Atrazine and Drinking Water: Understanding The Needs of Farmers and Citizens

Goal

The goal of this publication is to provide a brief, but detailed explanation about the controversies surrounding the use of the herbicide atrazine in Indiana. It offers insight as to why atrazine is a much relied upon product by farmers, and to what extent the product gets into public drinking water supplies. The enclosed insert entitled *"Future of Atrazine in Agriculture"* offers specific details on how atrazine in drinking water is regulated in Indiana. In addition, a companion publication entitled *"Weed Management Systems for Atrazine Sensitive Areas in Indiana"* explains what growers can do to reduce atrazine reaching surface waters of the state.

Introduction

The herbicide atrazine has been used for decades by Indiana farmers. Atrazine traditionally has been important to farmers who grow corn and sorghum and rely on this herbicide to control many different weeds. Weeds reduce yields by competing with crops for space, water, and nutrients. Indiana and other corn producing states in the Midwest use atrazine on more than 80% of the corn producing acres each year.

Growers use atrazine for economic reasons. The relatively low cost of this herbicide is an important consideration. It effectively controls a range of broadleaf and grassy weeds commonly found competing with corn and sorghum. In addition, atrazine is often combined with other herbicide products to provide control of an even wider weed spectrum.

The cost of atrazine is less than $5 per acre. It has helped to control the grower's cost in producing corn and sorghum when expenses associated with planting, management and harvest activities have increased. The control of production costs helps stabilize the price of meat and other products that use corn as a food source. The bottom line is atrazine is a reliable, consistent, and cost effective product which provides many tangible benefits to growers and is why it is currently used on such a large percentage of ground planted to corn and grain sorghum.

Figure 1. Public drinking water systems and watershed boundaries in Indiana (http://pasture.ecn.purdue.edu/~frankenb/atrazine/).

What is the problem?

Products containing atrazine have a drawback— atrazine is a water soluble herbicide easily dissolved in rainwater. Most atrazine applications in Indiana occur during April and May which coincides with heavy spring rains onto soils that are already saturated. The widespread use of atrazine in the early spring results in the product moving out of farm fields - into nearby streams and reservoirs. One specific concern occurs when communities process their drinking water from these surface water sources. This is a significant issue since 48% 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.

Has Atrazine Been Found in Surface Water?

Atrazine has been found in 47% of finished water samples from public water systems participating in the federally required Safe Drinking Water Act monitoring program. The presence of atrazine, other chemicals, and turbudity in surface water used for drinking raises concerns from government officials, water utility companies, farmers, and consumers.

A few public water systems rely on carbon filtration to remove foul odors, bad taste, and/or organic compounds from water before it is sent to their customers. If the water company uses the filtration treatment to reduce the level of atrazine from the water, then the utility and the customer has incurred a higher cost for each gallon of drinking water it produces.

What Watersheds Are of Immediate Concern?

Under previous guidelines established by EPA, eight public water supplies were identified in Indiana where atrazine concentrations have violated federal drinking water standards at some point between 1992 – 2003 (Table 1).

Table 1. Atrazine Notices of Violation (NOV's) sent during 1992 - 2003

	Square miles of watershed	Population Served	Percent of Land in Agricultural Production
Fort Wayne - 3 Rivers Plant	1089	173,072	90%
Holland Water Works	0.50	937	57%
Logansport Municipal Utility	805	12,621	95%
Bedford City Utilities	5033	14,390	80%
Versailles Water Works	107	1,550	75%
Morgan Foods, Inc.	357	500	71%
Winslow Water Works	603	1,242	53%
Westport Water Company	98	1,440	84%

These watersheds received a notice of violation (NOV) and were required to implement means to reduce the amount of atrazine in finished water. Under the new registration agreement between EPA and manufacturers of atrazine (2003), eleven systems are currently participating in an atrazine monitoring program (see insert for more details) because of elevated levels of atrazine in finished water. The eleven systems participating in this program are Indianapolis (Eagle Creek), Santee Utilities, Batesville, Bedford, Fort Wayne, Jasper, Logansport, Stucker Fork, Versailles, Westport, and Winslow.

Each year customers receive an annual report outlining what was detected in their drinking water. To find out more information about your water supply system, contact the following website: <http://www.epa.gov/ogwdw/dwinfo.htm.>

What Can Farmers Do To Minimize Atrazine in Surface Water?

The key to keeping this valuable herbicide available for use in Indiana is to have growers understand that our inability to reduce levels in water could result in the atrazine product being banned or further restricted in certain watersheds.

There are many activities farmers can implement to reduce the amount of atrazine product entering lakes, streams and rivers. The following recommendations and requirements are explored in greater detail in a paper titled *" Weed Management Systems for Atrazine Sensitive Areas in Indiana."* This publication will explain the cost and returns related to suggested alternatives.

• Read the label. The herbicide user is responsible for using the product in a safe and efficacious manner. Legal compliance with this responsibility is achieved by following label directions. Label directions incorporates the best science to control weeds, while minimizing the impact. Label directions for all atrazine containing products are specific about how far back to stay from surface water. Key points from the label include:

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 unless atrazine is incorporated and/or greater than 30% residue is present. Consider establishing a 66 foot grass buffer around the inlet.

For lakes and reservoirs:

1) Do not mix or load within 50 feet of the waters edge.
2) Do not apply within 200 feet of the waters edge.
3) Consider establishing a grass buffer.

• Establish 66 foot buffer grass strips along the waterbody edge (Continuous CRP) and ditches to help filter atrazine out of the water running across your cornfields. Turn off the sprayer when crossing grass waterways.

• Do your best to apply products when rains are not evident on the weather maps. Applications to saturated soils when rains are eminent are is a worst case scenario for off-site movement.

• Switch to products that don't contain atrazine as an ingredient.

• Switch to products that are tanked mixed with atrazine. In essence, atrazine is still a part of the tank mix, but in lesser amounts.

• Switch from corn to other crops that do not require the use of atrazine.

Conclusion

Farmers in specific areas are being asked implement a very aggressive, proactive approach in protecting our drinking water sources. In areas where water utilities have been cited by EPA, it is important that farmers go the extra mile to keep atrazine out of local community drinking water. For example, farmers may need to meet together to discuss what actions can be taken in the watershed and seek advice from Extension, NRCS and SWCD offices. By taking proactive steps, farmers can help guarantee that atrazine will remain a viable product in the marketplace.