

ILLINOIS ENVIRONMENTAL POLICY REVIEW

INFORMATION FOR PEOPLE CONCERNED ABOUT THE ENVIRONMENT IN ILLINOIS

Volume 1, Number 2, 1999



Is it time to regulate agricultural fertilizers?

By Mark B. David

Municipal sewage, industrial waste water, and other point source pollutants are highly regulated in Illinois and have decreased as environmental contaminants. However, nonpoint pollutants such as nitrate and phosphorus remain a problem. Because of this, the US EPA is now developing nutrient criteria that will focus on nitrate and phosphorus concentrations in surface waters, and may force states to develop standards.

Nitrate, whether synthetic like anhydrous ammonia, or natural like animal manure, is a possible human health hazard. It can cause methemoglobinemia in infants (blue baby syndrome). It also contributes to algal increases in surface waters caused by over-enrichment (eutrophication). Though phosphorus has no direct effect on human health, it is the greatest cause of fresh water eutrophication.

Little nitrate comes from the lawns, golf courses, and sewage effluent of urban areas. Similarly, phosphorus from urban sewage effluent is only a major problem in the Illinois River. The only way to reduce these nutrients in surface waters is by reducing runoff from the dominant source, agricultural land. Crops comprise 23 million acres in Illinois or 64 % of the state. Each year, these acres receive about 2 billion pounds of nitrogen and 350 million pounds of phosphorus.

Considering our current understanding of how these nutrients move from fields to surface waters, regulations which address the amount and timing of fertilizer application may be the most effective way to reduce fertilizer runoff.

From an environmental perspective, nitrogen fertilizer is best applied by side-dressing shortly after corn is planted. This allows the plant to have the best chance for taking up the fertilizer and should reduce runoff. Currently, many producers apply nitrogen fertilizer in the fall, up to seven months before the crop really needs it. Ideally, cool soil temperatures limit losses, but there is little doubt that there are higher losses with fall application, particularly with warm weather. Additionally, the amount of fertilizer added to fields is often greater than U of I extension recommends. On many fields, the amount of fertilizer added could be substantially reduced if realistic yield projections were made and all sources of nitrogen accounted for.

The idea of application regulation is not new. Several states, including Maryland and Nebraska, currently have implemented or passed legislation initiating regulations. Illinois does have laws that regulate labeling, reporting, and research on fertilizers, but none on application.

In 1971, the Illinois Pollution Control

Board proposed regulations for fertilizer application and held 10 public hearings throughout the state. Modest regulation of nitrogen and phosphorus fertilizers, as well as animal manure and sewage sludge or effluent applications, was proposed. Both the amount and timing of fertilizer applications also were addressed.

Following 80 witnesses, the board indicated it needed more information before any implementation was seriously considered. One member stated that "a vote for more research is often a common way to avoid a decision and it must be remembered that not to decide is to decide." The general consensus was that more studies were needed and that the issue should be revisited quickly. Twenty-eight years later, no state agency has revisited the issue. A thorough understanding of the issues is still considered incomplete and there continues to be debate on the sources of these pollutants in surface waters.

Today, many Illinois drinking water sources routinely exceed standards for nitrate, such as those of Bloomington-Normal, Danville, and Decatur. Initial capital costs to remove nitrate from drinking water by ion exchange in Decatur have been estimated at between \$3 and \$6 million dollars.

However, financial costs for nitrogen

CONTINUED ON NEXT PAGE



and phosphorus pollution are not limited to Illinois' lakes and reservoirs. Both nitrogen and phosphorus have been implicated in hypoxic (low oxygen) problems in the Gulf of Mexico. In addition to killing some aquatic species, hypoxia has forced fish and shrimp further from their habitats, placing financial pressure on the Gulf fishing industry. The source of these nutrients is thought to be the fields and feedlots of the Midwest via the Mississippi River.

In the 1971 hearings, fertilizer regulation was considered solely on the basis

of the potential impact to Illinois' citizens. Health issues and the quality of surface waters around the state remain concerns and we now suspect that the state contributes to larger environmental problems such as hypoxia. This prompts us to ask, should the Illinois EPA or the Illinois Department of Agriculture be proposing and discussing fertilizer regulations?

Many will suggest that voluntary changes will remedy the problem. The 1971 hearings noted this did not work in the past for other agricultural issues, nor was there reason to think it would

work in the future. Farmers have responded in the past to federal programs that alter production practices through payments. However, such programs may reward those who have continued to use poor practices, rather than those who have already made positive changes without payments. Regulation may be the best way to ensure a fair playing field for all producers, rather than relying on voluntary changes by a few.

Mark B. David is a professor of Natural Resources and Environmental Sciences at the University of Illinois at Urbana-Champaign.

