Minnesota Department of Health

CONTAMINANTS OF EMERGING CONCERN PROGRAM

Formaldehyde Screening Profile

Formaldehyde is a contaminant that has been found in drinking water. 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 March 2011. 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 formaldehyde for a full review.

Formaldehyde Uses

Formaldehyde is naturally occurring in the body and in the environment. Formaldehyde is also used as a disinfectant or preservative in:

- Industrial Products
- Detergents, shampoos, and cosmetics
- Paper products
- Composite wood products
- Food packaging
- Pesticides
- Animal feed

Formaldehyde can be a by-product of combustion and is detected in smog and cigarette smoke.

Formaldehyde in the Environment

Formaldehyde is expected to be found more frequently in indoor and outdoor air than in water. Formaldehyde enters indoor air when it is present in building materials, such as composite wood products.

Formaldehyde is not currently being monitored in Minnesota waters. Formaldehyde is not expected to build up in the tissues of fish or other wildlife.[3]

Exposure to Formaldehyde

Exposure to formaldehyde may occur through inhalation of contaminated air, ingestion of contaminated food or water, or absorption through the skin.[1]

The U.S. Environmental Protection Agency estimates that formaldehyde concentrations in U.S. drinking water may be as high as 10 parts per billion (ppb).[2] Formaldehyde can enter drinking water as a disinfection by-product or from leaching from certain plumbing fixtures.

Potential Health Effects

According to the International Agency on Cancer Research, formaldehyde is considered carcinogenic to humans.[1] Workers exposed to formaldehyde regularly experienced eye, nose, and throat irritation.[1,4] In laboratory animals, harmful stomach effects were seen in animals ingesting high amounts of formaldehyde for an extended period.[1]

In 1994, MDH developed a guidance value for formaldehyde in groundwater of 1,000 ppb.[5] In 2006, MDH developed a guidance value for formaldehyde in air of 2 µg/m^3.[6] Due to new information, formaldehyde was nominated to the CEC program.

Based on the screening assessment, a full review of formaldehyde may be possible; however, it is ranked lower than other nominated CEC chemicals at this time.

References

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3. U.S. Environmental Protection Agency. IRIS 2010a. DRAFT Toxicological Review of Formaldehyde: Inhalation Assessment. http://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=223614
4. National Toxicology Program.13th Report on Carcinogens. 2014. http://ntp.niehs.nih.gov/ntp/roc/content/profiles/formaldehyde.pdf
5. Minnesota Department of Health. Guidance for Water. 1994. http://www.health.state.mn.us/divs/eh/risk/guidance/gw/table.html
6. Minnesota Department of Health. Guidance for Air. 2006. http://www.health.state.mn.us/divs/eh/risk/guidance/air/formaldehyde.html

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CLEAN WATER LAND & LEGACY AMENDMENT

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.

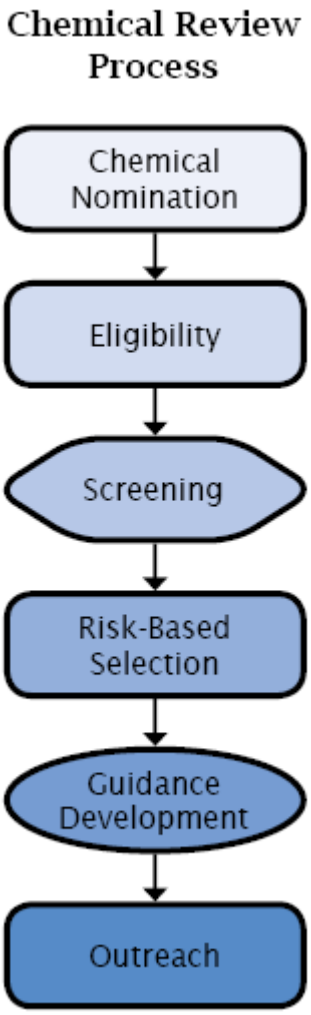
Chemicals having higher exposure and harm potential are selected for in-depth review and development of guidance (a contaminant water concentration that is not harmful to people). Chemicals that rank lower remain candidates for future in-depth review. For some contaminants, however, the information is 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.



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