Curbing Agricultural Runoff Pollution: Lessons from the Clean Water Act

Big Creek Lake northwest of Des Moines was one of several public lakes to suffer significant algae blooms during summer 2012, including this one, which took place in September over Labor Day weekend.

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Iowa faces numerous clean water challenges, but the state's most widespread, serious and vexing problem is polluted agricultural runoff--especially the nutrients nitrogen and phosphorus--which enter waterways each time it rains with sufficient intensity to create water runoff.

The agricultural runoff problem is particularly challenging to solve because it comes from across Iowa's landscape where over 90 percent of the land area is in farms. Cities and industries also contribute to this pollution, mainly through discharges of treated wastewater to waterways (called point sources because the pollution comes from a discrete pipe). But most of this pollution comes from runoff leaving farm fields and other land areas (called nonpoint sources)(see Table 1).

Nitrogen and phosphorus are naturally present in waters and necessary for healthy aquatic systems. However, too much nitrogen and phosphorus can cause algae blooms that turn water green, create foul odors, and spoil outdoor recreation. Algae blooms cause fish kills by decreasing dissolved oxygen in the water. Cyanobacteria, a type of toxic algae, can make water unsuitable for drinking and swimming.

Table 1: Sources of Nitrogen and Phosphorous Pollution in Iowa waters

	Municipal, industrial, and other point sources	Agricultural and other non-point sources
Nitrogen	8%	92%
Phosphorus	20%	80%

Source: http://www.iowadnr.gov/portals/idnr/uploads/water/standards/nbsum.pdf?amp;tabid=1585

How do we fix this problem?

In November 2012, a state government team released Iowa's Nutrient Reduction Strategy, an approach intended to help resolve this serious problem. It proposes to reduce runoff pollution from farms by ramping up the state's current all-voluntary approach along with new mandatory pollution control technologies proposed for cities and industries.

Given the serious impacts and widespread nature of agricultural runoff pollution, Iowa's strategy must consider new approaches in addition to current voluntary programs. One place to look for ideas is 40 years of successful pollution reduction from point sources under the federal Clean Water Act (CWA).

When the CWA passed in 1972, our major water pollution problems were from untreated sewage and industrial wastes discharged without adequate treatment into our rivers and lakes. By setting specific water quality standards for pollutants and requiring cities and industries to treat these pollutants before they discharge to waterways, the CWA achieved tremendous progress across the country.

Setting clear goals

Following the CWA model, establishing clean water standards for nitrogen and phosphorus is the first step to solving this pollution problem. Iowa currently lacks numeric standards limiting nitrogen or phosphorus. Iowa's current standards include only narrative limits that apply to nitrogen and phosphorus that say water should be free of "aesthetically objectionable" or "acutely toxic" conditions. Unfortunately, by the time these conditions are present, significant pollution has already occurred. Setting numeric pollution limits provides clear goals to prevent pollution of Iowa's rivers and lakes.

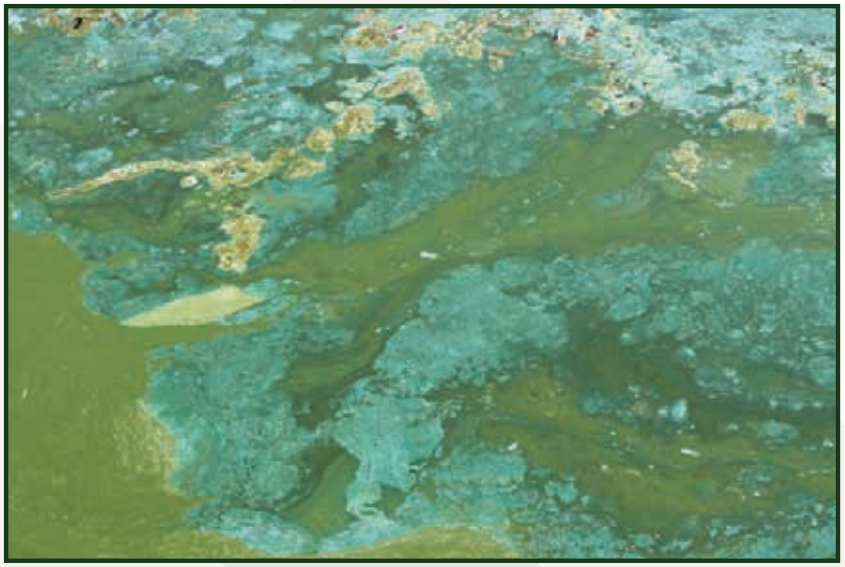
Matching solutions to the problem

In addition to setting goals, a key reason for the success of the Clean Water Act has been its two-tiered approach to pollution control by cities and industries:

- Common-sense, basic limits everyone follows: Technology-based limits for all industries and municipalities determine a basic level of required treatment that is both technically and economically achievable. These limits utilize treatment technologies that are proven to effectively remove pollutants, and they allow the facility to choose from several different options.
- Additional action when and where it is needed: If technology-based limits are insufficient to achieve clean water goals, additional treatment is required to meet water quality based pollution limits. Again, the facility is allowed to choose between different treatment technologies to achieve these limits.

The Clean Water Act does not regulate agricultural non-point sources of pollution. However, it is possible to consider state pollution control requirements for these sources modeled after the CWA's successful two-tiered strategy:

Common-sense basic conservation: Implementation of stewardship plans for all farmland would help protect soil and water resources. Like technology based limits for point sources, performance goals for these plans could be based on effective, affordable conservation practices, but also would allow each farmer to choose



On the Friday prior to Labor Day weekend this summer, state officials issued an water quality advisory about blue-green algae at Big Creek Lake and two others. They suggested the public avoid contact with the algae blooms, which can pose health hazards to people and animals.

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any of several practices that meet the plan's goals and the farmer's needs.

Additional action when and where needed: Where the farm stewardship plan is insufficient to meet water quality goals, farmers could partner with their neighbors--and with cities and industries that are also contributing to the problem--to implement targeted practices in their watershed to meet water quality goals.

Equal accountability for all

Under the Clean Water Act, clear goals for cities and industry and a measurable cleanup plan insures accountability for point source pollution and has resulted in significant water quality improvements. With new research on the effectiveness of conservation practices included in the Nutrient Reduction Strategy, the ability of conservation professionals to provide farmers science-based solutions that support both agricultural productivity and clean water has improved dramatically. The Clean Water Act model suggests combining these solutions with meaningful accountability will achieve results for Iowa's clean water goals.

References

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