



WATER REPORT



2024

SALEM VA



WATER QUALITY REPORT

We are pleased to present to you this year's Annual Water Quality Report. This report is designed to inform you about the quality of water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source is the Roanoke River and three ground water wells. In emergencies, we purchase or exchange water with the Western Virginia Water Authority (WVWA).

Our utility is committed to protecting public health and meets or surpasses all state and federal health standards for tap water. We constantly monitor for various constituents in the water supply to meet all regulatory requirements. Monitoring various sites in the distribution system helps us to better protect public health.

This report shows our water quality and what it means.

WHAT'S NEW?

Source Water Assessment. The Virginia Department of Health completed a source water assessment for our waterworks system in 2024. This assessment provides information on possible sources of contamination to our source water. As determined by the source water assessment, the possibility of contamination to our water source (Roanoke River) is high. This is because surface water is exposed to an inconsistent array of contaminants at varying concentrations due to changing hydrologic, hydraulic, and atmospheric conditions with land use activities of concern in the assessment area. To view a copy of this water assessment, please contact the City of Salem Water Department office at 540-375-3029. **Please remember that we need your help in the protection of this valuable water resource.**

USEPA Unregulated Contaminant Monitoring Rule (UMCR). To help advance the science of drinking water, we collect data for the USEPA to examine the occurrence of various compounds



Awarded the Virginia Office of Drinking Water Gold Award for Excellence in Clarification, Filtration and Backwash every year since 2013.

in the water supply. This is the first step in the USEPA's efforts to determine whether these should be regulated. The presence of a compound does not necessarily equate to a health risk; the concentration of a compound is a far more important factor in determining whether there are health implications. Should the USEPA ultimately determine that regulation is warranted, we will take whatever steps are necessary to protect the health of our citizens.

The fifth Unregulated Contaminant Monitoring Rule (UCMR 5) was published in 2021 and required utilities to collect samples for 29 per- and polyfluoroalkyl substances (PFAS), as well as lithium. In 2023-2024, we collected these samples for our finished drinking water in accordance with UCMR 5. **None of the 29 PFAS compounds, or lithium, were detected in the City of Salem's finished drinking water.** To view a copy of these results, please contact the City of Salem Water Department office at 540-375-3029. Results are also publicly available online using USEPA's UCMR 5 Data Finder tool.

Lead. A Service Line Inventory has been prepared. To view a copy of this service line inventory, please contact the City of Salem Water Department office at 540-375-3029.

WHO CAN I CONTACT?

If you have any questions concerning this report or your water utility, please contact

Frank Young – Chief Water Treatment Plant Operator or Jack Doss – Water Quality Manager at 540-375-3029. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of the regularly scheduled City Council meetings. These meetings are held on the second and fourth Monday of each month in council chambers.

The City of Salem Water Department routinely monitors for constituents in your drinking water mandated by Federal and State laws. The following table shows the results of our monitoring for the period of **January 1st to December 31st, 2024**. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

In the following table you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the

following definitions:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter - one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - measure of radiation absorbed by the body.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level Goal - The "Goal" (MCLG) is 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.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Presence / Absence (P/A) - The concentration of the contaminant is zero to be in compliance with the Total Coliform Rule.

WHAT DOES THIS MEAN?

We have learned through our monitoring and testing that some constituents have been detected. The U.S. Environmental Protection Agency has determined that your water IS SAFE at these levels. In order to ensure that tap water is safe to drink, USEPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. In developing the standards, USEPA assumes that the average adult drinks two (2) liters of water each day throughout a 70-year life span. The USEPA generally sets MCL's at

levels that will result in no adverse health effects for some contaminants or a one-in-ten thousand to one-in-a-million chance of having the described health effect for other contaminants. The U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same public health protection.

This table lists contaminants that had some level of detection. Many other contaminants were analyzed but were not present or were below the detection limits of laboratory equipment. Most of the results in the table are from testing done in 2024. However, state and federal agencies allow us to monitor for some contaminants less than once per year because the concentrations of the contaminants do not change frequently. Some of our data, though accurate, is more than one year old. As you can see by the table, our system had no violations. We're proud that your drinking water meets or exceeds all Federal and State requirements.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons 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 about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791) or www.epa.gov/your-drinking-water/safe-drinking-water-hotline.

To learn even more about your water after reviewing this report, please call our office at 540-375-3029 or visit the City's website at www.salemva.gov.

We at the City of Salem Water Department work around the clock to provide top quality water to every tap. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.

TEST RESULTS 2024

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants						
1. Fecal coliform and <i>E. coli</i>	N	0 samples	P/A	0	a routine sample and repeat sample are total coliform positive, and one is also fecal coliform or <i>E. coli</i> positive	Human and animal fecal waste
2. Turbidity Lowest Monthly Percentage below MCL	N	0.115 (max) 100%	NTU	N/A	TT ≤ 0.3NTU	Soil runoff
Inorganic Contaminants						
3. Sodium	N	5.42	ppm	N/A	N/A	Naturally occurring in environment
4. Barium	N	0.048	ppm	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
5. Chlorine Highest LRAA 2024	N	0.28 (min) 1.1	ppm	MRDLG = 4	MRDL = 4	Required disinfectant added during the treatment process to eliminate bacteria
6. Chromium	N	0.0023	ppm	0.1	0.1	Discharge from steel and pulp mills; erosion of natural deposits
7. Fluoride	N	0.58	ppm	4.0	4.0	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and plastic factories
8. Nitrate (as Nitrogen)	N	0.34	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Total Organic Carbon						
9. TOC [Total Organic Carbon]	N	1.00 (min)	ppm	N/A	TT	Naturally present in the environment

Disinfection Byproducts

10. TTHM [Total trihalomethanes]	N	20 – 51	ppb	0	80	By-product of drinking water chlorination
Highest LRAA 2024	N	38	ppb			
11. HAA5 [Haloacetic acids]	N	14 – 43	ppb	0	60	By-product of drinking water chlorination
Highest LRAA 2024	N	30	ppb			

Lead and Copper Analysis

Contaminant	Level Detected	Unit of Measurement	MCLG	MCL	90 th Percentile Level Found	Action Level Exceeded	Samples > AL	Typical Source of Contamination
12. Copper	0.0076 – 0.20	ppm	1.3	AL= 1.3	0.10	No	0	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
13. Lead	ND - 54	ppb	0	AL= 15	2.9	No	1 (54ppb)	

Lead and copper analysis frequency is every three years per USEPA regulation; 31 residential samples were collected from the distribution system in 2022.

Secondary Contaminants

14. pH	N	7.41 – 8.10	standard units	N/A	6.6 – 8.5	Acidity or basicity of water
15. Chloride	N	11.8	ppm	N/A	250	Naturally occurring in environment
16. Sulfate	N	22.5	ppm	N/A	250	Naturally occurring in environment
17. Aluminum	N	0.101	ppm	N/A	0.05 – 0.20	Metal used in electrical conductors, explosives, paints, photography, utensils

Contaminants:

(1) Fecal coliform/E.coli. Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

(2) Turbidity. Turbidity has no health

effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. Combined effluent turbidity must be ≤ 0.3 NTU in 95% of measurements taken each month.

(3) Sodium. An essential element required for normal body function

including nerve impulse transmission, fluid regulation, and muscle contraction and relaxation. However, in excess amounts, sodium increases individual risk of hypertension, heart disease, and stroke. One of the chief sources of sodium is the consumption of salt; salt restrictions are often recommended as a first line of treatment for individuals suffering from these conditions.

(4) Barium. Some people who drink water containing barium more than the MCL over many years could experience

an increase in their blood pressure.

(5) Chlorine. Some people who use drinking water containing chlorine well more than EPA's standard could experience irritating effects to their eyes and nose and stomach discomfort. **Maximum residual disinfectant level goal (MRDLG)** is the level of drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants. **Maximum residual disinfectant level (MRDL)** is the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

(6) Chromium. Chromium-3 is an essential human dietary element. It is found in many vegetables, fruits, meats, grains, and yeast. Chromium-6 occurs naturally in the environment from the erosion of natural chromium deposits. It can also be produced by industrial processes. Continued exposure to chromium-6 could result in allergic dermatitis (skin reactions).

(7) Fluoride. Some people who drink water containing fluoride more than the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.

(8) Nitrate. Infants below the age of six months who drink water containing nitrate more than the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(9) Total Organic Carbon. A parameter that is monitored to determine the probability of disinfection by-product formation (TTHMs and HAA5s) exceeding the MCL. Treatment Technique: The annual average removal ratio is ≥ 1.0 .

(10) Total Trihalomethanes. Some people who drink water containing trihalomethanes more than the MCL over many years may experience problems with their liver, kidneys, or

central nervous systems, and may have an increased risk of getting cancer. LRAA = Locational Running Annual Average

(11) Haloacetic acids. Some people who drink water containing haloacetic acids more than the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer. LRAA = Locational Running Annual Average

(12&13) Lead and Copper. 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 Salem Water Department 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 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 the City of Salem Water Department at 540-375-3029. 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>.

Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of women who are exposed to lead before or during pregnancy can have

increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney, or nervous system problems.

The USEPA promulgated a new Lead and Copper Rule in 2020, here is a short summary of the new rule we will be using to make your drinking water safe:

EPA's new Lead and Copper Rule better protects children and communities from the risks of lead exposure by better protecting children at schools and childcare facilities, getting the lead out of our nation's drinking water, and empowering communities through information. Improvements under the new rule include:

- Using science-based testing protocols to find more sources of lead in drinking water.
- Establishing a trigger level to jumpstart mitigation earlier and in more communities.
- Driving more and complete lead service line replacements.
- For the first time, requiring testing in schools and childcare facilities.
- Requiring water systems to identify and make public the locations of lead service lines.

For more information visit the Federal Register visit <https://www.regulations.gov>. (Docket ID No. EPA-HQ-OW-2017-0300)

(14) pH. The U.S. E.P.A. does not regulate pH levels in drinking water, it is classified as a secondary water contaminant whose impact is considered aesthetic.

(15) Chloride. Chlorides are usually not harmful to people; however, they can corrode metals and affect the taste of food products.

(16) Sulfate. Health concerns regarding sulfate in drinking water have been raised because of reports that diarrhea may be associated with the ingestion of water containing high levels of sulfate.

(17) Aluminum. People at risk for health problems include dialysis patients. Symptoms of chronic aluminum exposure include softening of the bones and brain dysfunction.