CURBING AGRICULTURAL POLLUTION:

Lessons from the Clean Water Act

Iowa faces numerous clean water challenges, but the state's largest problem is polluted agricultural runoff—especially the nutrients nitrogen and phosphorus— that enter waterways each time it rains with sufficient intensity.

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 farmland. Cities and industries also contribute to this pollution, mainly through discharges of treated wastewater to waterways. Pollution from water treatment facilities and other discrete pipes such as factory discharges are called point sources. But the majority of this pollution comes from runoff and drainage waters leaving farm fields and other land areas (called nonpoint sources).

Portion of nutrient pollution in Iowa's waters from agricultural and other non-point sources

Nitrogen and phosphorus are naturally present in waters and necessary for healthy aquatic systems. However, too much nitrogen and phosphorus can cause harmful algae blooms (HABs) that turn water green, create foul odors, and spoil outdoor recreation. Algae blooms can also cause fish kills by decreasing the amount of dissolved oxygen in the water.

A toxic algae bloom at Saylorville Lake in 2020.

How do we fix this problem?

In 2013, Iowa adopted the Nutrient Reduction Strategy (NRS) as its policy to address nutrient pollution. The strategy calls for mandatory pollution control technologies and regulated pollution discharge limits on point sources. For agricultural pollution, however, the strategy proposes ramping up an all-voluntary approach and does not implement regulations. Since the adoption of the NRS, progress has been slow-moving and underfunded. Given these struggles, Iowa's strategy must consider new approaches in addition to current voluntary ones. One place to look for ideas is 50 years of successful pollution reduction from point sources under the federal Clean Water Act (CWA).

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

Setting clear goals

Following the Clean Water Act 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 say water should be free of "aesthetically objectionable" or "acutely toxic" conditions.

Unfortunately, by the time these conditions are present, signifcant 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

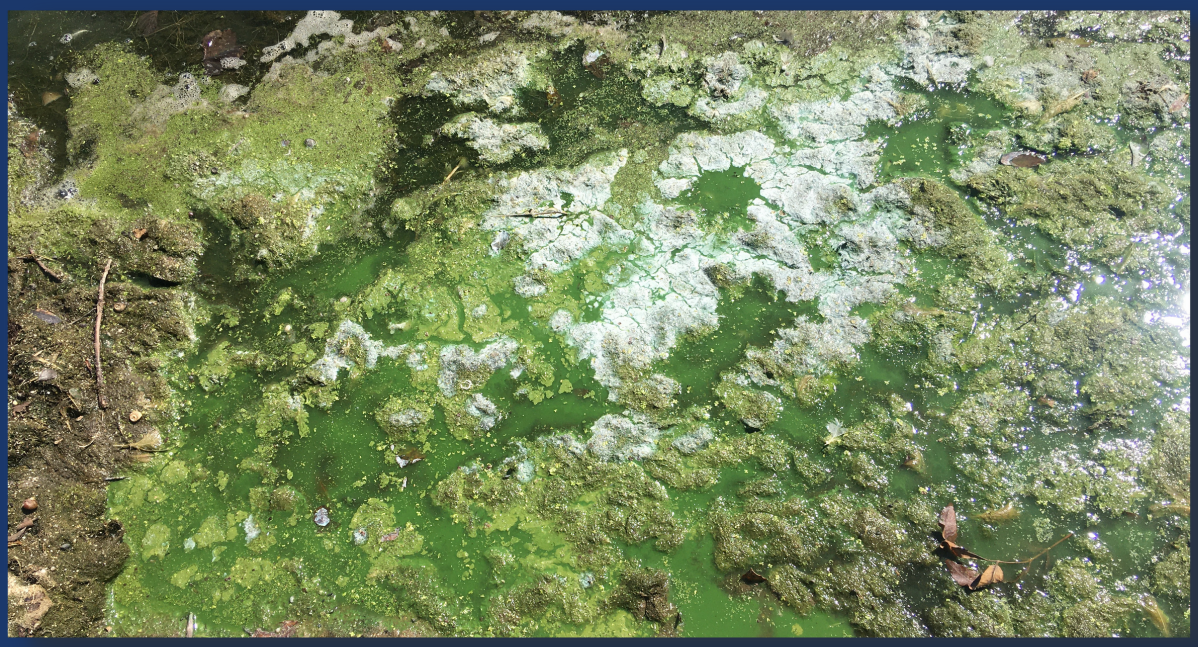
In addition to setting goals, a key reason for the success of the Clean Water Act has been its two-tiered approach to point source pollution control:

1. 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.
2. 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 model

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:

1. 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 any of several practices that meet the plan's goals and the farmer's needs.
2. 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 also contribute to the problem—to implement targeted practices in their watershed to meet water quality goals.



A toxic algae bloom at Union Grove Lake in 2020.

Equal accountability for all

Under the Clean Water Act, clear goals for cities and industry plus a measurable cleanup plan insures accountability for point source pollution and has resulted in signifcant 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.

Resources:

https://www.epa.gov/nutrientpollution
http://www.nutrientstrategy.iastate.edu/
https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Nutrient-Reduction-Strategy