



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003SC8B

Title: Toxicological Effects of Environmental Pollutants in Lake Conste

Project Type: Research

Focus Categories: Water Quality, Toxic Substances, Surface Water

Keywords: Environmental Risk Assessment, Human Health Risks, Biomarkers, Toxic Waste Wate, Remediation, Fish Toxicology

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Matching Funds: \$70400.00

Congressional District: Third and Fourth

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Abstract: Lake Conestee is a heavily polluted Superfund (Targeted Brownfields Program) site in the Reedy River watershed, just south of Greenville, SC. The lake, formerly 145 acres, has been silted in to such extent that it now is comprised of about 20 acres of water area, the remainder being emergent wetlands, sloughs, beaver ponds, and wooded bottomland flats. Lake Conestee has received waste water from domestic and industrial sources for over 100 years, as well as runoff from a highly urbanized watershed of 65 sq. miles. The result is a wetlands / aquatic system with high concentrations of nutrients, heavy metals, polyaromatic hydrocarbon pollutants, pesticides and PCBs. Contamination investigations sponsored by U.S.EPA, SCDHEC, and the Corps of Engineers – Charleston District have established the nature of contamination of the lake sediments. However, little is know about the dispersion of the contaminants, and even less is known about concentrations and toxicological effects of these contaminants in the organisms in the lake. This has not only caused concern about the environmental health of the system, bioconcentration / biomagnification of certain compounds in the food chain, but also potential effects on human health of people consuming fish, turtles and other game species from the lake. To address the expected toxicological effects, a study is proposed to measure a set of biomarkers in a fish species from the lake. These biomarkers will give insight in how different detoxification pathways

are induced, and how severe cellular and subcellular damage has progressed in fish from the lake. This information, combined with chemical, ecological, and whole organisms toxicity data, will enhance the understanding of the extent of the contamination and its effects on biota and provide the foundation for an ecological risk assessment. Further, it will generate data that will be used for human health risk assessment in people using resources in the lake for nutrition and recreation.

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