

S-Ethyl-N,N-dipropylthiocarbamate (EPTC) and Drinking Water

S-Ethyl-N,N-dipropylthiocarbamate (EPTC) 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 EPTC in drinking water and, based on findings in groundwater, does not expect EPTC to be a health concern in drinking water.

What is EPTC?

EPTC is an herbicide used to control broadleaf weeds, grasses, and sedges in several food and non-food crops. Use of EPTC in Minnesota has declined, but over 30,000 pounds are purchased in Minnesota each year.

Has EPTC been found in Minnesota waters?

EPTC has been detected by the Minnesota Department of Agriculture (MDA) in groundwater point-source monitoring near sites where chemical spills have occurred.¹ Sites where spills have occurred are carefully monitored to protect drinking water supplies. Typical use is not expected to result in groundwater contamination.

Historically, EPTC was detected in surface water in a range of 0.28 to 1.8 parts per billion (ppb), but has not been detected in surface water since 2000.^{2, 3}

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

Based on available information, MDH developed a guidance value of 40 ppb for EPTC in drinking water. A person drinking water at or below the guidance value would have little or no risk of health effects.

Can EPTC in drinking water affect my health?

Drinking water with high levels of EPTC for short periods of time has been shown to cause brain cell death and developmental effects in laboratory animals. Drinking water that has lower levels of EPTC for longer periods of time is associated with cardiac damage, and nerve and muscle deterioration in laboratory animals.

At a Glance

EPTC is...

- an herbicide used to control broadleaf weeds, grasses, and sedges in a variety of food crops.

EPTC enters your body from...

- breathing it in during use.
- getting it on your skin during use.
- drinking contaminated water.

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

- following the label instructions for safe use and re-entering treated areas.
- wearing protective clothing when handling or using EPTC.

EPTC gets into the environment when....

- it is put on crops when used as an herbicide.

EPTC in drinking water is safe if...

the level is lower than the MDH guidance value of 40 ppb.

How am I exposed to EPTC?

You are most likely to be exposed to EPTC when using the herbicide on crops. When you handle EPTC during mixing, loading, and application to crops, you can breathe it in or get it on your skin. It is unlikely that you will be exposed to EPTC in drinking water. Even though EPTC is used on some food crops, exposure from your diet is expected to be low.⁴

How can I reduce my exposure to EPTC?

People who use EPTC on crops can reduce their exposure by reading the label and following instructions for use and re-entering treated areas. The label may legally require that people applying the product wear personal protective clothing such as goggles, gloves, aprons, and long sleeves when using EPTC. Avoid bringing EPTC residue into your home by removing protective clothing and washing your hands well after using EPTC.

How does EPTC get into the environment and how long does it stay in the environment?

EPTC enters the environment when it is applied to crops for use as an herbicide. In surface soils and surface water, EPTC can degrade or move to air easily and will likely do so in less than 12 days. It can remain in soil up to 18 days, depending on the microorganisms in the soil.

Under anaerobic conditions (little or no oxygen in the soil), EPTC could be more persistent and remain in the environment for months.

What are the potential environmental impacts of EPTC?

Based on available data, normal use of EPTC is unlikely to cause serious harm to aquatic plants, fish, and other wildlife using Minnesota waters.

What Minnesotans Need to Know . . .

EPTC is an herbicide mainly used in agricultural settings. Although EPTC has been found in some of Minnesota's waters, it is not expected to be a widespread health problem. The best way to reduce exposure to EPTC is by proper application on crops and by proper disposal of EPTC containers. Exposure through water is usually at low levels that are below the level of concern.

The Health Risk Assessment Unit...

evaluates the health risks from contaminants in groundwater. MDH works in collaboration with the Minnesota Pollution Control Agency and the Minnesota Department of Agriculture to understand the occurrence and environmental effects of contaminants in water.

References

1. Minnesota Department of Agriculture (MDA). (2013). Submission for the Health Risk Limits Interagency Meeting.
2. Minnesota Pollution Control Agency (MPCA). (2014). Data from EQuIS sent to MDH per request.
3. MDA. (2002). Minnesota Department of Agriculture Pesticides Monitoring in Water Resources: 2002 Data Report. Retrieved from <http://www.mda.state.mn.us/Global/MDADocs/chemfert/reports/02datareport.aspx>. Accessed December 12, 2014.)
4. United States Environmental Protection Agency (USEPA). (1999). Re-registration Eligibility Decision (RED). Retrieved from <http://www.epa.gov/oppsrrd1/REDs/0064red.pdf>. Accessed February 25, 2014.

For more information contact:

Health Risk Assessment

Phone: (651) 201-4899

Website: www.health.state.mn.us/risk

E-mail: health.risk@state.mn.us