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## News Release

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U.S. Geological Survey

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## Low Concentrations of Contaminants in South-Central Texas Waters, USGS Report Shows

Organic chemicals—pesticides, solvents, gasoline compounds, refrigerants, and fumigants—are in aquifers and streams in the greater San Antonio region, but concentrations are low and well below any level of concern for human health, according to the results of a 5-year investigation of water quality by the U.S. Geological Survey.

“The chemicals are there, but the good news is that their concentrations are really small, parts per billion—about like an aspirin dissolved in an olympic pool,” said Ann Ardis, USGS hydrologist and ground-water specialist on the study. “We detected more contaminants than were found in previous studies that I am aware of, but that may reflect enhanced laboratory detection methods rather than a recent increase in contamination,” Ardis added.

The findings of the study, many of which are consistent with findings of concurrent USGS water-quality studies across the country, focus on the Edwards and Trinity aquifers and some of the streams that provide natural recharge to the Edwards aquifer in the San Antonio region. Although the findings in south-central Texas do not imply any current health risk, they are an early warning that human activities are having an effect on regional ground- and surface-water quality.

For example, pesticides and other organic chemicals in the Edwards aquifer were detected most frequently in wells in urbanized parts of the recharge zone—not surprising, according to Ardis, because “the limestone in the recharge zone is so porous that surface water carrying contaminants can easily enter the ground-water-flow system.” Detections were less frequent in Edwards aquifer wells in undeveloped parts of the recharge zone, and also in wells outside the recharge zone, where the aquifer is buried under rocks that restrict the downward movement of water and contaminants.

The findings indicate that urbanization affects stream-water quality more than agriculture in the region. More pesticides and other organic chemicals at generally higher concentrations were found in urban stream water than in agricultural stream water. In some (mostly urban) stream samples, concentrations of each of six pesticides (the herbicide tebuthiuron had the highest concentration) and one organic chemical (chloroform) were higher than Canadian guidelines for the protection of aquatic life. No U.S. guidelines

for the protection of aquatic life have been established. The potential risk to aquatic life can only be partially addressed, however, because many of the contaminants lack guidelines.

Fish and stream-sediment samples also showed effects of urbanization. The number of pesticides detected and their concentrations were higher in urban fish and stream-sediment samples than in agricultural or rangeland fish and stream-sediment samples.

The findings also suggest a correlation between the quality of recently recharged urban ground water and the quality of urban stream water. Four of the five most frequently detected pesticides in water from urban recharge-zone wells in the Edwards aquifer—the herbicides atrazine, deethylatrazine, simazine, and prometon—are the same as four of the five most frequently detected pesticides in surface water at urban stream sites in the San Antonio region. Those four pesticides also are the most frequently detected by the USGS in shallow ground water in urban areas nationwide.

Fewer organic chemicals were found in the Trinity aquifer, which supplies most of the water to wells in the Hill Country north of San Antonio, than in the Edwards aquifer. Water that could contain contaminants does not recharge the Trinity aquifer as readily as the Edwards aquifer, and little development overlies the Trinity aquifer.

The study that produced the report, which is continuing so that water-quality trends can be monitored, is one of more than 50 such projects being done by the USGS nationwide. In 1991, the USGS began its National Water-Quality Assessment (NAWQA) Program to assess the condition of the nation's streams and aquifers and learn how the conditions are changing over time.

Copies of the 32-page report, "Water Quality in South-Central Texas, 1996-98," published as USGS Circular 1212, are available free of charge from the USGS Branch of Information Services, Box 25286, Denver Federal Center, Denver, CO 80225, 303-202-4700 (fax request to 303-202-4693). The circular can be viewed on the World Wide Web at <http://water.usgs.gov/pubs/nawqasum/>.

As the nation's largest water, earth and biological science and civilian mapping agency, the USGS works in cooperation with more than 2,000 organizations across the country to provide reliable, impartial scientific information to resource managers, planners, and other customers. This information is gathered in every state by USGS scientists to minimize the loss of life and property from natural disasters, to contribute to the conservation and sound economic and physical development of the nation's natural resources, and to enhance the quality of life by monitoring water, biological, energy, and mineral resources.

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