



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2002MD3B

Title: Atmospheric Deposition of Currently Used Pesticides to Chesapeake Bay Watersheds.

Project Type: Research

Focus Categories: Non Point Pollution

Keywords: Atmospheric Processes; Agriculture; Contaminant Transport; Estuaries; Pesticides; Rainfall; Trace Organics

Start Date: 03/01/2002

End Date: 02/28/2003

Federal Funds: \$26,600

Non-Federal Matching Funds: \$53,305

Congressional District: 5th District of Maryland

Principal Investigator:

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Abstract

The Delmarva Peninsula, a region within the Chesapeake Bay watershed, is dominated by agricultural land use, which makes the streams and tributaries in this area highly vulnerable to agricultural runoff. This area also contains some of the most important aquatic habitat areas for the living resources of the Bay. The extent of local or regional atmospheric transport and deposition of pesticides to this area is poorly understood and may be an important contributor to the overall pesticide budget for the region. Baseline measurements of atmospheric concentrations and deposition fluxes of pesticides in different parts of the Chesapeake Bay watershed are a fundamental part of determining the importance of atmospheric processes to the overall loading of pesticides to the Bay.

Preliminary model predictions developed by ARS and University of Michigan scientists (Rice and Silman, 2000) indicate that the middle and upper regions of the Delmarva Peninsula receive significant inputs of herbicides through atmospheric deposition. This project is designed to take a first step towards testing the predictions of this model through two years of actual pesticide wet deposition flux from three locations in the region (Horn Point Environmental Laboratory in the Choptank River watershed, Lewes, DE, an agricultural site, and Smith Island, MD, a control site located in the Chesapeake Bay mainstem). Intensive sample collection of air, water, rain and soil components of the Choptank watershed will also be carried out concurrently to assess the fate of agricultural pesticides in a watershed typical of the region. The Lewes, DE and Smith Island sites are part of an existing NOAA, AirMon network used for monitoring nitrogen and other chemicals, and this study represents an expansion of the network to include pesticides.

Data produced from this work will have value on several levels. First, results can be used to estimate the spatial and temporal variability in pesticide atmospheric deposition flux in the Delmarva Peninsula region, which can be utilized by other researchers such as USGS. Second, the data will be used in a fugacity box model to predict the movement of these chemicals in the Choptank River watershed, which will be of interest to a wide range of researchers.