

REVISITING CRISIS BY DESIGN

CRISIS BY DESIGN: AGRICULTURE AND WATER QUALITY

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WATER POLLUTION

IATP's founder Mark Ritchie and Kevin Ristau wrote the original *Crisis by Design* in the midst of the farm crisis in 1987. It was a watershed document and has been a cornerstone of IATP's work for many years, also catalyzing further analysis and action by family farmers and their allies. *Crisis by Design* traced the evolution of farm policy, from the historic pattern of price volatility through the eventual establishment of parity pricing and supply management in the 1930s.

Now, more than 30 years later, we are in the middle of another farm crisis, with the added pressure of an impending climate catastrophe. We take a fresh look at the analysis and predictions made in *Crisis by Design* to understand how the farm situation has changed and what current policies imply for the future, as well as how U.S. agriculture intersects with global markets, the environment and broader disparities.

Read the full *Revisiting Crisis By Design* series at iatp.org/revisiting-crisis-by-design.

- Dramatic increases in agricultural use of chemicals and fertilizers and growing concentration of livestock production since the 1980s, linked to increasing farm size and the shift from family farms to larger corporate agribusiness, have worsened water pollution.
- A majority of waterways are unsuitable for aquatic life and/or human uses, and drinking water wells, particularly in rural areas, are also contaminated.
- The laws intended to control pollution from agriculture are weak both as written and as implemented, with powerful farm and agribusiness interests effectively blocking protective standards and effective enforcement.

AGRICULTURAL TRENDS

During the farm crisis of the 1980s, it began to be recognized that low farmgate prices, increasing corporate control of agriculture and absentee investors all contributed to farming practices that degraded the environment. These trends have only accelerated in the subsequent 30 years. Dramatic increases in the use of pesticides and chemical fertilizer, as well as factory farms producing massive amounts of manure, have degraded the nation's surface waters, aquifers, bays and estuaries.

Nationally, nitrogen from fertilizer used on farms doubled between the late 1960s and 2015, a nearly 30-fold increase from the early 1940s to 2015. [Acreage with chemical applications](#) (pesticides, herbicides, nematocides, and of chemicals used to control growth or ripen fruit) increased 7% from 2012 to 2017¹ even though the number of farms using these chemicals dropped, suggesting that [larger farms have increased their usage](#).² From 1992 to 2012 the [use of the herbicide glyphosate](#) increased dramatically, with at least half the country showing large increases.³

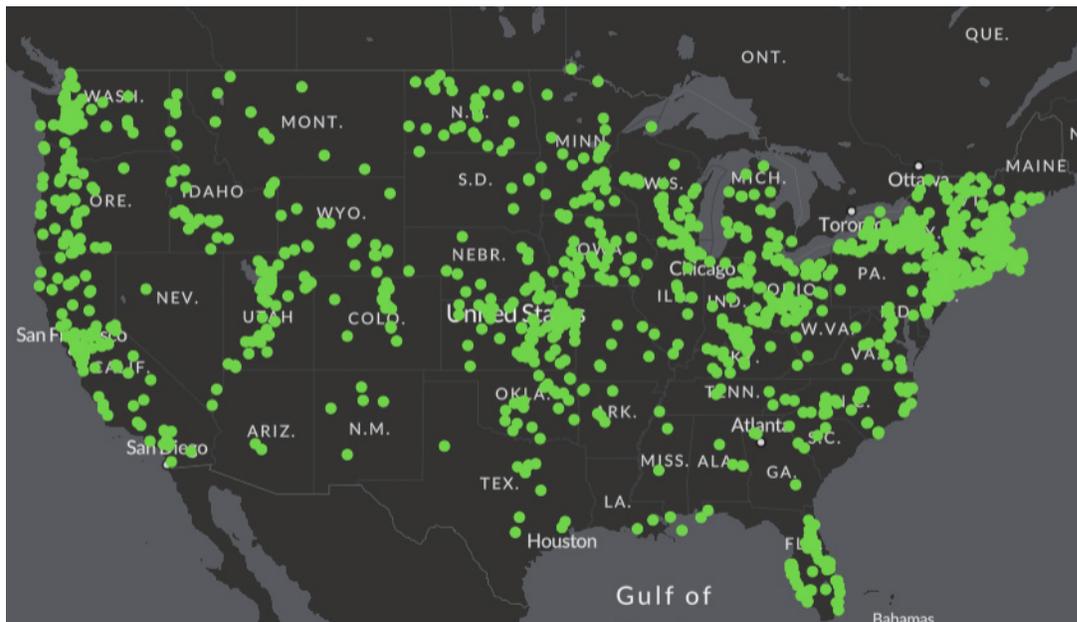


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Since the 1990s there has been an extreme shift to industrialized farming, generating massive volumes of manure, in the central and southeastern U.S. in particular. In North Carolina, the state with the second largest production of hogs and pigs, the [number of these animals nearly doubled](#) between 1992 and 1997.⁴ Nationally, there are more than 18,000 large (1,000 animals or more) [animal feeding operations](#) out of 450,000.⁵



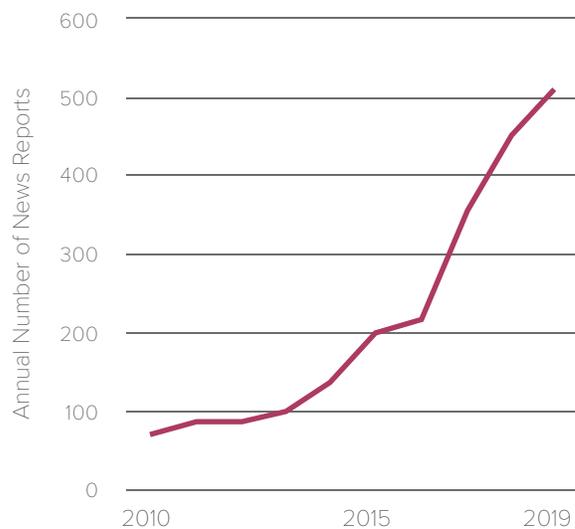
AGRICULTURE IS A PRIMARY CAUSE OF POOR WATER QUALITY

In 2016, the U.S. Environmental Protection Agency (EPA) [reported](#) that nationally, 71% of assessed lakes, ponds and reservoirs, 53% of assessed rivers and streams, and 80% of assessed bays and estuaries did not meet water quality standards.⁶ The most significant contributor to biologically impaired water quality is nutrient pollution, with 40% of stream and river miles having excessive levels of nitrogen and phosphorus resulting in algal blooms, low levels of oxygen and harm to aquatic life.

Nutrient contamination is directly linked to agricultural sources, including runoff from farm fields fertilized with chemicals or manure, and from animal feeding operations. Water quality data from 1992 to 2004 found [elevated nutrient concentrations](#) in both streams and groundwater in basins with significant agricultural development, and contamination rates increased over the study period.⁷ Concentrations in streams routinely were 2 to 10 times greater than safe for aquatic life, and nitrogen also exceeded federally-set human health standards in many shallow domestic wells in agricultural areas.

[Contaminants from feedlots](#) enter waterways through multiple pathways: leakage from poorly constructed manure lagoons, major precipitation events causing overflow of lagoons and runoff from recent applications of waste to farm fields, or atmospheric deposition.⁸ Besides nutrients, contaminants present in livestock wastes include pathogens, veterinary pharmaceuticals including

News Reports of Algae Blooms, 2010 to Present



Source: https://www.ewg.org/interactive-maps/2019_algal_blooms/map/

antibiotics, toxic chemicals such as [Per- and Polyfluoro-alkyl Substances \(PFAS\)](#) and heavy metals.⁹

Agricultural nutrient runoff is causing [algal blooms](#) that produce extremely dangerous toxins that can sicken or kill people and animals and create “dead zones” in fresh, salt and brackish water.¹⁰ All [50 states have experienced toxic algal blooms](#), and there has been a dramatic increase in their incidence since 2010, believed to be fueled in part by climate change.¹¹ The second largest [algal dead zone](#) in the world is in the northern [Gulf of Mexico](#)¹²—fed by manure- and fertilizer-rich waters of the Mississippi River

draining Midwestern agricultural lands—was about the size of New Jersey.¹³

Agricultural [pesticides also contaminate](#) the nation’s waterways.¹⁴ [Data from 1992-2001](#) found pesticides typically present throughout most of the year in streams draining watersheds with substantial agricultural areas.¹⁵ A [comprehensive 2013 study](#) of streams in 11 Midwestern states detected more than 180 pesticides and their byproducts.¹⁶

Public health is at stake. A U.S. Geological Survey study of private drinking wells found 23% contaminated in some way.¹⁷ Rural communities and farming areas that rely on shallow groundwater wells are especially at risk from agricultural pollutants. Wisconsin and Iowa are among many states facing a [rural water contamination crisis](#) caused by chemical fertilizers, manure, contaminated sewage sludge, and pesticides.¹⁸

A BROKEN SYSTEM THAT VALUES AGRIBUSINESS OVER CLEAN WATER

Enacted in 1972, the [federal Clean Water Act](#) (CWA) was intended to “restore and maintain the chemical, physical, and biological integrity of [U.S.] waters,” with the twin goals of achieving fishable and swimmable ambient water quality throughout the U.S. by 1983, and eliminating discharges of pollutants into U.S. waters by 1985.¹⁹ More than forty years later, these goals are far from being met, and the institutional failure to control agricultural pollutants is a major reason why. This failure is both in the design of the law and in its implementation, which has consistently been thwarted by the powerful agribusiness lobby.

The CWA’s point source program requires permits, reporting, and pretreatment for industrial wastes. While [meat processing facilities](#) are legally subject to these requirements, large operations often ignore permit limits without facing any consequences.²⁰ Enforcement is inadequate, with companies [obstructing inspections](#) or regulators failing to act.²¹ In the absence of federal or state enforcement, Food & Water Watch is suing a slaughterhouse that processes animal fat, meat, pathogens, ammonia and excrement that is maintained by JBS USA and the Swift Beef Company in Greeley, Colorado for failing to meet toxicity testing standards, unpermitted discharges of total suspended solids and ammonia nitrogen, and failing to report violations.²²

Other significant agricultural point sources, notably industrial-scale concentrated animal feeding operations (CAFOs), are even more loosely regulated.²³ EPA requires permits only for the largest operations discharging manure directly into designated waterways, and has [exempted waste](#) stored in lagoons and disposed of through application to cropland.²⁴ In 1987 Congress exempted from regulation “agricultural stormwater discharges” including weather-triggered leaks from manure pits. Feeding operations have been granted significant discretion to determine whether they are required to apply for a permit, and in 2012 the agribusiness lobby [forced the withdrawal of regulations](#) to create a central database of basic CAFO information.²⁵ In violation of the law, regulations in some of the 38 states with delegated water pollution permit-writing authority fail to meet even the weak federal minimum standards, and some states with large numbers of CAFOs do not require permits for the vast majority of these operations. Nationally, only an estimated 41% of CAFOs that EPA says should have water pollution discharge permits actually have them.²⁶

The CWA provisions regulating nonpoint sources—such as runoff from agricultural fields—are even less effective, and do not give EPA express authority to mandate standards. Congress left it to individual states to decide how best to control pollution from nonpoint sources, and most continue to do so [entirely through voluntary programs](#) such as education and financial assistance.²⁷

The human impact of the dramatic increase in industrial agriculture, and the failure to regulate the heavy load of pollutants it generates, falls [disproportionately on poor, rural and minority](#) communities.²⁸ The clustering of hog CAFOs in low-income, minority communities in North Carolina in particular has raised concerns of environmental injustice and [environmental racism](#).²⁹

Unfortunately, the rural pollution crisis is about to get even worse. Recent changes to the definition of “waters of the United States” (WOTUS) adopted by the Trump administration in 2019 will [significantly limit the scope of the CWA](#), removing environmental protections from millions of miles of streams and roughly half of the country’s wetlands, further limiting control of runoff from manure, fertilizers and pesticides.³⁰ This, too, is the direct result of agribusiness lobbying, as USDA Secretary Sonny Perdue made clear in [announcing the change](#): “Repealing the WOTUS rule is a major win for American agriculture.”³¹

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