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# The Examiner

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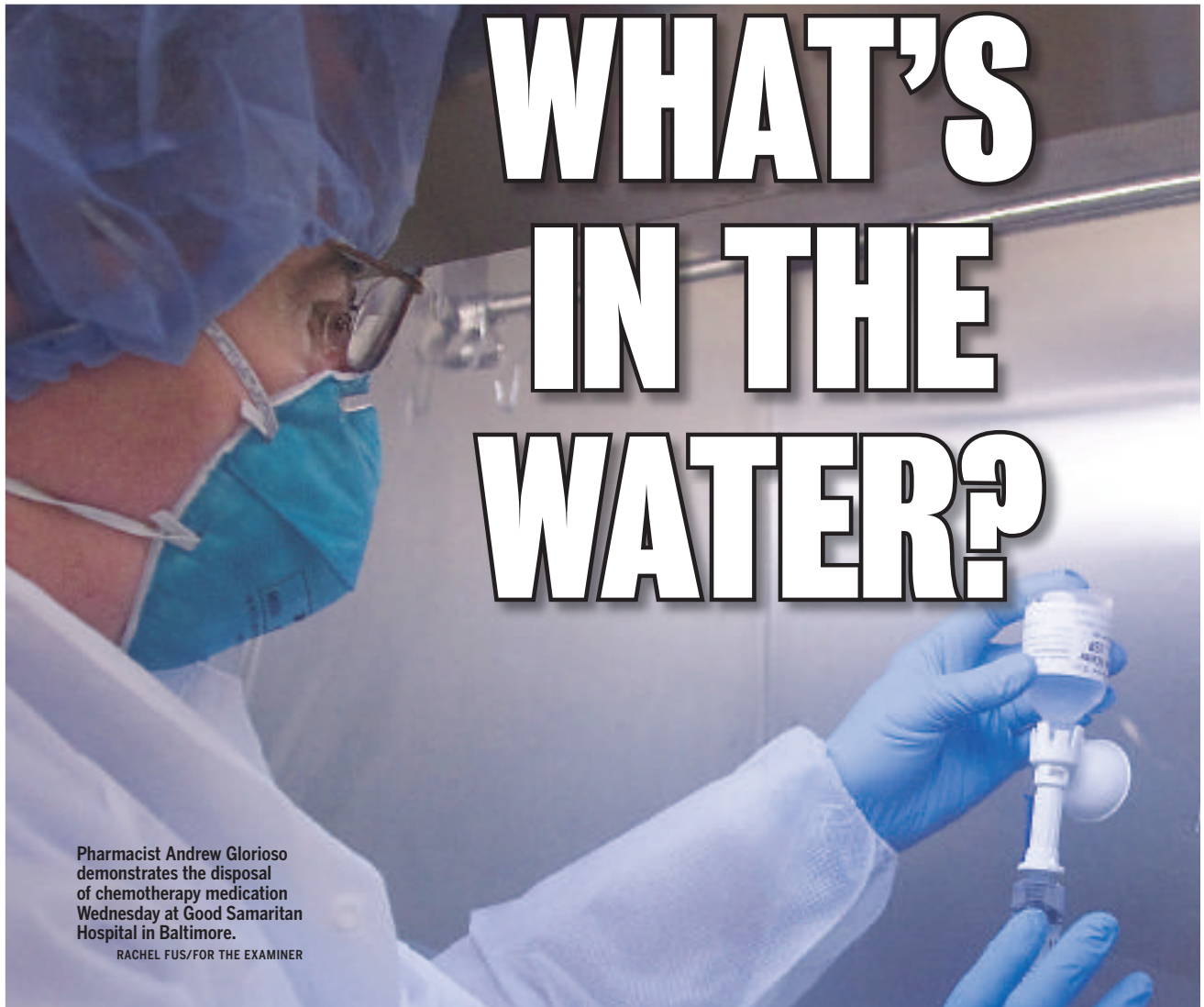
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Mixed-use project planned near Hopkins. **PAGE 24**



# WHAT'S IN THE WATER?

Pharmacist Andrew Glorioso demonstrates the disposal of chemotherapy medication Wednesday at Good Samaritan Hospital in Baltimore.

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**Research lags on effect of drugs **PAGE 5****



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# Researchers, regulators eyeing pharmaceuticals in the water

By Sara Michael  
Examiner Staff Writer

Medications meant to cure headaches or prevent pregnancy are being flushed down toilets or washed down sinks, making their way into the water supply, but little is known about how the low levels of pharmaceuticals can affect aquatic life or public health.

"We don't have a body of science that says it is in the public's best interest to remove these ultratrace amounts as opposed to spending [the money] elsewhere," said Greg Allen, a U.S. Environmental Protection Agency environmental scientist at the Chesapeake Bay Program, a regional restoration organization.

Efforts to clean up the Chesapeake Bay have centered on removing nitrogen and phosphorus — the two major culprits from agricultural and urban runoff.

Researchers and federal regulators are increasingly turning their sites on the invisible chemicals from pharmaceuticals, such as hormones, and personal care products such as antibacterial soap, and how to dispose of or regulate them.

## Missing regulations

No federal regulations for pharmaceuticals in surface or drinking water exist, said Suzanne Rudzinski, deputy director of the Office of Science and Technology in the EPA's Office of Water.

"EPA is conducting several studies [on] when pharmaceuticals occur in the water and how to best remove them from wastewater and drinking water," she said.

For example, the EPA is studying the disposal of unused medications from health care institutions and is surveying the practices of a national sample of hospitals, long-term-care facilities and veterinary hospitals for potential regulatory action.

In February 2007, federal officials changed their stance on flushing unused pharmaceuticals, saying people should only do so if the accompanying patient information deems it OK, Rudzinski said.

The disposal of unused narcotics is governed by the Controlled Substances Act, and hazardous pharmaceutical waste — which



Drugs are counted at Good Samaritan Hospital in Baltimore City. Little information is available on the effect of the chemicals in drugs on the water supply. Researchers and federal regulators are increasingly focusing on how to dispose of the chemicals safely.

accounts for about 5 percent of pharmaceutical waste — is disposed of based on guidelines in the Resource Conservation and Recovery Act, Rudzinski said.

But the hundreds of other chemicals found in over-the-counter or prescription drugs and personal care products aren't regulated.

The EPA has identified 287 pharmaceuticals that "may be of concern in drinking water," said Kim Lamphier, spokeswoman for the Maryland Department of the Environment, which regulates public water supplies.

## Intersex fish found

As to which pharmaceuticals are in the water, "nobody knows for sure," said Ed Merrifield, executive director of advocacy group Potomac Riverkeeper.

Intersex fish — those with male and female characteristics — have been found in the Potomac, a finding some scientists say may be linked to drugs and hormones.

Even small amounts found in some tests are "a bad thing," Merrifield said.

"Now, we are just gambling with our health," he said.

The issue of pharmaceuticals in the water is "really just emerging now," said Allen, the Chesapeake Bay Program scientist.

Scientists have developed

increasingly sensitive tests that detect low levels of pollutants, he said.

A U.S. Geological Survey study in the Shenandoah and James river basins in Virginia this spring sought to identify chemicals that may have caused intersex fish, external lesions on the fish or death.

Scientists detected low levels of chemicals, including prescription pharmaceuticals, caffeine and hormones.

"Increasingly, environmental scientists are acknowledging that in addition to contaminants of historic concern, emerging contaminants, including pharmaceuticals, new-generation pesticides, personal care products and natural and synthetic hormones are potential sources of adverse effects," the study states.

Geological survey spokeswoman A.B. Wade said results from research and sampling done in the Baltimore area are not yet available.

## Contaminants linger for decades

Rolf Halden, an adjunct associate professor at the Johns Hopkins Bloomberg School of Public Health and associate professor at Arizona State University, has studied the contaminants trilocarban and triclosan, found in antibacterial soap,

in the Chesapeake Bay and Jamaica Bay in New York.

Halden's team found trace amounts of these contaminants, shown to disrupt some ecological processes, dating back about 50 years in the waters around the Back River wastewater treatment plant in Baltimore County.

"They didn't break down, and they were discharged and settled, and they are still there," he said.

However, because research is scant, pharmaceuticals don't get the same attention as nitrogen and phosphorus, nutrients choking the Bay's rivers and streams.

"We know where [the nutrients] come from and what they do and how to get rid of them," said Jenn Aiosa, senior scientist in the Chesapeake Bay Foundation's Maryland office.

Most experts and advocates say people don't need to panic about the levels of pharmaceuticals in the water.

"It's not a crisis, but we do want to know more about the effects of these low levels," Allen said.

Rather than be scared, Halden said, people should think about what they put in the water.

"We have to be careful."

Go to this story on [baltimoreexaminer.com](http://baltimoreexaminer.com) for links to more information on this topic.

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## Discarding drugs

How to dispose of prescription drugs

- » Take unused or expired medications out of their original containers.
- » Mix the drugs with used coffee grounds or kitty litter and put them in a nondescript container to ensure they are not ingested by children or pets.
- » Throw this in the trash.
- » Flush medications only if the patient information says it's safe to do so.

Source: U.S. Office of National Drug Control Police

## THE 3-MINUTE INTERVIEW

### Rolf Halden

Rolf Halden, an adjunct associate professor at the Johns Hopkins Bloomberg School of Public Health and associate professor at Arizona State University, has done extensive research into contaminants in drinking water. He spoke with The Examiner about pharmaceuticals and personal care products, such as cosmetics and vitamins, in the environment.



**What do we know about the low levels of pharmaceuticals found in water?** We are now beginning to appreciate the presence of pharmaceuticals and residues of personal care products in the environment. In the past 10 years, great strides have been made.

We are becoming cognizant now that these products enter the environment and in some instances don't degrade.

What is lacking is a more complete understanding of the ramifications of these detections.

We already know some pharmaceuticals and personal care products have hormonal functions, and these are the chemicals that have great concern.

It's difficult to pinpoint.

It's not easy to determine which chemical is responsible.

But the science is fairly young.

There is much to be learned.

**So we haven't had the right tests to detect pharmaceuticals?** We just became aware of the presence of the chemicals, because we developed the analytical tools to detect these amounts.

**What are the health effects of the contamination?** You have to take a look at whether people drink this water and if it's treated to remove chemicals.

In a lot of instances, we have effective treatments of these chemicals.

What seems more important is the effect of the knowledge that people drink water that is recycled.

The truth is there is no virgin water.

Everything is recycled.

The water has been many places.

That is a reality.

The message should be not to scare people but to make them consider how they use water and stop thinking about it as wastewater. — Sara Michael

# MedStar tackles uniform disposal of drugs systemwide

By Sara Michael  
Examiner Staff Writer

Officials in the MedStar Health system's eight Baltimore/Washington-area hospitals are crafting a systemwide program to ensure the proper disposal of thousands of pharmaceuticals, from antibiotics to chemotherapy drugs.

"Each hospital has been trying to manage the pharmaceuticals independently," said Jerry Adams, MedStar's director of environmental and safety compliance.

The organization will have a

company assess the list of pharmaceuticals to determine which are regulated, hazardous and so-called "gray pharmaceuticals," unregulated ones that could still be toxic. Officials are finalizing the contractor selection, and a program is expected to be in place by the end of the year.

The U.S. Environmental Protection Agency has started studying the disposal of pharmaceuticals in several hospitals and health care facilities, surveying their disposal methods to inform possible uniform regulations.

Pharmaceuticals that haven't expired can be returned to the dis-

tributor, but mostly, the drugs are incinerated, Adams said.

"Because of the complexity of the chemical compounds, incineration is the best way to destroy them," he said, adding the residual ash is put in lined landfills.

Adams said he would prefer to find other ways to dispose of the pharmaceuticals, but incineration is the common practice and the easiest way to ensure they are destroyed.

At MedStar's Good Samaritan Hospital in Baltimore, pharmacist Andrew Glorioso recently donned a cap, booties, gloves and a fiber-free

gown before demonstrating how to dispose of chemotherapy drugs.

He removed the medications in a negative-pressure room, sealed them in a plastic bag and dropped them in a yellow bin.

Proper disposal prevents the pharmaceuticals from getting into the drinking water, Adams said.

"Hopefully we will see end results and see the levels [of pharmaceuticals in the water] are going down," he said.

For more on this story, visit [baltimoreexaminer.com](http://baltimoreexaminer.com).

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