



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2002IA16G

Title: Relationship of Nitroso Compound Formation Potential to Drinking Source Water Quality and Organic Nitrogen Precursor Source Characteristics

Projects Type: Research

Focus Categories: Water Use, Toxic Substances, Agriculture

Keywords: Contaminant, agricultural wastes, drinking water sources, disinfectant by-products

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Non-Federal Matching Funds: \$177,392

Congressional District: first

Principal Investigator:

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Abstract

Nitroso compounds are a class that includes numerous carcinogens, mutagens, and tetraogens. Until recently it was believed that the occurrence of nitroso compounds in drinking water and wastewater was due to contamination of the source waters. Recent research indicates that N-nitrosodimethylamine (NDMA), a particularly potent carcinogen, can be produced from the chlorination of drinking water and wastewater. Its formation at concentrations that are likely to be of health concern has been observed in distribution systems of some utilities, especially those practicing chloramination of unprotected waters in the Midwest. It is hypothesized that drinking source waters receiving municipal and especially agriculture related wastes, are particularly susceptible to the formation of NDMA as well as other nitroso compound as disinfection by-products. This is likely because these wastes are sources of abundant organic nitrogen precursors required for the formation of nitroso compounds. The potential to form these compounds may therefore limit the use of some waters as a source of drinking water. The extent of this potential is, however, unknown. The primary objective of this study is to measure the nitroso compound formation potential of a variety of drinking source waters, and relate this to source water quality, organic nitrogen precursor sources, land use, and biogeochemical processes that may attenuate their formation. This will be accomplished with the collaboration of the USGS which will assist in the collection of water samples in coordination with a variety of their ongoing studies. Samples will be subjected to standardized procedures to produce nitroso compounds. These will be measured by GC- MS methodology.