

Atrazine and Drinking Water: *Understanding the Needs of Farmers and Citizens*

EXPERT
REVIEWED



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<http://photogallery.nrcs.usda.gov/Index.asp>

The goal of this publication is to provide a brief but detailed explanation on the use of the herbicide atrazine in Indiana. It offers insight as to why farmers rely on atrazine and the extent to which the product gets into public drinking water supplies. It also addresses weed management systems for atrazine-sensitive areas in Indiana and explains what growers can do to reduce the amount of atrazine reaching surface waters of the state.

Introduction

The herbicide atrazine has been used for decades by Indiana farmers. Atrazine effectively controls a range of broadleaf and grassy weeds that commonly compete with corn and sorghum. It is often combined with other herbicides to control a broader spectrum of weed species. Indiana and other corn-producing states in the Midwest use atrazine on more than 80 percent of their total corn acreage each year.

Growers use atrazine for economic reasons. The relatively low price of atrazine (\$5 per acre) helps control the cost of producing corn and sorghum as other expenses associated with planting, management, and harvest activities increase. The control of production costs helps stabilize the price of meat and other end products from corn-fed sources. The bottom line is this: atrazine is reliable and cost effective.

Concerns Associated with Atrazine Use

Products containing atrazine do have a drawback: atrazine is a water-soluble herbicide, and once it is dissolved in water it is slow to break down. Most atrazine applications in Indiana occur during April and May, coinciding with heavy spring rains that saturate the soil. The widespread use of atrazine in early spring results in the product moving out of farm fields into nearby streams and reservoirs. This is a major concern because many communities process their drinking water from surface water sources; 48 percent of the drinking water supplied through public water systems to Indiana residents comes from surface water supplies located in the watersheds shown in Figure 1.

To protect public health, EPA has set the maximum contaminant level (MCL) for atrazine at 3 parts per billion (ppb) based on an annual average in public drinking water. In some cases, usually in significantly wet years and in watersheds with a high percentage of corn acreage, atrazine is detected at concentrations over 3 ppb. A lifetime exposure below 3 ppb is thought to be safe, using wide margins of safety. More recent research data does not positively identify atrazine as a human carcinogen. An



Figure 1. Public drinking water systems and watershed boundaries in Indiana.

EPA publication titled “Consumer Fact Sheet on: Atrazine” discusses its potential impact on human health. Go to <http://www.epa.gov/safewater/dwh/c-soc/atrazine.html> for more information.

Atrazine Monitoring Program

Atrazine has been found in 47 percent of the finished samples from Indiana public water systems participating in the federal Safe Drinking Water Act. EPA, as a condition of re-registration of atrazine, has required the registrants to implement an enhanced monitoring program in selected community water systems. The inclusion of a community water system into the atrazine monitoring program is based on a conservative trigger, termed Total Chloro-Triazine (TCT), that includes atrazine and its metabolites. If the annual TCT average exceeds 2.6 ppb in finished water, the community water system must comply with atrazine monitoring program requirements.

The atrazine monitoring program requires water utilities to sample their finished water weekly from April through July, the period when atrazine is applied to crop land, and biweekly during all other months. This enhanced monitoring program will continue for at least five years. In Indiana, 11 systems are currently in the program: Indianapolis (Eagle Creek), Santee Utilities, Batesville, Bedford, Fort Wayne, Jasper, Logansport, Stucker Fork, Versailles, Westport, and Winslow (Table 1).

The 11 Indiana community water systems triggered into the atrazine monitoring program are in a two-step watershed regulatory process. Starting in 2004, if the TCT 90-day rolling average is exceeded, a watershed mitigation plan must be developed and implemented for that

Table 1. Community Water Systems in Atrazine Monitoring Programs

Community	Watershed Area (square miles)	Percent Land in Agricultural Use	Population Served
Batesville	5	86	4,140
Bedford	5,033	79	14,390
Fort Wayne	1,089	90	173,072
Indianapolis (Eagle Creek)	163	89	678,000
Jasper	277	39	11,340
Logansport	805	93	12,261
Santee Utilities	279	92	678,000
Stucker Fork	355	57	*
Versailles	107	0	1,550
Westport	98	84	1,440
Winslow	603	53	1,242

*Current data on the population served by the Stucker Fork community water system was not available at the time of printing.

specific watershed. If the TCT 90-day average concentration is exceeded a second time within the five-year time period, atrazine use in the watershed will be cancelled.

The watershed mitigation plan addresses measures to reduce the total atrazine load in a body of water. Farmers will be asked to work closely in the development of the mitigation plan and its implementation. In Indiana, watershed mitigation has been developed for the reservoir serving as the raw water source for the Batesville community water system.

Each year customers receive an annual report outlining what was detected in their drinking water. To find out more about your water supply system, go to the Web site <http://www.epa.gov/ogwdw/dwinfo.htm> or call the Safe Drinking Water Hotline, (800) 426-4791.

How Farmers Can Minimize Atrazine in Surface Water

As a grower, you need to understand that failure to reduce atrazine levels in surface water could result in its being banned or further restricted in certain watersheds. Following are precautionary recommendations taken from a publication "Atrazine Use and Weed Management Strategies to Protect Surface Water Quality" that addresses weed management systems for atrazine-sensitive areas in Indiana:

- Read the label. You are legally responsible for using atrazine in a safe and efficacious manner, and compliance is best achieved by following label directions. Use directions on the product label are based on the science of weed control and the minimization of off-target impact. Label directions for all atrazine products give specific setback distances from surface water.
- Establish 66-foot, grass buffer strips along bodies of water and along ditches to help filter atrazine out of water flowing across fields.
- Turn off the sprayer when crossing grass waterways.
- Try not to apply pesticides when rains are forecast on weather maps. An application made to saturated soils when rains are imminent present the worst-case scenario for off-site movement.
- Switch to products that are tank-mixed with atrazine. In essence, you can use less atrazine in combination with other active ingredients.
- Consider using products that do not contain atrazine if farming in a watershed with a history of atrazine concentration problems.
- In fields located near surface water sources, plant crops that do not require the use of atrazine.



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Figure 2. Atrazine is a restricted-use pesticide (RUP). A farmer must be a certified pesticide applicator to purchase and apply any herbicide product containing atrazine.

Conclusion

Farmers in specific areas are being asked to implement proactive measures to protect drinking water sources. In areas where water utilities have been cited by EPA, it is important that you go the extra mile to keep atrazine out of community drinking water supplies. For example, you may need to meet with other farmers to discuss actions that can be taken in the watershed and to seek advice from your ag retailers and the Purdue Extension; the Natural Resource Conservation Service and your Soil & Water Conservation District are also good sources of information. By taking proactive steps, you can do your part to maintain atrazine's viability in the marketplace.

Programs to Assist Farmers Applying Atrazine

The Indiana Conservation Partnership helps farmers meet public environmental goals by providing cost-share programs and technical assistance. Listed below are government-sponsored programs that you might find beneficial as you attempt to reduce the amount of atrazine reaching surface water. Contact the local agency for the availability of technical and financial support.

Continuous Conservation Reserve Program (CRP) – administered by the Farm Service Agency and Natural Resources Conservation Service

Filter strips and riparian buffers can be planted between cropland and perennial streams, seasonal streams, sinkholes, lakes, and ponds (Figure 3). Filter strips are 20 to 120 feet wide, and riparian buffers are greater than 35 feet wide. Establishing a 66-foot wide grass buffer along ditches, rivers, and streams creates the label-required 66-foot setback for atrazine applications near moving water. You can receive an annual rental payment and cost share for the establishment (seeding, site preparation, fencing, etc.) of eligible acreage. Contract length is 10 to 15 years.

You can also get funding to establish filter strips around public wellhead protection areas.

Environmental Quality Incentive Program (EQIP) – administered by the Natural Resources Conservation Service and the Farm Service Agency

EQIP is a voluntary conservation program (for farmers) that promotes environmental quality. EQIP offers financial and technical assistance with installation and implementation of management practices. More details can be found at <http://www.in.nrcs.usda.gov/programs/2004equip/eqip2004.html>.



Figure 3. A riparian buffer is an area between cropland and surface water that is planted to shrubs, trees, and grasses.

Eligible EQIP conservation practices that address environmental concerns associated with pesticides include, but are not limited to, agrichemical handling, filter strips, grass waterways, pest management, residue management (mulch till and no till), and well decommissioning (plugging).

**Lake and River Enhancement (LARE) –
Indiana Department of Natural Resources, Division of
Soil Conservation**

In select watersheds, a filter strip and/or pest management incentive payments may be available. For more information contact Indiana Department of Natural Resources, Division of Soil Conservation. Go to <http://www.in.gov/dnr/soilcons/programs/lare.html> for more details.

Resources

Atrazine Re-registration Documents

<http://www.epa.gov/oppsrrd1/reregistration/atrazine/>

“Consumer Fact Sheet on: Atrazine”

United States Environmental Protection Agency

<http://www.epa.gov/safewater/dwh/c-soc/atrazine.html>

Indiana Department of Natural Resources

Go to Soil Conservation Division

<http://www.ai.org/dnr/index.html>

(317) 233-3870

Indiana Farm Service Agency

<http://www.fsa.usda.gov/IN/>

(317) 290-3030

Indiana Natural Resource Conservation Service

<http://www.in.nrcs.usda.gov/>

(317) 290-3200

Purdue Extension

<http://www.ces.purdue.edu/>

1-888-EXT-INFO (1-888-398-4636)

Purdue Pesticide Programs (PPP)

<http://www.btny.purdue.edu/ppp/>

(765) 494-4566

Office of Indiana State Chemist

http://www.isco.purdue.edu/Pesticide/index_pest1.html

(765) 494-1492

Safe Drinking Water Hotline

(800) 426-4791

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