

TCEP in Drinking Water

Tris(2-chloroethyl)phosphate (TCEP) is a contaminant that has been found in waters that could be used as drinking water sources in Minnesota. The Minnesota Department of Health (MDH) developed a health-based guidance value for TCEP in drinking water and, based on this value, does not expect levels in drinking water to harm Minnesotans.

What is TCEP?

TCEP is a chemical that is added to plastics, foams and textiles to help reduce the spread of fire. It belongs to the chemical class of fire-retardants called "phosphate esters." Consumer products such as furniture foam, carpeting, upholstery, and plastic coverings on televisions and computers can contain TCEP.

How much TCEP is in Minnesota drinking water?

A United States Geological Survey (USGS) found TCEP at two drinking water sites during a 2000-2002 study. The highest concentration of TCEP at these sites was about 0.066 parts per billion (ppb).¹

Has TCEP been found in other waters in Minnesota?

The USGS study noted above measured TCEP in Minnesota drinking water, groundwater, wastewater and surface water. TCEP was found in about 20 percent of all water samples in this study. The highest TCEP concentrations found in Minnesota were in wastewater samples that had drained through a landfill (maximum concentration was 9.2 ppb).¹

What is the MDH guidance value for TCEP in drinking water?

MDH developed a guidance value of 5 ppb for TCEP in drinking water based on its potential to cause cancer in people.²

How can I reduce my exposure to TCEP?

One way to reduce TCEP exposure is to minimize the purchase and use of materials known to contain phosphate ester based flame-retardants.

Can TCEP in drinking water affect my health?

The amount of TCEP found in drinking water (0.066 ppb) is about 80 times less than MDH's guidance value of 5 ppb. If you drink water containing up to 5 ppb TCEP over a lifetime there is little to no health risk of cancer or other effects.

At a Glance

TCEP is...

- a fire retardant added to plastics, foams and textiles.

TCEP enters your body from...

- consuming contaminated water or food, or
- breathing TCEP dust or vapors.

Your exposure to TCEP can be reduced by....

- minimizing the purchase/use of TCEP-containing materials.



TCEP in drinking water is safe if...

The level is lower than the MDH guidance value of 5 ppb.

How am I exposed to TCEP?

TCEP can get into your body by:

- consuming contaminated water or food, or
- breathing TCEP dust or vapors from products used indoors.

Young children can get TCEP in their bodies by putting plastic products in their mouths, or from touching plastic products and then putting their hands in their mouths.³ According to estimates, indoor air may contain only very small amounts of TCEP.¹ Scientists have estimated how much TCEP might get into your body from food.³ The estimated amount children (six months-2 years) eat in food is 0.0049-0.0065 micrograms/kilogram/day ($\mu\text{g}/\text{kg}/\text{day}$). These amounts of TCEP in food are not expected to pose a health risk.

How does TCEP get into the environment?

TCEP gets into the environment when TCEP-containing products end up in landfills. When it rains, or when snow starts to melt, water gets into landfills. Rain and snowmelt moving through landfills pick up TCEP.⁴ This contaminated water can reach groundwater, surface water, and potentially drinking water.

How long does TCEP stay in the environment?

Once TCEP is in water, it is likely to stay there. It does not break down in water; it is persistent. TCEP in soil will mostly move into water instead of attaching to soil. This is why it is likely to reach groundwater, surface water, and potentially drinking water. TCEP is not removed by conventional wastewater treatment methods.⁵ TCEP does not build up in fish or other animals in the food chain. This means you will not get it in your body from eating fish.⁶

What are the potential environmental impacts of TCEP?

In general, TCEP poses a low to moderate hazard to fish and algae based on laboratory studies.⁴

The Contaminants of Emerging Concern (CEC) Program...

Evaluates health risks from contaminants in drinking water.

References

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