

Bifenthrin Screening Profile

Bifenthrin is a contaminant that could be present 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 January 2016. 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 bifenthrin for a full review.

Bifenthrin Uses

Bifenthrin is a broad use pyrethroid insecticide used both indoors and outdoors. Example indoor uses of bifenthrin include:

- Bed bugs control products,
- Dairy and cheese processing facilities,
- Pest control products for pets, and
- Restaurants.

Example outdoor uses of bifenthrin include:

- Agricultural crops including beans, root vegetables, hops, and melons,
- Christmas tree farms, and
- Commercial and industrial lawns.

Bifenthrin is listed as a restricted use pesticide by the US Environmental Protection Agency (EPA); however, bifenthrin can be purchased for residential use in lower concentrations.

Bifenthrin is a high production chemical and there are over 600 products containing bifenthrin available in the US. In 2011, more than 86,000 pounds of bifenthrin were sold in Minnesota.

Bifenthrin in the Environment

Bifenthrin enters the environment through regular application and use. Bifenthrin is currently being monitored for in Minnesota waters by the Minnesota Department of Agriculture. To date, bifenthrin has rarely been detected in Minnesota's environment.

Bifenthrin is highly toxic to aquatic life, including fish and animals.¹ Bifenthrin is toxic to insects, including bees.¹

Exposure to Bifenthrin

Exposure can occur through eating foods that contain small amounts of bifenthrin residues. Exposure can also occur through drinking water contaminated with bifenthrin.

Inhalation and skin exposures may occur after applying bifenthrin, or after entering an area within 24 hours of

the application of bifenthrin. Since bifenthrin is often used indoors, exposure can occur in the home, workplace, or in public places.

Potential Health Effects

Humans occupationally exposed to bifenthrin report mild effects such as skin tingling or eye irritation.² In studies on laboratory animals, exposure to high levels of bifenthrin affected the nervous system, causing tremors in animals.³ Animals exposed to very high levels of bifenthrin developed bladder cancer; however, cancer is not likely to occur at lower exposure levels.

MDH developed a Pesticide Rapid Assessment value of 2 parts per billion (ppb) for bifenthrin in drinking water. A person drinking water at or below this level would have little or no risk of health effects. Based on the screening assessment, available information on bifenthrin is likely sufficient for a full review; however, it is ranked lower than other nominated CEC chemicals at this time.

References

1. European Chemicals Agency. Committee for Risk Assessment RAC Opinion proposing harmonized classification and labelling at Community level of bifenthrin. May 2011.
2. Joint FAO/WHO Meeting on Pesticide Residues. Evaluations. 2009. http://apps.who.int/iris/bitstream/10665/44522/1/9789241665254_eng.pdf
3. EPA 2012. Bifenthrin Human Health Risk Assessment to Support New Uses for a Bed Bug Treatment, Grass Grown for Seed, Tolerances for Imported Tea, and a Section 18 Emergency Exemption Use on Apple, Nectarine, and Peach. <http://www.gpo.gov/fdsys/pkg/FR-2012-09-14/html/2012-22772.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.

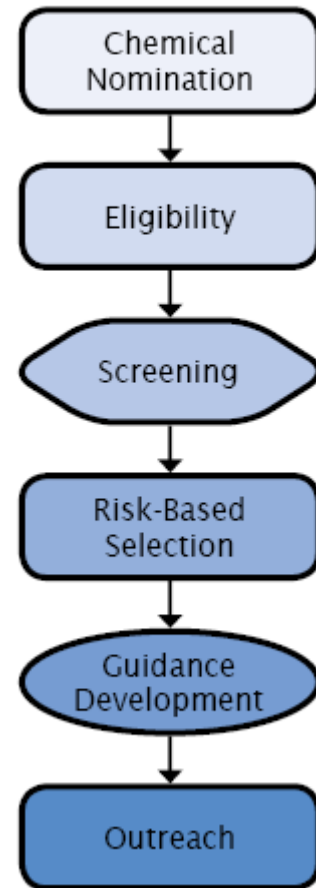
Guidance Development

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>