

Skatol Screening Profile

Skatol (3-methyl-1H-indole) is a contaminant that has been detected in potential drinking water sources in Minnesota. The information in this profile was collected for the screening process of the Minnesota Department of Health's Contaminants of Emerging Concern (CEC) program in December 2010. The chemicals nominated to the CEC program are screened and ranked based on their toxicity and presence in Minnesota waters. Based on these rankings, some chemicals are selected for a full review. CEC program staff have not selected skatol for a full review.

Skatol Uses

Skatol is a fragrance ingredient used in consumer products such as soaps, detergents, lotions, and perfumes. Skatol is also used as an artificial flavor in processed foods such as beverages, ice cream, candy, and baked goods. At high concentrations, skatol contributes to the foul odor of human and animal waste, but at low concentration, it is combined with other ingredients to make pleasant aromas.

Skatol in the environment

Skatol is produced in the body during the digestion of the amino acid tryptophan. Skatol is excreted in the feces of humans and animals, including some farm animals. When it rains, skatol in animal feces is washed into lakes, rivers, and possibly groundwater. Skatol in human waste enters the environment through wastewater.

When products containing skatol are used, skatol is washed down the drain and mixed with wastewater. Skatol is also released into the environment when it is manufactured.

Once in the environment, skatol tends to attach to soil. Some skatol may move through soil into groundwater. Skatol in surface water is likely to attach to particles in surface water, although some will go into the air.

Very few studies have measured skatol concentrations in drinking water, surface water, groundwater, or wastewater.

In Minnesota, skatol has been found at maximum concentrations of:

- 0.29 parts per billion (ppb) in treated wastewater,¹
- 0.037 ppb in surface water,¹
- 0.032 ppb in the intake water of a drinking water treatment facility,¹ and
- very low levels in groundwater.²

Exposure to Skatol

Exposure to skatol may occur from drinking contaminated water, using scented products, drinking beverages containing skatol and eating foods containing skatol.

Potential Health Effects

There is some evidence from animal studies that skatol harms the lungs when inhaled at very high doses.³ No other harmful effects are known.



Based on the screening assessment, a full review of skatol may not be possible.

References

1. USGS. Presence and Distribution of Organic Wastewater Compounds in Wastewater, Surface, Ground, and Drinking Waters, Minnesota, 2000-02. Scientific Investigation Report 200-5138 <http://pubs.usgs.gov/sir/2004/5138/20045138.pdf>
2. Erickson, M.L., Langer, S.K., Roth, J.L., and Kroening, S.E., 2014. Contaminants of emerging concern in ambient groundwater in urbanized areas of Minnesota, 2009-12; ver. 1.2. U.S. Geological Survey Scientific Investigations Report 2014-5096. <http://dx.doi.org/10.3133/sir20145096>
3. Bray TM and S. Kubow. Involvement of free radicals in the mechanism of 3-methylindole-induced pulmonary toxicity: an example of metabolic activation in chemically induced lung disease. Environmental Health Perspectives. 1985;64:61-67.

For more information, contact:
Minnesota Department of Health Environmental Health Division
Contaminants of Emerging Concern Program
health.legacy@state.mn.us
November 2015



Contaminants of Emerging Concern Program

Chemical Review Process

The Contaminants of Emerging Concern (CEC) program investigates the potential health concerns of contaminants of emerging concern in drinking water. This investigation includes a rapid assessment ('screening') to prioritize nominated chemicals for in-depth research and evaluation that result in drinking water guidance and information about exposure.

Chemical Nomination and Eligibility

Minnesota risk managers, stakeholders, and the public are encouraged to nominate contaminants for review. After chemicals are nominated, MDH program staff determine eligibility by examining the likelihood that the chemical will enter Minnesota waters and whether adequate guidance already exists.

Screening and Risk Based Selection

Program staff conduct a screening of where and how a contaminant is used in the state, its potential to enter the water supply, and its potential to harm humans. The results from the screening are used to prioritize nominated chemicals.

Chemicals having higher exposure and harm potential are selected for in-depth review and development of guidance (a contaminant water concentration that is not harmful to people). Chemicals that rank lower remain candidates for future in-depth review. For some contaminants, however, the information is too limited. For chemicals that are not selected for in-depth review, the results of the screening assessment are summarized in a Screening Profile. The screening and prioritization process is repeated as additional chemicals are nominated and screened.

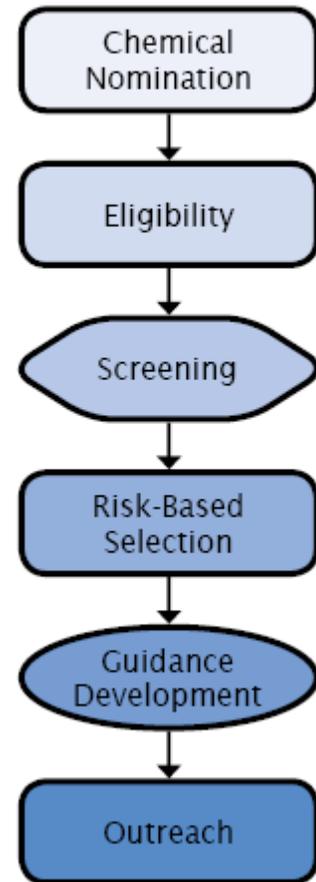
Guidance Development

When a chemical is selected for a full review, program staff carefully review exposure and toxicological information to understand how humans may be exposed and what adverse health effects occur from exposure. Staff combine the results of in-depth analyses of toxicity and exposure to calculate a guidance, a level of contaminant in water that causes little to no harm to someone drinking the water.

Outreach

CEC program staff work to communicate the results of the chemical review process. This includes making key findings publicly available on web pages and at a variety of meetings and events. An email subscription service (GovDelivery) is also used to alert the interested public (subscribers) of chemical review activities and guidance values.

Chemical Review Process



Subscribe to the CEC Program GovDelivery service to receive notification when reviews are initiated for water contaminants and other announcements by visiting: <http://www.health.state.mn.us/cec>