



At a \$13 million plant outside Seaford, Del., chicken giant Perdue turns tons of manure into fertilizer, but added plants might strain the firm.  
(Mark Gail/The Washington Post)

## Manure becomes pollutant as its volume grows unmanageable

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Nearly 40 years after the first Earth Day, this is irony: The United States has reduced the manmade pollutants that left its waterways dead, discolored and occasionally flammable.

But now, it has managed to smother the same waters with the most natural stuff in the world.

Animal manure, a byproduct as old as agriculture, has become an unlikely modern pollution problem, scientists and environmentalists say. The country simply has more dung than it can handle: Crowded together at a new breed of megafarms, livestock produce three times as much waste as people, more than can be recycled as fertilizer for nearby fields.

That excess manure gives off air pollutants, and it is the country's fastest-growing large source of [methane](#), a greenhouse gas.

And it washes down with the rain, helping to cause the 230 oxygen-deprived "dead zones" that have proliferated along the U.S. coast. In the Chesapeake Bay, about one-fourth of the pollution that leads to dead zones can be traced to the back ends of cows, pigs, chickens and turkeys.

Despite its impact, manure has not been as strictly regulated as more familiar pollution problems, like human sewage, acid rain or industrial waste. The Obama administration has made moves to change that but already has found itself facing off with farm interests, entangled in the contentious politics of poop.

In recent months, Oklahoma has battled poultry companies from Arkansas in court, blaming their birds' waste for slimy and deadened rivers downstream. In Florida, the U.S. Environmental Protection Agency proposed first-of-their-kind [limits](#) on pollutants found in manure.

In the Senate, [Benjamin L. Cardin](#) (D-Md.) has proposed a [bill](#) that would allow farmers in the Chesapeake watershed to cut pollution more than required and sell the extra "credits" to other polluters. The EPA, in the middle of an overhaul for the failed Chesapeake cleanup, also has threatened to tighten rules on large farms.

"We now know that we have more nutrient pollution from animals in the Chesapeake Bay watershed" than from human sewage, said J. Charles Fox, the EPA's new Chesapeake czar. "Nutrients" is the scientific word for the main pollutants found in manure, treated sewage, and runoff from fertilized lawns. They are the bay's chief evil, feeding unnatural algae blooms that cause dead zones.

Around the country, agricultural interests have fought back against moves like these, saying that new rules on manure could mean crushing new costs for farmers.

"It's clearly going to put a squeeze on people that they've always said they didn't want to squeeze," including family-run farms, said Don Parrish of the American Farm Bureau Federation.

The story of manure is already a gloomy counterpoint to the triumphs in fighting pollution since the first Earth Day in 1970. An air pollutant that causes acid rain has been [cut](#) by 56 percent. By one [measure](#), the output from sewage plants got 45 percent cleaner.

But, according to Cornell University researchers, the amount of one key pollutant -- nitrogen -- entering the environment in manure has increased by at least 60 percent since the 1970s.

"We've dealt with the kind of conventional pollutants," that helped spark the first Earth Day, said Donald F. Boesch, president of the University of Maryland Center for Environmental Science. "Now, we see the things that are eating our lunch, if you will, are natural products . . . that are just overloading the system."

The reasons for manure's rise as a pollutant have to do, environmentalists say, with a shift in agriculture and a soft spot in the law.

In recent decades, livestock raising has shifted to a smaller number of large farms. At these places, with thousands of hogs or hundreds of thousands of chickens, the old self-contained cycle of farming -- manure feeds the crops, then the crops feed the animals -- is overwhelmed by the large amount of waste.

The result in farming-heavy places has been too much manure and too little to do with it. In the air, that extra manure can dry into dust, forming a "brown fog." It can emit substances that contribute to climate change.

And it can give off a smell like a punch to the stomach.

"You have to cover your face just to go from the house to the car," said Lynn Henning, 52, a farmer in rural Clayton, Mich., who said she became an environmental activist after fumes from huge new dairies gave her family headaches and burning sinuses. The way that modern megafarms produce it, Henning said, "Manure is no longer manure. Manure is a toxic waste now."

In the water, the chemicals in manure don't poison life, like pesticides or spilled oil. Instead, they create too much life, and the wrong kinds.

"You get Miracle-Gro for your water," said David Guest, a lawyer for the group [Earthjustice](#) who has fought for tougher limits on pollution in Florida.

The chemicals in manure serve as fertilizer for unnatural algae blooms. They drain away oxygen as they decompose. Scientists say the number of suffocating dead zones -- oxygen-depleted areas where even worms and clams climb out of the mud, desperate to respire -- has grown from 16 in the 1950s to at least 230 today. The Chesapeake's is usually the country's third largest, after the Gulf of Mexico and Lake Erie.

The law, however, has treated manure and other agricultural pollutants differently than pollutants from smokestacks and sewer pipes.

The EPA does not set a hard cap on how much manure can wash off farms, instead issuing guidelines that apply only to the largest operations. There, the rules might limit how much manure farmers can spread on individual fields, for instance, or order them to plant grassy strips along riverbanks to filter manure-laden runoff. Even that level of regulation has only been in place since the 1990s.

But now, the EPA has signaled an intent to tighten its grip.

Last Monday, the agency announced that reducing manure-laden runoff was one of its six "national enforcement initiatives." New rules went into effect in December that will impose even tighter restrictions on large farms.

Last fall, the U.S. Department of Agriculture also considered a change to its guidelines, which would have limited the amount of manure farmers could apply to their fields. But then it scrapped that idea, saying the issue needed more study.

Last week on the Eastern Shore, where farmers raised [568 million chickens](#) last year, the problem of excess manure was still big enough to see from the road.

"See how dark that one pile is? That's chicken manure," said Kathy [Phillips](#), 61, an environmental activist who patrols the peninsula for piles of manure stored outdoors. As a steady rain fell, she said that pollutants were probably leaching off that mound -- as tall as a van and the color of dark-roast coffee-- and into ditch water that would eventually reach the Pocomoke River, then the Chesapeake.

Phillips usually surveys these piles from the air. She has a mental map of dozens of these off-smelling mounds.

"I don't want to be the Poop Lady," said Phillips, who got into environmentalism because she loved to surf Ocean City's beaches. "But, you know, somebody had to talk about this. It's like this dirty little secret."

A few miles north, the poultry giant [Perdue](#) has come up with one way to dispose of excess manure. At a \$13 million [plant](#) outside Seaford, Del., tons of poultry manure are dried, heated to kill off bacteria and compressed into pellets of organic fertilizer that is sold to golf courses or homeowners.

"This is sort of a reverse chicken," said Perdue spokesman Luis Luna, as bulldozers moved manure below. "In a chicken, the food goes in and the poop goes out. Here, the poop comes in and the plant food goes out."

That helps Chesapeake's manure problem, but it isn't the whole solution. Luna said there is enough manure on the Shore to keep more plants like this running-- but Perdue isn't planning to build more yet. So far, the fertilizer doesn't sell well enough to make that cost-effective.