

Pentachlorophenol and Drinking Water

Pentachlorophenol (PCP) 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 PCP in drinking water and, based on this value, does not expect levels of PCP in drinking water to harm Minnesotans.

What is pentachlorophenol (PCP)?

Pentachlorophenol (PCP) is a manufactured chemical that was once widely used as a pesticide, preservative and disinfectant. The use and sale of PCP was restricted in the mid-1980s to preserving wood products, such as utility poles, used in exterior settings. PCP has a strong, sharp odor when it is hot, but little odor at room temperature.

Has PCP been found in Minnesota waters?

Historically, PCP has been found in groundwater in several locations throughout Minnesota, including in some private drinking water wells near contaminated sites. According to MDH records, PCP has been reported in Minnesota public drinking water supplies five times since 2002. In all cases, the levels were below 0.3 ppb. If PCP is found in drinking water above the EPA standards, water systems are required to notify their customers.

At industrial sites where PCP was once used it has been found at levels of 8,000 parts per billion (ppb) or more.¹ Minnesota Pollution Control Agency (MPCA) data show that PCP was detected in surface water (e.g., lakes and rivers) during the 1970s (average concentration: 0.3 ppb). PCP has rarely been found in Minnesota surface water in the past 10 years. In areas of known contamination, state agencies require water monitoring to ensure safe drinking water supplies. The levels of PCP are slowly decreasing as the substance is broken down in the environment and as contaminated sites are cleaned up.

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

MDH has updated drinking water guidance due to new toxicity and health effects information.² The new guidance value for PCP is 0.3 ppb based on its potential to cause cancer.³ The revised guidance value is approximately three times lower than the previous value of 1 ppb. A person drinking water at or below the guidance value of 0.3 ppb would have little or no risk of health effects from PCP.

At a Glance

Pentachlorophenol (PCP) is...

- A pesticide used to preserve wood for exterior settings. Its use was restricted in the 1980s.

PCP enters your body from...

- Touching products treated with PCP.
- Drinking water contaminated with PCP. However, the levels in water are generally very low.
- Breathing it in when next to products treated with PCP.

Your exposure to PCP can be reduced by...

- Proper disposal of old products containing PCP.
- If you get water from your own well and live near a wood preserving facility, check with your county and state offices about any contaminants in the area.⁴

PCP in drinking water is safe if...

- The level is at or lower than MDH's guidance value of 0.3 ppb.

How am I exposed to pentachlorophenol?

You could be exposed to PCP in soil, water, or air by living near a source of PCP, such as a facility that uses PCP. You could also be exposed by handling utility poles or other wood treated with PCP. Very low amounts of PCP have been found in food, but the amounts are well below levels of concern and have been declining over time.⁵

Can PCP in drinking water affect my health?

According to the EPA, PCP has the potential to cause cancer in humans.² PCP has also been found to cause problems with the liver, thyroid, nervous system, immune system, reproduction and development in animals. Humans exposed to PCP over a long time period have sometimes had adverse health effects, especially related to the liver, kidneys, blood or nervous system. Because it is unlikely that PCP will be in Minnesota drinking water, the potential for health effects from PCP in drinking water in Minnesota is low.

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

PCP can get into the soil, air, or water at places where it is used to treat wood, or where PCP was spilled or discarded, including landfills. Such sources of PCP may contaminate ground water or surface water and sediments. PCP-treated products might also release PCP into surrounding soil, air, or water.

What are the potential environmental impacts of PCP?

PCP may be harmful to fish and other wildlife living in water. Limited studies show that PCP may interfere with normal endocrine function in fish. Several impurities found in PCP products may remain in the environment for long periods of time and build up in wildlife living in water.

What Minnesotans Need to Know...

PCP is a pesticide, preservative and disinfectant that was once used for many purposes, but its use was greatly restricted in the 1980s. It is now used for treating wood products for exterior settings. PCP in drinking water at levels below the guidance value is not expected to cause harm to humans.

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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 (MDA) to understand the occurrence and environmental effects of contaminants.

References

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2. EPA. 2010. www.epa.gov/iris/subst/0086.htm
3. MDH. 2013, Toxicological Summary for PCP. www.health.state.mn.us/divs/eh/ris/k/guidance/gw/pentachlorsum.pdf
4. Visit MDA and MPCA "What's in my neighborhood?" websites at: www.mda.state.mn.us/en/chemical/spills/incidentresponse/neighborhood.aspx and www.pca.state.mn.us/index.php/da/wimn-whats-in-my-neighborhood/whats-in-my-neighborhood.html
5. Wilson et al. J Expo Sci. Env. Epi. (2010) 20:546-558. www.ncbi.nlm.nih.gov/pubmed/19724304



Photo courtesy of the MPCA.