Octylphenol and Drinking Water

4-tert-Octylphenol (octylphenol) 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 health-based guidance values for octylphenol in drinking water and, based on these values and levels found in Minnesota water, does not expect levels of octylphenol in drinking water will harm Minnesotans.

What is octylphenol?
Octylphenol is a chemical used to manufacture many products including octylphenol ethoxylates (OPEs). Octylphenol and OPEs are used in products such as paints, coatings, adhesives, inks, and products containing rubber. Octylphenol is also present in detergents and surfactants used in some household, industrial, and pesticide products, and in some personal care products, such as cosmetics, body lotions, soaps, face creams, and hair products. When released into the environment, OPEs can degrade into octylphenol.

Has octylphenol been found in Minnesota waters?
Several studies have detected octylphenol in wastewater and surface water in Minnesota. The U.S. Geological Survey (USGS) detected octylphenol at maximum concentrations of 2.48 parts per billion (ppb) in Minnesota wastewater effluent and up to 0.09 ppb in samples of Minnesota surface water. The USGS detected octylphenol at a maximum concentration of 0.19 ppb in Minnesota groundwater.

Studies of octylphenol in Minnesota have found no detections in drinking water sources.

What is the MDH guidance value for octylphenol in drinking water?
Based on available information, MDH developed a guidance value of 100 ppb for octylphenol. A person drinking water at or below the guidance value would have little or no risk of health effects.

Can octylphenol in drinking water affect my health?
Drinking water that has octylphenol at levels higher than the guidance value may cause adverse health effects. Animal studies have indicated that exposure to high doses of octylphenol results in changes to weight, development, and the female reproductive system.

At a Glance

Octylphenol is...
• used to manufacture OPEs, which are used in several consumer products and industrial processing. It is found in personal care products, detergents, paints, inks, adhesives, and products containing rubber.

Octylphenol enters your body from...
• consuming contaminated water and food, and
• using products containing octylphenol such as lotion, face cream, liquid cosmetics, and soaps.

Your exposure to octylphenol can be reduced by...
• using personal care products that do not contain octylphenol, and
• limiting the amount of a product you use to only as much as you need.

Octylphenol in drinking water is safe if...
• the levels are at or below the MDH guidance value of 100 ppb.
How am I exposed to octylphenol?
You are most likely exposed to octylphenol by using personal care products that contain OPEs. Products that remain on the skin for a period of time (lotions, face creams, and liquid cosmetics) result in a higher exposure than those that are washed off quickly during use (soaps and shampoos). An infant may be exposed to octylphenol through breastmilk from an exposed nursing mother. MDH does not expect exposures from personal care products or breastmilk to be harmful.

How does octylphenol get into the environment?
Octylphenol commonly enters the environment through wastewater. When products containing octylphenol or OPEs are rinsed down drains into wastewater or are disposed of in landfills, octylphenol can be released directly or can form as OPEs in these products break down. Wastewater treatment processes can remove most OPEs from wastewater, but some amount persists after treatment and is discharged into the environment.

What are the potential environmental impacts of octylphenol?
Octylphenol disrupts normal endocrine system function and reproduction in fish at low levels in the environment. Limited monitoring data suggests that OPEs may be found at high concentrations in beehives, but a negative impact on bee health has not been demonstrated.

What Minnesotans need to know…
OPEs and octylphenol are used in many consumer products such as detergents, lotions and liquid cosmetics, adhesives, inks, paints, coatings, and products containing rubber. When these products wash down household drains or are discarded after use, they are released into the environment and degrade, resulting in the release of octylphenol. Octylphenol is frequently detected at low levels in treated wastewater and surface water, and has been detected at low levels in Minnesota groundwater. Detections in Minnesota have been below the health-based guidance developed by MDH and drinking water is unlikely to be a main source of exposure.

The Contaminants of Emerging Concern (CEC) Program...
Evaluates health risks from contaminants in drinking water and develops drinking water guidance. 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.

References

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