



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003MD30B

Title: Response of Macroinvertebrates to Road Salt Runoff in Headwater Streams

Project Type: Research

Focus Categories: Non Point Pollution, Water Quality, Conservation

Keywords: road salt, macroinvertebrates, headwater streams, chloride toxicity, stormwater

Start Date: 03/01/2003

End Date: 02/28/2004

Federal Funds: \$34005.00

Matching Funds: \$74007.00

Congressional District: 5th District of Maryland

Principal Investigators: Lamp, William

Abstract: Road salt is widely applied to roads and parking lots during snow and icestorms, leading to salt loading of streams subsequent to melting. In the Washington Metro Region, the relative rapid melting after storms may lead to toxic levels of salt in streams. Headwater streams are particularly susceptible to stormflow loading from impervious surfaces. Because of the physiological need for osmoregulation of macroinvertebrates in freshwater, they are often vulnerable to acute levels of salinity although the response is known to vary among species. The goal of the proposed research is to determine the impact of road salt applications on macroinvertebrates that inhabit headwater streams in the Maryland Piedmont Region. Our objectives are (1) to quantify the stormflow loading of road salt in small, suburban streams subsequent to a snowstorm event, (2) to measure the macroinvertebrate population response (mortality and drift) to salt loading of an unimpacted headwater stream, (3) to measure the mortality response of tolerant and intolerant macroinvertebrate species to acute levels of high salt concentrations, and (4) to compare the mortality of macroinvertebrate species to different cation sources of salt. The results will be useful in identifying the environmental risks associated with road salt applications. Specific testing of various cation sources of salt may suggest alternatives to reduce environmental stress. Finally, by identifying both salt-tolerant and intolerant macroinvertebrate species, we will develop a biological monitoring tool for identifying impacted streams.

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Last Modified: Wed May 28, 2003 4:26 PM

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