News Release

U.S. Department of the Interior
U.S. Geological Survey

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Water-quality contamination is closely linked to nonpoint source pollution and land use in the Mobile River Basin

The quality of streams and ground water in the Mobile River Basin is closely linked to land use and the chemicals used in urban and agricultural areas. Whereas the quality of water is good—supporting most beneficial uses of water, such as for drinking, recreation, and protection of fish—some challenging issues have emerged in the U.S. Geological Survey (USGS) study undertaken from 1999-2001 by the USGS, including the presence of insecticides such as diazinon and decreases in the types and numbers of aquatic insects and fish in some urban streams. Fortunately, water in the urban streams sampled in the Mobile River Basin is not used as a source of drinking water. Therefore, the elevated insecticide concentrations generally do not pose a health risk for people. However, findings suggest that aquatic life may be more at risk than humans because 14 percent of samples collected from the urban streams contained concentrations of commonly used insecticides (such as chlorpyrifos, diazinon, malathion, and carbaryl) that were above guidelines for the protection of aquatic life.

The USGS study indicates that urbanization in a watershed can affect the types and numbers of aquatic insects and fish in the streams. Increases in urbanization in a watershed correspond to decreases in the types and numbers of aquatic insects and fish. Aquatic insects and fish that are tolerant of poor water quality dominated aquatic insect and fish communities in streams with increasing amounts of urbanization. Degradation of aquatic insect and fish communities in those streams is related to physical and chemical factors associated with increasing residential development, density of roads, commercial and industrial land use, and population.

High levels of chemical contamination are not just an urban problem. Runoff from agricultural activities contains elevated herbicides, such as atrazine, which was detected in 100 percent of samples collected. Although nitrogen concentrations generally were highest in streams or rivers draining urban areas, total nitrogen concentrations in one sampled agricultural stream were above average when compared to samples collected in other agricultural areas across the Nation.

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Also in the report:

- Nitrate concentrations generally were highest in shallow aquifers in urban and agricultural areas. Nitrate concentrations in three wells were above the U.S. Environmental Protection Agency drinking water standard.
- Pesticides were detected in more than 80 percent of wells in urban and agricultural areas, but none of the concentrations exceeded any U.S. Environmental Protection Agency drinking water standards. Herbicides were commonly detected in ground water both in urban and agricultural areas. Dieldrin was the only insecticide detected in any of the wells, and only in urban wells.
- Volatile organic compounds (VOCs), organic compounds which are components of gasoline, fuel oils and lubricants, as well as some solvents, were found in 67 percent of urban wells but concentrations generally were well within the range considered safe for drinking water.

Copies of the USGS report, "Water Quality in the Mobile River Basin, Alabama, Georgia, Mississippi, and Tennessee, 1999-2001" published as USGS Circular 1231, are available free of charge by writing the USGS Branch of Information Services, Box 25286, Denver Federal Center, Denver, CO 80225 (or by calling 1-888-ASK-USGS). The report also can be accessed on the World Wide Web at http://water.usgs.gov/nawqa/nawqa_sumr.html.

The USGS assessment is part of a national program, currently releasing results on surface and ground water in 14 additional major river basins or aquifer systems. Findings of regional and national interest are highlighted in a separate report "Water Quality in the Nation's Streams and Aquifers—Overview of Selected Findings, 1991-2001." Check the status and availability of the individual basin reports on the NAWQA website, as well as accessibility to other publications and national data sets and maps.

The USGS serves the nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.