

This is Your River on Drugs



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Trouble is brewing in the Potomac River. The fish in the river may look normal at first glance, but many of the Potomac's male bass are producing eggs, and similar "intersex" fish are being found in rivers across the country. While scientists have yet to pinpoint the cause of this gender-defying mutation, it's thought that a group of compounds known as endocrine disruptors are responsible. These chemicals affect key biological processes regulated by hormones, such as growth, development and reproduction, and include common medications including birth control pills. What-

ever the cause, it's unknown what effects these compounds are having on us when we drink or swim in the same waters.

Like the canary in the coal mine, the story of intersex fish may be an early warning of the effects that pharmaceuticals are having on the health of our waterways and on the people and organisms that depend on them. There are myriad pollutants in our waterways, but pharmaceuticals are particularly worrying for a few reasons: they are designed to alter biological processes, the effects of chronic environmental exposure are poorly understood,

and more and more drugs are being consumed and excreted or disposed every year.

Already, thousands of tons of pharmaceuticals are used across the globe, and Americans alone fill more than three billion prescriptions a year. Many of them end up in lakes, rivers and coastal waters via waste disposal. Up to 90 percent of a drug is unchanged and still active when it leaves a patient's body. The compounds are flushed down the toilet and transported to a sewage treatment plant. Because most plants do not remove pharmaceutical compounds in their treatment process, active

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chemicals are then discharged into local waterways. Nursing homes, hospitals and consumers also flush unused drugs down the toilet, where they follow the same path to local waters.

As a result, our waterways are becoming a soup of hormones, antibiotics, painkillers and other drugs. Recent studies have found pharmaceuticals in waterways across the country, even in remote areas. Although the concentration of most drugs in our waters is low, well below the dosage prescribed by doctors, there is much uncertainty surrounding the effects pharmaceuticals are having on ecosystems and human health. The Potomac's intersex bass show that low levels of hormones can have large impacts on the health of aquatic organisms. Even more alarming is evidence that antibiotics in sewage are creating antibiotic-resistant bacteria. This is one of the foremost global health concerns, as it could turn once-curable diseases into dangerous killers. Other pharmaceuticals such as antidepressants have been found to disrupt development and spawning behavior in aquatic organisms and could be having a far greater impact than we know.

People can come in contact with drug-contaminated water through swimming and drinking, and little is known about how chronic, low-level exposure to pharmaceuticals affects human health. Many scientists believe that the combination of drugs found in many waterways could create serious health problems. Hormones in the environment have been linked to reduced sperm count and the development of breasts in men. Current research promises to shed more light on these questions, but much uncertainty remains.

Stopping pharmaceuticals from polluting our wa-



terways is a difficult task. The surest solution is advanced sewage treatment techniques such as reverse osmosis which eliminate almost all pharmaceutical compounds. But the costs of updating treatment plants to this level would be high, and given the funding deficits for meeting current standards, imposing new requirements is unlikely in the short term. American Rivers' Healthy Waters Initiative is nonetheless working to highlight health threats from

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sewage and increase funding for wastewater infrastructure to improve treatment. In the near term, there

should be standards for disposing of unused medications so that they aren't unnecessarily sent down the drain. It is also important to continue to research the effects pharmaceuticals have on ecosystems and human health. The Healthy Waters Initiative supports the completion of EPA's Endocrine Disruptor Research Initiative, which was supposed to have had a comprehensive screening process in place by 1999 but has produced few results. Only when such research is completed will we know how great a risk we are facing and how we can best respond. In the meantime, keep an eye on the fish you catch.