

# Protect Long Island Drinking Water

2012



## Prevent Improper Disposal of Pharmaceuticals

Long Island is a sole-source aquifer region, which means residents rely on groundwater for 100% of our drinking water. A thriving aquifer system is vital to maintaining Long Islanders' quality of life. Contamination of the groundwater from improper pharmaceutical disposal negatively impacts public health and the environment.

### Pharmaceutical Disposal

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>1</sup>*

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## SUFFOLK COUNTY

In 2002, USGS and US Department of the Interior partnered with the Suffolk County Water Authority to complete a study on Suffolk County groundwater. They found low, but measurable amounts of pharmaceutically active compounds (PhACs) in the shallow groundwater areas of Suffolk County. Of 70 samples collected from 61 wells in the upper glacial and Magothy aquifers, 28 samples contained at least one PhAC compound. The most common were carbamazepine, an antiepileptic drug, and sulfamethoxazole, a commonly used antibiotic. Samples also contained acetaminophen, caffeine, codeine, cotinine, and gemfibrozil. The presence of these compounds proves that PhACs and other trace chemicals can enter groundwater after going through the wastewater treatment process.<sup>ii</sup>



## JAMAICA BAY

A study of the effects of treated sewage effluent on marine life in Jamaica Bay beginning in 2002 found a direct correlation between trace amounts of pharmaceuticals and feminization of nearby winter flounder populations. There was a 10:1 ratio of female to male flounder and delays in embryonic development in the fish exposed to the sediment in the bay. The researchers suggest that estrogen-mimicking compounds in the water, which can come from pharmaceuticals, could have caused these impacts on the fish population.<sup>iii</sup>



## Pharmaceuticals in New York Wastewater Include:

Cholesterol Medication  
Birth Control  
Antibiotics  
Antidepressants  
Pain Killers

## 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 in higher concentrations than other psychotropic drugs in Long Island groundwater.



## 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 up Long Island groundwater.



## 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 that prevent ordinary citizens from disposing of their own pharmaceuticals. Therefore, Suffolk, Rockland, and Monroe Counties have established regular take-back programs where residents can bring in unused or expired pharmaceuticals at permanent locations. Several other counties have conducted periodic take-back events where residents can bring in unused medications on specific days.

Suffolk is the first county in New York to set up a permanent collection program. *Operation Medicine Cabinet* allows residents to drop off unwanted medications at drop boxes in any Suffolk County police precinct, 24 hours a day, 7 days a week. In the first four months, 800 pounds of drugs were collected and incinerated. These take-back programs, which were previously hindered by federal drug enforcement and hazardous waste disposal laws, have been becoming more prevalent. Since the passage of 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 Suffolk County are an effective way to raise awareness about pharmaceutical waste and prevent unused and unwanted medications from ending up in Long Island's 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>

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