



ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2018

Presented By
Town of Danvers/Water Division

Our Mission Continues

We are once again pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2018. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please remember that we are always available should you ever have any questions or concerns about your water.

The Benefits of Fluoridation



Fluoride is a naturally occurring element in many water supplies in trace amounts. In our system, the fluoride level is adjusted to an optimal level averaging 0.7 parts per million (ppm) to improve oral health in children. At this level, it is safe, odorless, colorless, and tasteless. Our water system has been providing this treatment since 1951. There are over 3.9 million people in 140 Massachusetts water systems and 184 million people in the U.S. who receive the health and economic benefits of fluoridation.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



Substances That Could Be in Water

To ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (DEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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. Substances that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may 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 Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Where Does My Water Come From?

The Town of Danvers has been operating its drinking water pumping facility at Middleton Pond since 1876. The Vernon C. Russell Water Treatment Plant opened in 1976 and has continuously provided residents and businesses of Danvers and Middleton a safe and dependable source of drinking water. The water system has 10,141 (combined, Danvers and Middleton) service connections through which an average of 3.16 million gallons (MG) is pumped per day. The Town also has secondary reservoirs at Emerson Brook in Middleton and Swan Pond in North Reading.

In addition to these surface water supplies, the Town of Danvers has two water supply wells. Both of these wells were constructed during 1960 - 1961. In 2003, a greensand filtration plant was built at Well #2 to remove troublesome iron and manganese. In 2004, Well #1 was rehabilitated with two new replacement wells. If necessary, during an emergency, water may also be purchased from the cities of Beverly and Peabody through interconnections in the distribution system. One such emergency occurred in October. Both variable frequency drives, for the Finished Water pumps and the Water Treatment Plant, failed within ten days of each other and required replacement. It only took two days for repairs to be completed. During this time, 3.6 MG of water was purchased from the Salem-Beverly water supply.

The Town of Danvers maintains a state-certified laboratory for bacterial analysis. We are also a member of the American Water Works Association and the New England Water Works Association.

We remain vigilant in delivering the best-quality drinking water

The Water Treatment Process

The treatment process includes pre-oxidation to neutralize water-borne cysts and to aid sedimentation and filtration; flocculation and sedimentation to remove settle-able solids; and filtration to remove un-settle-able particulates as well as to reduce taste, color, and odor-causing organic compounds. Finally, the water is disinfected, pH optimized, and fluoridated.

Lead in Home Plumbing

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. We are responsible for providing high-quality drinking water, but we 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 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 at (800) 426-4791 or at www.epa.gov/safewater/lead.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Jason McCarthy, Water Treatment Plant Manager, or Matthew O'Boyle, Assistant Water Treatment Plant Manager/Laboratory Director, at (978) 774-5054.

What's a Cross-Connection?



Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems), or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand), causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools, or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed industrial, commercial, and institutional facilities in the service area to make sure that potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test backflow preventers to make sure that they provide maximum protection.

For more information on backflow prevention, contact the Safe Drinking Water Hotline at (800) 426-4791.

About Our Action Level Exceedence

In September of 2018 the Town of Danvers conducted our Lead and Copper Rule (LCR) sampling. This sampling requires that 90 percent of samples tested be below the Action Level (AL) of 15 ppb for lead. Lead is a component that was commonly used in household plumbing fixtures prior to 1986. Danvers' source water does not contain lead, and the water mains in the distribution system do not contain any lead parts. Danvers results came back that 88.2 percent of samples tested were below the AL. Danvers has since initiated a public education campaign, worked with an engineering consultant to optimize the dose of our corrosion control system, and increased the number and frequency of lead and copper test sites. For additional information, please visit www.danversma.gov/lead.

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 spans and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

SWAP

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to inventory land uses within the recharge areas of all public water supply sources. The state has determined that the risk of contamination is generally low to moderate from these land uses. A source's susceptibility to contamination does not imply poor water quality. Source water protection, monitoring, and treatment ensure that safe water is delivered to the tap. Residents can help by taking hazardous household chemicals to the Town's annual Household Hazardous Waste Day collection. You should also limit pesticide and fertilizer use in sensitive areas. The complete SWAP report is available for review at the Public Works office at Town Hall or by calling (978) 777-0001, ext. 3011.



Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. Also, the water we deliver must meet specific health standards. Here, we show only those substances that were detected in our water. (A complete list of all our analytical results is available upon request.) Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

We participated in the 4th stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR4) program by performing additional tests on our drinking water. UCMR4 sampling benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if the EPA needs to introduce new regulatory standards to improve drinking water quality. Unregulated contaminant monitoring data are available to the public, so please feel free to contact us if you are interested in obtaining that information. If you would like more information on the U.S. EPA's Unregulated Contaminant Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	ACTION LEVEL EXCEEDENCE	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2017	15	0	2.66	NA	No	Erosion of natural deposits
Barium (ppm)	2018	2	2	0.045	0.014–0.069	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2018	[4]	[4]	1.34	0.30–2.26	No	Water additive used to control microbes
Combined Radium (pCi/L)	2017	5	0	0.221	NA	No	Erosion of natural deposits
Fluoride (ppm)	2018	4	4	0.4	0–0.9	No	Water additive that promotes strong teeth
Haloacetic Acids [HAAs] (ppb)	2018	60	NA	23.5	5.14–42.33	No	By-product of drinking water disinfection
Nitrate (ppm)	2018	10	10	1.44	0.11–2.83	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] ¹ (ppb)	2018	80	NA	49.88	29.6–81.95	No	By-product of drinking water disinfection
Total Organic Carbon ² (ppm)	2018	TT	NA	2.36	1.33–3.01	No	Naturally present in the environment
Turbidity ³ (NTU)	2018	TT	NA	0.34	0.06–0.34	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2018	TT = 95% of samples meet the limit	NA	96	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	ACTION LEVEL EXCEEDENCE	TYPICAL SOURCE
Copper (ppm)	2018	1.3	1.3	0.154	0/34	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2018	15	0	17.6	4/34	Yes	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Iron (ppb)	2018	300	NA	190	0–630	No	Leaching from natural deposits; Industrial wastes
Manganese (ppb)	2018	50	NA	160	10–480	No	Leaching from natural deposits

UNREGULATED SUBSTANCES⁴

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Sodium ⁵ (ppm)	2018	71.1	47.7–100	Erosion of natural deposits; Road de-icing agents; Water treatment process

Definitions

90th %ile: Out of every 10 homes sampled, 9 were at or below this level. This number is compared to the Action Level to determine lead and copper compliance.

AL (Action Level): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as the highest LRAAs.

MCL (Maximum Contaminant Level): 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.

MCLG (Maximum Contaminant Level Goal): 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.

MRDL (Maximum Residual Disinfectant Level): 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.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a 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.

NA: Not applicable

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

SMCL (Secondary Maximum Contaminant Level): These standards are developed to protect aesthetic qualities of drinking water and are not health based.

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

¹ Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their livers, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

² The value reported under Amount Detected for TOC is the lowest ratio between the percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

³ Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

⁴ Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of monitoring unregulated contaminants is to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted.

⁵ The Massachusetts Department of Environmental Protection maintains a guideline level of 20 ppm for sodium.