

# WATER BULLETIN

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## Drugs in Drinking Water

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A class of water contaminants has been receiving more attention in recent years. Researchers have detected very low concentrations of pharmaceutical drugs given to people and domestic animals everywhere they have looked such as rural mountain lakes, rivers flowing through densely populated areas, and municipal drinking water. Antibiotics, antiseptics, hormones, chemotherapy chemicals and more have been found in concentrations that are generally barely detectable. However they do resemble concentrations of other, more conventional pollutants found in the environment. Therefore the presence of pharmaceuticals in surface and ground water is an emerging water-quality issue because of the potential for deleterious effects on humans, other animals and ecosystems.

The first study which detected drugs in sewage occurred at the Big Blue River sewage treatment plant in Kansas City in 1976. However the problem was ignored. Then in 1992, German researchers in Switzerland were screening lake water for the herbicide mecoprop when they found a compound they could not identify. Eventually they determined the compound to be clofibrac acid, a widely used cholesterol-lowering drug which is not even manufactured in Switzerland. The researchers concluded in the Jan 1., 1998 Environmental Science and Technology that the only reasonable explanation is that the clofibrac acid comes from human wastes.

The research on drugs in water gained momentum and scientists discovered that clofibrac acid was just the tip of the iceberg. No one yet knows how to gauge the potential toxicity of chronic exposure to low doses of such compounds. The body's ability to break down any medicine it uses varies by individual and by drug.

A significant percentage of the administered drug may be excreted from the body in its original or its biologically active form. Some researchers also report that partially degraded drugs can convert back to their active form through chemical reactions with the environment.

As a result of the European work, U.S. researchers are now paying more attention to drugs in the environment. For example, the National Ground Water Association held an Emerging Issues conference this past spring which focused on drugs in water. The United States Geological Service is developing a method to identify and quantify agricultural and human health pharmaceuticals isolated from surface and ground water. The U.S. Environmental Protection Agency acknowledges that this topic warrants more scientific research.

Prior to July, 1997, drug manufacturers were required to model a new drug's projected concentration in public water supplies for review by the Food and Drug Association (FDA). If such an environmental assessment were to suggest worrisome levels of a drug, a manufacturer would have to prepare a more detailed investigation. In 1997, the FDA reduced a manufacturer's environmental reporting requirements because environmental assessments for a new drug were seldom suggesting hazards. Currently regulatory agencies are doing little, if anything, to assess the extent that drugs are present in your drinking water.

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