

## Trihalomethanes in Drinking Water

### Information for Consumers

#### Key messages

The use of chlorine to ensure safe drinking water is one of the greatest public health achievements.

Trihalomethanes (THMs) may be formed as a result of adding chlorine to water containing high levels of organic material (e.g. vegetation).

The benefits of using chlorine to treat our drinking water are much greater than any possible health risk from THMs.

#### Introduction

Most drinking water in Ireland comes from surface water sources e.g. rivers, lakes and streams. These water supplies often contain high levels of vegetation, also known as organic material.

The benefits of using chlorine to treat our drinking water are well recognised. Chlorine kills bacteria and viruses and is the most commonly used drinking water disinfectant. Chlorination of drinking water has virtually eliminated typhoid fever, cholera and many other diseases in the western world. The supply of safe drinking water is one of the greatest public health achievements ever.

Trihalomethanes (THMs) are formed when organic material in treated water reacts with chlorine.

#### What are Trihalomethanes (THMs)?

THMs are chemicals which may be found in water treated with chlorine. The concentration of THMs in drinking water varies according to the level of organic material in the water, the amount of chlorine required to treat the water, and the temperature of the water that is being treated.

Some water supplies have reported levels of THMs which are higher than the recommended levels. Irish Water is developing a National THM plan, in order to deal with this issue.

## **How might I be exposed to THMs in water?**

THMs can be ingested (swallowed), if present in water.

THMs may be inhaled (breathed in), if present in air, as most THMs in water evaporate.

THMs can be inhaled or absorbed through the skin while showering or bathing. Swimming in a chlorinated pool is another way that people may be exposed to THMs.

## **How can THMs affect my health?**

Short-term health effects of THMs in drinking water are rare. Therefore temporary raised levels of THMs in drinking water are unlikely to result in any risk to health.

Some studies suggest a link between long term exposure to THMs (i.e. many years) and cancer and reproductive effects but the evidence is not conclusive.

THMs are classified as 'possibly carcinogenic' to humans.

This means that scientific evidence cannot conclude definitively whether or not THMs cause certain cancers in humans. There is some evidence that THMs cause cancer in animals.

Some studies suggest that very long-term exposure (e.g. 35 years or more) to high levels of THMs may be linked to a slightly increased risk of some types of cancer in humans, in particular bladder and colon cancer. The evidence however, is not conclusive.

Study findings on risks of miscarriage and low birth weight, associated with drinking water containing THMs, are inconsistent.

Any such possible risks are, however, much lower than the risk of serious illness that could result from drinking water that has not been properly disinfected.

## **Testing water for THMs**

The legal limit of total THMs in drinking water in Europe is 100 µg (microgrammes) per litre. The legal limit for total THMs is based on a level of exposure (through inhalation and ingestion) that is acceptable over a lifetime (70 years) and safety factors are built into the calculations. All public water supplies are tested for THMs. Public water supplies are tested more frequently than other types of supplies.

## **How do I know the level of THMs in my drinking water?**

For details on the THM levels in your drinking water you should contact your water supplier:

Public Water Supplies – Irish Water <https://www.water.ie/help-centre/contact-us/>

Irish Water customers can check THM levels in their own Water Supply Zone at <http://www.water.ie/water-supply/water-quality/>

Private Water Supplies (surface water source) – your group water scheme committee or the owner of your private supply (this might be the developer of a private estate, for instance)

Water that has no disinfectant added will not have THMs.

## **What is the HSE's health advice on THMs in drinking water?**

Short-term exceedances in THMs are unlikely to result in any risk to health.

Potential risks from drinking untreated water far outweigh any possible risks of long-term exposure to THMs.

## **Is there a test to show if I have been exposed to THMs?**

Medical tests are not necessary to show exposure to THMs and are not recommended.

## **What can I do to reduce my exposure to THMs?**

If you are concerned about THMs in your drinking water supply you may lower your exposure by:

- Boiling the water for one minute and allowing it to cool before drinking. This will allow the THMs to partially evaporate into the air.
- Storing tap water in the refrigerator for 24 hours in an open jug. This will allow the THMs to partially evaporate into the air.
- Using activated carbon water filters (including point-of-use filter at the tap or a point-of-entry filter where water enters the house). Filters must be certified by an accredited organisation to remove THMs. If a filter is used it should be properly maintained and changed often because such filters can become sources of bacterial contamination in water.
- You could use an alternative source of drinking water, such as bottled water.

If you are concerned about THMs in your water supply you may lower your exposure to THMs by:

- Ensuring bathrooms and kitchens are well ventilated.
- Reducing the length of time spent in showers or baths.
- Taking short baths instead of a shower.
- Using colder water to bath or shower.

### **Where can I get further advice?**

On your water service and test results:

- From Irish Water <https://www.water.ie/help-centre/contact-us/>
- From the Environmental Protection Agency (EPA) <http://www.epa.ie/water/dw/>
- From the National Federation of Group Water Schemes <http://www.nfgws.ie/Home>

On health issues:

- The HSE and the EPA Joint Position Statement. Trihalomethanes in Drinking Water  
<http://www.hse.ie/water>
- The HSE leaflet Risk of Illness from Well Water  
<http://www.hse.ie/water>
- From your local HSE Department of Public Health  
<http://www.hse.ie/publichealth>
- From your local HSE Environmental Health Service  
<http://www.hse.ie/eng/services/list/1/environ/>
- From your GP if you are concerned about existing health problems or symptoms.