

Dinoseb and Drinking Water

Summary

Dinoseb is a pesticide that is no longer registered for use in the United States. Dinoseb has been detected in Minnesota groundwater near locations where previous spills of dinoseb occurred. Studies show that contact with dinoseb may result in birth defects or male reproductive problems. It is unlikely that people in Minnesota will come into contact with dinoseb, either through use or drinking in contaminated water.

Dinoseb

Dinoseb is a pesticide that was registered for use in the United State between 1948 to 1986 for use on soybeans, corn, and other produce. The Environmental Protection Agency (EPA) discontinued the registration for this chemical in 1986, meaning it is no longer legal to use for agriculture. Dinoseb was primarily used to control grasses and weeds but could also be used to control fungus and insects.¹

Dinoseb in Minnesota Waters

Dinoseb has been detected in some Minnesota groundwater associated with known locations of past dinoseb spills. Detections in groundwater near spill sites have been between 0.29 and 86 ppb.² Dinoseb has not been detected in Minnesota surface waters.

Dinoseb was detected in two public drinking water systems in 1993 at 0.27 and 0.52 ppb. Monitoring data through 2015 shows no detections of dinoseb in drinking water since 1993.³

MDH Guidance Value

Based on available information, MDH developed a guidance value of 8 ppb for dinoseb in drinking water. A person drinking water at or below the guidance value would have little or no risk of health effects.

Potential Health Effects

Short term exposures to dinoseb can cause birth defects and skeletal malformations in fetuses. From a longer exposure, male reproductive toxicity effects such as low sperm counts and abnormal sperm shapes were reported in laboratory rats.

Potential Exposure to Dinoseb

Most people in Minnesota do not come into contact with dinoseb. Dinoseb can be absorbed through the skin during application, but because it is banned for use in the United States, it is very unlikely it is being used in Minnesota. You may come into contact with dinoseb if you drink water that has been contaminated. The risk of drinking contaminated water is low because dinoseb has only been detected at sites where previous chemical spills have occurred.

Chemical in the Environment

Dinoseb has only been detected in Minnesota at known sites where the chemical was previously spilled. Dinoseb may move from the soil into groundwater, depending on the conditions of the soil. Dinoseb is unlikely to break down or degrade once it enters a groundwater aquifer.

Potential Environmental Impacts of Chemical

Dinoseb is harmful to fish and other aquatic animals. Laboratory studies show that very small amounts of dinoseb can impact the growth and survival of fish and other animals living in water. However, because dinoseb is not detected in Minnesota's surface waters, effects to aquatic life are unlikely.

Minnesota does not have an aquatic life water quality standard for dinoseb, but Canada has a guideline value of 0.05 ppb based on toxicity to fish.

Health Risk Assessment Unit

The MDH Health Risk Assessment Unit evaluates the health risks from contaminants in groundwater. MDH works in collaboration with the Minnesota Pollution Control Agency and the Minnesota Department of Agriculture to understand the occurrence and environmental effects of contaminants in water.

References

1. EPA. Environmental Protection Agency. 1990. National Pesticide Survey: Dinoseb (Archived document). Retrieved from http://nepis.epa.gov/Exe/ZyNET.exe/10003H0T.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1986+Thru+1990&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A\zyfiles\Index%20Data\86thru90\Txt\00000005\10003H0T.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h|_-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p|f&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeeKPage=x&ZyPURL# Accessed January 25, 2016.
2. MDA. Minnesota Department of Agriculture. 2015. MDA 2015 HRL Nominations. Submitted to MDH June 2015.
3. Minnesota Drinking Water Information System (MNDWIS). 2016. Accessed by MDH staff January 2016.

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