Frequently Asked Questions: 1,4-dioxane

What is 1,4-dioxane?

1,4-dioxane is a synthetic chemical historically used as a stabilizer for industrial solvents, predominantly 1,1,1-trichloroethane (TCA). Apart from the widespread use as a solvent stabilizer from the 1950s through the 1990s, it is used in small concentrations in a variety of applications, such as inks, adhesives and pharmaceuticals. According to the US Environmental Protection Agency (EPA), “traces of 1,4-dioxane may be present in some food supplements, food containing residues from packaging adhesives, or on food crops treated with pesticides that contain 1,4-dioxane” as well as “in some consumer products (deodorants, shampoos and cosmetics).”

How does 1,4-dioxane get into the drinking water?

- Just like other water suppliers on Long Island, we rely on groundwater for drinking later supplies. 1,4-dioxane has reach groundwater aquifers primarily because of industrial manufacturing operations on Long Island that used the solvent TCA stabilized by 1,4-dioxane from the 1950s through the 1990s. Some manufacturers of TCA even instructed commercial users of its products to dispose wastes containing 1,4-dioxane in a way that makes contamination of the groundwater more likely.

- Once 1,4-dioxane reached the ground from routine spills or disposal straight to the soil, it could migrate to the groundwater and persist for many years. Additionally, if and when 1,4-dioxane is present in food products and packaging, or in household products (such as shampoo or cosmetics), it can contribute to ongoing and future contamination as it gets washed down the drain and seeps into the ground, eventually entering Long Island’s aquifer.

Is the water safe to drink?
We only deliver water to our customers that meets or surpasses federal, state and local standards.

What are you doing to remove 1,4-dioxane/PFAs from the water?
The Water Authority is taking every precaution necessary to test, monitor, and assess all of our water supplies for 1,4-dioxane and PFAs. If we find a well that does not meet all established standards, we will expeditiously take appropriate measures to reduce contaminant levels.

Isn’t the New York State Health Department considering stricter standards for 1,4-dioxane and PFAs?
Yes, the New York State Department of Health is responsible for setting safety standards for drinking water, and it is reviewing recommended standards for 1,4-dioxane and PFAs. If and when new standards are adopted, we will act quickly to comply with them.

Shouldn’t you be meeting the proposed standards now?
The New York State Health Department is still deciding what those standards will be for 1,4-dioxane and PFAs. We are already working closely with the health department, as well as engineers and equipment manufacturers, to ensure that the treatment processes and equipment needed to meet those standards are available and implemented as quickly and safely as practicable. The Water Authority has already completed a successful Pilot study for its well site located in New Hyde Park and the engineering report for that study has been submitted to the New York State Department of Health and is currently under review.

How long will it be before treatment systems for 1,4-dioxane will be in place?

- The processes for removing 1,4-dioxane are complex, expensive, and still being tested. Pilot studies undertaken by Long Island water providers have demonstrated that Advanced Oxidation Process (AOP) effectively removes 1,4-dioxane from drinking water. In addition, comprehensive testing and quality control measures are required for 1,4-dioxane removal because of by-products generated by the AOP.

- Despite the high cost to install AOP systems and its associated treatment costs we will make the investments needed to deliver water that meets the proposed new standard. This equipment is not readily available and we are working with scientists, engineers, health experts, and equipment manufacturers to ensure that the treatment processes and equipment needed to meet the new standard are available as quickly and safely as practicable.

What happens if you can’t meet the new standard? Are we expected to drink contaminated water because you can’t put a

treatment plan in place?
No – we will only deliver water to our customers that meets or surpasses all federal, state and local standards. If a source well doesn't meet those standards, we will expeditiously take appropriate measures to reduce contaminant levels. Right now, we are doing everything we can to ensure that treatment systems are developed, approved, tested and implemented as quickly as practicable. That includes taking the polluters who caused the contamination to court so that ultimately they – not our customers – pay for the millions of dollars in treatment costs.

Can it be filtered using a home filtration system? Is it in bottled water?
Regulations for 1,4-dioxane in bottled water (which are enforced by the FDA) have not been developed. Bottled water manufacturers may have specific information on 1,4-dioxane levels for their products. At present there are no home water treatment devices available for the removal of 1,4-dioxane.

What are the costs of treating 1,4-dioxane and PFAs?
Ensuring effective, ongoing treatment will likely cost tens of millions of dollars per well to pay for:

- Up front capital costs for new treatment and technology;

- Infrastructure and property costs;

- Monitoring and testing; and

- Operations, maintenance and periodic costs.

For example, removing 1,4-dioxane will cost an estimated $17 to $20 million per well over the next few decades. We believe these costs should be paid by the big industrial manufacturers who are responsible for the pollution – not by our customers.

Are there any health risks associated with 1,4-dioxane?

- The EPA has estimated the concentration of 1,4-dioxane in water corresponding to an increased lifetime cancer risk of one-in-a-million, assuming consumption of 2 liters of water per day every day for a lifetime of 70 years, which is 0.35 parts per billion. This health-protective criterion is often used as a non-regulatory benchmark for minimal risk.

- The Federal Consumer Product Safety Commission (FCPSC) continues to monitor for 1,4-dioxane in consumer products, and legislation has been proposed to regulate and restrict chemicals such as 1,4-dioxane. Many personal care product companies are beginning to voluntarily remove this chemical from their products.