

# Octylphenol and Groundwater

## Octylphenol

Octylphenol is a chemical used to manufacture many products including octylphenol ethoxylates (OPEs).<sup>1</sup> 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.<sup>2</sup> When released into the environment, OPEs can degrade into octylphenol.<sup>1</sup>

## Octylphenol 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 µg/L\* in Minnesota wastewater effluent and up to 0.12 µg/L in samples of Minnesota surface water.<sup>3,4</sup> The USGS detected octylphenol at a maximum concentration of 0.19 µg/L in Minnesota groundwater.<sup>5</sup>

Studies of octylphenol in Minnesota have found no detections in drinking water sources.<sup>5,6</sup>

\*One microgram per liter (µg/L) is the same as one part per billion (ppb).

## MDH Guidance Value

Based on available information, MDH developed a guidance value of 100 ppb for octylphenol. MDH does not use guidance values to regulate water quality, but they may be useful for situations in which no regulations exist. MDH develops guidance values to protect people who are most vulnerable to the potentially harmful effects of a contaminant. A person drinking water at or below the guidance value would have little or no risk of health effects.

## Potential Health Effects

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.

## Potential Exposure to Octylphenol

You can be 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).<sup>7</sup> An infant may be exposed to octylphenol through breastmilk from an exposed nursing mother.<sup>8</sup> MDH does not expect exposures from personal care products or breastmilk to be harmful.

## Octylphenol in 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.

### Potential Environment 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.

### Health Risk Assessment Unit

The MDH Health Risk Assessment Unit evaluates the health risks from contaminants in drinking water sources and develops health-based guidance values for drinking water. 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

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