SALEM VA

2015 WATER QUALITY REPORT

We're 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 (3) ground water wells. In emergency situations, we purchase or exchange water with the Western Virginia Water Authority (WVWA).

The Virginia Department of Health has completed a source water assessment for our waterworks system. 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 due to the fact that 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.

SALEM
WATER DEPARTMENT
WATER.SALEMVA.GOV

WHAT'S NEW?

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. To help advance the science of drinking water, we collected data for the USEPA on the occurrence of 22 compounds in the water supply **(please see table for Unregulated Contaminant Monitoring).** This is the first step in the USEPA's efforts to determine whether they 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. We will closely monitor the concentration of these compounds, should the USEPA ultimately determine that regulation is warranted, we will take whatever steps are necessary to protect the health of our citizens.

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 Marcus Potts – Chemist 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. They 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, 2015. 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.

Parts per trillion ***(ppt)*** *or Nanograms per liter (nanograms/l)* - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.

Parts per quadrillion ***(ppq)*** *or Picograms per liter (picograms/l)* - one part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in $10,000,000,000,000.

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.

Million Fibers per Liter ***(MFL)*** - million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.

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 - 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.

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.

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

WHAT DOES THIS MEAN?

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. We have learned through our monitoring and testing that some constituents have been detected. The USEPA 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. (MCL's are set by the U.S. Environmental Protection Agency. In developing the standards EPA 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.) 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 for but were not present or were below the detection limits of the lab equipment. Most of the results in the table are from testing done in 2015. However, state and federal agencies allows 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.

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 **water.salemva.gov**

We at the 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, way of life and our children's future.

TEST RESULTS						
Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants						
1. Total Coliform Bacteria	N	0 samples	P/A	0	presence of coliform bacteria > 5% of monthly samples	Naturally present in the environment
2. Fecal coliform and *E.coli*	N	0 samples	P/A	0	a routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Human and animal fecal waste
3. Turbidity	N	0.017-0.116	NTU	n/a	≤ 0.3NTU	Soil runoff, **(see note #3)**
4. Cryptosporidium **Most recent monitoring period 2008-2010** New data collection begins October 2016	N	1-2	Oocysts per 10 liters	0	99% removal by filtration plus addition as required under the LT2ESWTR	Human and animal fecal waste **THIS IS UNTREATED WATER!!**
5. Giardia lamblia **Most recent monitoring period 2008-2010** New data collection begins October 2016	N	2-7	Cysts per 10 liters	0	99.9% removal or inactivation	Human and animal fecal waste **THIS IS UNTREATED WATER!!**
Radioactive Contaminants						
6. Beta/photon emitters	N	1.5	pCi/1	0	4	Decay of natural and man-made deposits
7. Alpha emitters	N	<0.9	pCi/1	0	15	Erosion of natural deposits
8. Combined radium	N	<0.6	pCi/1	0	5	Erosion of natural deposits
Inorganic Contaminants						
9. Antimony	N	< 2	ppb	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
10. Arsenic	N	< 2	ppb	n/a	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
11. Aluminum	N	0.114	ppm	0.05-0.20	0.20	Metal used in electrical conductors, explosives, paints, photography, utensils
12. Barium	N	0.038	ppm	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
13. Beryllium	N	< 2	ppb	4	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
14. Cadmium	N	< 2	ppb	5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
15. Chromium	N	< 10	ppb	100	100	Discharge from steel and pulp mills; erosion of natural deposits
16. Corrosivity	N	11.0	Aggressive Index	n/a	noncorrosive	Physical property of water
17. Silver	N	<0.01	ppm	n/a	0.10	Naturally occurring in environment
18. Chloride	N	13.7	ppm	n/a	250	Naturally occurring in environment
19. Sulfate	N	17.5	ppm	n/a	250	Naturally occurring in environment
20. pH	N	7.20 – 7.96	pH units	n/a	6.6 – 8.5	Acidity or basicity of water
21. Total dissolved solids	N	182	ppm	n/a	500	Physical property of water
22. Iron	N	< 0.05	ppm	n/a	0.3	Naturally occurring in environment
23. Manganese	N	0.01	ppm	n/a	0.05	Naturally occurring in environment

24. Nickel	N	< 0.01	ppm	n/a	0.1	Naturally occurring in environment, Used in alloys, protective coatings
25. Zinc	N	< 0.01	ppm	n/a	5	Naturally occurring in environment, Used in alloys, batteries, fungicides
26. Color	N	<5	Color units	n/a	15	Physical property of water
27. Sodium	N	5.94	ppm	n/a	n/a	Naturally occurring in environment
28.Chlorine	N	0.92 – 2.14	ppm	4	4	Required disinfectant added during the treatment process to eliminate bacteria
29. Fluoride	N	0.23 – 0.83	ppm	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
30. Cyanide	N	<0.02	ppm	0.2	0.2	Discharge from steel/metal factories: discharge from plastic and fertilizer factories
31. Mercury (inorganic)	N	< 0.2	ppb	2	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
32. Nitrate/Nitrite (as Nitrogen)	N	0.35	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
33. Ortho Phosphate	N	<0.05	ppm	n/a	n/a	Used in drinking water treatment
34. Selenium	N	< 0.01	ppm	0.05	0.05	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
35. Thallium	N	< 2	ppb	0.5	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
36. Hardness	n/a	123-239	ppm	n/a	n/a	Primary dissolved limestone minerals from soil and rock materials
37. Alkalinity	n/a	90-187	ppm	n/a	n/a	Primary dissolved limestone minerals from soil and rock materials
Synthetic Organic Contaminants including Pesticides and Herbicides						
38. 2,4-D	N	< 1.0	ppb	70	70	Runoff from herbicide used on row crops
39. 2,4,5-TP (Silvex)	N	< 0.5	ppb	50	50	Residue of banned herbicide
40. Carbaryl	N	< 0.5	ppb	0	700	A pesticide used on forest lands
41. Alachlor	N	< 0.2	ppb	0	2	Runoff from herbicide used on row crops
42. Atrazine	N	< 0.5	ppb	3	3	Runoff from herbicide used on row crops
43. Benzo(a)pyrene (PAH)	N	< 0.2	ppb	0	0.2	Leaching from linings of water storage tanks and distribution lines
44. Carbofuran	N	< 0.2	ppb	40	40	Leaching of soil fumigant used on rice and alfalfa
45. Chlordane	N	< 0.2	ppb	0	2	Residue of banned termiticide
46. Dalapon	N	< 3	ppb	200	200	Runoff from herbicide used on rights of way
47. Di(2-ethylhexyl) adipate	N	< 1	ppb	400	400	Discharge from chemical factories
48. Di(2-ethylhexyl) phthalate	N	< 2	ppb	0	6	Discharge from rubber and chemical factories
49. Dibromochloropropane	N	< 0.02	ppb	0	0.2	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
50. Dinoseb	N	< 1	ppb	7	7	Runoff from herbicide used on soybeans and vegetables
51. Diquat	N	< 0.4	ppb	20	20	Runoff from herbicide use
52. Methomyl	N	< 0.5	ppb	0	200	Broad spectrum insecticide
53. Aldicarb Sulfoxide	N	< 0.5	ppb	0	4	Runoff from insecticide use, applied directly to soil
54. Aldicarb Sulfone	N	< 0.7	ppb	0	2	Runoff from insecticide use, applied directly to soil
55. Aldicarb	N	< 0.5	ppb	0	3	Runoff from insecticide use, applied directly to soil

56. Ethylene dibromide	N	< 0.02	ppb	0	0.05	Discharge from petroleum refineries
57. Dicamba	N	< 0.1	ppb	200	200	Runoff from herbicide use
58. Heptachlor	N	< 0.1	ppb	0	0.4	Residue of banned termiticide
59. Heptachlor epoxide	N	< 0.5	ppb	0	0.2	Breakdown of heptachlor
60. Hexachlorobenzene	N	< 0.1	ppb	0	1	Discharge from metal refineries and agricultural chemical factories
61. Hexachlorocyclo-pentadiene	N	< 0.5	ppb	50	50	Discharge from chemical factories
62. Lindane	N	< 0.1	ppb	0.2	0.2	Runoff/leaching from insecticide used on cattle, lumber, gardens
63. Methoxychlor	N	< 0.2	ppb	40	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
64. Oxamyl [Vydate]	N	< 2.0	ppb	200	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
65. PCBs [Polychlorinated biphenyls]	N	< 0.2	ppb	0	0.5	Runoff from landfills; discharge of waste chemicals
66. Pentachlorophenol	N	< 0.1	ppb	0	1	Discharge from wood preserving factories
67. Picloram	N	< 1	ppb	500	500	Herbicide runoff
68. Simazine	N	< 0.5	ppb	4	4	Herbicide runoff
69. Toxaphene	N	< 1	ppb	0	3	Runoff/leaching from insecticide used on cotton and cattle

Volatile Organic Contaminants

70. Benzene	N	< 0.5	ppb	0	5	Discharge from factories; leaching from gas storage tanks and landfills
71. Carbon tetrachloride	N	< 0.5	ppb	0	5	Discharge from chemical plants and other industrial activities
72. Chlorobenzene	N	< 0.5	ppb	100	100	Discharge from chemical and agricultural chemical factories
73. o-Dichlorobenzene	N	< 0.5	ppb	600	600	Discharge from industrial chemical factories
74. p-Dichlorobenzene	N	< 0.5	ppb	75	75	Discharge from industrial chemical factories
75. 1,2 - Dichloroethane	N	< 0.5	ppb	0	5	Discharge from industrial chemical factories
76. 1,1 - Dichloroethylene	N	< 0.5	ppb	7	7	Discharge from industrial chemical factories
77. cis-1,2-Dichloroethylene	N	< 0.5	ppb	70	70	Discharge from industrial chemical factories
78. trans - 1,2 -Dichloroethylene	N	< 0.5	ppb	100	100	Discharge from industrial chemical factories
79. Dichloromethane	N	< 0.5	ppb	0	5	Discharge from pharmaceutical and chemical factories
80. 1,2-Dichloropropane	N	< 0.5	ppb	0	5	Discharge from industrial chemical factories
81. Ethylbenzene	N	< 0.5	ppb	700	700	Discharge from petroleum refineries
82. Styrene	N	< 0.5	ppb	100	100	Discharge from rubber and plastic factories; leaching from landfills
83. Tetrachloroethylene	N	< 0.5	ppb	0	5	Leaching from PVC pipes; discharge from factories and dry cleaners
84. 1,2,4 -Trichlorobenzene	N	< 0.5	ppb	70	70	Discharge from textile-finishing factories
85. 1,1,1 - Trichloroethane	N	< 0.5	ppb	200	200	Discharge from metal degreasing sites and other factories
86. 1,1,2 -Trichloroethane	N	< 0.5	ppb	3	5	Discharge from industrial chemical factories
87. Trichloroethylene	N	< 0.5	ppb	0	5	Discharge from metal degreasing sites and other factories
88. TTHM [Total trihalomethanes]	N	11.7 – 65.0	ppb	0	80	By-product of drinking water chlorination

89. HAA5 [Haloacetic acids]	N	14.9 – 47.0	ppb	n/a	60	By-product of drinking water chlorination
90. Toluene	N	< 0.5	ppm	1	1	Discharge from petroleum factories
91. Vinyl Chloride	N	< 0.5	ppb	0	2	Leaching from PVC piping; discharge from plastics factories
92. Xylenes	N	< 0.5	ppb	1000	1000	Discharge from petroleum factories; discharge from chemical factories
93. Methyl Tert Butyl Ether (MTBE)	N	<5	ppb	n/a	n/a	Gasoline additive, found in leaking underground storage tanks

Total Organic Carbon

94. Total Organic Carbon	N	0.73 – 1.53	ppm	n/a	Treatment Technique **(see note #94)**	Naturally present in the environment

Lead and Copper Analysis **(Most recent monitoring period 2013)***

Contaminant	Unit of Measurement	MCLG	MCL	90th Percentile Level Found	Action Level Exceeded	Samples > AL	Typical Source of Contamination
Copper	ppm	1.3	AL= 1.3	0.087	No	0	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead	ppb	0	AL=15	7.7	No	0	

Analysis frequency is every three years; thirty samples are collected from the distribution system

New data will be collected during the summer of 2016. It will be in the next CCR report

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. 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 Salem Water Department 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 30 seconds to 2 minutes or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your tested. Information on lead in drinking, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://ww.epa.gov./safewater/lead.

Unregulated Contaminant Monitoring Program Data

Contaminant	Violation Y/N	Level Detected	Unit of Measurement	MCLG	MCL	Likely source of contamination
1,2,3-Trichloropropane	N	ND	ppb	--	--	Used in paint, varnish remover, solvents and degreasing agents
1,3-Butadiene	N	ND	ppb	--	--	Used in rubber manufacturing and occurs as a gas
Chloromethane	N	ND	ppb	--	--	By-product that can form when chlorine used to disinfect drinking water
1,1-Dichloroethane	N	ND	ppb	--	--	Used as a solvent
Bromomethane	N	ND	ppb	--	--	Used as a fumigant on soil before planting, on crops after harvest
Chlorodifluoromethane	N	ND	ppb	--	--	Used as a refrigerant
Bromochloromethane	N	ND	ppb	--	--	Used as a fire extinguishing fluid, as a solvent in the making of pesticides
Perfluorooctanesulfonic acid	N	ND	ppb	--	--	Used in firefighting foam, floor polish, as a pesticide active ingredient
Perfluorooctanoic acid	N	ND	ppb	--	--	Used cleaners, cosmetics, greases, paints, lubricants
Perfluorononanoic acid	N	ND	ppb	--	--	Used in products to make them stain, grease, heat and water resistant
Perfluorohexanesulfonic acid	N	ND	ppb	--	--	Used in products to make them stain, grease, heat and water resistant
Perfluoroheptanoic acid	N	ND	ppb	--	--	Used in products to make them stain, grease, heat and water resistant
Perfluorobutanesulfonic acid	N	ND	ppb	--	--	Used in products to make them stain, grease, heat and water resistant
1,4 -Dioxane	N	ND	ppb	--	--	Used in the production of paper, cotton, textile products, cosmetics, shampoos
Chlorate	N	ND	ppb	--	--	Agricultural defoliant or desiccant
Vanadium	N	0.320-0.370	ppb	--	--	Naturally occurring elemental metal

Molybdenum	N	ND	ppb	--	--	Naturally occurring elemental metal
Cobalt	N	ND	ppm	--	--	Naturally occurring elemental metal
Strontium	N	240-380	ppm	--	--	Naturally occurring elemental metal
Chromium	N	ND	ppm	--	--	Naturally occurring elemental metal
Chromium - 6	N	0.057-0.079	ppb	--	--	Naturally occurring elemental metal

Purpose: To collect occurrence data for contaminants suspected to be present in drinking water but that do not have health-based Standards set under the Safe Drinking Water Act (SDWA). The Unregulated Contaminant Monitoring Program is the primary source of drinking water contaminant occurrence data used by USEPA in regulatory determinations.

Microbiological Contaminants:
(1) Total Coliform. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present.
(2) 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.
(3) 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 ≤ 0.3NTU
in 95% of measurements taken each month.
(4) Cryptosporidium. Pathogenic protozoa that is widely distributed in nonpotable water supplies. This organism can cause gastrointestinal illness (e.g. diarrhea, vomiting, and cramps).
(5) Giardia lamblia. Pathogenic protozoa that is widely distributed in nonpotable water supplies. This organism can cause gastrointestinal illness (e.g. diarrhea, vomiting, and cramps).

Radioactive Contaminants:
(6) Beta/photon emitters. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
(7) Alpha emitters. Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
(8) Combined Radium 226/228. Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.

Inorganic Contaminants:
(9) Antimony. Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
(10) Arsenic. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
(11) Aluminum. People at risk for health problems include dialysis patients. Symptoms of chronic aluminum exposure include softening of the bones and brain dysfunction.
(12) Barium. Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
(13) Beryllium. Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
(14) Cadmium. Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
(15) Chromium. Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
(16) Copper. Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.
(17) Silver. Since silver is not a health benefit for living organisms in any way, the body has a low capacity for absorbing it. Low amounts of ionic silver water intake are not harmful or life threatening in any way, but large intakes can prove to be extremely toxic. Water guidelines suggest an incredibly low amount of silver within drinking water because a high concentration of silver water can bond while boiling and create silver oxide. Silver water that contains silver nitrate can be even more harmful and cause dizziness, diarrhea, and vomiting.
(18) Chloride. Chlorides are not usually not harmful to people, however they can corrode metals and effect the taste of food products.
(19) 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.
(20) 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.
(21) Total dissolved solids. Total dissolved solids can give water a murky appearance and detract from the taste quality of the water.
(22) Iron. Elevated iron levels in water can cause stains in plumbing, laundry, and cooking utensils, and can impart objectionable tastes and colors to food.
(23) Manganese. Elevated manganese levels in water can cause stains in plumbing, laundry, and cooking utensils. Upon exposure to air or other oxidants, manganese will usually precipitate black.
(24) Nickel. Nickel is not known to cause any health problems when people are exposed to levels above the MCL for relatively short periods of time
(25) Zinc. Harmful effects generally begin at levels 10-15 times higher than the amount needed for good health. Large doses taken by mouth even for a short time can cause stomach cramps, nausea, and vomiting.
(26) Color. Color in drinking water is classified as a secondary water contaminant whose impact is considered aesthetic.
(27) 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; therefore salt restrictions are often recommended as a first-line of treatment for individuals suffering from these conditions.
(28) Chlorine. Some people who use drinking water containing chlorine well in excess of EPA's standard could experience irritating effects to their eyes and nose and stomach discomfort.
(29) Fluoride. Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.
(30) Cyanide. Nerve damage or thyroid problems.
(31) Mercury (inorganic). Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
(32) Nitrate. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
(33) Orthophosphate. A commonly used corrosion inhibitor that is added to finished drinking water. Orthophosphate works by forming a protective coating inside of pipes in the distribution system and in customer homes to prevent lead from leaching into drinking water. It is approved for use in drinking water treatment by the USEPA, and certified by the National Sanitation Federation. It is not used at the City of Salem Water Plant.
(34) Selenium. Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
(35) Thallium. Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
(36) Hardness. Hardness does not pose a health risk and is not regulated by state or federal agencies. It often causes aesthetic problems, such as scaling on pipes and fixture; lowers detergent performance.
(37) Alkalinity. High alkalinity does not pose a health risk, but can cause aesthetic problems.

Synthetic organic contaminants including pesticides and herbicides:
(38) 2, 4-D. Some people who drink water containing the weed killer 2, 4-D well in excess of the MCL over

many years could experience problems with their kidneys, liver, or adrenal glands.
(39) 2, 4, 5-TP (Silvex). Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
(40) Carbaryl. Carbaryl may reduce learning ability and aggravate viral diseases.
(41) Alachlor. Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
(42) Atrazine. Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
(43) Benzo (a) pyrene [PAH]. Some people who drink water containing benzo (a) pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
(44) Carbofuran. Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
(45) Chlordane. Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
(46) Dalapon. Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
(47) Di (2-ethylhexyl) adipate. Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties.
(48) Di (2-ethylhexyl) phthalate. Some people who drink water containing di (2-ethylhexyl) phthalate in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
(49) Dibromochloropropane (DBCP). Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
(50) Dinoseb. Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
(51) Diquat. Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
(52) Methomyl. Repeated exposure to methomyl may cause an unsuspected inhibition of cholinesterase, resulting in flu-like symptoms, such as weakness, lack of appetite, and muscle aches.
(53) Aldicarb Sulfoxide. The primary route of human exposure to aldicarb sulfoxide is consumption of food and of contaminated water especially wells. There may be adverse immune system effects associated with long term ingestion of aldicarb sulfoxide.
(54) Aldicarb Sulfone. The primary route of human exposure to aldicarb sulfone is consumption of food and of contaminated water especially wells. There may be adverse immune system effects associated with long term ingestion of aldicarb sulfone.
(55) Aldicarb. The primary route of human exposure to aldicarb is consumption of food and of contaminated water especially wells. There may be adverse immune system effects associated with long term ingestion of aldicarb.
(56) Ethylene dibromide. Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
(57) Dicamba. Chronic exposure to dicamba can lead to the lost of appetite, vomiting, shortness of breath, and bluing of the skin and gums.
(58) Heptachlor. Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
(59) Heptachlor epoxide. Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
(60) Hexachlorobenzene. Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
(61) Hexachlorocyclopentadiene. Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
(62) Lindane. Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
(63) Methoxychlor. Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
(64) Oxamyl [Vydate]. Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
(65) PCBs [Polychlorinated biphenyls]. Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
(66) Pentachlorophenol. Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
(67) Picloram. Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
(68) Simazine. Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
(69) Toxaphene. Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have increased risk of getting cancer.

Volatile Organic Contaminants:

(70) Benzene. Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
(71) Carbon Tetrachloride. Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
(72) Chlorobenzene. Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
(73) o-Dichlorobenzene. Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
(74) p-Dichlorobenzene. Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
(75) 1,2-Dichloroethane. Some people who drink water containing 1, 2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
(76) 1, 1-Dichloroethylene. Some people who drink water containing 1, 1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
(77) cis-1, 2-Dichloroethylene. Some people who drink water containing cis-1, 2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
(78) trans-1, 2-Dicholoroethylene. Some people who drink water containing trans-1, 2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
(79) Dichloromethane. Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
(80) 1, 2-Dichloropropane. Some people who drink water containing 1, 2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
(81) Ethylbenzene. Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
(82) Styrene. Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
(83) Tetrachloroethylene. Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
(84) 1, 2, 4-Trichlorobenzene. Some people who drink water containing 1, 2, 4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
(85) 1, 1, 1,-Trichloroethane. Some people who drink water containing 1, 1, 1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
(86) 1, 1, 2-Trichloroethane. Some people who drink water containing 1, 1, 2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
(87) Trichloroethylene. Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
(88) TTHMs [Total Trihalomethanes]. Some people who drink water containing trihalomethanes in excess of 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.
(89) HAA5s [Haloacetic acids]. Some people who drink water containing haloacetic acids in excess of 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.
(90) Toluene. Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
(91) Vinyl Chloride. Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
(92) Xylenes. Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
(93) Methyl Tert Butyl Ether (MTBE). Data support the conclusion that MTBE is a potential human carcinogen at high doses.
(94) Total Organic Carbon. A parameter that is monitored to determine the probability of disinfection by-product formation (TTHMs no.88 and HAAs no.89) exceeding the MCL. Treatment Technique: The annual average removal ratio is ≥ 1.0.