Diquat Dibromide Screening Profile

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Diquat dibromide, also referred to a "diquat," is a chemical that may be present in Minnesota waters. Information in this profile was collected for the screening process of the Minnesota Department of Health's Contaminants of Emerging Concern (CEC) program in March 2012 and updated in October 2021. 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 diquat dibromide for a full review.

Diquat dibromide uses

Diquat dibromide is an herbicide, algaecide, desiccant, and defoliant used on food crops, such as potatoes and crops grown for seed, and in lakes and ponds. In residential areas it is used for weed control on lawns.[1]

Diquat dibromide in the Environment

Diquat dibromide may enter the environment through regular use. Once diquat dibromide enters the environment, it can remain in the soil for years.[1]

Prior to2021, monitoring for diquat had not taken place in Minnesota waters. However, testing of finished drinking water supplies – from both groundwater and surface water sources – was initiated in 2021 by the Minnesota Department of Health under the federal Safe Drinking Water Act.[2] The U.S. Environmental Protection Agency (US EPA) has established a maximum contaminant level (MCL) of 20 parts per billion (ppb) in drinking water.[3] Diquat dibromide has occasionally been detected in surface water outside Minnesota at levels below the US EPA MCL.[4]

Diquat dibromide may be harmful to some aquatic life but is not expected to build up in tissues of fish or other aquatic animals.[5]

Exposure to Diquat Dibromide

Exposure to diquat dibromide may occur through drinking contaminated water, by eating food that contains pesticide residues, or by swimming in waters where diquat dibromide was recently applied.

Potential Health Effects

Excess exposure to diquat dibromide for an extended period of time has the potential to cause vision problems.[1] In laboratory studies, animals exposed to high levels of diquat dibromide experienced severe cataracts, kidney damage, and decreased body weight in their offspring. [1]

MDH developed a Pesticide Rapid Assessment value of 1 part per billion (ppb) for diquat dibromide in drinking water.[6] A person drinking water at or below this level would have little or no risk of health effects. Based on the screening assessment, a full review of diquat dibromide is possible; however, it is ranked lower than other nominated CEC chemicals at this time.

References

1. US EPA 2015. Diquat Dibromide – Draft Human Health Risk Assessment for Registration Review (www.regulations.gov/document/EPA-HQ-OPP-2017-0291-0010)
2. US EPA National Primary Drinking Water Regulations (www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations)
3. National Water Quality Monitoring Council (2021). Water Quality Portal. Data retrieved November 2021. US Geological Survey (USGS) – US EPA Water Quality Portal (www.waterqualitydata.us/)
4. Wisconsin Department of Natural Resources. 2018. Diquat Chemical Fact Sheet (dnr.wisconsin.gov/search/google?keys=%22Diquat+Chemical+Fact+Sheet%22#gsc.tab=0&gsc.q=%22Diquat%20Chemical%20Fact%20Sheet%22&gsc.sort=)
5. Minnesota Department of Health. 2021 Pesticide Rapid Assessment Table. Rapid Assessments for Pesticides (www.health.state.mn.us/communities/environment/risk/guidance/dwec/rapidpest.html)

For more information, contact:

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