Minnesota Department of Health

CONTAMINANTS OF EMERGING CONCERN PROGRAM

Metoprolol Screening Profile

Metoprolol 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 June 2015. 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 metoprolol for a full review.

Metoprolol Uses

Metoprolol is a pharmaceutical used to treat high blood pressure and other heart problems. It is commonly known by the brand name Lopressor®.

Metoprolol in the Environment

Metoprolol enters the environment when it is excreted from people taking the medication or when unused medication is disposed of in the toilet, sink, or landfill.

One way to reduce metoprolol in the environment is to dispose of unused medication properly. Follow the recommendations from the Minnesota Pollution Control Agency (MPCA) for disposing of any unwanted medications.[1]

Metoprolol has been found in Minnesota surface water at a maximum concentration of 0.051 parts per billion (ppb).[2]

Metoprolol may be harmful to fish at levels found in the environment.[3]

Exposure to Metoprolol

Exposure to metoprolol can occur through drinking contaminated water or taking medication containing metoprolol.

Metoprolol may be present in the breastmilk of women taking the medication.[4] Nursing mothers should talk to their doctor about any medications they are taking.

Potential Health Effects

Although side effects of metoprolol at therapeutic doses are known, there is little information available about the health effects of metoprolol at the lower levels found in the environment.

In animal studies, high doses of metoprolol affected pregnancy outcomes and male fertility.[4]

MDH developed a pharmaceutical water screening value of 3 ppb in drinking water using a rapid assessment methodology.[5] Concentrations at or below this level are unlikely to pose a health risk.[5]

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

References

1. MPCA. Disposal of Household Hazardous Waste. 2015. http://www.pca.state.mn.us/index.php/living-green/living-green-citizen/household-hazardous-waste/disposing-of-unwanted-medications.html
2. MPCA. Pharmaceuticals, Personal Care Products, and Endocrine Active Chemical Monitoring in Lakes and Rivers:2013. 2015. http://www.pca.state.mn.us/index.php/view-document.html?gid=22915
3. Triebskorn et al. Ultrastructural effects of pharmaceuticals (carbamazepine, clofibric acid, metoprolol, diclofenac) in rainbow trout and common carp. Anal Bioanal Chem. 2007;387(4):1405-16.
4. National Library of Medicine. DailyMed. Lopressor. Updated July 2015. http://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=6640cc61-edee-4808-a26f-cbc2c0b7af86
5. MDH. Pharmaceutical water screening values report. 2015. http://www.health.state.mn.us/divs/eh/risk/guidance/dwec/pharmwaterrept.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.

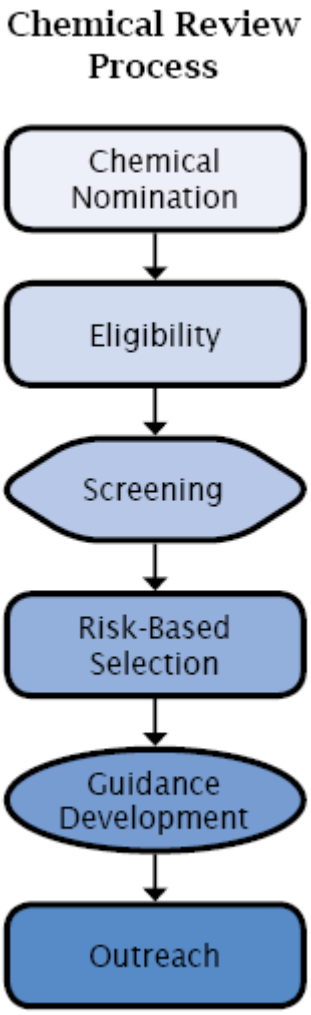
Chemicals having higher exposure and harm potential are selected for in-depth review and development of guidance (a contaminant water concentration that is not harmful to people). Chemicals that rank lower remain candidates for future in-depth review. For some contaminants, however, the information is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