

Pharmaceuticals passing unaltered from humans into nation's waterways

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WASHINGTON -- Over the last two years, scientists working on the Potomac River have netted 111 smallmouth bass with bizarre sexual traits. The fish were males but had eggs growing inside their testes.

Researchers found many of these gender-bending bass downstream from sewage treatment plants in water tinged with a chemical called ethinylestradiol -- the active ingredient in birth control pills.

More studies are necessary, biologists say, but evidence is mounting that trace levels of prescription drugs in rivers and streams may be harming fish, tadpoles, frogs, mussels and oysters. The pharmaceuticals are passing unaltered through people's bodies and sewage plants into waterways.

In Georgia and Mississippi, scientists recently discovered that the antidepressant Prozac, in water downstream from sewage plants, can kill tadpoles, stunt the growth of others and befuddle the survivors so they swim in circles and can't flee from predators.

In Pennsylvania, a biologist reported that small amounts of Prozac may cause mussels and clams to discharge their sperm and eggs prematurely, dooming their offspring. And in Texas, a researcher found that the sexual organs of male minnows shrank when they were lowered into a river tainted with birth control drugs.

"We might just be seeing the tip of the iceberg in terms of the cumulative impact of all this," said Dr. Thomas Burke, associate chairman of health policy at the Johns Hopkins School of Public Health.

He said concerns about pharmaceutical pollution are likely to become more urgent as a growing human population consumes a multiplying number of medications.

"This is an important area we have to study more," Burke said.

The U.S. Environmental Protection Agency is working with other federal offices to investigate whether the government should require better sewage filtration systems to remove drugs before water is discharged, according to the agency.

Pharmaceuticals are not regulated as pollutants, and most sewage plants are not designed to break them all down.

One stumbling block to adding better filtration systems is the cost, which could reach \$100 million to install advanced technology on each large sewage treatment plant, said Shane Snyder, research manager at the Southern Nevada Water Authority.

"The water industry has no problem spending the public's money to put in new [filter] technology," Snyder said. "But the cost might mean that fewer schools can be built or fewer hospitals."

Vicki Blazer, a fish pathologist with the U.S. Geological Survey, began investigating smallmouth bass in the Potomac River a few years ago when fishermen reported their catch was falling.

She worked with natural resources officials in Maryland and West Virginia, who used devices that fired electric shocks into the Potomac River to stun hundreds of fish in 2003 and 2004.

Blazer said she dissected 184 male bass, and found that 111 of them -- or about 60 percent -- had eggs growing inside their sexual organs. All nine male bass netted downstream from the Hagerstown sewage plant had this sexual abnormality. Fish like these almost never show up in clean rivers, she said.

Blazer is looking into the possibility that the birth control drugs caused the sexual confusion. She also found several other pollutants in the river, including triclosan, a disinfectant used in soap, and trifluralin, a farm pesticide. Any of these chemicals could be disrupting fish hormonal systems, she said.

In an effort to pin down which is causing the mutations, Blazer's colleagues have shocked an additional 100 fish during the last month at five places along the lower Potomac River in Maryland, including downstream from the Blue Plains sewage treatment plant near Washington.

The study is important, Blazer said, because fish with deformed sex organs might not reproduce as well. People also draw drinking water from the Potomac, and the same chemicals that could be harming fish populations might also be affecting humans, she said.