



2016 Town of Avon Annual Water Quality Report

MassDEP PWSID # 4018000

Quality Drinking Water & the Avon Water Department. The Town of Avon, through its Department of Public Works, (PWS No. 4018000) is committed to providing our customers with high quality drinking water that meets or surpasses state and federal standards for quality and safety. To ensure delivery of high quality water, we have made significant investments in treatment facilities, water quality monitoring, and the distribution system. We hope that you are as pleased with the quality of your water as we are. Please feel free to contact us with any questions or concerns you may have.

Avon's Water System. The Town of Avon draws its water from seven groundwater supply wells (01G, 02G, 03G, 04G, 05G, 06G and 07G), seven pump stations, and two water storage tanks. The water sources and DEP ID numbers are listed below.

Well ID	Well Common Name	Location	Well ID	Well Common Name	Location
01G	Memorial Well #1	Memorial Drive	05G	Well #4	Connolly Road
02G	Memorial Well #2	Memorial Drive	06G	Trout Brook Wellfield	Argyle Avenue
03G	Porter Well	Avon Place	07G	Satellite Wells #3A, 3B, 3C	Argyle Avenue
04G	Theater Well #3	Argyle Avenue			

Additionally, the DPW has three water treatment plants for corrosion control and one water filtration plant. The system has interconnections with Randolph and Stoughton.

Required Information. The Town of Avon entered into an Administrative Consent Order with Penalty (ACOP) on January 17, 2014. The Town was required to meet a number of conditions regarding operational improvements, including preparation and implementation of an Environmental Management System (EMS).

Cross Connection Education. Cross-connections that could contaminate drinking water distribution lines are a 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).

The Avon DPW has an active cross connection control program, and tests all backflow devices as required by Mass DEP and the Cross Connection Control Section (310 CMR 22.22) of the Commonwealth of Massachusetts Drinking Water Regulations. Commercial, industrial and institutional facility backflow devices are inspected at least annually by licensed professionals, and there is an ongoing program to insure new connection to the water system have appropriate backflow devices.

A cross connection is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For instance, you're going to spray fertilizer or weed killer on your lawn. You hook up your hose to the sprayer that contains the fertilizer. If the water pressure drops (say because of fire hydrant use in the town) while the hose is connected to the fertilizer, the fertilizer may be sucked back into the drinking water

pipes through the hose. This can also occur when a hose is submerged in a swimming pool, or even simply laying on the ground. Using an attachment on your hose called a backflow prevention device can prevent this problem. The DPW recommends the installation of backflow prevention devices, such as a low cost bib vacuum breaker, for all inside and outside hose connections. You can purchase this at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system in your town. For additional information on cross connections and on the status of Avon's cross connection program, please contact the DPW.

Notice of Noncompliance (NON): On August 2, 2016, the Town received a NON for failing to maintain its disinfection treatment process such that the treatment process was not sufficient to achieve at least 99.99% (4-log) inactivation and or removal of viruses as required by the Groundwater Rule, which is in violation of 310 CMR 22.26(5)(c). Avon Water Department provided the required notice to MassDEP and subsequently submitted an Emergency Response Report detailing the exact sequence of events that led to failure, the cause of the failure, and the steps taken by the Avon Water Department to ensure that failure will not be repeated. These steps were all implemented, and no further action is required.

Water Quality Summary. The contaminants listed below only represent those which were detected in 2016 or within the past five years. Data presented in these tables are from the most recent round of testing done in accordance with the regulations. The DPW regularly tests for many hundreds of contaminants to ensure that only the safest and highest quality water is delivered to our customers. Please refer to the definitions on the back for clarification understanding this table.

Regulated Substances	Year	Units of Measure	MCL [MRDL]	MCLG [MRDLG]	2016 Sample Result Range (Low-High)	Highest Detected Level in 2016	Violation (Yes/No)	Typical Source
Alpha Emitters	2012	pCi/L	15	N/A	N/A	1.36	No	Erosion of natural deposits
Haloacetic Acids ¹	2016	ppb	60	N/A	3.2-7.5	7.5	No	By-product of drinking water disinfection
Total Trihalomethanes ¹	2016	ppb	80	N/A	41.0-46.1	46.1	No	By-product of drinking water disinfection
Nitrate	2016	ppm	10	10	1.5-2.3	2.3	No	Fertilizer/ Septic Runoff; erosion of natural deposits
Fluoride ²	2015	ppm	4	N/A	ND-0.06	0.06	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum f
Barium	2015	ppm	2	2	0.024-0.061	0.061	No	Discharge of drilling wastes and metal refineries; Erosion of natural deposits

Chlorine	2015	ppm	4	N/A	0.08-1.57	1.57	No	Water additive used to control microbes
Cyanide	2015	ppb	200	200	ND	ND	No	Discharge from metal, plastic and fertilizer factories,
Perchlorate	2016	ppb	2	N/A	0.30-0.38	0.38	No	Blasting agents, munitions, rocket propellants, flares, fireworks

Lead and Copper³ <i>(Tap water samples were collected for lead and copper analysis throughout the community)</i>								
Substance	Year	Units	AL	MCLG	Amount Detected (90 th %tile)	Sites above AL/ Total Sites	Violation	Typical Source
Copper	2014	ppm	1.3	1.3	0.298	0/23	No	Corrosion of household plumbing; Erosion of natural deposits; Leaching from wood preservatives
Lead	2014	ppb	15	0	4	0/23	No	Corrosion of household plumbing; Erosion of natural deposits

Unregulated Substances ⁴	Year	Unit of Measure	2016 Sample Result Range (Low-High)	Highest Detected Level in 2016	Source
Bromoform	2016	ppb	ND-0.74	0.74	By product of drinking water disinfection
Bromodichloromethane	2016	ppb	ND-1.5	1.5	By product of drinking water disinfection
Chlorodibromomethane	2016	ppb	ND-2.3	2.3	By product of drinking water disinfection
Chloroform	2016	ppb	ND-0.97	0.97	By product of drinking water disinfection
Sodium ⁵	2015	ppm	72-110	110	Road salt, naturally occurring

	Highest # Positive in a month	MCL	MCLG	Violation	Possible source of contamination
Total Coliform ⁶	1	*	0	No	Naturally present in the environment
E. Coli	0	*	0	No	Human and animal fecal waste

*Compliance with the fecal coliform/E. Coli MCL is determined upon additional repeat testing.

Footnotes

1. Stage 2 Monitoring Program

2. Fluoride has a secondary contaminant level (SMCL) of 2 ppm to better protect human health.

3. 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 Town is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 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 or at <http://www.epa.gov/safewater/lead>.

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

5. Sodium levels exceeding the guidelines does not require a water supplier to treat or complete additional monitoring. The supplier is expected to evaluate the cause of the elevated sodium levels and possible remediation measures. The supplier is required to provide information about elevated levels and a referral to the local Board of Health or physician to discuss the health effects. While there is no MCL for sodium, the DEP Office of Research & Standards (ORSG) has established a guideline of 20 mg/L (ppm) based on an 8 oz. serving. Sodium sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of the sodium levels where exposures are carefully controlled. Please contact the Avon DPW, the Avon Board of Health, your health professional, or the Mass. Department of Public Health, Bureau of Environmental Health Assessment at 617-624-5757 for more information.
6. Fecal coliform are microbes 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 special health risks for infants, young children, and people with severely compromised immune systems

Definitions

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

Maximum Contaminant Level Goal (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.

Maximum Residual Disinfectant Level (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.

Maximum Residual Disinfectant Level Goal (MRDLG)- 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.

90th Percentile- Out of every 10 homes sampled, 9 were at or below this level. **pCi/L**- picocuries per liter (a measure of radioactivity)

ppm- parts per million, or milligrams per liter (mg/l)

ppb- parts per billion, or micrograms per liter (ug/l)

NR- not regulated

ND- not detectable at testing limit

N/A- not applicable

UOM- unit of measure

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

Variances & Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

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

Avon's Water Treatment

In order to meet state and federal requirements for public drinking water, our source water receives the following treatment before it is supplied to our customers.

Primary Disinfection with Chlorine (without filtration): All reservoirs and some ground water sources contain numerous microorganisms, some of which can cause people to be sick. To eliminate disease-carrying organisms it is necessary to disinfect the water. Disinfection does not sterilize the water, but it does destroy harmful organisms. Sterilization kills all microorganisms, even though most are not harmful, and it is too costly to use on a routine basis. The Town uses sodium hypochlorite (chlorine) as its primary disinfectant. Chlorine destroys organisms by penetrating cell walls and reacting with enzymes. Disinfection with chlorine has been proven effective at ensuring that water is free of harmful organisms and is safe to drink. The Memorial Filtration Plant went online Oct. 30, 2009. A carbon filter has been installed to filter out MTBE's at the plant.

Corrosion Control through pH Adjustment: Many drinking water sources in New England are naturally corrosive (i.e. they have a pH of less than 7.0) so the water they supply has a tendency to corrode and dissolve the metal piping it flows through. This not only damages pipes but can also add harmful metals, such as lead and copper, to the water. For this reason, it is beneficial to add chemicals that make the water neutral or slightly alkaline. This is done by adding any one, or a combination of several, approved chemicals. The Town adds potassium hydroxide (KOH) to the water. This adjusts the water to a non-corrosive pH. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations. All chemicals used for coagulation are approved for water treatment by one or more of the following organizations: National Sanitation Foundation (NSF) now known as NSF International or Underwriters Laboratory (UL), both accredited by the American National Standards Institute (ANSI). Chemicals also have to meet performance standards established by the American Water Works Association.

Iron and Manganese Removal: Iron and manganese is often present in groundwater at levels that can discolor the water or cause it to take on unpleasant odors or tastes. Even though the water may still be safe to drink, it is preferred that the iron and manganese be removed. Removal generally requires a two step process of oxidation and filtration. Oxidation is accomplished by adding chlorine to the water. This causes the iron and manganese to form tiny particles. Once this happens, the water passes through special filters consisting of a material that is specifically designed to capture iron and manganese particles. Over time the filters start to clog and need to be cleaned using a high flow backwash process.

SWAP

What is SWAP? The Source Water Assessment & Protection Program (SWAP) assesses the susceptibility of public water supplies. *What is my system's ranking?* A susceptibility ranking of high was assigned to this system using the information collected during the assessment by the DEP. *Where Can I See the SWAP Report?* The complete SWAP Report is available at the DPW and online at <http://www.mass.gov/eea/agencies/massdep/water/drinking/overview-of-the-source-water-assessment-and-protection-pr.html>.

Is Our Water Safe for Everyone?

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 some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) 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 1-800-426-4791**.

Substances Found in Tap Water

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. It can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:	
MICROBIAL	Viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
INORGANIC CONTAMINANTS	Salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial, domestic wastewater discharges, oil & gas production, mining, and farming.
PESTICIDES AND HERBICIDES	May come from a variety of sources such as agricultural, urban storm water runoff, and residential uses.
ORGANIC CHEMICAL CONTAMINANTS	Synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.
RADIOACTIVE	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, the Department of Environmental Protection (DEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. 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 water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at 1-800-426-4791.

Contact Information & Public Meetings

As of July 1, 2014, the Water Department was incorporated into the Avon Department of Public Works. The Board of Selectmen oversees the operations of the Water Department and serves as Water Commissioners for the Avon Water Department. Selectmen include: Francis A. Hegarty, Chairman, Steven P. Rose- Associate, and Robert F. Brady, Jr.- Clerk. If you have any questions please call William Fitzgerald, Director, Department of Public Works (Email: wfitzgerald@avon-ma.gov), at (508) 588-0414 extension 1024 with any questions, comments, or concerns. We are located in the Avon Town Offices at 65 E. Main Street in Avon. Board of Selectmen meetings are open to the public and are held 1st and 3rd Thursday of every month at the Town Hall and broadcast live by Avon Cable Access and replayed regularly.