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We are here to answer your questions, call our water quality hotline to speak with a live representative Monday through Friday between the hours of 8 AM and 5 PM at (800) 279-8810.

Frequently Asked Questions About Total Trihalomethanes (TTHM)

What are Total Trihalomethanes (TTHM)?

Total trihalomethanes (TTHM) are a group of disinfection byproducts that form when chlorine compounds that are used to disinfect water react with other naturally occurring chemicals in the water. They are colorless and will evaporate out of the water into the air. There are four significant TTHM (chloroform, bromoform, bromodichloromethane, and dibromochloromethane) potentially found in disinfected drinking water and their combined concentration is referred to as total TTHM.

What are Disinfection Byproducts?

Disinfection byproducts are chemical, organic and inorganic substances that can form during a reaction of a disinfectant with naturally present organic matter in the water.

Why is chlorine added to drinking water?

Chlorine is used to disinfect drinking water. Disinfection of water supplies is necessary to prevent illness from waterborne disease-causing bacteria; it is a federal and state requirement. The practice of disinfection has nearly eliminated most acute waterborne diseases in the United States. Disinfection of the water first kills any microorganisms that it may contain. Then, a small amount of disinfectant is needed in the water as it travels through the pipes in the distribution system. This prevents regrowth of microorganisms, or contamination from an outside source, such as during a water main break.

Are TTHMs in Drinking Water Regulated?

The Massachusetts Department of Environmental Protection (MassDEP) Drinking water standards are called maximum contaminant level. Maximum contaminant level are set to limit risks to people from chemicals in drinking water. These standards ensure that our drinking water is safe, fit, and pure. Some maximum contaminant levels limit the daily amount consumed (for chemicals that pose an immediate risk), and some limit the amount averaged over a long period of time (for chemicals that pose a long-term risk).

How often is the public water system sampled for TTHM?

All water systems that use chlorine to disinfect the water are required by federal and state law to sample for TTHM on a regular basis (quarterly, or once every three months).

What would cause an exceedance of the maximum contaminant level for TTHMs?

Levels of TTHM generally increase in the summer months due to the warmer temperatures, they 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 TTHM 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.

How can consumers be exposed to TTHM in drinking water?

People may be exposed to TTHM in drinking water from ingestion (i.e., drinking the water and ingesting it in foods and/or ice prepared with the water). In addition, TTHM vaporize readily into the air so inhalation exposure to TTHM can be significant, especially when showering and bathing, as can exposure from absorption through the skin.

What are the health risks associated with using water containing TTHM?

The degree of risk for these effects will depend on the TTHM level and the duration of exposure. Consumption of water with TTHM levels somewhat above the MCL for limited durations, for example, while corrective actions are being taken to lower the levels, is not likely to significantly increase risks of adverse health effects for most people. If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from your health care providers about drinking this water.

The MCL for TTHM is based on potential cancer risks following a lifetime of drinking the water. TTHM are considered to be possibly carcinogenic to humans by USEPA because of evidence of carcinogenicity in experimental laboratory animals and limited evidence in people. Some of the individual chemicals that comprise TTHM have also caused other effects in experimental laboratory animals following high levels of exposure, including toxicity to the liver, kidneys, neurological and reproductive systems. Various adverse reproductive and developmental effects have been observed in experimental laboratory animals following exposure to disinfection byproducts (which include TTHM). In some, but not all, studies in people, similar effects have also been reported. In general, young children may be more susceptible to the effects from any chemical exposure, such as TTHM, 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 from using water containing TTHM.

Based on the available information, long term consumption of TTHM in drinking water above the MCL may increase the risk of certain types of cancer (e.g., bladder, colon, and rectal) and other adverse effects in some people. Because some data indicate that disinfection byproducts may increase the risk of developmental effects, women who are pregnant or may become pregnant may wish to avoid consuming water containing TTHM and other disinfection byproducts exceeding the drinking water standard. In general, young children may be more susceptible to the effects from any chemical exposure, such as TTHM, 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 from using water containing TTHM.



How can I reduce exposure to TTHMs?

- Use bottled water. Bottled water sold in Massachusetts must meet all federal drinking water quality standards and, if originating in Massachusetts, must also meet state drinking water quality requirements.
- Use water filters (e.g., a pitcher style or a point of use treatment filter that can be mounted to the faucet, under the sink or on the countertop) or install a point-of-entry whole-house filtration system. Any filter that is purchased should be certified by National Sanitation Foundation (NSF), Underwriters Laboratories (UL) or the Water Quality Association (WQA) to remove TTHM (look for the seals on the box). For information on selecting a water treatment system that's right for you, visit NSF international at www.nsf.org or call their hotline at 1-800-673-8010.
- To reduce overall TTHM exposure risk:
 - Ventilate the bathroom when bathing or showering;
 - Operate room exhaust fans or ventilate room (open window) when boiling water, washing with hot water or running the dishwasher;
 - Reduce the length of showers and baths;
 - Reduce the temperature on hot water heaters; and
 - Limit time spent in or around chlorinated pools or hot tubs.

What is the Dedham-Westwood Water District Doing to reduce the levels of TTHM in the water?

Our team consistently monitors the public drinking water supply for all regulated inorganic substances, unregulated (secondary) substances, organic disinfection byproducts, radionuclides, as well as lead and copper. We have been paying close attention and taking proactive measures to mitigate THMs in the public drinking supply due to an elevated sample result in 2019 (that did not exceed the Massachusetts Drinking Water Regulation). However, during this past summer, we saw record high temperatures in the month of June and historic rainfall amounts in July and August. We believe these two factors greatly contributed to the October THMs exceeding the LRAA. Other public drinking water suppliers in the Commonwealth have also been impacted by these unprecedented weather conditions.

We have engaged the services of Weston & Sampson, a recognized leader in the engineering field of water projects to analyze the total organic carbon sampling data and research the cause of the elevated levels of TTHMs. We have also included additional equipment in the plants, tanks and distribution system as well as implementing a unidirectional flushing program in our 2022 capital plan. These combined actions will help reduce the THM levels.

We are committed to providing clean, safe water, these are the first initial steps in our corrective action plan to reduce TTHMs in the public water supply. As stewards of this valuable resource, we take our job to protect public health and safety seriously. Our team of 30+ professionals work around the clock to provide reliable, cost-effective, high-quality water service that protects public health, promotes environmental stewardship, maintains customer confidence, and supports economic development and sustainability.

Should you have any questions, you may speak with a water quality representative by calling **(800) 279-8810** or by emailing us at waterquality@dwwd.org. For more information on TTHMs visit: <https://www.mass.gov/service-details/tthm-in-drinking-water-information-for-consumers>