

# City of Richmond Department of Public Utilities Consumer Confidence Report Richmond, VA's Drinking Water Quality 2023

## Why We Report on Water Quality

The 1996 Safe Drinking Water Act requires water utilities to provide consumers with a yearly report on the source and quality of water they drink. You may also find this information posted on our website at [www.rva.gov/public-utilities/water-utility](http://www.rva.gov/public-utilities/water-utility).



We are proud to report that during 2023 we were in 100% compliance with all federal and state Safe Drinking Water Act MCLs (Maximum Contaminant Levels). Last year DPU conducted 58,000 tests on more than 15,000 water samples. The tables list all the substances that were detected in our drinking water during 2023. The presence of these substances in water does not necessarily indicate that the water poses a health risk. Unless otherwise noted data presented in this table is from testing performed January 1 through December 31, 2023.

## Inside the Water Quality Report

This brochure is a snapshot of 2023 drinking water quality. Included is information about your water, what it contains and how it compares with standards mandated by the U.S. Environmental Protection Agency (EPA) and the Virginia Department of Health. This report is being sent to you to comply with the 1996 Safe Drinking Water Act. Landlords, businesses, and other property owners are encouraged to share this water quality report with tenants.



To save printing and mailing costs, the primary distribution of our annual report will be online. For free copies or more information about your water and this report, call the City of Richmond Department of Public Utilities (DPU): (804) 646-6405 and leave your name and mailing address. Or email [dpuc@rva.gov](mailto:dpuc@rva.gov) for a link to the online copy.

For information about public participation opportunities, visit our website at <https://www.rva.gov/public-utilities/news>.



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# Microbial Contaminants

Substance	Likely Source	Richmond's Highest Monthly # of Positive Samples	Richmond's Highest Monthly % of Positive Samples	MCL	MGLG	Sample Date	Violation
Total Coliform (TC)	Naturally present in the environment	8	4.94% <sup>1</sup>	TT	N/A	Jun 2023	No
Escherichia Coli (EC)	Human and animal fecal waste	0	0	An E. coli-positive repeat sample following a total coliform-positive routine sample OR A total coliform-positive repeat sample following an E. coli-positive routine sample OR Failure to collect all required repeat samples following an E. coli-positive routine sample OR Failure to test for E. coli when any repeat sample is total coliform-positive.	0	2023	No <sup>2</sup>

# Regulated Substances

Substance	Likely Source	Richmond's Results	Richmond's Range	MCL	MGLG	Sample Date	Violation
Fluoride (ppm)	Added to promote dental health	0.60	0.45 - 0.76	4	4	2023	No
Nitrate + Nitrite (ppm)	Fertilizer runoff, septic tank leakage, sewage, erosion of natural deposits	<0.05			10	Apr 2023	No
Total Organic Carbon Removal Ratio <sup>3</sup>	Naturally present in source water	1.0	0.0 to 1.9	TT removal ratio ≥ 1.0		2023	No
Alpha Emitters (pCi/L)	Erosion of natural deposits	<0.4		15	0	Aug 2018	No
Beta Emitters (pCi/L) <sup>4</sup>	Erosion of natural deposits	2		4	0	Aug 2018	No
Combined Radium (pCi/L)	Erosion of natural deposits	<0.5		5	0	Aug 2018	No
TTHms (ppb) Total Trihalomethanes <sup>7</sup>	Byproduct of drinking water disinfection	32	19 - 48	80		2023	No
HAA5 (ppb) Haloacetic Acids <sup>5</sup>	Byproduct of drinking water disinfection	22	0 - 43	60		2023	No
Barium (ppm)	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	0.031		2		Apr 2023	No

# Disinfectant

Substance	Likely Source	Richmond's Results	Richmond's Range	MRDL	MGLG	Sample Date	Violation
Chloramines (ppm) <sup>6</sup>	Disinfection	3.8	3.1 - 5.0	4	4	2023	No

# Turbidity

Substance	Likely Source	Richmond's Results	MCL	MGLG	Sample Date	Violation
Turbidity (NTU)	Soil Runoff	0.29, 100% <sup>7</sup>	TT 1.0 NTU, Max ≤0.3 (95% of the time)		12/26/2023	No

<sup>1</sup> If the highest monthly percentage of positive TC samples exceeds 5, Level 1 Assessment will be conducted to identify and correct sanitary defects.

<sup>2</sup> If the work incurs an EC MCL violation, Level 2 assessment will be conducted to identify and correct sanitary defects.

The EPA has implemented the Stage 2 Disinfectants and Disinfection Byproduct Rule (Stage 2 DBPR) and the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). The Stage 2 DBP Rule provides increased protection against health effects associated with disinfection byproducts (DBPs). The LT2ESWTR further protects public health against Cryptosporidium and other microbial pathogens that may be present in drinking water.

<sup>3</sup> TOC Removal Ratio – Richmond’s result shows the lowest RAA. Richmond’s range extends from the lowest to the highest of the compliance removal ratios measured monthly during the calendar year

<sup>4</sup> The MCL for beta particles is 4mrem/year. EPA considers 50 pCi/1 to be the level of concern for beta particles.

<sup>5</sup> TTHMs and HAA5s – Richmond’s result shows the highest LRAA. Richmond’s range extends from the lowest to the highest of the compliance sample results measured quarterly during the calendar year.

<sup>6</sup> Chloramines – Richmond’s result shows the highest RAA. Richmond’s range extends from the lowest to the highest of the residual disinfectant levels measured monthly during the calendar year.

<sup>7</sup> Turbidity – Highest single measurement and the lowest monthly percentage of samples meeting monthly turbidity limits.

# Lead and Copper

Substance	Likely Source	Richmond's Results (90 <sup>th</sup> Percentile) <sup>1</sup>	Richmond's Range	MCL	MCLG	Sample Date	Violation
Copper (ppm)	Corrosion of household plumbing; leaching from wood preservatives	0.063	No results exceeded action level	Action Level = 1.3	1.3	2022	No
Lead (ppm)	Corrosion of household plumbing; erosion of natural deposits	3.7	No results exceeded action level	Action Level = 15	0	2022	No

<sup>1</sup>90th Percentile – The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90 percent of our lead and copper detections.

# Unregulated Substances

Substance	Likely Source	Richmond's Results	MCL	Sample Date	Unit
Aluminum	Erosion of natural deposits; addition of water treatment substances	<0.05		2023	ppm
Manganese	Naturally present in the environment	<0.01		2023	ppm
Nickel	Corrosion of household plumbing	<0.01		2023	ppm
Sodium	Naturally present in the environment; addition of water treatment substances	15.4	*	2023	ppm
Sulfate	Naturally present in the environment; addition of water treatment substances	37		2023	ppm

\*State and federal agencies recommend sodium levels in water not exceed 20 milligrams per liter (mg/L) for people on very low sodium diets and 270 mg/L for people on moderately restricted sodium diets.

# Other Information

Substance	Richmond's Results	EPA's Suggested Limit	Sample Date	Unit
Alkalinity	58.3		2023	ppm
Chloride	16.7	250	2023	ppm
Hardness	73		2023	ppm
pH (acidity)	7.84	6.5 - 8.5	2023	su
Total Dissolved Solids	134	500	2023	ppm

## Health Information

Some people may be more vulnerable to certain substances in drinking water than the general population. Immuno-compromised people – such as those with cancer who are undergoing chemotherapy, those who have undergone organ transplants, those with HIV/AIDS or other immune system disorders, and some elderly people and infants – can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC (Centers for Disease Control) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial substances are available from the Safe Drinking Water Hotline (1-800-426-4791).

For more information about Richmond's water quality, call (804) 646-8701 or visit us on the web at: <https://www.rva.gov/public-utilities/water-utility>.

For more general information about drinking water, visit the U.S. Environmental Protection Agency's website at: [www.epa.gov/safewater](http://www.epa.gov/safewater); or Virginia Department of Health (Drinking Water) at: [www.vdh.virginia.gov](http://www.vdh.virginia.gov).

The James River is the source of water for the City of Richmond. Substances that may be present in source water include:

- Microbial substances such as viruses and bacteria, which may come from domestic animals, wildlife, septic systems, livestock and sewage treatment plants.
- Inorganic substances such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- Organic chemicals, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can come from gas stations, urban stormwater runoff and septic systems.
- Radioactive substances, which can be naturally occurring or be the result of oil and gas production and mining activities.



Water treatment significantly reduces the level of these substances in drinking water. In order to ensure that tap water is safe to drink, EPA regulations limit the amount of certain substances in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for substances in bottled water, which must provide the same protection for public health.

## Definitions

**AL** – Action Level:

The concentration of a substance which, when exceeded, triggers treatment or other requirements.

**LRAA** – Locational Running Annual Average:

the average of analytical results of compliance samples taken at each monitoring location during the previous four calendar quarters.

**MCL** - Maximum Contaminant Level:

The highest level allowed by regulation. MCLs are set as close to the MCLGs as feasible using the best treatment technology.

**MCLG** - Maximum Contaminant Level Goal:

The level of contaminant below which there is no known or suspected health risk.

**MRDL** – Maximum Residual Disinfectant Level:

The highest level of a disinfectant allowed in drinking water.

**MRDLG** – Maximum Residual Disinfectant Level Goal:

The level of a drinking water disinfectant below which there is no known or expected risk to health.

**MREM** – Millirem:

A unit of measure that estimates the damage radiation does to human tissue

**NA** – Not applicable

**ND** – Not detected.

**NTU** – Nephelometric Turbidity Unit:

A measure of turbidity; water cloudiness.

**pCi/L** – Picocuries per liter:

A measure of radioactivity.

**ppb** – parts per billion or micrograms per liter ( $\mu\text{g/L}$ )

**ppm** – parts per million or milligrams per liter ( $\text{mg/L}$ )

**RAA** – Running Annual Average:

The average of analytical results of compliance samples taken during any consecutive four calendar quarters.

**Removal ratio** – A ratio between the percentage of a substance actually removed to the percentage of the substance required to be removed.

**SMCL** - Secondary Maximum Contaminant Level:

These standards are developed to protect aesthetic qualities of drinking water and are not health based.

**su** – standard units. Used in pH measurements.

**TT** – Treatment Technique:

Process intended to reduce the level of a substance in drinking water.

**Source water** – Untreated water

**Finished water** – Treated water

Regulated Substances are regulated by the EPA and their concentration cannot be above the MCL.

Unregulated Substances are not regulated by the EPA, but they must be monitored so information about their presence in drinking water can be used to develop limits.

**Cryptosporidium**

Cryptosporidium is a microbial parasite found in surface water throughout the United States. Sampling was not required in 2023 as our last sampling found an average of 5.4 Oocysts/100L. This is less than the Action Level of 7.5 Oocysts/100L.



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