



DRINKING WATER QUALITY

by Mariana Nicolae – GROW Commissioner

- **Drinking Water**

Drinking water or **potable** is water that is safe for ingestion, either when consumed directly in liquid form or consumed indirectly through food preparation. It is often (but not always) supplied through taps in which case it is also called tap water.

Typically in developed countries, tap water meets drinking water quality standards. Other typical uses for tap water include washing, toilets, and irrigation. Greywater may also be used for toilets or irrigation. Its use for irrigation however may be associated with risks¹.



In the United States, the United States Environmental Protection Agency (EPA) establishes standards as required by the **Safe Drinking Water Act, (SDWA)** which sets testing standards for drinking water in all states and localities.

As of 2019, EPA has issued 88 standards for microorganisms, chemicals, and radionuclides; this upcoming year a new standard is on the horizon regarding permanent plastic particles (PFOA/PFAS).

The SDWA does not apply to bottled water because bottled water is regulated by the Food and Drug Administration (FDA) under the Federal Food, Drug, and Cosmetic Act.

The FDA regulations for the bottled water follow in general the EPA regulations, however there is no legal requirement for data to be shared with an agency or public.

A recent study performed and published by Columbia University in January 2024 found 240,000 nanoparticles of permanent plastic in a 16 oz water bottle.²

Other sound standards and testing procedures are issued by National Sanitation Foundation International (NSF); the plumbing industry acts accordingly following these standards, by having the products certified as compliant.

This month we celebrate the World Water Day on March 22 and the theme of this year is Water for Peace.³

¹ [https://www.epa.gov/groundwater-protection/irrigation-water-quality](#)

² [https://www.columbia.edu/~c4123/2024-01-24-plastic-in-water-bottles/](#)

³ [https://www.un.org/en/observances/world-water-day/](#)

- **Water Sources in Chicagoland**

In Illinois, communities in Cook and DuPage counties get most of their water from Lake Michigan, while Kane, McHenry, Kendall, Will and western Lake counties get theirs from groundwater. Lake Michigan water enters the purification plant's intake basin through a tunnel beneath the lake bed at depths of 20 to 30 feet, then is filtered through eight traveling screens to catch debris followed by chemical treatments. Those chemicals are added in small amounts: one teaspoon per 100 gallons of water and they are controlled by Chicago Department of Water Management. Western suburbs – and among them Westchester, get the Lake Michigan water filtrated, treated and transferred from Jardine Water Purification plant located on 1000 E. Ohio in Chicago.

- **Quality Water Reports**

a. Chicago Department of Water Management issues quarterly reports on raw water collected from Lake Michigan and then treated for all major chemical and microbiological contaminants. Those reports are free to be viewed under Freedom of Information Act (FOIA) online.

b. Westchester Reports are also published for general information to the residents with results of the potable water tests results from water collected in multiple locations after necessary chemical adjustments. The water samples from Westchester are tested by certified labs and the results are published annually online and in the local newsletter that every household in the Village receives at no cost.

Three major contaminants regulated by EPA that are worth mentioning in this article: Lead, Chromium, and Forever Plastics.

c. Lead Issue

Lead is an element used for more than a hundred years in pipes and fixtures, however Lead leaches in the potable water and is affecting human health, especially children. The plumbing industry took the initiative in 2009 to reduce the Lead content under The Low Lead Law. This law determined that the fixtures cannot contain more than 0.25% Pb (Lead) on total wetted surface and the solder and flux used on those fixtures cannot exceed 0.2% Pb (Lead).

However, Lead can still enter into the drinking water when the plumbing materials would corrode, especially when the water has high acidity or low mineral content that corrodes pipes and fixtures. The most common sources of Lead in drinking water are Lead pipes, faucets, and fixtures. The Lead pipes that connect the home to the water main, also known as Lead services lines, are typically the most significant source of Lead in the potable water. EPA has set the maximum contaminant level goal for Lead in drinking water at 15 ppb because Lead is a toxic metal that can be harmful to human health even at low exposure levels. Lead can bioaccumulate in the body over time and young children, infants, and fetuses are particularly vulnerable because a much lower exposure levels have been linked to damage to the central and peripheral nervous system, learning disabilities, shorter stature, impaired hearing, and impaired formation and function of blood cells.

d. Hexavalent chromium issue

In April 2017, U.S. Steel, located near Gary IN illegally discharged 350 pounds of Chromium – containing almost 300 pounds of Hexavalent Chromium - highly toxic and carcinogenic chemical, into a small channel that was diverted into Lake Michigan. As a note, this chemical was the source of a large

distributed area with cancer patients and was described in the movie Erin Brockovich. This massive discharge in Lake Michigan shut down the beaches from Gary to Michigan City for six days, closed public drinking water intakes and endangered fish in Lake Michigan. The event was published in Chicago Tribune followed by a general outcry. The US Steel location is closed since 2019 and currently our potable water is free of Hexavalent Chromium.

e. Forever plastics issue

The latest issue that affects our drinkable water at the global level is the presence of forever plastics that are in microscopic quantities and are present everywhere, including food, meats, fish, and enter in our body on daily basis. PFAS are a diverse group of compounds, which are resistant to heat, water, and oil. These properties have made PFAS ideal for use in many industrial applications and consumer products, including grease and water-resistant food packaging, fire-fighting foams, carpeting, apparel, and upholstery. However, PFAS do not biodegrade – therefore bearing the name Forever Plastics, and are bio-accumulative, meaning they build up in the bloodstream and organic tissues, mainly in liver, kidney, and bloodstream. EPA is currently working on a standard for detection and limitation of forever chemicals present in potable water.

- **Good Practices**

1. A good practice for safe drinking water is to filtrate it through your refrigerator, equipped with a filter certified for NSF-53, that will retain Lead, Chromium, and other potentially harmful chemicals. Public schools already installed filters for potable water fountains that retain Lead, Chromium and several other chemicals.
2. Do not cook with hot water that comes to kitchen faucet from the water heater.
3. Never drink water from the bathroom faucet, especially if the faucet was installed before 2010, when the fixtures potentially contained up to 8% Lead. Kitchen faucets are certified for a different standard that is more stringent and chemicals would not leach into the water.
4. Never drink water in summer from the outside garden hose. The faucet may contain Lead and the garden hose will also leach chemicals especially when heated by the sun into the water.
5. When you come back from vacation, let the faucets run a good 3-4 minutes to get rid of the chemicals standing still in the pipes and inside the fixtures.
6. In case of a water interruption due to a village closure for emergency water repair, let the water run in all the faucets until it is clear, without any debris.

¹ Wikipedia: Drinking Water

² <https://www.pnas.org/doi/10.1073/pnas.2300582121>

³ <https://www.un.org/en/observances/water-day>

Note:

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