

Water Quality Best Management Practices for CHLORPYRIFOS

The Minnesota Department of Agriculture (MDA), in cooperation with the University of Minnesota Extension Service and other interested parties, has developed voluntary Best Management Practices (BMPs) to address the presence of chlorpyrifos in Minnesota's surface water from normal agricultural use (see reverse side of page). If the voluntary BMPs are proven ineffective, mandatory restrictions on chlorpyrifos use and practices may be required. The BMPs may refer to mandatory label use requirements. Always read and follow product labels. For information on monitoring results for chlorpyrifos and other pesticides in Minnesota's water resources, refer to the MDA's Monitoring and Assessment webpage www.mda.state.mn.us/chemicals/pesticides/maace.aspx.

Example trade names for products and package mixtures containing chlorpyrifos. List is not all-inclusive and can change with the introduction of new products; always check the label, or consult MDA's product registration database at http://npirspublic.ceris.purdue.edu/state/, select Minnesota, and search for Active Ingredient.*

CHLORPYRIFOS IS AN ACTIVE INGREDIENT IN		
Chlorpyrifos	Govern	Pilot
Cobalt	Hatchet	Vulcan
Cobalt Advanced	Lorsban	Warhawk
Dursban	Lorsban Advanced	Whirlwind
Eraser	Nufos	Yuma

^{*} Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement is implied.

The chlorpyrifos BMPs are companions to a set of core water quality BMPs for use with all agricultural insecticides (www.mda.state.mn.us/protecting/bmps.aspx). If using chlorpyrifos for crop production, consult these BMPs prior to application. State and federal law can require that the use of a pesticide be limited or curtailed due to the potential for adverse impacts on humans or the environment.

Information about CHLORPYRIFOS

- Chlorpyrifos, a broad-spectrum insecticide, was first registered in 1965 and was widely used for agricultural and home pest control. Most indoor, pet, and homeowner uses were voluntarily withdrawn in 2001.
- Chlorpyrifos is used to control foliar and soil-borne insect pests on a variety of crops including soybeans, corn, alfalfa, sugar beet, and a number of fruit and vegetable crops. It is also used as a seed treatment.
- Chlorpyrifos is a "Restricted Use Pesticide" which indicates that it can only be bought and applied by a Certified Pesticide Applicator.
- Chlorpyrifos belongs to the organophosphate class of insecticides (Mode of Action Group 1B) and controls insects by disrupting normal nervous system function.
- Chlorpyrifos is highly toxic to bees and other beneficial insects exposed to direct treatment or residues on blooming crops or weeds. It is also toxic to fish, aquatic invertebrates, and birds. It is moderately toxic to mammals.



Pesticide applications near water bodies and in certain regions/watersheds are more likely to result in potential water quality impacts from runoff, drift, and volatilization. Other sensitive areas include those that provide runoff to surface water systems, areas near tile surface inlets, highly erodible soils, areas with seasonally high water tables, and highly permeable soils. Note: Many fields are adjacent to water bodies, and portions of every Minnesota county may contain sensitive soils, water tables, and geology.

Contact your Natural Resources Conservation Service or Soil & Water Conservation District for further information on specific soil and water resource conditions on and near your farm. Then work with Extension educators, crop consultants, and other agricultural advisors to select and adopt the Best Management Practices that are appropriate for your field and farm.

The BMPs are reminders of label requirements and a series of additional voluntary options. Producers and crop production advisors should select options most appropriate for a given farming operation, soil type, geography, tillage and cultural practices, and irrigation and runoff management. The MDA encourages development of Integrated Pest Management Plans for every Minnesota farm. Always read and follow the product label. Label use requirements and application setbacks are legally enforceable.

Water Quality Best Management Practices for CHLORPYRIFOS To be used in conjunction with MDA's core "BMPs for All Agricultural Insecticides" Chlorpyrifos-Specific Practice* Description **Benefit** 1. Adopt the core "Water Quality Minnesota Department of Agriculture's "BMPs for All Agricultural Insecticides" are a baseline Adoption of core BMPs and set of voluntary crop production practices to reduce losses of insecticides to water resources. **BMPs for All Agricultural** adherence to mandatory label Insecticides" when applying Core Insecticide BMPs are available on the MDA web page. requirements and application chlorpyrifos. • Utilize practices which avoid insects or interfere with their lifecycle. setbacks results in potential water • Use crop varieties that are pest tolerant/resistant. quality benefits. Proper chlorpyrifos application 2. Limit chlorpyrifos application rates Utilize lowest labeled application rate which will effectively control the pest, preserving higher to those specified on the product rates results in cost effective insect rates for high pest pressure. Recommended application rate varies with the target pest species. Observe label restrictions for maximum chlorpyrifos applied "per acre", "per application", "per control and minimizes risk to water label. season", or "per year". resources. 3. Apply chlorpyrifos according to Adhere to mandatory droplet size, boom height, and wind speed restrictions. Boom width and Protects vulnerable streams, label directions. nozzle orientation are specified for aerial application. rivers, lakes, and reservoirs from • For applications made through the planter, in-furrow and T-band (incorporated) have lower risk chlorpyrifos runoff, drift, or of surface run-off than surface applications. leaching. • Include applications by all methods when determining maximum annual usage limits. 4. Maintain application setbacks from Required treatment setbacks from aquatic areas for chlorpyrifos applications: Protects vulnerable streams. permanent water bodies such as rivers, lakes, and reservoirs from **APPLICATION METHOD** SETBACK (FEET) lakes, ponds, rivers, streams, and chlorpyrifos runoff and drift. Ground boom 25 marshes. Orchard airblast sprayer 50 Aerial (plane/helicopter) 150 Crop varieties with resistance or tolerance for some insect pests might be used in select fields or setback/buffer zone areas. Also follow required sensitive site setbacks which are based on application rate, spray droplet size, and application method to reduce bystander exposure. • If available, use scouting procedures and Economic Thresholds (ET) to make insect management 5. Utilize Integrated Pest Management Decreases crop loss to pest (IPM) for making pest control decisions (https://wiki.bugwood.org/NPIPM:Main Page). damage, unnecessary insecticide decisions. Consider cultural, biological, and chemical control options as part of an IPM strategy. Use crop applications, and insect resistance rotation, insect resistant or tolerant varieties, and other non-chemical management practices. A selection. combination of strategies can be used in the same field and year. 6. Rotate chlorpyrifos with other Rotate chlorpyrifos use with insecticide from other mode-of-action (MOA) groups Reduces selection pressure for insecticides and management (www.irac-online.org/modes-of-action). insect resistance to chlorpyrifos. • Tank mixes of chlorpyrifos with other organophosphate insecticides (MOA 1B) are not Reduces probability of sequential practices. considered mode-of-action rotation. chlorpyrifos impacts on water resources. 7. Manage and dispose of unused Return unused chlorpyrifos or apply it to other acres according to label directions. Reduces the potential for surface chlorpyrifos properly. • Do NOT pour leftover pesticides down a drain or in a single spot in a field. and groundwater contamination. • Maintain spill safeguards at insecticide storage and loading areas.

*For core practices and for practices related to the use of other specific insecticides, visit MDA's Best Management Practices webpage www.mda.state.mn.us/protecting/bmps/voluntarybmps.aspx.

