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# Using GIS Technology for Iowa Pesticide Distribution and Transport Modeling

Joost Korpel

*Iowa Department of Natural Resources*

Cam Conrad

*Iowa Department of Natural Resources*

Kristine Schaefer

*Iowa State University, schaefer@iastate.edu*

Rich Pope

*Iowa State University, ropope@iastate.edu*

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## **Using GIS technology for Iowa pesticide distribution and transport modeling**

Joost Korpel and Cam Conrad, Iowa Geological Survey, Iowa Department of Natural Resources

Kristine Schaefer and Rich Pope, Extension Program Specialists, Iowa State University

The patterns of pesticide occurrence in surface and ground waters are linked to agricultural practices and the product's susceptibility to leaching and runoff. Pesticide use information has historically been catalogued in relation to points of sale from agrichemical dealerships. In an effort to provide a wide audience with an understanding of these occurrences and patterns, an atlas was developed during 2006 that provided a web-based front end to the data. The atlas links pesticide calculations of pounds of active ingredients sold with geographic information and water monitoring data using Geographic Information System (GIS) software.

Pesticide transport is also being studied through computer modeling in Iowa, Kansas, Missouri, and Nebraska. The work uses a GIS-based pesticide "favorability" model that uses soil characteristics to predict where pesticides will create the least amount of potential environmental impact based on leaching, runoff, and particle-adsorbed runoff potential.

Iowa established the Iowa Pesticide Sales Database in the 1987 Groundwater Protection Act. The database is an ongoing collection of data on pesticide sales that are submitted from licensed dealers as a requirement of licensure. From these sales data, trends in pesticide use can be tracked by region through the years, which coupled with water monitoring data, allow for targeted educational programming. At least three pesticide use or distribution data sources exist, namely the Iowa Pesticide Sales Database, Iowa Geologic Survey database (IAPEST) on water contaminants in Iowa, and a recently conducted pesticide use survey conducted by ISU Extension. From these data sources it is possible to generate graphics to illustrate trends and use patterns as summaries that will be shared with the originating agencies and prepared for dissemination to the public.