Minnesota Department of Health

CONTAMINANTS OF EMERGING CONCERN PROGRAM

Nonylphenol Ethoxylates Screening Profile

Nonylphenol mono-ethoxylate (NP1EO) and nonylphenol di-ethoxylate (NP2EO) are contaminants that have 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 October 2011.The chemicals nominated to the CEC program are screened and ranked based on their toxicity and presence in Minnesota waters. CEC program staff have not selected the nonylphenol ethoxylates for a full review.

Nonylphenol Ethoxylates Uses

Nonylphenol mono-ethoxylate (NP1EO) and Nonylphenol di-ethoxylate (NP2EO) collectively referred to as Nonylphenol ethoxylates (NPEs), are used in many consumer products and industrial processes. A few examples of these include cleaning products, adhesives, paints, varnishes, food packaging, indoor and agricultural pesticides, cosmetics, and paper processing.

NPEs in the Environment

NPEs are released into the environment when they are manufactured and when chemicals containing these products are used. NPEs are often used in products that end up being washed down the drain or in agricultural products that end up in Minnesota waters.

NPEs have been detected in wastewater and surface water in Minnesota, as well as in lake and river sediment. The highest concentration of NP1EO found in surface water was 0.11 parts per billion (ppb) and the highest concentration of NP2EO was 0.12 ppb.[1]

NPEs are highly toxic to aquatic organisms.[2]

In the environment, NPEs will likely degrade into nonylphenol, a chemical recently reviewed by the CEC program.[3] Based on current information NP1EO and NP2EO are likely to be less toxic than nonylphenol.[2]

Exposure to NPEs

Exposure to NPEs can occur through drinking contaminated water, eating contaminated food or coming into contact with products that contain NPEs.

For most Minnesotans, exposure from consumer products or contaminated food is of greater concern than contaminated drinking water.

Children may be exposed to these chemicals from crawling on floors where cleaners containing NPEs are used.

Potential Health Effects

Although NPEs are generally less toxic than nonylphenol, they can break down into nonylphenol. In animal studies, high levels of nonylphenol caused harmful effects on the kidneys and hormone levels.[3] MDH developed a health-based value for nonylphenol in drinking water of 20 ppb.[3]

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

References

1. Minnesota Pollution Control Agency. Wastewater Treatment Plant Endocrine Disrupting Chemical Monitoring Study. 2011. http://www.pca.state.mn.us/index.php/view-document.html?gid=15610/
2. U.S. Environmental Protection Agency. 2009. http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/RIN2070-ZA09_NP-NPEs%20Action%20Plan_Final_2010-08-09.pdf
3. Minnesota Department of Health. Nonylphenols and drinking water information sheet. 2015. http://www.health.state.mn.us/divs/eh/risk/guidance/gw/nonylphinfo.pdf

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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.

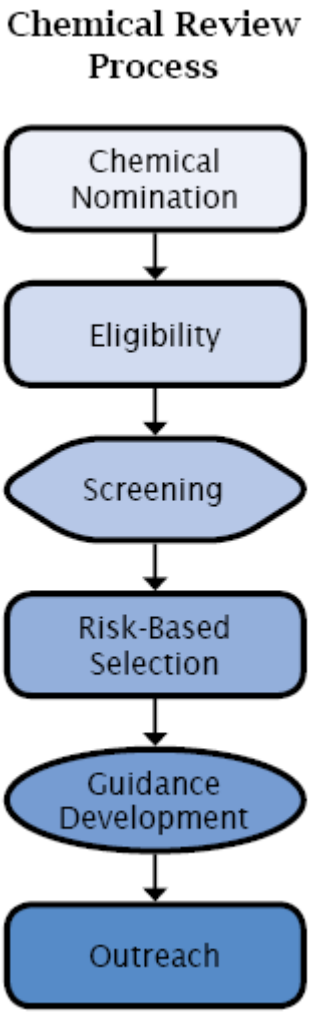
Chemicals having higher exposure and harm potential are selected for in-depth review and development of guidance (a contaminant water concentration that is not harmful to people). Chemicals that rank lower remain candidates for future in-depth review. For some contaminants, however, the information is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