Chlorine Disinfects Drinking Water
What are Trihalomethanes (THMs)?

Q. Why does drinking water need to be disinfected?

A. Disinfection of drinking water is vital to protecting public health against diseases caused by microorganisms. The practice of disinfecting drinking water has made many once-common diseases a thing of the distant past in the United States. In the early 1900s, prior to adequate disinfection, tens of thousands of people died from water-borne disease. The filtration and disinfection of drinking water is widely acknowledged to be responsible for a large part of the 50 percent increase in life expectancy in this century. The U.S. Centers for Disease Control (CDC) and Prevention recognizes the control of infectious diseases from cleaner water and improved sanitation as one of the top 10 public health achievements of the 20th century.

Q. What are THMs?

A. Water utilities use chlorine to disinfect water so that you can use it to drink and cook. Chlorine kills bacteria, viruses, and protozoa in water and thus makes it free of disease causing microorganisms. Trihalomethanes (THMs) are a class of disinfection by-products that are formed when chlorine, which is used to treat drinking water, reacts with naturally occurring materials in the water.

Long term exposure to high levels of THMs may have some negative impacts on human health. However, as part of its role in overseeing water safety, the U.S. Environmental Protection Agency (EPA) utilizes the best science and collective wisdom of experts to regulate levels of THMs and ensure that drinking water is safe. Water utilities have to comply with EPA regulations in order to provide customers with safe drinking water.

Q: Is WSSC water safe?

A: WSSC customers can drink their tap water with confidence that it meets EPA standards for safe water. The EPA sets water safety standards for all water utilities in the US.

Q: Why does WSSC use chlorine?

A: We use chlorine to prevent common water-borne diseases, such as typhoid and cholera. The Centers for Disease Control says that drinking water chlorination is one of the best public health achievements in the 20th century. Besides chlorination, there are several other options for water disinfection. However, our use of chlorination is based on the best science currently available as it relates to protection of public health.

Q: What are the regulations for THMs in drinking water, and who enforces them?

A: The current EPA regulations set a limit of 80 parts per billion (ppb) for THMs based on the annual average at sixteen distribution system monitoring locations. This limit must be met at each monitoring location. We are also required to review and further optimize plant operation if seasonal peaks exceed a threshold criteria. The current regulations target long-term health effects and therefore do not set limits on single or seasonal peak levels. Health limits that account for short term exposure are typically much higher than those based on long term health effects.

The Maryland Department of the Environment (MDE) is the agency that enforces drinking water quality regulations for WSSC, including THM limits. MDE has verified that we have always met and continue to meet the prevailing standards for all regulated contaminants, including THMs. You may contact MDE Water Supply Program at 410-537-3589 if you need further information.

Q: How often does WSSC monitor for THMs and where?

A: EPA regulation requires us to monitor THMs once per quarter at each monitoring location. WSSC monitors twice a month, six times more frequently than required, at each of the sixteen distribution system monitoring locations. These locations are selected based on the historical data to include the areas showing the highest THM levels, as well as to cover the most populated areas.

Q: How does WSSC treat water to further reduce THM levels?

A: WSSC conducted a multi-year study to find the most effective and cost effective ways to reduce THM levels. This study included review and testing of all available best practices known to effectively reduce disinfection byproduct levels. Based on the outcome of this study, WSSC uses a treatment process called "enhanced coagulation" to reduce the amount of organic material in the water that contributes to the formation of THMs. WSSC also carefully controls the amount of chlorine added in water treatment, to maintain the right balance between THM levels and the bacteriological safety of water.

Q: How does WSSC inform the public about the THM levels?

A: WSSC's Annual Water Quality Report is sent out to all of our customers each year and is available on our website (https://www.wsscwater.com/waterquality). It reports the highest annual average of the sixteen monitoring locations, as well as the range of all individual monitoring results. It also indicates whether we have complied with the prevailing standards, which we always have. We also respond to requests for information from the public.

Q: Should I use a water filter?

A: The following information on THM health effects may provide you with more assurance on the safety of our water. However, if you still have special health concerns and want to go beyond the collective judgment of those involved in developing drinking water regulations, you can consider extra precautions such as the use of a water filter with activated carbon. If you do use such a device, make sure that it is NSF-certified for removal of THMs and that you follow the manufacturer's recommendations on replacement and maintenance.

Q: Are THMs dangerous?

A: There are two types of health effects that have been suggested by some as associated with THMs: cancer and reproductive/developmental health effects. EPA has concluded that there is evidence to support a potential association between long-term exposure to high levels of THMs and bladder cancer as well as suggestions of an association with colon and rectal cancers. However, for the short term, reproductive and developmental health effects, current health effects data are inconclusive and do not show causality.

Q: At what levels do THMs have adverse cancer health effects?

A: Current EPA regulation set a Maximum Contaminant Level of 80 ppb for THMs as a locational annual average. This level was established to limit the number of excess cancer cases to between 1 in 10,000 and 1 in 100,000 per year at the regulated limit. This assumes long-term exposure by an individual (i.e., 70 years drinking 2 liters/day). The limits are based on animal testing and/or epidemiological data and include a significant safety factor to account for uncertainties in this data. WSSC has always met the prevailing THM limits.