



# Trihalomethanes (THMs) in Drinking Water

Fact Sheet presented by the Livingston County Department of Health

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## What are Trihalomethanes?

All drinking water sources could contain microorganisms such as bacteria and viruses that may cause serious illnesses. Drinking water is disinfected with chlorine to destroy those microorganisms. Chlorine is the most common disinfectant for treating drinking water. When chlorine is added to water that has organic matter such as decaying plants and algae, disinfection by-products (or side effects) can occur. Trihalomethanes (THMs) are the most common type of by-product.

## Why is chlorine added to drinking water?

Chlorine has been added to drinking water to destroy harmful microorganisms since the early 1900s. If harmful bacteria or viruses are distributed through a drinking water supply, people can get sick very quickly. Using chlorine has greatly reduced the number of waterborne disease outbreaks (illnesses caused by microorganisms in water). While there are other disinfectants, chlorine is most used to disinfect water because it is highly effective. It also helps in keeping the pipes that carry water to communities free of harmful microorganisms that can get into the water after it leaves the treatment plant. Other disinfectants, such as ozone or ultraviolet light, cannot help protect water after it leaves the treatment plant.

## What water sources are most likely to have THMs?

Water with high organic content will generally form THMs more than water with low organic content. Water sources with higher organic content usually include surface water like lakes, reservoirs, rivers, and streams. Filtering water before adding chlorine helps reduce the organic content and the formation of THMs. Groundwater from deep wells usually has lower organic content and are less likely to form THMs.

## What is the standard for THMs in drinking water?

The current Environmental Protection Agency (EPA) guideline is 80 micrograms per liter ( $\mu\text{g}/\text{L}$ ) or 80 parts per billion (ppb). The reportable amount is based on an annual average of four laboratory tests a year from the point in the distribution system where THMs are likely to be the highest. This guideline was originally established as part of the Safe Drinking Water Act.

## What health problems are linked to THMs?

While there is not enough proof to show that THMs cause cancer in people, cancers have been detected in some studies in which animals (mice and rats) were exposed to high doses. Further study is needed. As a safety measure, drinking water guidelines are set to ensure a very low level of potential health risk over a typical lifetime of exposure. Short-term use of drinking water that exceeds the guidelines is unlikely to have an impact on human health.

## How could I be exposed to THMs?

Drinking tap water that has THMs, showering, bathing and using water for recreation (ex: swimming, hot tubs) can all increase THM exposure. THMs can be absorbed through skin or inhaled by breathing water vapor when showering, bathing, etc. All of these types of exposures and normal daily activities were considered when setting the standard for THMs in drinking water.

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## Are THMs monitored in public water supplies?

Public water systems test for THMs regularly. Most surface water systems test for THMs four times a year. Samples must be taken throughout the year because water quality changes over the year. THMs are usually higher in the summer and lower in the winter. The average THM value for the year must be below the standard. The Livingston County Department of Health monitors test results for increases and responds accordingly.

## What can be done to reduce THMs in community water supplies?

THMs can be reduced by removing organics from the water source before adding chlorine. Routine watermain flushing also helps to ensure old water is flushed out of the system.

## How do I know if my water has high THMs?

For information on the THM levels in your water system, contact your water supplier or the Livingston County Department of Health. Large public water suppliers must prepare an annual water quality report to be made available to the public and post a copy of the report on the Internet.

## How can I reduce my exposure to THMs?

You can lower your THM exposure by using a home water treatment system, such as a filter. This can be a point-of-use (POU) filter at the kitchen tap or a point-of-entry (POE) filter, where the water enters the house. Treatment systems range from water pitchers with a carbon filter to whole-house treatment units. Taking shorter showers and baths can also reduce THM exposure. If you buy a home treatment system, look for filters or equipment that have been certified by an accredited organization to remove THMs. Certification standards help ensure the safety and performance of retail products for drinking water. The THM removal standards are set by NSF International (NSF) or the American National Standards Institute (ANSI). Certification organizations make sure the treatment filters and equipment meet these standards. Always follow the manufacturer's instructions on how to use and maintain any home water treatment filters or equipment.

