Annual Drinking Water Quality Report
City of Radford
2016

INTRODUCTION

This Annual Drinking Water Quality Report for calendar year 2016 is designed to inform you about your drinking water quality. Our goal is to provide you with a safe and dependable supply of drinking water, and we want you to understand the efforts we make to protect your water supply. The quality of your drinking water must meet state and federal requirements administered by the Virginia Department of Health (VDH).

If you have questions about this report, or if you want additional information about any aspect of your drinking water or want to know how to participate in decisions that may affect the quality of your drinking water, please contact:

Mr. Lawrence Rice, City of Radford at (540) 731-3662

The times and location of regularly scheduled board meetings are as follows:

Second and Fourth Monday of each month at 7:30 p.m. at 10 Robertson Street, Radford, Virginia

GENERAL INFORMATION

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include: (1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. (2) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining , or farming. (3) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses. (4) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems. (5) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, 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 which must provide the same protection for public health.

Drinking water, including bottled drinking water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

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).

SOURCE OF YOUR DRINKING WATER

The source of your drinking water is surface water. The source of supply for the City of Radford water treatment plant is the New River.

A source water assessment of our system was conducted in 2002 by the Olver, Inc. The New River was determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program. The report is available by contacting the City of Radford water treatment plant at the phone number or address given elsewhere in this drinking water quality report.

DEFINITIONS

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The table on the next page shows the results of our monitoring for the period of January 1st to December 31st, 2016. In the table and elsewhere in this report you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to help you better understand these terms:

Maximum Contaminant Level, or MCL - 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, or MCLG - 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.

Non-detects (ND) - lab analysis indicates that the contaminant 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 (µg/L)- 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.

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

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 required process intended to reduce the level of a contaminant in drinking water.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity, or cloudiness, of water. Turbidity in excess of 5 NTU is just noticeable to the average person. Turbidity is monitored because it is a good indicator of the effectiveness of our filtration system.

Maximum Residual Disinfectant Level Goal or MRDLG – 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 or MRDL – 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.

WATER QUALITY RESULTS -- REGULATED CONTAMINANTS

Contaminant (units)	MCLG	MCL	Level Detected	Violation (Y/N)	Range	Date of Sample	Typical Source of Contamination
Nitrate + Nitrite (ppm)	10	10	0.37	N	NA	2016	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride	4	4	0.57	N	NA	2016	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Chlorine (ppm)	MRDLG = 4	MRDL = 4	1.55	N	0.36– 2.2	2016	Water additive used to control microbes
Barium (ppm)	2	2	0.021	N	NA	October 2016	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Total Organic Carbon	N/A	TT, met when ≥1 or alternate criteria is met	1.00	N	NA	2016	Naturally present in the environment
HAA5s [Haloacetic Acids] (ppb)	N/A	60	45	N	9.4-63	2016	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	N/A	80	60	N	9.8-82	2016	By-product of drinking water disinfection
Turbidity (NTU)	N/A	TT, 1 NTU Max	0.110	N	0.020– 0.110	2016	Soil runoff
		TT, ≤0.3 NTU 100% of the time	100%	N	N/A		

Lead and Copper Contaminants

Contaminant (units)	MCLG	Action Level	90th Percentile	Date of Sampling	# of Sampling Sites Exceeding Action Level	Typical Source of Contamination
Lead (ppb)	0	AL = 15	2.1	08/2015	2	Corrosion of household plumbing system; Erosion of natural deposits
Copper (ppm)	1.3	AL = 1.3	0.060	08/2015	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

In 2016, the City of Radford began monitoring for Cryptosporidium in the source water (before treatment) as required by EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). Cryptosporidium is a microscopic parasite found in surface water throughout the United States. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Under the LT2ESWTR, the average Cryptosporidium concentration determines if additional treatment measures are needed. Twenty-four samples are required for analysis over a two-year period. During 2016, the average Cryptosporidium concentration was 0.0 oocysts per liter for the three samples collected. Based on the Cryptosporidium monitoring results so far and the current performance of the treatment plant, we anticipate meeting the future treatment requirements of the LT2ESWTR.

The water quality results in the above tables are from testing done during 2016 or before 2016. The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently.

We regularly monitor for various contaminants in the water supply to meet all regulatory requirements. The table lists only those contaminants that had some level of detection. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment. The City of Radford also tests for Total Coliforms (bacteria), volatile organics (VOCs), synthetic organic compounds (SOCs), metals, etc., and the test results met current state and federal guidelines for drinking water.

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

MCLs are set at very stringent levels by the U.S. Environmental Protection Agency. In developing the standards EPA assumes that the average adult drinks 2 liters of water each day throughout a 70-year life span. EPA generally sets MCLs 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.

VIOLATION INFORMATION

None.

ADDITIONAL HEALTH INFORMATION FOR 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 Radford 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 or to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline of at (800-426-4791).

ADDITIONAL INFORMATION ABOUT YOUR WATERWORKS – THE CITY OF RADFORD CROSS CONNECTION CONTROL PROGRAM

Radford residents expect their drinking water to be aesthetically pleasant and safe to drink. Though the City goes to great lengths to ensure that the water delivered to its residents is of the highest quality, there is a possibility the water may be contaminated or polluted from sources out of its control. This might occur when the water supply is connected to equipment containing a substance unsuitable for drinking. These "cross connections" may be permanent or temporary and could cause delivery of an unstable product which may be harmful.

Federal law requires the City of Radford to protect the water supply from potential contamination or pollution. In order to prevent contamination of supply lines from these cross connections, the City implemented a Cross Connection Program which offers protection from contamination by cross connection by use of backflow prevention assemblies. Backflow is the undesirable reversal of water, or mixtures of water and undesirable substances, from any sources (such as used water, industrial fluids, gasses, etc.) into the distribution pipes of the water system.

Water distribution systems are designed to flow in one direction from the main to the customer. With the direction of flow reversed, due to a change in pressures (such as fire-fighting efforts or breaks in the water main) backflow can allow contaminants to enter our drinking water system through cross connection. When this happens, any substance that may be in contact with the water line could be introduced into the system. Backflow can also occur when the unprotected water supply line is attached to a container or pipe which contains substances under pressure, such as a boiler or a water recirculation system. Conditions can cause these substances to be pumped back into the water system through a cross connection.

Among typical potentially hazard cross connections which occur in residential areas is the use of a garden hose sprayer to apply insecticides or herbicides to lawns. Placing a hose in a bucket of soapy solution while washing a car is also a potential cross connection. Another cross connection may occur when someone uses a garden hose to clear stoppage in their sewer line. Other potential problems may arise from swimming pools, indoor sprinkler systems, radiator heat or boiler heating units.

Preventing the backflow of contaminants in the water system is absolutely essential if health and property are to be protected. A single backflow incident can potentially affect hundreds, or even thousands, of people.

With co-operation from building contractors and plumbers, the City's Building Official and Code Enforcement Officer, and the Public Works Department, the City of Radford has incorporated and administered an outstanding and reputable Program to ensure a dependable and safe supply of water is available to its customers.

If you would like an evaluation of your residence or business, please contact Mr. Lawrence C. Rice, Water Treatment Superintendent, by calling (540) 731-3662 or by sending a written request to him at 20 Forest Avenue, Radford, VA 24141.