumbing materials, the EPA requires corrosion control as a method for reducing copper concentrations; however, implementation of the corrosion control measures would have a detrimental economic impact on many small Nebraska communities.

Internal corrosion of copper water pipes is a complex process that can occur under a variety of different conditions. Corrosion reactions may be caused by water chemistry or by the presence of biofilms inside pipes, a process that is often referred to as microbially-influenced corrosion (MIC). Recent observations in two of Nebraska's small community public water systems have provided evidence for possible MIC in copper plumbing. This research seeks to determine the biological, chemical, and physical conditions that contribute to copper corrosion and high copper concentrations in Nebraska drinking water systems. Significant effort will be aimed at understanding the MIC problem and the conditions under which it occurs, developing protocols for detecting MIC in distribution systems, and making an initial assessment of possible control methods that can effectively mitigate biological corrosion of copper in small drinking water systems.