

Lincomycin Screening Profile

Lincomycin is a contaminant that has been detected in surface water and groundwater wells 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 February 2017. 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. Lincomycin has not yet been selected for a full review.

Lincomycin Uses

Lincomycin is an antibiotic used to treat severe infections with gram positive bacteria, such as *Streptococcus*, *Staphylococcus*, and *Mycoplasma*. Lincomycin is used with patients who cannot take penicillin and is also used to treat livestock. Lincomycin is not usually used for humans because of its strong side effects.

Lincomycin in the Environment

Lincomycin can enter the environment through waste streams from producing the antibiotic or from human and animal waste. Lincomycin can exist in particulates in the air or in water. The antibiotic can move easily through the soil. Lincomycin is not expected to build up in tissues of fish or other wildlife.

Minnesota Pollution Control Agency (MPCA) detected lincomycin in 8 percent of the streams and rivers they sampled in 2014.¹ The highest concentration detected was 6.23 parts per trillion (ppt).¹ The U.S. Geological Survey and MPCA detected lincomycin in 2 percent of the groundwater wells they sampled in urban areas. These detections were in samples collected at landfills. The highest concentration detected was 110 ppt.²

Exposure to Lincomycin

People come in contact with lincomycin through using the drug as an antibiotic. People who work where lincomycin is used or produced may come in contact with the drug through inhalation or skin contact. The general population may come in contact with lincomycin through skin contact with water.³

Potential Health Effects

Coming in contact with high levels of lincomycin may kill healthy bacteria in the gastrointestinal tract and

cause diarrhea. Lincomycin is also associated with nausea, rash, and vomiting.⁴ Lincomycin appears in breast milk if the mother is exposed to the antibiotic. No ill effects have been reported in human patients taking the drug while pregnant.³

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

References

1. MPCA. 2017. [Pharmaceuticals and Chemicals of Concern in Rivers: Occurrence and Biological Effects](https://www.pca.state.mn.us/sites/default/files/tdr-g1-20.pdf) (<https://www.pca.state.mn.us/sites/default/files/tdr-g1-20.pdf>).
2. U.S. Geological Survey and MPCA. 2014. [Contaminants of Emerging Concern in Ambient Groundwater in Urbanized Areas of Minnesota, 2009-12](https://pubs.usgs.gov/sir/2014/5096/pdf/sir2014-5096.pdf) (<https://pubs.usgs.gov/sir/2014/5096/pdf/sir2014-5096.pdf>).
3. U.S. National Library of Medicine. Hazardous Substances Data Bank. Searched "lincomycin" (<https://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>). Accessed February 2017.
4. Pfizer. 2016. [Material Safety Data Sheet](http://www.pfizer.com/files/products/material_safety_data/PZ01160.pdf) (http://www.pfizer.com/files/products/material_safety_data/PZ01160.pdf).

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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.

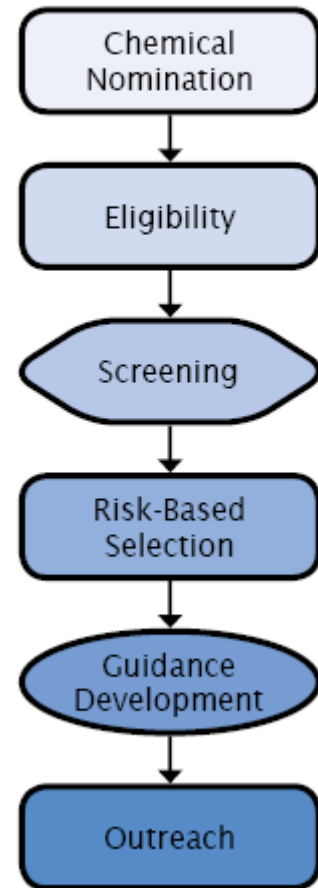
Guidance Development

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>