

NDMA Screening Profile

N-Nitrosodimethylamine (NDMA) is a contaminant that has been found in 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 August 2013. 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 NDMA for a full review.

NDMA Uses

NDMA is a chemical that was formerly used in the manufacturing of many products such as rocket fuel, plastics, dyes, and pesticides. NDMA can be produced from reactions taking place during water treatment and is a potential breakdown product of material used in silica sand mining.¹

NDMA in the Environment

NDMA has been detected in Minnesota drinking water at a maximum concentration of 0.08 parts per billion (ppb).²

NDMA may be harmful to some aquatic life, but it is not expected to build up in the tissues of fish or other wildlife.³



Exposure to NDMA

Exposure to NDMA may occur through drinking contaminated water, eating contaminated food, or by handling consumer products that contain NDMA.

Exposure to NDMA may also occur by inhaling or ingesting tobacco products and car exhaust.

Potential Health Effects

Excess exposure to NDMA has the potential to cause harmful health effects. NDMA is considered by both the U.S. Environmental Protection Agency (EPA) and the International Agency for Research on Cancer as a probable human carcinogen.⁴ In laboratory animals, exposure to NDMA caused cancer and liver damage.^{4,5} In humans, exposure to NDMA has been shown to damage the liver.^{4,5}

Due to limited data available from the EPA, NDMA has not been yet selected for a full review.

References

1. National Library of Medicine. Hazardous Substances Data Bank. Toxnet. <http://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+1667>
2. Minnesota Department of Health and Minnesota Geological Survey. The County Well Index Database, Updated Daily. Accessed August 2013. <http://mdh-agua.health.state.mn.us/cwi/cwiViewer.htm>
3. Office of Environmental Health Hazard Assessment of California. Toxicity Criteria Database. <http://www.oehha.ca.gov/tcdb/index.asp>
4. International Agency for Research on Cancer. Monographs. 1987;17(75).
5. EPA. Integrated Risk Information System. NDMA. <http://www.epa.gov/iris/subst/0045.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.

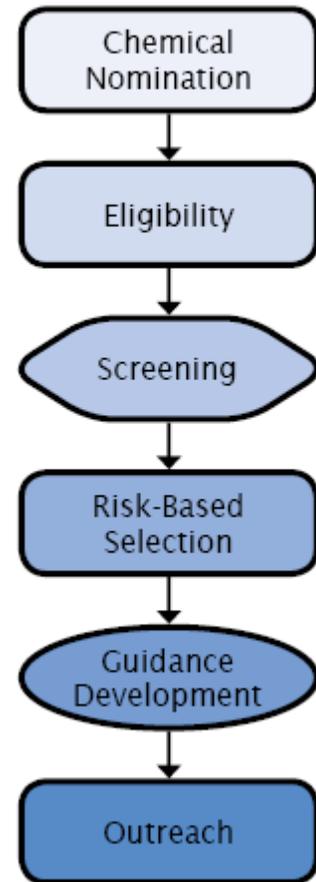
Guidance Development

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>