

# BALTIMORE CITY DEPARTMENT OF PUBLIC WORKS

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# 2022

## Water Quality Report



BALTIMORE CITY  
DEPARTMENT OF  
PUBLIC WORKS



# ABOUT THE REPORT

This report, covering Jan. 1, 2022, to Dec. 31, 2022, for the Baltimore City Department of Public Works (DPW) water system (PWSID#:MD0300002) contains data on the quality of Baltimore water, educational information and important public health notices and contacts. The information in this Annual Water Quality Report, also known as the Consumer Confidence Report, is being provided as required by the U.S. Environmental Protection Agency.

This is the 25th edition of the DPW Annual Water Quality Report and is available on the Department's website:

**[publicworks.baltimorecity.gov/waterreport](https://publicworks.baltimorecity.gov/waterreport)**.  
Printed copies of the report can be requested by calling 311 or (410) 396- 5352 for Baltimore County residents.

Questions about this report, drinking water quality and information on source water assessments should be directed to one of the City's Water Quality Laboratories:  
Montebello - 410-396-6040  
Ashburton - 410-396-0150.





# MESSAGE FROM THE DIRECTOR



I am excited to deliver the Baltimore City Department of Public Works (DPW) 2022 Water Quality Report.

DPW provides high-quality water to 1.8 million people throughout the Baltimore metropolitan area. As DPW strives to be a “best-in-class” utility, this report underscores our commitment to your safety as the region’s largest water provider.

This year, DPW improved its Customer Self-Service Payment Portal which allows near-real time access to your water consumption, billing and payment data, and account information. You can watch how your water usage varies by month, by day, or even the hour. You can also set alerts to learn about unusual water consumption, or send us a question. The more you know about your water consumption, the more you’ll be able to control it.

Recognizing access to water as a fundamental right has helped DPW establish our Water Advocacy & Customer Appeals Office and support our assistance programs. In alignment with “Equity in All We Do,” DPW connects residents to a number of programs through the City’s Affordability Portal. Programs include the City of Baltimore’s Water4All Program, the State of Maryland’s Low Income Household Water Assistance Program (LIWHAP), and PromisePay. The Affordability Portal quickly screens Baltimore City residents for eligibility and provides guidance on the application process.

The implementation of DPW equity programs is paying dividends back into our community and with our customers who need it most. In October 2022, we partnered with PromisePay to provide flexible payment plans to customers needing assistance. This year we are celebrating over \$2 million in Water4All discounts for water and sewer costs based on a percentage of residents’ income.

This report will:

- Educate you about our efforts to treat and protect our drinking water.
- Provide an update on projects to install underground tanks to hold treated drinking water.
- Include the most recent testing results, completed per the requirements of the Environmental Protection Agency’s (EPA) Water Testing Regulations.

I am hopeful that this report will help you understand more about DPW, our treatment processes, and your water.

In Service,

Jason W. Mitchell, Ed.D.  
Director, Department of Public Works

# TESTING FOR WATER QUALITY

To ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling EPA's Safe Drinking Water Hotline (1-800-426-4791).

**Microbiological Contaminants**, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural and livestock operations, and wildlife.

**Fluoride** is a mineral added to water to prevent tooth decay.

**Turbidity** is a measure of the cloudiness of the water. It is used to indicate water quality and filtration effectiveness (such as whether disease-causing organisms are present).

**Inorganic Contaminants**, such as salts and metals, can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

**Arsenic**, a gray, semi-metallic element that occurs naturally, can be found in certain types of rock and soil. Arsenic can also enter the environment through agricultural and industrial processes.

**Radioactive Contaminants** can be naturally-occurring, or the result of oil and gas production and mining activities.

**Chlorine** is added to water to control the growth of bacteria and viruses.

**Lead and Copper** enter drinking water primarily through plumbing materials. Exposure to lead and copper may cause health problems ranging from stomach distress to brain damage.

**Volatile Organic Chemicals** are byproducts of industrial processes and petroleum production. They come from gas stations, urban stormwater runoff, and septic systems.



# HOW TO READ THE WATER QUALITY TABLE

EPA establishes safe drinking water regulations that limit the number of contaminants in tap water. The table on pages 6 and 7 shows the concentrations of detected substances, in comparison to regulatory limits. Substances not detected are not included in the data table.

## Key Water Quality Terms

The following are definitions of key terms referring to standards and goals of water quality noted on the data table.

**MCL: Maximum Contaminant Level.** The highest level of a contaminant allowed by health regulations established by the Environmental Protection Agency.

**MCLG: Maximum Contaminant Level Goal.** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**AL: Action Level.** The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a system must follow.

**PPM: Parts per million;** (or 1 drop in 1 million gallons of water).

**PPB: Parts per billion;** (or 1 drop in 1 billion gallons of water).

**PPT: Parts per trillion;** (1 drop in 1 trillion gallons of water).

**HLD: Highest Level Detected** of a substance.

**NTU: Nephelometric Turbidity Units.** A unit of measurement is used to report the level of turbidity or “cloudiness” in the water.

**pCi/L: Picocuries per Liter.** A measure of the level of radioactivity in the water.

**Total COLIFORMS/ E. COLI Indicator bacteria:** this type of bacteriological test is routinely used to determine if contamination has occurred in a drinking water system.

**LRAA: Locational Running Annual Average (LRAA)** is calculated by averaging the results of all the samples collected at a single site within a quarter and then averaging the quarterly averages for the last four quarters at that same site.

**HAL: Health Advisory Level.** EPA establishes a non-regulatory human health-based level of protection from drinking water contaminants that are not regulated under the Safe Drinking Water Act.

# 2022 CCR REGULATED CONTAMINANTS TABLE

LEAD AND COPPER – Tested at customer’s taps. Testing is done every 3 years. 2021 was a compliance year for testing.								
Contaminant	EPA’s Action Level	Ideal Goal (EPA’s MCLG)	90% of Test Levels Were Less Than	# of Test with Levels Above EPA’s Action Level	Violation	Typical Sources		
Lead	90% of homes less than 15 ppb	0 ppb	3.53 ppb	0	No	Corrosion of household plumbing		
Copper	90% of homes less than 1,300 ppb	1,300 ppb	268 ppb	0	No	Corrosion of household plumbing		
INORGANIC CHEMICALS								
Contaminant	Highest Level Allowed (EPA’s MCL)	Ideal Goal (EPA’s MCLG)	Ashburton Plant		Montebello Plants		Violation	Typical Sources
			Highest Result	Range of Test Results	Highest Result	Range of Test Results		
Arsenic	10 ppb	0 ppb	ND	<3 ppb	ND	<3 ppb	No	Erosion of natural deposits
Barium	2 ppm	2 ppm	0.0230	0.0196 – 0.0230	0.0382	0.0294 – 0.0382	No	Discharges from drilling wastes
Chlorine	4 ppm	4 ppm	1.20	0.59 – 1.20	1.19	0.50 – 1.19	No	Water additive to disinfect supply
Fluoride	4 ppm	4 ppm	0.86	0.05 – 0.86	1.00	0.04 – 1.00	No	Water additive that promotes strong teeth
Nitrate	10 ppm	10 ppm	1.64	1.08 – 1.64	1.78	0.83 – 1.78	No	Runoff from fertilizer use
ORGANIC CHEMICALS								
Contaminant	Highest Level Allowed (EPA’s MCL)	Ideal Goal (EPA’s MCLG)	Ashburton Plant	Montebello Plant	Violation	Typical Sources		
			Highest Level Detected	Highest Level Detected				
Atrazine	3 ppb	3 ppb	ND	0.31 ppb	No	Runoff from herbicide use		
Di (ethylhexyl) phthalate	6 ppb	6 ppb	2.5	ND	No	Man-made chemicals in a range of products		
UNREGULATED CONTAMINANTS								
Contaminant	Proposed Highest Level Allowed (EPA’s MCL)	Proposed Ideal Goal (EPA’s MCLG)	Ashburton Plant	Montebello Plant	Violation	Typical Sources		
			Highest Level Detected	Highest Level Detected				
**PFOA	4 ppt	0 ppt	2.65 ppt	1.94 ppt	No	Man-made chemicals in a range of products		
**PFOS	4 ppt	0 ppt	3.29 ppt	1.94 ppt	No	Man-made chemicals in a range of products		
**PFBS	Used to calculate Hazard Index	Used to calculate Hazard Index	2.28 ppt	1.81 ppt	No	Man-made chemicals in a range of products		



# 2022 CCR REGULATED CONTAMINANTS TABLE

**PFHxS	Used to calculate Hazard Index	Used to calculate Hazard Index	1.55 ppt	1.25 ppt	No	Man-made chemicals in a range of products
**PFNA	Used to calculate Hazard Index	Used to calculate Hazard Index	<1.5 ppt	<1.5 ppt	No	Man-made chemicals in a range of products
**HFPO-DA	Used to calculate Hazard Index	Used to calculate Hazard Index	<1.0 ppt	<1.0 ppt	No	Man-made chemicals in a range of products
**PFBS + PFHxS +PFNA +HFPO-DA	1.0 Hazard Index	1.0 Hazard Index	0.17 HI	0.14 HI	No	Man-made chemicals in a range of products

## RADIOACTIVE CONTAMINANTS

Contaminant	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Level Detected	Range of Levels Detected	Violation	Major Sources
* Combined Radium 226/228	5pCi/L	0	1.6	0.2 - 1.6	No	Erosion of natural deposits

## VOLATILE ORGANIC CHEMICALS

Contaminant	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	City of Baltimore Distribution System		Violation**	Major Sources
			Highest Result (Locational Running Annual Average)	Range		
Total THMs	80 ppb	NA	72	25 - 118	No	By-product of drinking water chlorination
HAA (5)	60 ppb	NA	55	1 - 61	No	By-product of drinking water chlorination

## TURBIDITY

Contaminant	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	ASHBURTON PLANT		MONTEBELLO PLANTS		Violation	MAJOR SOURCES
			Highest Result	Lowest %	Highest Result	Lowest %		
Turbidity	Treatment Technique (TT)	None						Soil Run-off
	Filtration	NA	0.06 NTU	100%	0.29 NTU	100%	No	Soil Run-off

## BACTERIA IN TAP WATER

Contaminant	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Monthly Percentage of Samples with Total Coliform Present		Violation	Typical Sources
Total Coliform (for systems that collect ≥ 40 samples/month)	5% of monthly samples are positive	0	1.7%		No	Naturally present in the environment
CHLORINE	4 ppm	4 ppm	Running Annual Average of Samples Computed Quarterly		No	Water additive to disinfect supply
			0.52 ppm (Based on 4,807 distribution system samples collected in 2022)			
***E. coli	0	0	Total number of detections in the distribution system		Yes	Waste contamination, storm water run-off
			2			

# CONTAMINANTS TABLE FOOTNOTES

Violations for Stage 2 THMs and HAAs are based on a locational annual average. Therefore, unless this exceeds the MCL, there is no violation.

• **Radioactive contaminants are monitored on a 9-year schedule. Gross Alpha radioactive contaminant is monitored on a 6-year schedule for Montebello. 2019 was a compliance year for testing of radioactive contaminants. The state allows monitoring of some contaminants less than once per year due to infrequent contaminant concentration level changes. Radioactive contaminants data, though representative, is more than one year old.**

## \*\* Hazard Index (HI)

Hazard Index is used to evaluate the potential health risk from exposure to mixtures of chemicals. The chemicals of interest are PFNA, PFHxS, PFBS, and HFPO-DA (“Gen X chemicals”). The Hazard Index (HI) considers the toxicities of PFNA, PFHxS, PFBS, and Gen X chemicals to determine if the combined levels pose a potential risk and require action from the Public Water System (PWS) based on a running annual average. A Hazard Index (HI) greater than 1.0 would be a violation of the proposed HI MCL. Currently, there is no required action for the hazard index until EPA finalizes the regulation.

## \*\*\* E. coli MCL Violation

On September 2, 2022, E. coli was detected in the waters of the City of Baltimore’s (the “City”) distribution system. The City’s Department of Public Works (“DPW”) was required to issue a Boil Water Advisory (“BWA”) for parts of West Baltimore. The detection of E. coli resulted in a MCL violation. To eliminate E. coli from the system, DPW coordinated with the Maryland Department of the Environment (“MDE”), industry partners, and the City’s Health Department and Office of Emergency Management. On September 9, 2022, after consecutive negative test results were reported throughout the affected areas, the Boil Water Advisory was lifted.

Since the September event, the City has posted bacteriological summary results for monthly distribution sampling on the website: <https://publicworks.baltimorecity.gov/routine-testing-result> and routinely continues to exceed the required minimum number of 360 samples monthly to ensure that the water distribution system is properly monitored and the consumers protected from contaminants that could pose a health risk.

## \*\*\* Public Notification Violation

In related action, MDE issued a Tier 3 Public Notification Violation to the City for exceeding the 24-hour time frame for notifying the public about the E. coli MCL violation. A public water system must issue a Tier 1 notice to the persons/community served no later than 24 hours after learning of an E. coli MCL violation [40 CFR 141.202(b)].

MDE was notified of the MCL exceedance. The city made door-to-door contacts along with social media notifications within 24 hours, followed by an official Revised Boil Water Advisory issuance that included maps of the affected and surrounding areas. However, MDE issued the City of Baltimore a Tier 3 Public Notification Violation because the initial notice lacked some of the specific requirements set forth in Code of Maryland Regulations (COMAR) 26.04.01.20 and was issued prior to MDE approval. The violation was promptly resolved with the issuance of an MDE approved Tier 1 public notification, however, this notice was delivered outside of the requisite 24-hour timeframe.

## HEALTH EFFECTS: CRYPTOSPORIDIUM, SODIUM LEVELS AND BARIUM

Cryptosporidium is a microorganism commonly found in lakes and rivers which is highly resistant to disinfection and can cause gastrointestinal problems. DPW’s monitoring results indicate that our water sources are not affected by **Cryptosporidium**.

### Cryptosporidium Results Range:

Liberty: 0.00 – 0.09 Oocyst/Liter

Loch Raven: 0.00 – 0.09 Oocyst/Liter

Susquehanna River: 0.00 – 0.36 Oocyst/Liter

Sodium levels in the water supply are often of concern to consumers who contact our facilities. Sodium naturally occurs in raw waters but the concentration can be increased due to the influence of runoff from road surfaces treated with rock salt during snow and ice removal efforts. During the year 2022, the average sodium concentrations measured in the finished water from the Ashburton and Montebello Water Treatment Plants were **20.4 ppm and 20.3 ppm** respectively and are considered low.

**Barium:** Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.



# BOIL WATER ADVISORY FAQs

As DPW continues to combat aging infrastructure challenges, we want to ensure our customers are prepared and protected. In September 2022, DPW issued a Boil Water Advisory impacting parts of West Baltimore and Western Baltimore County. Our routine drinking water testing procedures detected this contamination from a series of water main breaks. This report explains what happens when a boil water advisory is issued and how to be prepared.

## **What is a boil water advisory?**

A boil water advisory is a health and safety alert. Water is likely not safe to drink without taking extra safety steps. You should boil tap water before consuming it or use bottled water instead.

## **What are the reasons for a boil water advisory?**

A boil water advisory is issued when harmful germs (e.g., E. coli bacteria, Giardia parasite) may be in the drinking water supply. Drinking water contaminated with these germs can make people and animals very sick.

## **Why is boiling water recommended?**

Boiling your tap water for one minute will kill the germs and make the water safe to drink.

E. coli is a type of bacteria that normally lives in the intestines of humans and some animals. While most types of E. coli are harmless, some may cause disease.

The presence of E. coli indicates that the water may be contaminated with human or animal waste.

If consumed, the bacteria can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for babies, young children, the elderly, pregnant women, and people with severely compromised immune systems.

## **What steps do I take after a boil water advisory is lifted?**

- Run all cold water taps for fifteen (15) minutes.
- If you have a single-lever faucet, set it to run cold water.
- Begin with the lowest faucet in your home or business and then open the other faucets one at a time, moving from your lowest floor to your highest.
- After fifteen (15) minutes, turn off your faucets in reverse order, from highest to lowest.
- Apartment buildings and multi-story buildings should notify all residents, occupants, and users of this procedure and flush starting with the closest tap to the water connection moving outward.

# MONITORING PFAS

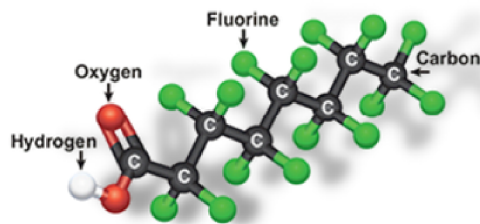
**PFAS – or per- and poly-fluoroalkyl substances** – refers to a large group of more than 4,000 human-made chemicals that have been used since the 1940s in a range of products, including stain- and water-resistant fabrics and carpeting, cleaning products, paints, cookware, food packaging, and fire-fighting foams. These uses of PFAS have led to PFAS entering our environment, where they have been measured by several states in soil, surface water, groundwater, and seafood. Some PFAS can last a long time in the environment and in the human body and can accumulate in the food chain.



Beginning in 2020, the Maryland Department of the Environment (MDE) initiated a PFAS monitoring program. PFOA and PFOS are two of the most prevalent PFAS compounds. PFOA concentrations from samples taken from our water system in 2022 ranged from 1.94- 2.65 parts per trillion (ppt); PFOS concentrations from samples taken from our water system in 2022 ranged from 1.94- 3.29 ppt. In March 2023, EPA announced proposed Maximum Contaminant Levels (MCLs) MCLs of 4 ppt for PFOA and 4 ppt for PFOS, and a Group Hazard Index for four additional PFAS compounds. Future regulations would require additional monitoring as well as certain actions for systems above the MCLs. EPA will publish the final MCLs and requirements by the end of 2023 or beginning of 2024.

**Additional information about PFAS can be found on the MDE website:**

[mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx](https://mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx)



**Lead** can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Baltimore City Department of Public Works (DPW) is responsible for providing high-quality drinking water and removing lead pipes, but cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, doing laundry, or doing a load of dishes. You can also use a filter certified by an American National Standards Institute accredited certifier to reduce lead in drinking water. If you are concerned about lead in your water and wish to have your water tested, contact DPW. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at <http://www.epa.gov/safewater/lead>.



# PROTECTING TREATED WATER RESERVOIRS



The Druid Lake Finished Water Tanks and Ashburton Reservoir Tank projects are getting closer to completion. These projects are another investment in ensuring excellent water for our residents and water customers throughout the region. Our underground tank projects have faced some challenges and unforeseen site conditions, including the impact of COVID-19 and associated supply chain shortages due to the pandemic. DPW is continuing to move these projects forward. We are eager to begin functional and operational use of both projects later this year, barring unforeseen delays. The remaining site work, such as park amenities, and clean up, is scheduled for completion early to mid 2024.

## Important Health Information

Uncovered reservoirs used to store treated drinking water can be open to contamination from animals, such as birds or insects. Inadequately treated water may contain disease-causing organisms including bacteria, viruses, and parasites that can result in such symptoms as nausea, cramps, diarrhea, and associated headaches. Some people may be more vulnerable to contaminants in drinking water than the general population.

Immunocompromised people, such as those undergoing chemotherapy or who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice from their health care providers.

Guidelines from the U.S. Environmental Protection Agency and Centers for Disease Control and Prevention regarding appropriate means to lessen the risk of infection from *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Helpline at 1-800-426-4791. If you have specific health concerns, consult your doctor.







## PROTECTING TREATED WATER RESERVOIRS

Water system security continues to be an enormously important issue. If you notice suspicious activities in or around local water utilities, such as persons cutting, or climbing facility fencing, loitering, tampering with equipment, or other similar activities, please contact your local law enforcement agency immediately by dialing 911.

For other suspicious activities that may appear non-threatening such as persons videotaping or photographing facilities, equipment or structures, please call 410-517-3600.

## YOU CAN HELP WITH WATER SYSTEM SECURITY

Baltimore uses surface water from rainfall and snowmelt as its water source. This water, approximately 75 billion gallons at available capacity, is collected and stored in the City's Liberty, Loch Raven, and Prettyboy reservoirs. The City water supply is also linked to the Susquehanna River, which flows from Cooperstown, N.Y., to Havre de Grace, Md. Water from the Susquehanna River is only used in times of drought. The reservoirs are surrounded by mostly native woodlands, which filter out pollutants and prevent soil erosion and runoff. These watershed lands were established for the sole purpose of protecting our drinking water supply. Although the reservoirs are the property of the City, all the surrounding jurisdictions have a stake in their well-being.



# Do You Need Help Paying Your Water Bill?

From **flexible PromisePay** payment plans to **bill relief funds** from the State of Maryland, we likely have an affordability program that meets your needs!

Visit Baltimore's New Affordability Portal at  
[Baltimore.Promise-Pay.com](https://Baltimore.Promise-Pay.com) To Learn How We Can Help!



Please scan here with a phone camera

## PromisePay Payment Plans

- ◆ Affordable and convenient payment plans for Baltimore City residential customers
- ◆ **PromisePay** has helped thousands of people get out of debt and avoid negative financial consequences by offering **flexible and interest-free payment plans**

## Water4All

- ◆ Monthly water billing discount program designed to **reduce the monthly water bill** for eligible Baltimore City residents
- ◆ Baltimore City residential households whose income is **below 200% of the federal poverty level** may be eligible

## Paperless Billing

- ◆ Customers will receive their bills **faster and more securely** with the ability to view and access their bill **anytime and anywhere**
- ◆ You can sign up for paperless billing in the **DPW Customer Service Portal**



To learn more, enroll, and see if you're eligible, please visit us at  
[Baltimore.Promise-Pay.com](https://Baltimore.Promise-Pay.com)  
**410-779-9808**



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