



Best Management Practices to Reduce Atrazine Losses to Surface Water

The Illinois Environmental Protection Agency (IEPA) has identified several public water supplies that do not meet the water quality standard for atrazine. During the next two years, IEPA will be developing a TMDL (Total Maximum Daily Load) analysis to determine how large a reduction in the amount of atrazine reaching those public water supplies is needed to meet the water quality standard. Atrazine continues to be used on a majority of corn acres in Illinois. To help keep this weed control option, producers should begin now to reduce atrazine losses, protect the local water supply and help their neighbors.

Best management practices (BMPs) are designed to minimize adverse effects of pesticides on surface water and groundwater quality. In addition to protecting the environment, these practices must be economically sound. In most cases, a combination of BMPs is required to achieve water quality goals, and the suggested practices may vary depending on soils, topography and individual farm operation.

Best management practices that are specific to a field can be more effectively implemented than treating every acre the same way.

**RESTRICTED USE PESTICIDE
(GROUND AND SURFACE WATER CONCERNS)**

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION. THIS PRODUCT IS A RESTRICTED-USE HERBICIDE DUE TO GROUND AND SURFACE WATER CONCERNS. USERS MUST READ AND FOLLOW ALL PRECAUTIONARY STATEMENTS AND INSTRUCTIONS FOR USE IN ORDER TO MINIMIZE POTENTIAL FOR ATRAZINE TO REACH GROUND AND SURFACE WATER.

Atrazine label setbacks

For streams and rivers:

1. Do not mix or load within 50 feet of any stream or river.
2. Do not apply within 66 feet of points where surface water enters an intermittent or perennial stream or river.
3. Do not apply within 66 feet of a tile inlet in terraced fields unless atrazine is incorporated and/or greater than 30 percent residue is present. Consider establishing a 66-foot filter strip around the inlet. (Check the label for details).

For lakes and reservoirs:

1. Do not mix or load within 50 feet of the water's edge.
2. Do not apply within 200 feet of the water's edge.
3. Consider establishing filter strips.

**KEEP OUT OF REACH OF CHILDREN.
CAUTION**

See additional precautionary statements and directions for use inside booklet.

Field characteristics affect the potential for atrazine loss

Individual field characteristics affect the potential for atrazine movement to surface water. Although every acre in a watershed will contribute water to a stream or lake, the greatest potential for atrazine movement is from areas close to the water or areas with claypan soils or other sub soil layers that restrict water infiltration. (Check with your local Natural Resources Conservation Service (NRCS) or Soil and Water Conservation District (SWCD) office for a soil map and help identifying hydrologic group C and D soils which have the highest runoff rates.) Atrazine losses are generally low from tile-drained fields which will have improved infiltration of water and pesticide. However, surface inlets to drain depressional areas can accelerate loss.



Follow atrazine label setback requirements

Atrazine application rates for corn and sorghum are limited to 2.0 lbs/acre in a single pre or post-emergence application or 2.5 lbs/acre (pre and post-emergence combined) per calendar year. On land identified by the NRCS as highly erodible, the maximum atrazine use rate is 1.6 lbs/acre unless the soil is covered by 30% or more plant residue at application, in which case up to 2.0 lbs/acre may be applied pre or post-emergence.

The label specifically states how, when, and where applications are to be made to prevent atrazine from leaving the application site and reaching surface water. It is a violation

of state and federal law to apply atrazine within a setback.

Consider weed control alternatives

There are a number of ways to achieve effective weed control while using less atrazine and reducing risk of atrazine losses to your local water supply. Work with your crop advisor and ag retailer to find the weed management alternatives that best fit your operation.

Shallow incorporation of atrazine has been shown to decrease the amount of runoff in surface water. Obviously, this practice is not compatible with a no-till system, and the balance between controlling soil erosion and reducing atrazine movement must be considered.

Reduce atrazine rates by tank-mixing with other herbicides. According to Purdue University, a low-rate atrazine pre-mix tank-mixed with another broadleaf herbicide can reduce the amount of atrazine applied by 30 to 50 percent – without sacrificing overall weed control. (See the last page of this guide for a list of currently registered corn herbicides which contain atrazine.)

Apply atrazine post emergence which will allow you to reduce rates up to 75 percent. Because there is a short time frame to apply atrazine post-emergence, target those fields with the greatest potential for runoff to the reservoir.

Use corn varieties that are herbicide resistant. This approach allows you to rotate herbicide modes of action and/or reduce the rate of atrazine. Remember that there is a risk for developing herbicide – resistant weeds and you may choose to include a residual herbicide in your weed management program.

Band-apply herbicides and use mechanical control when appropriate.

Watch the weather forecast

Research has shown that heavy rainfall shortly after atrazine application can cause significant chemical loss, especially if the soils are saturated. Consider delaying herbicide application if heavy rains are forecast for the next few days or use split applications to reduce the risk of a heavy rainfall event causing extensive runoff. If you have your herbicides applied, talk with your ag retailer about options for scheduling applications.

Control Runoff

Conservation tillage practices reduce or slow water runoff. Since atrazine moves from treated fields dissolved in runoff water, conservation tillage practices that increase water infiltration into the soil profile may help slow herbicide runoff into surface water.

Establish grass waterways in areas of concentrated water flow. These waterways will trap sediment and reduce the velocity of runoff flow, allowing greater infiltration of dissolved chemicals. Similarly, grass filter strips have been shown to effectively reduce the amount of atrazine runoff. Contact your local SWCD, NRCS and/or Farm Services Agency (FSA) for assistance.

Farmers can receive an annual rental payment and cost share for the establishment (seeding, site preparation, fencing, etc.) of grass filter strips or riparian buffers on eligible acreage through the Conservation Reserve Program (CRP)—administered by the FSA and NRCS. NRCS or the SWCD can provide help in establishing grass waterways.

The Environmental Quality Incentive Program (EQIP) offers financial and technical assistance with installation and implementation of pesticide management practices.

Additional Information:

60 Ways Farmers Can Protect Surface Water, University of Illinois.
<http://www.thisland.uiuc.edu/60ways/60ways.html>

Atrazine Use and Weed Management Strategies to Protect Surface Water Quality, Purdue University.
www.btny.purdue.edu/pubs/PPP/PPP-67.pdf

Illinois Agricultural Pest Management Handbook (2008), University of Illinois.
<http://www.ipm.uiuc.edu/pubs/iapmh/index.html>

This guide was prepared by Dennis McKenna, Illinois Department of Agriculture and Dr. George Czapar, University of Illinois Extension.

Acknowledgement: Preparation and distribution of this guide was funded by the U.S. Environmental Protection Agency.

University of Illinois • United States Department of Agriculture • Local Extension Councils Cooperating
University of Illinois Extension provides equal opportunities in programs and employment.

January 2009

Corn herbicide premixes containing atrazine

This table lists many of the corn herbicide premixes that contain atrazine. The bolded name is the commercial or trade name of the herbicide and its formulation. The indented list shows the common names for each herbicide component of a premix and the amount of active ingredients (a.i.) in the premix. Rates for glyphosate and 2, 4-D are expressed as acid equivalent (ae). For some of these herbicides, the recommended application rates will vary depending on soil texture, organic matter, weed species and size, and other factors. Always consult the label for appropriate application rates.

Bicep II Magnum 5.5L

S-metolachlor = 1.26 lb
atrazine = 1.63 lb

Bicep Lite II Magnum 6L

S-metolachlor = 1.2 lb
atrazine = 1.00 lb

Buctril + atrazine 3L

bromoxynil = 0.25 lb
atrazine = 0.5 lb

Bullet 4CS

alachlor = 2.5 lb
atrazine = 1.5 lb

Degree Xtra 4.04CS

acetochlor = 2.025 lb
atrazine = 1.0 lb

Expert 4.88SC

metolachlor = 1.31 lb
atrazine = 1.61 lb
glyphosate = 0.56 lb ae

Field Master 4.06S

acetochlor = 2.0 lb
atrazine = 1.5 lb
glyphosate = 0.56 lb ae

FulTime 4CS

acetochlor = 2.4 lb
atrazine = 1.6 lb

G-Max Lite 5L

dimethenamid-P = 0.844 lb
atrazine = 1.03 lb

Guardsman Max 5L

dimethenamid-P = 0.85 lb
atrazine = 1.65 lb

Harness Xtra 5.6L

acetochlor = 1.94 lb
atrazine = 1.56 lb

Harness Xtra 6L

acetochlor = 2.15 lb
atrazine = 0.85 lb

Keystone 5.25L

acetochlor = 2.25 lb
atrazine = 1.69 lb

Keystone LA 5.5L

acetochlor = 2 lb
atrazine = 0.75 lb

Laddok S-12

bentazon = 0.52 lb
atrazine = 0.52 lb

Lexar 3.7L

S-metolachlor = 1.52 lb
mesotrione = 0.196 lb
atrazine = 1.52 lb

Lumax 3.95L

S-metolachlor = 2.01 lb
mesotrione = 0.201 lb
atrazine = 0.75 lb

Marksman 3.2L

dicamba = 0.4125 lb
atrazine = 0.7875 lb

Shotgun 3.25F

atrazine = 0.56 lb
2,4-D = 0.25 lb ae

Steadfast ATZ 89.3WDG

nicosulfuron = 0.0236 lb
rimsulfuron = 0.0114 lb
atrazine = 0.7464 lb