

Water Quality **Best Management Practices** for **METOLACHLOR**

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The Minnesota Department of Agriculture (MDA) has developed voluntary Best Management Practices (BMPs) to address the presence of metolachlor and its breakdown products in Minnesota's groundwater from normal agricultural use (see reverse side of page for metolachlor-specific BMPs). If the BMPs are proven ineffective, mandatory restrictions on herbicide use and practices may be required. The BMPs may also refer to mandatory label use requirements. Always read product labels. For information on monitoring results for metolachlor and other pesticides in Minnesota's water resources, refer to the MDA's Monitoring and Assessment webpage:

www.mda.state.mn.us/monitoring

The metolachlor BMPs are companions to a set of core BMPs for use with all agricultural herbicides. Herbicide-specific BMPs have also been developed for use with acetochlor, alachlor, atrazine, and metribuzin. If you use any of these herbicides in the production of crops, be sure to consult each herbicide-specific BMP prior to applying these herbicides. 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.

Example trade names for products and package mixtures containing metolachlor. 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://state.ceris.purdue.edu/doc/mn/statemn.html> and search for Active Ingredient.*

Products containing:

s-metolachlor		metolachlor
Bicep II products	Expert	Ballistic
Boundary	Halex GT	Metolachlor
Camix	Lexar	Me-Too-Lachlor
Charger products	Pennant	Parallel products
Cinch products	Prefix	Stalwart products
Dual products	Sequence	Trizmet II

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

Information about METOLACHLOR

- There are two categories of metolachlor herbicides: those listing "metolachlor" as a registered active ingredient, and those listing "s-metolachlor" as a registered active ingredient. Products in both categories contain s-metolachlor as the primary herbicidal chemical. The active ingredient "s-metolachlor" is considered a reduced risk for potential water resource impacts by the Environmental Protection Agency because a lesser amount of the product is needed to achieve the same level of weed control as that achieved with the active ingredient "metolachlor."
- Products containing metolachlor herbicides have the potential to leach through soil into groundwater under certain conditions as a result of agricultural use. Groundwater contamination may result if used in areas where soils are permeable, particularly where the water table is shallow. These herbicides and their breakdown products have been frequently detected in Minnesota groundwater beneath areas with coarse-textured soils.
- Products containing metolachlor herbicides may, under some conditions, have a high potential for runoff into surface water primarily via dissolution in runoff water, for several months post application. These conditions include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, areas over-laying extremely shallow groundwater, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters with vegetated filter strips, and areas over-laying tile drainage systems that drain to surface water.



Certain soils, regions and watersheds are more vulnerable to losses of metolachlor. Sensitive areas include those with highly permeable geologic material, highly erodible soils or seasonally high water tables (including areas with drain tiles). Note that portions of every Minnesota county may include one or more of these conditions.

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 crop consultants and educators to select and adopt the Best Management Practices that are appropriate for your field and farm.

- Metolachlor belongs to the class of “chloroacetamide herbicides” that manage weeds through a similar mode of action (chemistry). Other herbicides in this class include acetochlor and alachlor. Herbicides in this class should be considered in the context of an Integrated Weed Management (IWM) Plan. All chloroacetamide herbicides have similar potential to contaminate water resources.

The BMPs are provided as a series of options. Producers, crop consultants and educators should select options most appropriate for a given farming operation, soil types and geography, tillage and cultivation practices, and irrigation and runoff management. The MDA encourages development of Integrated Weed Management Plans for every Minnesota farm (see “Additional Information and References” for more information*). **Always read the product label. Label use requirements and application setbacks are legally enforceable.**

Water Quality *Best Management Practices* for METOLACHLOR
To be used in conjunction with MDA’s core “BMPs for All Agricultural Herbicides”

Metolachlor-Specific Practice*	Description	Benefit
1. Adopt the core “BMPs for All Agricultural Herbicides” when applying metolachlor.	MDA’s core “BMPs for All Agricultural Herbicides” are designed as the baseline set of options to mitigate or prevent losses of herbicides to water resources. The core BMPs are available at www.mda.state.mn.us/herbicidebmps	Adoption of core BMPs with those specific for metolachlor and adherence to mandatory label use requirements and application setbacks result in opportunities for multiple water quality protection benefits.
2. Determine your soil’s texture and organic matter content, then limit metolachlor application rates to the indicated label recommendation.	This practice is especially important for metolachlor (and other chloroacetamide herbicides). Weed control with metolachlor is sensitive to differences in soil organic matter and texture. Limit unnecessary and costly use of metolachlor and protect the environment by carefully reviewing the label and adjusting the application rate to match your soil organic matter content and soil texture.	Proper metolachlor application rates mean cost-effective use and efficient weed control with minimal risk of water resource impacts.
3. When using metolachlor herbicides, choose products with “s-metolachlor” listed as the registered active ingredient.	The active ingredient “s-metolachlor” is considered a reduced risk for water resource impacts because a lesser amount of the product is needed to achieve the same level of weed control as that achieved with the active ingredient “metolachlor.”	Use of products containing “s-metolachlor” at recommended label rates can mean fewer potential impacts to water resources.
4. Adopt conservation tillage practices appropriate for your farm’s topography and in SE Minnesota karst areas.	Conservation tillage controls soil erosion that can contribute to losses of metolachlor attached to soil particles during field runoff events and from fields with tile drain surface inlets. It also helps slow movement of water across the landscape when metolachlor is dissolved in runoff water. Consult your Natural Resources Conservation Service and Soil & Water Conservation District offices for current tillage guidelines.	Controlling loss of soil and runoff means less potential metolachlor loss to surface waters.
5. Rotate use of metolachlor (and acetochlor, alachlor and other chloroacetamide herbicides) with herbicides from a different chemical class.	Evaluate this practice in the context of other effective control practices in the management system (e.g., use of tank mixes with multiple modes of action; crop rotation; planned, periodic use of herbicide-resistant varieties in a rotation; mechanical weed control; field scouting). Determine which crop in the rotation is in greatest need of chloroacetamide herbicides, and reserve their use for that crop.	With time, this practice will reduce development of herbicide resistant weeds or weed species shifts, and means less annual availability of these herbicides for loss to the environment.

*BMPs related to the use of other specific herbicides and for all agriculture herbicides are available at www.mda.state.mn.us/herbicidebmps See “Additional Information & References” on “BMPs for All Agricultural Herbicides” to access detailed guidance on recommended practices.