

Methyl and Propyl Parabens Screening Profile

Parabens are contaminants that have been found 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. 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 methyl or propyl paraben for full reviews.

Methyl and Propyl Parabens Uses

Parabens are antimicrobial chemicals used as preservatives in packaged foods, pharmaceuticals, cosmetics, and personal care products. Methyl and propyl parabens are commonly found together in paraben mixtures used in consumer products.

Parabens in the Environment

Based on a study Minnesota Pollution Control Agency (MPCA) did in Minnesota in 2010, parabens are widespread in Minnesota's surface water. Twenty-one percent of streams sampled had propyl paraben, with a maximum concentration of 0.6 parts per billion (ppb). Methyl paraben was found in 32% of the sites; the maximum concentration was 1.0 ppb.¹

Propyl paraben may build up in the tissues of fish and other wildlife.² There is low potential for methyl paraben build up in fish and wildlife tissues.³

Exposure to Methyl and Propyl Parabens

Exposure to parabens may occur through eating foods preserved with parabens, using products with parabens, or drinking contaminated water. Companies use a variety of names for parabens on ingredient lists. Here are some key names for different types of products:

Personal care products: propyl paraben, methyl paraben, butyl paraben, or ethyl paraben.

Food and beverage products: methyl or propyl p-hydroxybenzoate, or methyl or propyl parahydroxybenzoate.

Potential Health Effects

Parabens are potential endocrine (hormone) disruptors, but their estrogen activity is much lower than natural estradiol.⁴ Parabens have been detected in human breast cancer tissue; however, studies have not shown that parabens actually cause breast cancer.⁴ Much of what is known about endocrine disruption is based on limited studies, which in some cases have produced conflicting results. These studies may not represent what might happen when humans ingest methyl or propyl parabens from food or water.⁴

Based on the screening assessment, it is unclear whether the available information on methyl or propyl parabens is sufficient for a full review.

References

1. Minnesota Pollution Control Agency. 2013. Pharmaceuticals and Personal Care Products in Minnesota's River and Streams: 2010. <http://www.pca.state.mn.us/index.php/view-document.html?gid=19426>.
2. National Library of Medicine. Hazardous Substances Data Bank. Toxnet. Propylparaben. <http://toxnet.nlm.nih.gov/cgi-bin/sis/search2/r?dbs+hsdb:@term+@DOCNO+203>
3. National Library of Medicine. Hazardous Substances Data Bank. Toxnet. Methylparaben. <https://toxnet.nlm.nih.gov/cgi-bin/sis/search2/f?./temp/~Dj6XEH:1>
4. European Medicines Agency. Reflection paper on the use of methyl-and propylparaben as excipients in human medicinal products for oral use. 2015. http://www.ema.europa.eu/docs/en_GB/document_library/Scientific_guideline/2015/11/WC500196733.pdf
5. U.S. Food and Drug Administration (FDA). Parabens. <http://www.fda.gov/Cosmetics/ProductsIngredients/Ingredients/ucm128042.htm>

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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.

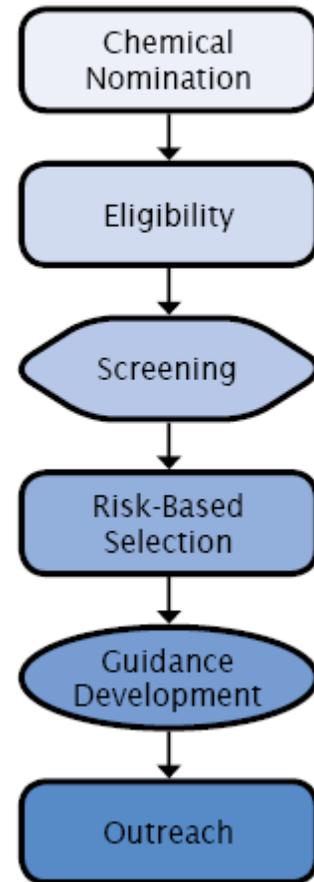
Guidance Development

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>