


2019 Annual Drinking Water Quality Report

Water and Sewer Division
Department of Public Works
Town of Shrewsbury

The Shrewsbury Water Department is committed to providing our customers with high quality drinking water 24 hours a day, 365 days a year. To ensure we deliver this quality product that meets established standards, we continue to make significant investments in water treatment facilities, water quality monitoring, water sources, and the distribution system. Today's consumers are keenly aware of environmental and health issues, so they should have information regarding their water supply. Well-informed customers are our best allies in supporting improvements necessary to maintain the highest drinking water standards.

This Customer Confidence Report contains important information about Shrewsbury's drinking water supply and quality for calendar year 2019.

A Message from the Superintendent – A Review of 2019

Dear Water Customer,

It is an honor to present my first Customer Confidence Report to you for calendar year 2019. Having started in September 2019 in my capacity as the Superintendent of Water and Sewer, I was able to begin this role during a very active part of the year. This allowed me to quickly become familiar with the complexities of our water distribution system. Returning to the Town of Shrewsbury, after serving in a public works organization in another community for nearly five years, I am very pleased to be working for the Town of Shrewsbury where I have enjoyed spending a large part of my career.

During this past year, several significant staffing changes took place in the Water and Sewer Division. First, after thirty years of employment with the Town of Shrewsbury in the Water and Sewer Division, the former Superintendent, Mr. Robert Tozeski, officially retired in June 2019. The Town is appreciative of Mr. Tozeski's hard work and dedication throughout his long tenure with the Water and Sewer Division; and wishes him well in his retirement. Another significant change was the formal creation of the Department of Public Works and the incorporation of divisions under that management which included the Water and Sewer Division. This new structure allows for additional technical and managerial support for this complex utility.

Our focus on water quality and system reliability improvements continued to be a top priority for the Water and Sewer Division throughout the past year. Many projects and initiatives where realized which will aid in our mission to deliver reliable drinking water that meets all established standards. The new Home Farm Water Treatment Plant performed reliably throughout its first full year of service and consistently met the expectation of removing manganese to near non-detect levels. Recognizing our system still has some water quality issues, we entered into a contract with Hydra Tech Inc. to perform unidirectional flushing of four sections of town or approximately one-third of the water mains beginning in the late fall. Additionally, two contracts were awarded for water main replacements, which included Lake Street near the new Beal School, a section of Ireta Road, Main Street from Route 140 to School Street, a section of Walnut Street, and Shepard Lane. Efforts to ensure an ample and reliable water supply for years to come continued with progress on two well replacement projects, the first at the Sewell Street location and the second at Home Farm. By the end of the year, approval from MassDEP had been granted to conduct pump testing for the replacement well site at Home Farm.

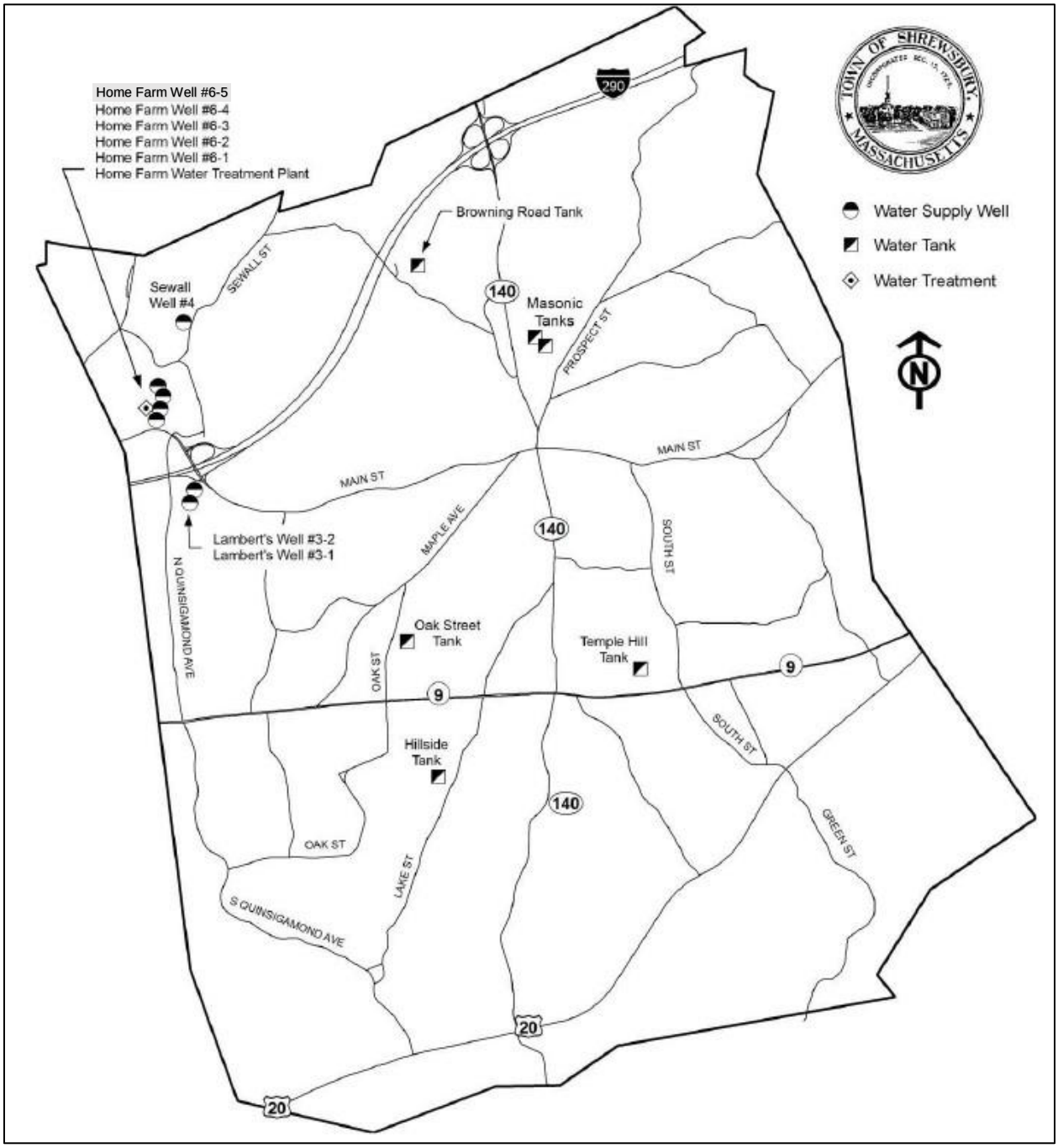
Over the summer, the Town of Shrewsbury participated in a voluntary program through MassDEP to test for an emerging contaminant known as PFAS (Per- and Polyfluoroalkyl Substances). PFAS was detected at low levels, well below the established thresholds, which enabled the Town to be proactive in taking the necessary actions to best manage this new challenge. Additionally, monitoring of hexavalent chromium continued throughout the year with levels remaining consistently low. Plans to continue pilot testing for the removal of hexavalent chromium as well as initial pilot testing for the removal of PFAS were finalized with the Town's Water Consultant, Tata and Howard, Inc., before the end of the year with the projects expected to be completed in 2020.

I hope you find this report informative and please do not hesitate to contact me if you have any questions regarding your water supply. Finally, the Board of Selectmen, who serve as the Water Commissioners, often review water related topics on their agenda and I encourage you to attend.

Sincerely,

Daniel C. Rowley, Superintendent
Water and Sewer Division
Shrewsbury Public Works
100 Maple Avenue
Shrewsbury, MA 01545
508-841-8502

Public Water System Information
Shrewsbury Water Department PWS#2271000



The water distribution system is served by eight (8) gravel packed wells and consists of, 207.93 miles of water mains, 11,583 water service connections, three booster stations, six water storage tanks, and three pressure zones.

In 2019, a total of 1,143,650,000 gallons of water were pumped, thirty-two (32) new water services were installed, 7,978 linear feet of water main replaced, the maximum gallons of water used in one day was 3,785,000, with a daily average for the year of 3,133,288.

Drinking Water Sources

The Town's water supply comes entirely from a series of eight (8) active gravel packed groundwater supply wells, located in the northwest quadrant of Town. The eight wells are pumped to the Home Farm Water Treatment Plant facility for treatment before entering the distribution system. State and federal drinking water regulations require certain chemical treatments before groundwater enters the distribution system:

- Biological filtration for manganese removal and deep bubble aeration for VOC removal
- Chlorine is added to disinfect the water to prevent waterborne diseases
- Potassium hydroxide which adjusts the pH of the water and a phosphate based corrosion inhibitor is added to minimize lead and copper.
- Fluoride is added for tooth decay prevention

The three remaining wells South St., Sewall St. #5 and Oak St are presently not in use because their rated daily capacities have been transferred to the Home Farm Wells. This site has higher yield capacity and better pumping efficiency for the Town.

Source Water Assessment and Protection Report

The Source Water Assessment and Protection (SWAP) program requires states to assess the susceptibility of the public water supplies to potential sources of contamination. The Department of Environmental Protection (Mass DEP) has completed its assessment on each of the Zone II's for Town of Shrewsbury's Wells. Each of our wells has a protected area known as Zone I which is the 400 foot radius proportional to the well's pumping rate. The Town owns or controls by easement this area for each of our individual wells. The Zone II area for each well is the primary recharge area for the aquifer. This area is defined by hydrogeologic studies and varies for each well source.

A susceptibility rating of "high" was assigned to each Zone II using the information compiled by Mass DEP. The main reason being that the wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barrier (i.e. clay) that can prevent contaminant migration. There is also a mixture of residential, commercial and light industrial land uses along with the Route 290 corridor in the Zone II areas.

The Shrewsbury Water Department has long recognized the susceptibility of its sources, and has worked closely with the state to maximize the protection of all of its Zone II's. An Aquifer Overlay District for allowed activities and building requirements in our different well zones has been in place since 1988 along with numerous other zoning by laws passed over the years at our annual Town Meeting. The complete SWAP report can be reviewed online at: **www.mass.gov/eea/docs/dep/water/drinking/swap/cero/2271000.pdf** or at the Shrewsbury Water Department in the Richard D. Carney Municipal Building, 100 Maple Ave.

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 contaminants - such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants - such as salts and metals, which can be naturally-occurring or 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 agricultural, 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 can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants - which can be naturally occurring or be the result of oil and gas production and mining activities.

Lead & Copper – 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 of Shrewsbury 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 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.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) 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's Safe Drinking Water Hotline at 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 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 lowering the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 800.426.4791.

Important Definitions

Maximum Contaminant Level (MCL) – the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the 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.

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

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

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

Parts Per Million (ppm) – This unit is equivalent to one milligram per liter (mg/L).

One part per million is equal to:

- One ounce in 82,500 pounds
- One minute in two years
- One penny in $10,000
- One drop in ten gallons

pCi/L= picocuries per liter (a measure of radioactivity)

Parts Per Billion (ppb) – Micrograms per liter (ug/L). Equivalent to one drop in 10,000 gallons.

Massachusetts Office of Research and Standards Guideline (ORSG) – This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

Lead and Copper 90th Percentile – Out of every ten (10) homes sampled, nine (9) were at or below this level.

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 expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

ND= not detected N/A= not applicable

Water Quality Testing Results

The tables below list all the drinking water contaminants that were detected during the 2019 calendar year or during the most recent monitoring period for each contaminant group in the water supplied to the distribution system.

Bacteria	Highest # of Positive Samples in a Month	MCL	MCLG	Violation (Y/N)	Possible Sources of Contamination
Total Coliform**	0	1	0	N	Naturally present in the environment
E. Coli	0	**	0	N	Human and animal fecal waste

*** Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful bacteria may be present.**

**** Compliance with the E. coli MCL is determined upon additional repeat testing.**

Regulated Contaminants	Date(s) Collected	90TH percentile	Action Level	MCLG	# of sample sites	# of sites above Action Level	Possible Source of Contamination
Lead (ppb)	6/12-6/30/19 12/5-12/27/19	4.8 1.9	15 15	0 0	57 60	2 2	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	6/12-6/30/19 12/5-12/27/19	0.1210 0.128	1.3 1.3	1.3 1.3	57 60	0 0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganic Contaminants							
Barium (ppm)	5/16/2019	0.0222	0.0222	2	2	N	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Chromium (ppb)	5/16/2019	0.0034	0.0034	100	100	N	Discharge from pulp mills; erosion of natural deposits
Hexavalent Chromium (ppb)	2/12, 3/12, 3/27, 7/10, 12/18/19	3.8	3.2 –3.8	100	100	N	Leaching from ore-processing sites, discharge from electronics, glass, and drug factories
Fluoride (ppm) *	Daily	0.88	0.00 - 0.88	4	4	N	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
* Fluoride also has a secondary contaminant level (SMCL) of 2 ppm.							
Radioactive Contaminants							
Gross Alpha (pCi/l) (minus uranium)	Quarterly (2019)	1.12	0.204 - 1.12	15	0	N	Erosion of natural deposits
Radium 226 & 228 (pCi/L) (combined values)	Quarterly (2019)	1.287	0.495 - 1.287	5	0	N	Erosion of natural deposits
Disinfectants and Disinfection By-Products							
Total Trihalomethanes (TTHMs) (ppb)	8/15/2019	13.55	11.0 - 16.1	80	N/A	N	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5) (ppb)	8/15/2019	2.6	2.4- 2.6	60	N/A	N	Byproduct of drinking water disinfection
Chlorine (ppm) (free, total or combined)	Monthly in (2019)	0.61	.32 -.71	4	4	N	Water additive used to control microbes

Unregulated Contaminants	Date(s) Collected	Results	Avg. Detected	SMCL	ORSG	Possible Source
Bromoform	Quarterly in (2019)	.60 – 1.19	0.915		N/A	Trihalomethane; by-product of drinking water chlorination
Nickel (ppb)	5/16/19	0.0019	0.0019	N/A	100	Discharge from domestic wastewater, landfills, and mining and smelting operations
Perfluorooctanesulfoic Acid* (PFOS) (ppt)	7/11 & 8/12/19	1.70 – 5.26	4.33		70	Surfactant or emulsifier; used in fire-fighting foam, circuit board etching acids, alkaline cleaners, floor polish, and as a pesticide active ingredient for insect bait traps; U.S. manufacture of PFOS phased out in 2002; however, PFOS still generated incidentally
Perfluorooctanoic Acid* (PFOA) (ppt)	7/11 & 8/12/19	4.5 – 6.62	5.56		70	Perfluorinated aliphatic carboxylic acid; used for its emulsifier and surfactant properties in or as fluoropolymers (such as Teflon), fire-fighting foams, cleaners, cosmetics, greases and lubricants, paints, polishes, adhesives and photographic films
*PFOS and PFOA totals are combined						
Perfluorobutanesulfonic[1] Acid (PFBS)						
Perfluorohexanesulfonic [1] Acid (PFHxS)	7/11 & 8/12/19	1.65 – 2.65	2.15		N/A	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluoroheptanoic Acid[1] (PFHpA)	7/11 & 8/12/19	1.85 – 2.59	2.22		N/A	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluorononanoic Acid[1] (PFNA)	7/11 & 8/12/19	ND	ND		N/A	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Sodium (ppm)	5/16/19	110	110	N/A	20	Discharge from the use and improper storage of sodium-containing de-icing compounds or in water-softening agents
Tetrachloroethylene (ppb)	5/28/19	ND-3.35	1.675	5	N/A	Manufactured in chemicals used in coating and lubricants

Secondary Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
Iron (ppb)	Quarterly (2019)	ND	ND	300	N/A	Naturally occurring, corrosion of cast iron pipes
Manganese* (ppb) Entering the distribution system	Monthly	ND-0.0022	ND	50	Health Advisory of 300	Natural sources as well as discharges from industrial uses
* EPA has established a lifetime Health Advisory (HA) for manganese of 0.3 mg/L and an acute HA at 1.0 mg/L						
pH	Daily	7.2 -7.8	7.6	6.5-8.5	N/A	Runoff and leaching from natural deposits; seawater influence
Sulfate (ppm) (Latest result)	05/06/14	2.2	2.2	250	N/A	Natural sources
Total Dissolved Solids (TDS) (ppm)	10/11/19	502	502	500	N/A	Erosion of natural deposits
Radioactive Contaminants						
Radon (pCi/L) (Latest scheduled results	6/20/13	250	250	N/A	10,000	Natural Source

Drinking Water Violations

We failed to complete required sampling in a timely manner, which is a monitoring and reporting violation. Because we did not take the required number of samples, we did not know whether the contaminants were present in your drinking water, and we are unable to tell you whether your health was at risk during that time. The contaminants for which monitoring was not done are listed in the table below, with the period during which samples should have been taken, the number of samples each contaminant required, the number taken, and when the required sampling was conducted. In addition to sampling for these contaminants, our system announced public notification upon awareness of the violation.

Contaminant	Monitoring Period	Number of Samples Required	Number of Samples Taken	Date Sampling Conducted	Health Effects
Nitrate	4/1/19 - 6/30/19	9	8	5/16/19	Unknown
Perchlorate	4/1/19 – 4/30/19	1	0	------	Unknown
Lead and Copper	1/1/19 – 6/30/19	60	57	6/19	Unknown

Cross-Connection Control and Backflow Prevention

The Town of Shrewsbury makes every effort to ensure that the water delivered to your home and business is clean, safe and free of contamination. Our staff works very hard to

protect the quality of the water delivered to our customers from the time the water is extracted via deep wells from underground aquifers or it is withdrawal from a surface water source, throughout the entire treatment and distribution system. However, what happens when the water reaches your home or business? Is there still a need to protect the water quality from contamination caused by a cross-connection if so, how?

What is a cross-connection?
A cross-connection is any actual or potential connection between the drinking water lines and potential sources of pollution or contamination such as a piping arrangement or equipment that allows the drinking water to come in contact with non-potable liquids, solids or gases hazardous to humans in event of a backflow.

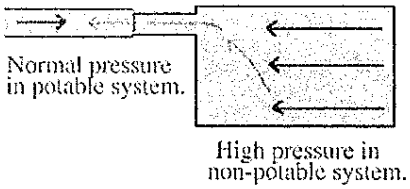
What is a backflow?
Backflow is the undesired reverse of the water flow in the drinking water distribution lines. This backward flow of the water can occur when the pressure created by an equipment or system such as a boiler or air-conditioning is higher than the water pressure inside the water distribution line (backpressure), or when the pressure in the distribution line drops due to routine occurrences such as water main breaks or heavy water demand causing the water to flow backward inside the water distribution system (backsiphonage). Backflow is a problem that many water consumers are unaware of, a problem that each and every water customer has a responsibility to help prevent.

What can I do to help prevent a cross-connection?
Without the proper protection something as simple as a garden hose has the potential to contaminate or pollute the drinking water lines in your house. In fact, over half of the country's cross-connection incidents involve unprotected garden hoses. There are very simple steps that you as a drinking water user can take to prevent such hazards, they are:

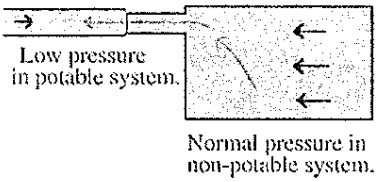
- NEVER submerge a hose in soapy water buckets, pet watering containers, pool, tubs sinks, drains or chemicals.
- NEVER attach a hose to a garden sprayer without the proper backflow preventer.
- Buy and install a hose bib vacuum breaker in any threaded water fixture. The installation can be as easy as attaching a garden hose to a spigot. This inexpensive device is available at most hardware stores and home-improvement centers.
- Identify and be aware of potential cross-connections to your water line.
- Buy appliances and equipment with a backflow preventer.
- Buy and install backflow prevention devices or assemblies for all high and moderate hazard connections.

If you are the owner or manager of a property that is being used as a commercial, industrial or institutional facility you must have your property's plumbing system surveyed for cross-connection by your water purveyor. If your property has NOT been surveyed for cross-connection contact the Shrewsbury Water Department to schedule a cross-connection survey.

Back Pressure:



Back Siphonage:



Radon

Radon is a radioactive gas that you cannot see, taste, or smell. It is found throughout the United States. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will be (in most cases) a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries of radon per liter of air (pCi/l) or higher. There are simple way to fix a radon problem that aren't too costly. For additional information, call your state radon program or call EPA'S Radon Hotline, 800 SOS.RADON.

Manganese

Manganese is a naturally occurring mineral found in rocks, soil and groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet, but can have undesirable effects on certain sensitive populations at elevated concentrations. The United States Environmental Protection Agency (EPA) and MassDEP have set an aesthetics-based secondary maximum contaminant level (SMCL) for manganese of 50 ug/L (micrograms per liter), or 50 parts per billion. In addition, MassDEP's Office of Research and Standards (ORS) has set a drinking water guideline for manganese (ORSG), which closely follows the EPA public health advisory for manganese. Drinking water may naturally have manganese and, when concentrations are greater than 50 µg/L, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 300 µg/L and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ug/L, primarily due to concerns about possible neurological effects. Children up to one (1) year of age should not be given water with manganese concentrations over 300 ug/L, nor should formula for infants be made with that water for longer than ten (10) days. The ORSG differs from the EPA's health advisory because it expands the age group to which a lower manganese concentration applies from children less than six (6) months of age to children up to one (1) year of age to address concerns about children's

susceptibility to manganese toxicity. See: EPA Drinking Water Health Advisory for Manganese www.epa.gov/safewater/ccl/pdfs/reg_determine1/support_cc1_magnese_dwreport.pdf and MassDEP Office of Research and Standards Guideline (ORSG) for Manganese www.mass.gov/eea/agencies/massdep/water/drinking/manganese-in-drinking-water.html

Mandatory Water Use Restrictions

Effective between May 1 and September 30, 2020, unless modified by the Commissioners, based upon the street address number as follows:

Even numbered addresses may use water outdoors: **Wednesday & Saturday**
Odd numbered addresses may use water outdoors: **Thursday and Sunday only**
No nonessential outdoor water use on Monday, Tuesday and Friday

Outdoor Watering Hours
Nonessential outdoor watering hours are restricted to before 9:00 A.M. and after 5:00 P.M.

Nonessential outdoor water uses that are subject to the mandatory restrictions include:

- Irrigation of lawns via sprinklers our automatic irrigation systems
- Washing of vehicles, except in a commercial car wash or as necessary for operator safety; and
- Washing of exterior building surfaces, parking lots, driveways or sidewalks except as necessary to apply surface treatments such as paint, preservatives, stucco, pavement, or cement.

The following uses may be allowed when these mandatory restrictions are in place before 9:00 AM and after 5:00 PM.

- Irrigation to establish a new lawn and new plantings during the months of **May** and **September**
- Irrigation of public parks and recreational fields by means of automatic sprinklers outside the hours: and
- Irrigation of lawns, gardens, flowers and ornamental plants by means of a hand-held hose.

The report is also available at the Shrewsbury Water and Sewer Division's Office, Second Floor of Town Hall, 100 Maple Avenue. While Town Hall remains closed to the public due to Covid-19, print copies can be obtained by calling 508-841-8502 or watersewer@shrewsburyma.gov