



# Department of Environmental Protection

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## Question and Answer Guide to TTHM's Exceedence

Customers have been notified that their drinking water exceeds the drinking water standard for Total Trihalomethanes (TTHMs). This document has been prepared to assist users with some common questions about TTHMs and the drinking water standards.

### *Why are customers receiving public notices from your water system?*

All public water systems are required by state and federal law to notify users of any exceedence of any water quality standard and any other noncompliance events affecting their water system. If this is an ongoing situation, customers have previously received periodic public notices for exceedence of Total Trihalomethanes (TTHM) standards. The purpose of the public notice is to keep consumers informed about water quality. Public notices will be issued to customers for each quarter the public water system exceeds the TTHM standards.

### *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 surface and ground waters. 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 added. 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 mains 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 regular basis (quarterly, or once every three months) in several locations in the distribution system.

***Why is chlorine added?***

Our system adds chlorine to its drinking water system to disinfect it. Disinfection of water supplies is necessary to prevent illness and is a United States Environmental Protection Agency (USEPA) and MassDEP requirement. 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 and pregnant women because of their greater vulnerabilities.

Since surface waters are open to the environment, they are vulnerable to contamination by waterborne microorganisms (viruses, bacteria, and protozoa). Disinfection of the water first kills any microorganisms that may be present in the surface water. Then, a small amount of disinfectant is required to be kept in 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.

***Where do we monitor for TTHM's?***

Our system monitors at locations in the distribution system that may represent maximum and average chlorinated water ages where TTHM levels are expected to be highest, and are sampled every quarter for TTHM's.

***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 regulate the daily amount consumed (for chemicals that pose an immediate risk), and some regulated the amount averaged over a period of time (for chemicals that pose a long-term risk). The USEPA and MassDEP have set an MCL for TTHMs of 80 parts per billion (ppb) or micrograms per liter (ug/L). This MCL is based on an increased risk to people who would consume 2 liters of water per day for a lifetime of 70 years.

Present federal and state regulations require us to determine the water system's compliance with the TTHM MCL by averaging the concentrations found at all the sampling locations in the entire system over the past year, using a running annual average calculation method. The sampling locations and the number of samples collected in each service area have been reviewed and approved by MassDEP.

In 2013, new federal and state regulations will require that the average of each sample location be calculated over the past year, and those individual site averages will be compared to the TTHM MCL to determine whether the system is in compliance.

### ***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 (bladder, colon, and rectal) and developmental (e.g. fetal growth) and reproductive effects (e.g. miscarriages, stillbirths). 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. 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:

1. Use bottled water or
2. 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 houseware 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 more information on filters refer to US EPA Filter Facts at [http://water.epa.gov/aboutow/ogwdw/upload/2005\\_11\\_17\\_faq\\_fs\\_healthseries\\_filtration.pdf](http://water.epa.gov/aboutow/ogwdw/upload/2005_11_17_faq_fs_healthseries_filtration.pdf). You can also contact the US EPA Safe Drinking Water Hot Line at #1-800-426-4791.

For information on selecting a water treatment system that's right for you, visit NSF international at [www.nsf.org](http://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:

- Go to [www.nsf.org](http://www.nsf.org)
- ✓ Click on 'consumers'
- ✓ Click on 'Water Treatment' (on left)

- ✓ Click on 'Contamination Guide' (on left)
- ✓ Click on 'Trihalomethanes (TTHMs)'
- ✓ Click on 'Filtration'

Here are several other web sites that could be helpful.

[www.nsf.org/certified/dwtu/](http://www.nsf.org/certified/dwtu/)

[www.waterfiltercomparisons.com/water\\_filter\\_comparison.php?d=gp](http://www.waterfiltercomparisons.com/water_filter_comparison.php?d=gp)

[www.waterfiltercomparisons.com/shower\\_filter\\_comparison.php](http://www.waterfiltercomparisons.com/shower_filter_comparison.php)

[www.waterfiltercomparisons.com/whole\\_house\\_filter\\_comparison.php](http://www.waterfiltercomparisons.com/whole_house_filter_comparison.php)

In addition, people may be exposed to disinfection by-products, including TTHMs from other uses of the water besides drinking water. If you wish to reduce your overall TTHM exposure risk, the following recommendations may be helpful:

1. Limit time spent in or around chlorinated pools or hot tubs;
2. Operate room exhaust fans or ventilate room (open window) when boiling water, washing with hot water or running the dishwasher;
3. Reduce the temperature on hot water heaters;
4. Reduce the length of showers and baths; and
5. Ventilate the bathroom when bathing or showering.