

Consumer Confidence Report



Richmond, VA's Drinking Water Quality 2019

Dedicated to Drinking Water Quality

The City of Richmond Department of Public Utilities is a member of the American Water Works Association, the American Water Works Association Research Foundation and the Association of Metropolitan Water Agencies. These organizations are dedicated to furthering knowledge and research on safe drinking water.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some substances. The presence of substances does not necessarily indicate that the water poses a health risk.

More information about substances and potential health effects may be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

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

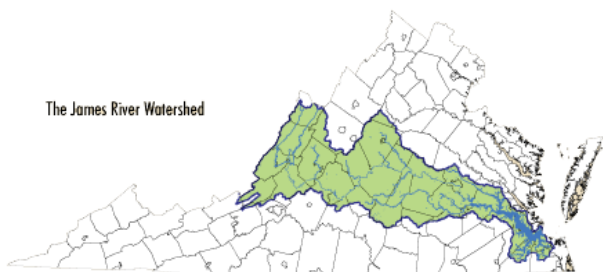
Contact the City of Richmond Department of Public Utilities at 646-5224 for additional copies of this report. For more information about Richmond's water quality, call 646-5777 or visit us on the Web at: www.richmondgov.com/publicutilities

For more general information about drinking water, visit the U.S. Environmental Protection Agency's Web site at: www.epa.gov/safewater

Virginia Department of Health (Drinking Water) at: www.vdh.state.va.us

Our Water Source

The source of our water is the James River.



Inside the Water Quality Report

This brochure is a snapshot of 2019 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 this report, call the City of Richmond Department of Public Utilities (DPU): 646-5224.

For information about public participation opportunities, visit our website at www.richmondgov.com/PublicUtilities/index.aspx and our blog at www.richmondvaannouncements.blogspot.com for meeting announcements.

Why We Report on Water Quality

The U.S. Environmental Protection Agency (EPA) 1996 Safe Drinking Water Act requires water utilities to provide consumers with a yearly report on the **source and quality** of the water they drink. You may also find this information posted on our website at www.richmondgov.com/PublicUtilities.

The state allows us to monitor for some substances less than once per year because the concentrations of these substances do not change frequently.

The Virginia Department of Health conducted a source water assessment of our system during 2002. The Richmond Water Treatment Plant was determined to be of high susceptibility to contamination, using criteria developed by the state in its EPA-approved Source Water Assessment Program. The assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last five years from the date of assessment. This report is available by called 804-646-5777.

Richmond's Drinking Water: A History

Richmond's Water Treatment Plant was built on the banks of the James River in 1924. Before then, more than 300 years ago, Richmond's drinking water came from numerous springs and an open stream flowing from the Capitol across Main Street. Over the years the plant has been upgraded and enlarged to meet growing demand.

Today, Richmond's Department of Public Utilities' (DPU) water plant can produce up to 132 million gallons per day (MGD). In 2019, DPU treated an average of 62.1 MGD of water and distributed it to more than 60,000 residential, commercial and industrial customers in the metro Richmond area. DPU also provides water to Henrico, Chesterfield, Hanover, Goochland and Powhatan counties through wholesale contracts.

DPU has invested millions of dollars to ensure it always meets or exceeds federal regulations as well as the increasing regional demands for reliable, high-quality drinking water. Water utility employees perform numerous water tests every day and maintain approximately 990 miles of water lines so that when you turn on the tap, your family will receive water that is clean and safe.

Microbial Contaminants

Substance	Likely Source	Richmond's Samples Indicating Bacteria Presence	Richmond's Highest Monthly % of Positive Samples	MCL ^{2a}	MCLG	Sample Date	Violation
Total Coliform	Naturally present in the environment	4	3.03% ¹	TT	N/A	Aug 2019	No
Escherichia Coli	Human and animal fecal waste	0 ²	0%	Repeat sample is E.coli positive OR Routine sample is E.coli positive followed by Repeat sample that is Total Coliform positive OR System fails to take all required samples following E.coli positive Routine sample OR System fails to analyze for E.coli when any Repeat sample tested positive for Total Coliform	0	2019	No

¹Total Coliform – Highest monthly percentage of positive total coliform samples for 2019

² E.coli Bacteria – Highest total number of positive samples per month in 2019

^{2a}If an E.coli MCL violation occurs, an assessment to determine the cause would be performed and corrective action taken.

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.

Regulated Substances

Substance	Likely Source	Richmond's Results	Richmond's Range	MCL	MCLG	Sample Date	Violations
Fluoride (ppm)	Added to promote dental health	0.6	0.2-0.8	4	4	2019	No
Nitrate + Nitrate (ppm)	Fertilizer runoff, septic tank leakage, sewage, erosion of natural deposits	<0.05		10		June-19	No
Total organic carbon removal ratio ³	Naturally present in source water	1.3	1.1 to 2.1	TT, removal ratio>1.0		2019	No
Alpha Emitters (pCi/L)	Erosion of natural deposits	<0.4		15	0	Aug-18	No
Beta Emitters (pCi/L) ⁴	Erosion of natural deposits	2		4	0	Aug-18	No
Combined Radium (pCi/L)	Erosion of natural deposits	<0.5		5	0	Aug-18	No
TTHMs (ppb) Total trihalomethanes ⁵	Byproduct of drinking water disinfection	27	13-39	80		2019	No
HAA5 (ppb) Haloacetic Acids ⁵	Byproduct of drinking water disinfection	21	5-27	60		2019	No
Barium (ppm)	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	0.031 mg/L		2 mg/L		July-19	No

³TOC Removal Ratio – Amount detected is the lowest of the annual rolling average of the four quarterly calculations made in 2019; range is the minimum and maximum of all samples used to calculate average

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

⁵ TTHMs and HAA5s – Richmond's results are the maximum of the rolling annual average. The range is the minimum and maximum of all 2019 samples used to calculate those averages.

Disinfectant

Substance	Likely Source	Richmond's Results	Richmond's Range	MRDL	MRDLG	Sample Date	Violation
Chloramines (ppm) ⁶	Disinfection	4.0	0.1-5.6	4	4	2019	No

⁶ Chloramines – Amount detected is the maximum of the annual rolling average; range is the minimum and maximum of all samples used to calculate average

Turbidity

Substance	Likely Source	Richmond's Results	MCL	MCLG	Sample Date	Violation
Turbidity (NTU)	Soil runoff	0.32, 100% ⁷	TT, 1.0 NTU, Max ≤0.3 (95% of the time)		10/10/2019	No

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

Lead and Copper

Substance	Likely Source	Richmond's Results	Richmond's Range	MCL	MCLG	Sample Date	Violation
Copper (ppm)	Corrosion of household plumbing; leaching from wood preservatives	0.058	No results exceeded action level	Action Level = 1.3	1.3	2019	No
Lead (ppb)	Corrosion of household plumbing; erosion of natural deposits	2.5	No results exceeded action level	Action Level = 15	0	2019	No

Unregulated Monitored Substances

Substance	Likely Source	Richmond's Result	MCL	Sample Date	Unit
Aluminum	Erosion of natural deposits; addition of water treatment substances	<0.05		2019	ppm
Manganese	Naturally present in the environment	<0.01		2019	ppm
Nickel	Corrosion of household plumbing	<0.01		2019	ppm
Sodium	Naturally present in the environment; addition of water treatment substances	16.6	*	2019	ppm
Sulfate	Naturally present in the environment; addition of water treatment substances	39.6		2019	ppm

*For low or no salt diets, a limit of 20 ppm is suggested

Other Information

Substance	Richmond's Result	EPA's Suggested Limit	Sample Date	Unit
Alkalinity	55.0		2019	ppm
Chloride	14.5	250	2019	ppm
Hardness	64		2019	ppm
pH (acidity)	7.83	6.5 – 8.5	2019	su
Total Dissolved Solids	139	500	2019	ppm

Unregulated Components Detected in UCMR 4 Monitoring

Distribution System Components (ug/L)	Likely Source	Richmond's Results	Richmond's Range	Sample Date
Bromochloroacetic Acid	Byproduct of drinking water disinfection	2.8	2.6-3.2	2019
Bromodichloroacetic Acid	Byproduct of drinking water disinfection	1.5	1.4-1.6	2019
Dichloroacetic Acid	Byproduct of drinking water disinfection	14.7	12.8-18.2	2019
Trichloroacetic Acid	Byproduct of drinking water disinfection	13.8	12.8-14.2	2019

Finish Water Component	Likely Source	Richmond's Results	Richmond's Range	Sample Date
Manganese	Erosion of natural deposits	1.0	ND-1.0	2019

Once every five years, EPS requests the City of Richmond and other waterworks around the country to monitor for certain unregulated contaminants to determine if any of the contaminants are sufficiently common to justify establishing maximum contaminant levels and routine monitoring requirements. UCMR4 represents the fourth set of unregulated contaminants that EPA has requested to be monitored. UCMR4 benefits the environment and public health by providing the U.S. EPA with the data on the occurrence of contaminants suspected to be in drinking water in order to determine if the U.S. EPA needs to introduce new regulatory standards to improve drinking water quality.

More information about substances and potential health effects may be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791) or visiting the Environmental Protection Agency's website at www.epa.gov/safewater



Definitions

- **AL** – *Action Level*: The concentration of a substance which, when exceeded, triggers treatment or other requirements.
- **LRAA** – *Locational Running Annual Average*: The running annual average at each sampling location.
- **MCL** – *Maximum Contaminant Level*: The highest level allowed by regulation. MCLs are set as close to the MCLGs (see below) 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
- **NTU** – *Nephelometric Turbidity Unit*: A measure of turbidity, water cloudiness.
- **ND** – *Not detected*.
- **pCi/L** – *Picocuries per liter*: A measure of radioactivity
- **ppb** – *parts per billion or micrograms per liter (µg/L)*
- **ppm** – *parts per million or milligrams per liter (mg/L)*
- **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.

Substances Expected To Be In Drinking Water

As water travels over land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material. Water can pick up substances resulting from the presence of animals or human activity. 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, Environmental Protection Agency (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.

Water Quality Information

We are proud to report that during 2019 we were 100 percent in compliance with all federal and state Safe Drinking Water Act MCLs. Last year DPU conducted 94 different tests on more than 60,000 water samples. The tables list all the substances that were detected in our drinking water during 2019. 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, 2019.

The State allows us to monitor for some substances less than once per year because the concentrations of these substances do not change frequently.

The City of Richmond monitors the James River continuously throughout the year for various substances. We will continue to monitor our source water to enhance the water treatment process and to ensure the highest quality finished water is provided to our customers.

To enhance existing water protection efforts, the DPU has partnered with Virginia Commonwealth University's Center for Environmental Studies to design and implement a state-of-the-art monitoring system. DPU is among the first water utilities in the nation to use this cutting-edge technology for the purpose of screening for naturally and intentionally introduced biological, chemical and radiological substances.

Lead

If present, elevated levels of 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 City of Richmond is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes or until it becomes cold or reaches a steady temperature before using water for cooking or drinking.

If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing materials, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at: <http://www.epa.gov/safewater/lead> or by calling their hotline at 1-800-426-4791.

Cryptosporidium

Cryptosporidium is a microbial parasite found in surface water throughout the United States. Sampling was not required in 2019 as our last sampling found an average of 5.4 Oocysts/100L. This is less than the Action Level of 7.5 Oocysts/100L.

