



Department of Environmental Protection

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Question and Answer Guide to TTHM's Exceedance of Town of Maynard Water Department Public Water System - April 2016 -

Customers of the Town of Maynard Water Department were previously notified that their drinking water exceeded the standard for Total Trihalomethanes (TTHMs) based on analysis of quarterly routine water samples collected by the Town during Quarter 4 of 2015. Testing conducted in March 2016 indicated that the public water system is still in exceedance of the TTHM standard during Quarter 1 of 2016. This document has been prepared for the Town to assist its customers with some common questions about TTHMs, drinking water standards, and operation of the public water system.

Why did the Town provide the public notice?

All public water systems are required by state and federal law to notify users of any exceedance of any water quality standard and any other noncompliance events affecting their water system. The purpose of the public notice is to keep consumers informed about water quality. Public notification is required to be repeated every three months until the public water system is in compliance with the standard.

What are TTHMs?

TTHMs are a group of chemicals known as disinfection byproducts. They form when chlorine used for disinfection reacts with naturally occurring organic material that is found in source water. They are colorless, and will evaporate out of the water into the air.

Levels of TTHMs generally increase in the summer months due to the warmer temperatures, but can also be affected by seasonal changes in source water quality or by changing amounts of disinfection chemicals that are added to the water. Water systems often can experience temporary increases in TTHMs due to short-term increases in chlorine disinfection. Chlorine disinfection increases can occur when there is a water main break, when water systems are under repair, or when there is a potential microbial (example: bacteria) problem or threat.

All water systems that use chlorine to disinfect the water are required by federal and state law to sample for TTHMs on a quarterly basis (once every three months) in several locations in the water distribution system.

Why is chlorine added to the water?

Disinfectants are an essential element of drinking water treatment because of the barrier they provide against waterborne disease-causing microorganisms. The practice of disinfection has nearly eliminated most acute waterborne diseases such as dysentery, typhoid fever, and cholera in the United States, though they are still common in some other countries. These microbial diseases would otherwise be a major concern for children and other subgroups such as the elderly, immune compromised individuals, and pregnant women because of their greater vulnerabilities.

Chlorine (sodium hypochlorite) is commonly used in treatment operations and to treat the water as it travels through the pipes in the distribution system to prevent growth of microorganisms, or contamination from an outside source, such as during a water main break. The Town adds chlorine to its drinking water system to maintain effective treatment for the removal of naturally occurring iron and manganese and to minimize the potential of microbial growth in the distribution system.

Where does the Town's drinking water come from?

The Town obtains its water from six groundwater sources. Wells #1, 2, and 4 are constructed in sand and gravel deposits that overlie bedrock. These wells are 40-70 feet deep and are located in the southern half of Maynard. The remaining three wells, #5-7, are approximately 400 feet deep into bedrock and are located in the northern half of Maynard. The Town maintains three treatment facilities that disinfect all the water and have greensand filters to remove iron and manganese. In addition, potassium hydroxide is added to control corrosion from household plumbing, and the Rockland Ave facility is equipped with an air stripper to remove radon, a naturally occurring contaminant in bedrock wells.

Where does the Town monitor for TTHMs?

There are four locations that the Town samples each quarter for TTHM's: 86 Powder Mill Road, 3 Powder Mill Road, 195 Main Street, and 12 Winter Street, which represent compliance for the entire Town. The sampling locations and the number of samples collected in each service area have been reviewed and approved by MassDEP.

What is an MCL and how is compliance with the MCL determined?

Drinking water standards are set to protect against potential negative health effects from drinking water containing the chemicals. The Maximum Contaminant Level (MCL) in drinking water is set so that the amount consumed does not exceed safe levels. Some MCLs address the daily amount consumed (for chemicals that pose an immediate risk), and others address the amount averaged over a long period of time (for chemicals that pose a long-term risk). The TTHM MCL is set at a level to balance the immediate risk of bacterial contamination and the long-term risk of health effects such as cancer. The United States Environmental Protection Agency and MassDEP have set an MCL for TTHMs of 80 parts per billion (ppb) or micrograms per liter (ug/L).

Federal and state regulations require the Town to sample the four monitoring locations cited above every three months, including the month of warmest water temperature. The average of each sample location is then calculated each quarter over the last 12-month period, and these individual site averages (Locational Running Annual Average, or LRAA) are compared to the standard to determine whether the system is in

compliance. As of Quarter 1, 2016 (January – March), the highest Locational Running Annual Average (LRAA) for TTHMs was reported at **97 ppb** at the 86 Powder Mill Road sampling location.

What is the TTHM sampling and compliance history of the Town?

Table 1: TTHM Stage 2 Locational Running Annual Average (LRAA) Results & Compliance								
Sample Date	Sample Locations A= 86 Powder Mill Rd. B= 3 Powder Mill Rd. C= 195 Main St. D= 12 Winter St.							
	Quarterly Results (ug/L)				4-Quarter Compliance (LRAA) Per Site			
Quarter/Year	A	B	C	D	A	B	C	D
Q1 – 2015 March	54	29	53	53	65	59	48	58
Q2 – 2015 June	74	68	40	52	71	67	45	55
Q3 – 2015 September	63	47	61	60	63	52	50	58
Q4 – 2015 December	160	120	110	44	88	66	66	52
Q1 – 2016 March	89	63	46	36	97	75	64	48

The highlighted results indicate a result above the TTHM standard of 80 ug/L. Compliance with the LRAA MCL for each location is currently determined by the numbers in the last four columns of the table, which represent an average of all samples for each location collected in the Town’s water system over a 12-month compliance period.

What are the health risks of TTHMs?

The information provided below is based on available health studies. Studies of populations that have been exposed to TTHMs suggest a possible connection between long-term TTHM exposure and certain types of cancer (e.g., bladder, colon, and rectal) and developmental (e.g. fetal growth) and reproductive effects (e.g. miscarriages, stillbirths). In general, young children may be more susceptible to the effects from any chemical exposures, such as TTHMs, because their ability to metabolize chemicals is not mature and because their exposures may be greater for their size than in adults. More research is being conducted to better understand the potential risks between TTHM exposures and these diseases. It is important that people be aware of these potential health effects from TTHM exposure.

Cancer risks generally accrue over lifetimes and very long periods of exposure. Cancer risks are normally expressed as lifetime risks as a result of averaging daily exposure levels (associated with the lifetime daily average of ingesting 2 liters of drinking water/day) over a lifetime of 70 years. Based on these studies, and the potential for developmental and reproductive effects from TTHM exposure, women of childbearing age and pregnant women are the group that may be more susceptible to effects from TTHM exposure; however,

children are always of concern with chemical exposures as noted above. To reduce this risk, this group may wish to act with caution and reduce their exposures by following the recommendations in the next section.

What can customers do in the interim to reduce exposure to TTHMs?

If you are concerned about TTHMs and want to reduce your exposure, you can do the following:

- Use bottled water or
- Install point-of-use home water treatment systems on delivery lines in the house (faucet mount, pour-through pitcher style, and plumbed-in units);

Any filter that is purchased should be certified by National Sanitation Foundation (NSF), Underwriters Laboratories (UL) or the Water Quality Association (WQA) to remove TTHMs (look for the seals on the box). The filters could be a pitcher style or a point-of-use treatment filter that can be mounted to the faucet, under the sink, or on the counter top. These treatment devices are widely available for purchase at kitchen and bath stores or hardware stores. A final option could be a whole house filter. This type of installation would likely require the services of a plumber which would increase the cost. It is important that filters be used and the filters are changed according to manufacturer's instructions.

For information on selecting a water treatment system that is right for you, visit NSF International at www.nsf.org or call their hotline at 1-800-673-8010.

Follow these links below to access water filtration systems certified by NSF to treat for TTHMs:
(Note: products certified for VOC reduction will reduce trihalomethanes)

Go to **www.nsf.org**

- ✓ Click on 'Consumer Resources' (on top)
- ✓ Click on 'What is NSF Certification?' (on right)
- ✓ Click on 'Water Filters/Water Treatment'
Contaminant Reduction Claims Guide
- ✓ Click on 'Volatile Organic Chemical (VOCs)' (in table)

Below are several other web sites that could be helpful.

www.nsf.org/certified/dwtu/
www.waterfiltercomparisons.com/water_filter_comparison.php?d=gp
www.waterfiltercomparisons.com/shower_filter_comparison.php
www.waterfiltercomparisons.com/whole_house_filter_comparison.php

You can also contact the US EPA Safe Drinking Water Hotline at 1-800-426-4791. For more information on filters please refer to US EPA Filtration Facts at: EPA Water Health – Filtration Facts:

www.epa.gov/sites/production/files/2015-11/documents/2005_11_17_faq_fs_healthseries_filtration.pdf

Who can I contact if I have additional questions or concerns about exposure to TTHMs in drinking water and my health?

If you have health questions about exposure to TTHMs in drinking water you can contact the Environmental Toxicology Program at the Massachusetts Department of Public Health (617-624-5757).

If you are experiencing any symptoms or have medical care questions, you should consult with your health care provider and/or a specialist at an occupational and environmental medicine clinic (AOEC). You may visit <http://www.aoec.org/> to search for an AOEC clinic in your area, or call Toll Free: (888) 347-AOEC (2632). You may also contact a Pediatric specialist at Boston Children's Hospital by calling the New England Pediatric Environmental Health Specialty Unit at 1-888-244-5314.

What steps are being taken to correct the situation?

TTHMs levels can vary depending on a number of factors including the amount of chlorine used, amount of organic material in water sources, temperature, water use, water storage, and season of the year. Control of TTHM levels must be maintained while also applying appropriate levels of disinfectant in the water necessary to treat the water for contaminants and avoid bacterial issues.

On Wednesday April 13th, representatives from the Town met with MassDEP to discuss the TTHM violations. The Town is working with MassDEP on evaluating operations, water quality and treatment plant performance with the intention of developing a corrective action plan to correct this issue. The Town is still performing interim actions including flushing distribution system hydrants to reduce the TTHM levels.

Public notification is required to be repeated every three months until the public water system is in compliance with the TTHM standard.

Who should customers contact for more information about the Public Water System?

The Town remains the primary contact for all questions regarding the Public Water System. Any questions concerning sample results, status of projects, public notice inquires, etc. should be directed to **Tim Mullally, Water & Sewer Foreman, at 978-897-1317.**

Please also visit the Town website at www.townofmaynard-ma.gov