



Trihalomethanes (THMs) in Drinking Water

Introduction

Chlorination of drinking water throughout the world has been recognized as one of the most effective public health measures undertaken in modern times. Where water is effectively chlorinated infection by waterborne diseases such as cholera, typhoid fever and dysentery has ceased to pose a risk to public health. However, chlorination of drinking water may produce by-products such as a group of chemicals known as trihalomethanes (THM's). THM's may be formed when chlorine reacts with natural organic matter that can be found in some water sources. There are many forms of THM's, such as Chloroform, Bromoform, Bromodichloromethane and Dibromochloromethane. If the levels of disinfection by-products are not controlled they may pose a risk to your health. This fact sheet provides information about the possible health risks posed by THM's and how they are controlled and simply removed from drinking water.

How are THMs absorbed by the body?

THM's can be easily absorbed by the body when:

- water containing high levels comes into contact with the skin, or
- if they are consumed in food prepared in water; or
- they are inhaled during showering or bathing.

Do THM's pose a real health risk in drinking water?

For several years a number of researchers around the world have been concerned that THM's could be a cause of some forms of cancer in the liver, kidneys, colon, bladder, rectum and reproductive areas of the body. However, the results from continual research provides differing results and to date both the International Agency for Research on Cancer and the World Health Organization have concluded that there is not enough evidence to prove that THM's pose a health risk.

Do all health agencies agree on a maximum level for THMs'?

No. Although the majority of health agencies around the world have set a maximum level for THM's in drinking water they are not all the same. There is still debate over the real risk posed by THM's and each health agency has used a different risk rating and safety factor to set their maximum THM level. Also some countries have set limits based on what is readily achievable rather than on their estimation of possible risk.

Are THM's monitored and regulated in drinking water?

Yes, all licensed water providers such as the Water Corporation, AQWEST and the Busselton Water Board are required to monitor THM levels in accordance with the Australian Drinking Water Guidelines (ADWG, 2004). The ADWG (2004) recommends that THM levels in drinking water should not exceed 0.25mg/L. However, concentrations of up to 1.0mg/L for short periods of time (for a day or two each year) are unlikely to pose a serious health risk. The Department of Health constantly monitors THM levels in drinking water to ensure compliance with the ADWG (2004). Licensed water providers are required to publish their water quality results and these can be found on each water provider's website.



What can I do to reduce trihalomethanes in my drinking water?

THM levels in scheme drinking water supplies are continually monitored to ensure that they comply with the 2004 Australian Drinking Water Guidelines, so it should not be necessary to treat your water in any way. However, THM's are easily removed by:

- aeration at the tap,
- allowing water to stand or passing it from one glass to another (a few times) before drinking.
- boiling for one minute and allowing it to cool before drinking.
- using activated carbon water filters.

Does bottled water contain THM's?

THM's should not be found in bottled and packaged water as many bottled water companies use other forms of water treatment to disinfect their water supplies such as ozone or ultraviolet light. For further information about the THM level in bottled or packaged water, check the label or contact the manufacturer.

Do all methods of disinfecting water produce THM's?

No. Other disinfecting systems such as: Ozone, chlorine dioxide, chloramination and ultraviolet light do not produce THMs' but they can produce other types of disinfection by-products. Chlorine is the disinfectant of choice in scheme reticulated systems as it is easy to use, effective against virtually all microorganisms and it continues to work throughout the reticulation system.

Can I test for THM's

THM levels can be tested by a National Analytical Testing Authority (NATA) authorized chemical laboratory. Chemical laboratories are listed under 'Analysts', in the Yellow Pages telephone directory.

Summary

- THMs can be formed when naturally found organic matter in water reacts with chlorine used to disinfect drinking water and can be absorbed by breathing, swallowing or through the skin.
- THM's could be a cause of some forms of cancer. However, continuing research around the world has not been able to prove that this is correct.
- The International Agency for Research on Cancer and the World Health Organization have concluded that there is not enough evidence to prove any strong link between cancer risks and THM's.
- The 2004 Australian Drinking Water Guidelines recommends that THM levels in drinking water should not exceed 0.25mg/L and that concentrations of up to 1.0mg/L for short periods of time (for a day or two each year) are unlikely to pose a serious health risk.
- The Department of Health constantly monitors THM levels in drinking water supplies to ensure compliance with the Guidelines.
- THM's are easily removed by aeration, boiling or by using activated carbon water filters.

Other Fact sheets available:

- Information Requirements for New Water Treatment Chemicals
- Drinking Water Treatment Procedures for Vehicle Mounted Water Containers
- Recreational Access to Drinking Water Catchments



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