

# PROTECT Westchester's Water

2012



## Prevent Improper Disposal of Pharmaceuticals

### WESTCHESTER WATER SUPPLY

Westchester County is in a water-rich area, surrounded by the Hudson River and Long Island Sound which provide economic and recreational opportunities for residents. There are six major watershed areas surrounding Westchester: Peekskill & Haverstraw Bay, Croton River, Pocantico & Saw Mill River, Inland Long Island Sound, Bronx River, and Coastal Long Island Sound.

### PHARMACEUTICAL CONTAMINATION

Throughout the nation, waterways have been testing positive for trace amounts pharmaceutical contaminants, with an estimated 41 million Americans drinking water from a source containing trace amounts of pharmaceutical compounds. In 2002, the United States Geological Survey (USGS) found trace amounts of antibiotics, hormones, contraceptives and steroids in 80% of the water they tested.

The primary pathways that pharmaceuticals enter waterways are through human waste and through the direct flushing of unwanted or unused pharmaceuticals. For decades, it was the position of the U.S. Environmental Protection Agency (EPA) and NYS Department of Conservation (DEC) to dispose of unwanted pharmaceuticals by flushing them. Sewage, storm water, and drinking water infrastructure were never equipped to handle pharmaceutical waste and chemicals ended up in trace amounts in local drinking water supplies, including in Long Island groundwater. *Flushing is no longer the recommended means of disposal, yet many individuals and institutions continue this practice.*<sup>i</sup>

## CITIZENS CAMPAIGN



FOR THE ENVIRONMENT

## WESTCHESTER DRINKING WATER

In 2009, the Department of State (DOS) released a report on contamination from pharmaceuticals and personal care products in the New York City water supply system, sampling the Croton, Delaware, and Catskill Systems. The study reported trace amounts of common pharmaceuticals and personal care products in all three reservoirs. In each case, the contamination was below the Environmental Protection Agency (EPA) and New York State standards for contamination. However, no study has been done on the effects of long-term exposure to multiple pharmaceuticals, particularly on small children and fetuses.

In 2010, Governor Cuomo initiated an investigation which found 5 nursing homes and long-term care facilities near the New York City Source Supply reservoirs to be illegally dumping thousands of pounds of pharmaceuticals into the water supply. Cases like this, in addition to the thousands of cases of homeowners flushing drugs due to lack of education or safe-disposal programs, seriously impair the quality of Westchester drinking water and negatively impact the health of residents.

## PHARMACEUTICAL CONTAMINATION AND WESTCHESTER RECREATIONAL WATERS

Both the Long Island Sound and the Hudson River Estuary provide recreational areas for swimming, fishing, and boating for Westchester residents and contribute to the economic vitality of the region. In the Long Island Sound, which provides \$8.5 billion annually for the local economy in tourism and recreation, there have been increasing occurrences of emerging contaminants such as pharmaceuticals. According to the 2009 Long Island Sound Study, pharmaceutical pollution has been threatening fish populations, as estrogen and endocrine disruptors from wastewater are leading the feminization of male fish. In the Hudson River Estuary, which provides \$4.7 billion annually in fishing and tourism, pharmaceutical contamination near wastewater sites is also negatively impacting fish populations and impairing water quality.

## DETECTED PHARMACEUTICAL & PERSONAL CARE PRODUCT COMPOUNDS IN SOURCE WATER OF THE NEW YORK CITY WATER SUPPLY

Compound	Type of Compound
Acetaminophen	antipyretic, nonprescription drug
Butalbital	barbiturate, pain reliever, prescription drug
Caffeine	Stimulant
Carbamazepine	anticonvulsant, prescription drug
cis-Testosterone	reproductive hormone
Cotinine	nicotine metabolite
DEET	insect repellent
Diazepam	antianxiety/insomnia, prescription drug
Estrone	reproductive hormone
Gemfibrozil	antihyperlipidemic, prescription drug
Ibuprofen	anti-inflammatory, nonprescription drug
Lasalocid	Antibiotic
Nicotine	stimulant, alkaloid
Paraxanthine	stimulant, caffeine metabolite
Progesterone	reproductive hormone
Sulfamethoxazole	Antibiotic

## IMPACTS ON HUMAN HEALTH



- Antibiotic resistant bacteria have been found near hospitals, pharmaceutical manufacturers, and fish farms, where antibiotics are used and discharged at higher rates. There is a risk of microbial antibiotic resistance when people are constantly exposed to low levels of antibiotics on a consistent basis.



- Synthetic steroids, such as estrogens, are known endocrine disruptors. Trace amounts of these compounds are known to cause feminization, reproductive problems, and hormone system disruption in fish. There is no evidence yet as to whether these compounds cause disruption to humans during developmental stages.
- Psychotropic drugs, such as antidepressants and anticonvulsants, have been found in wastewater and receiving waterways. One anticonvulsant, carbamazepine, does not degrade naturally and was found in Westchester drinking water sources.



## PROPER DISPOSAL OF PHARMACEUTICALS

The DEC and EPA classify unused and unwanted pharmaceuticals as hazardous waste, and therefore recommend that they are incinerated<sup>v</sup>. However, currently, no New York State or federal law prevents pharmaceutical disposal through flushing or disposal at a solid waste landfill. The state and federal guidelines are specifically aimed at pharmaceutical manufacturers, hospitals, and pharmacies, which handle and dispose of large amounts of pharmaceuticals. Yet, no educational component has been established to increase awareness to these key pharmaceutical distributors. A 2010 USGS study found that wastewater treatment plants in New York that accept waste from institutions handling large quantities of pharmaceuticals had effluent with pharmaceutical levels 10-1000 times higher than the national average<sup>vi</sup>. This effluent ends up in surrounding waterways, negatively impacting aquatic and human health. Because of the impact these institutions can have on pharmaceutical contamination of groundwater, Suffolk County passed a resolution in 2011 requiring hospitals, hospices, long term care facilities and nursing homes to file a safe disposal plan with the county each year. Educating and regulating facilities that handle and dispose of large amounts of pharmaceuticals can significantly decrease the amount of drugs that end in drinking water and nearby surface waters.



# RESIDENTIAL DRUG TAKE-BACK PROGRAMS

One action municipalities and individuals can take to decrease pharmaceutical contamination in groundwater is participate in free take-back programs. Because pharmaceuticals are considered hazardous waste and many are controlled substances, there are regulations in place which prevent ordinary citizens from disposing of their own pharmaceuticals. Because of this, in 2008 Westchester set up a successful residential take back program.

## Collection Rates in Westchester Take-Back Program:

- 2008 –3,593 pounds; 8 events; 963 households
- 2009 –4,433 pounds; 12 events; 1,528 households
- 2010 –9,838 pounds; 8 events; 1,663 households

These take-back programs, which were previously hindered by federal drug enforcement and hazardous waste disposal laws, have been becoming more prevalent. Since The Secure and Responsible Drug Disposal Act of 2010, federal regulations on take-back programs have been eased, differentiating between illicit drugs and prescription drugs and allowing patients to bring medications to their health care facilities for proper disposal. Residential drug take-back programs like the one in Westchester County, are an effective way to raise awareness about pharmaceutical waste and prevent unused and unwanted medications from ending up in drinking water sources.

For more information on drug take-back programs in your area contact your local officials or visit:

<http://www.dec.ny.gov/chemical/63826.html>  
<http://www.citizenscampaign.org/campaigns/pharmaceutical-disposal.asp>

- Westchester County Planning. Watershed Protection. <http://planning.westchestergov.com/environment/watershed-protection?task=view>
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- Phillips PJ, et al. Pharmaceutical Formulation Facilities as Sources of Opioids and Other Pharmaceuticals to Wastewater Treatment Plant Effluents. Environ Sci Technol. 2010;44(13):4910–4916.
- Westchester County's "Take Back the Medication" Program. <http://www.westchestergov.com/parks/NatureCenters05/ConservationCafe/WCDEFMedicationTakebackProgram.pdf>

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