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**REFORMING INDUSTRIAL
ANIMAL AGRICULTURE**

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THE CHESAPEAKE BAY IS IN TROUBLE.

But there is hope: After decades of pollution, a plan to save the bay is taking shape.



Runoff from city streets and farm fields causes pollution in the Chesapeake Bay.

PHOTO: DAVID HARP

The Chesapeake Bay is a national treasure, teeming with life and providing economic and recreational benefits estimated at **\$33 billion a year**.¹ More than a million birds spend the winter in the region, and in the summer, countless tourists visit its 12,000 miles of shoreline. The bay provides habitat to more than 2,700 plant species, nearly 350 species of finfish, and 175 species of shellfish, including the blue crab. Its waters produce more than 500 million pounds of seafood annually. Unfortunately, however, this bounty has been diminished by pollution.

Decades ago, during the 1970s, it became apparent that North America's largest estuary

was in peril: Important underwater grasses had disappeared; areas of low or no oxygen had developed; and catches of oysters, crabs, and striped bass had dropped dramatically.²

In the early 1980s, a congressionally funded study revealed excess nutrient pollution, in various forms of nitrogen and phosphorus, as a major source of the bay's degradation. These findings led to the formation of the Chesapeake Bay Program, a collaborative effort among federal, state, and local governments to protect the bay.³

In 1983, the Environmental Protection Agency (EPA) administrator, the governors of Maryland,

HOW NUTRIENTS BECOME POLLUTANTS

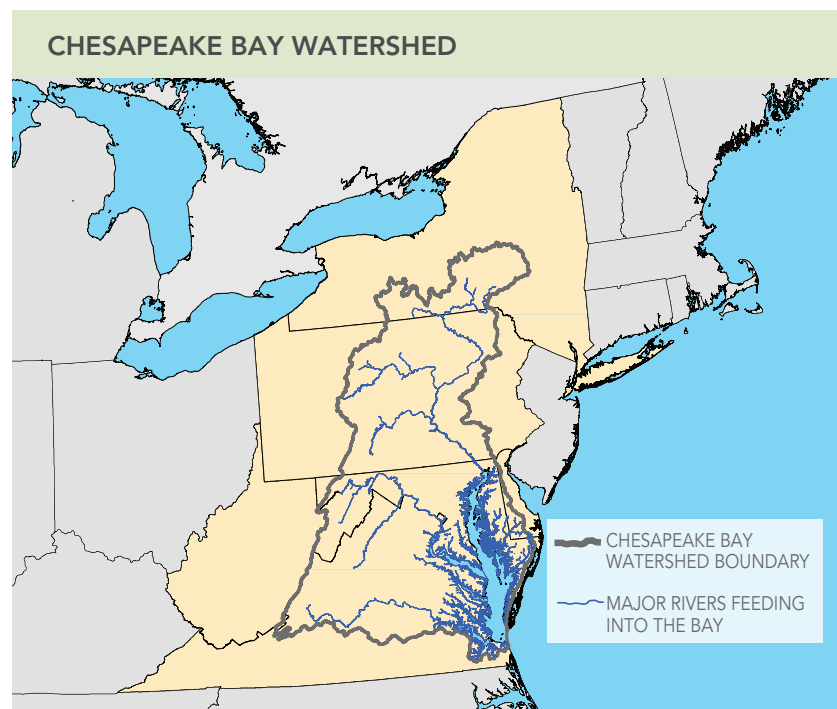


Manure contains nutrients such as phosphorus and nitrogen that are essential to crop production. When manure is improperly managed, however, those valuable nutrients become pollutants. They run off farm fields in rainstorms, build up in the soil and seep through the groundwater into the bay, or evaporate into the air and then are re-deposited on the land and in the water. Mismanagement also can involve ineffective or inadequate storage of manure, use of more manure than crops need, placement of manure too close to waterways and wells, and use of the wrong application techniques. Other examples include application of manure to frozen, snow-covered, or saturated ground, or fertilization at times when crops cannot use the nutrients or when precipitation will quickly wash away the manure.

PHOTO: DAVID HARP

Pennsylvania, and Virginia, and the mayor of the District of Columbia signed the first of several Chesapeake Bay Agreements, **pledging cooperation to improve water quality** and protect bay resources.⁴ By 1987, the group made more specific commitments, aiming for a 40 percent reduction in the nitrogen and phosphorus that had polluted the bay waters and set in motion a spiral of harmful impacts.

Since then, policymakers from numerous federal agencies and the seven jurisdictions of the bay watershed—Delaware, Maryland, Pennsylvania, Virginia, New York, West Virginia, and the District of Columbia—have collaborated closely on cleanup. Billions of dollars in state and federal funds have been invested in efforts to improve land use planning, upgrade sewage treatment plants, restore habitat, and change agricultural practices. Scientific expertise has been marshaled to construct sophisticated models to predict the impact of various actions on bay health. Despite these efforts, however, progress has fallen short of expectations, and the bay's health remains in jeopardy.



The land area that drains to the bay covers **64,000 square miles**, including the District of Columbia and parts of six states. Within this area, nearly 150 major rivers and many thousands of streams and creeks flow to the bay.

NEW CLEANUP COMMITMENTS: THE PLAN TO SAVE THE BAY

Today, the bay jurisdictions and the EPA are involved in an unprecedented large-scale cleanup effort. This approach puts the bay on a “pollution diet” by setting an overall limit (called the Total Maximum Daily Load, or TMDL) on the amounts of nitrogen, phosphorus, and sediment that can flow into the bay and its tributaries. The total quantity of these pollutants that scientists believe the bay can tolerate is well below current levels, so the jurisdictions have been assigned pollution allocations, or shares of that total. Each state must prepare a series of watershed implementation plans (WIPs) to describe how its share will be divided among pollution sources and what steps will be taken to achieve reductions. The states can phase in their controls, but all of the measures must be fully in place by 2025.

In 2010, the EPA approved the Phase I WIPs, and implementation began. The **Phase II WIPs**, submitted to the EPA in the spring of 2012, provided more detail on how the jurisdictions will ensure that 60 percent of their controls are in place by 2017, when Phase III WIPs are due. In the meantime, jurisdictions will report their progress toward specific two-year milestones. Any program falling short of its milestones will be pressed for more aggressive actions and potentially will be subject to direct EPA regulation of some pollution sources.

FAIR SHARES FOR REDUCING POLLUTION

In the bay watershed, as elsewhere, excess nutrients enter waterways through pipes or run off the land during storms; seep slowly into streams from polluted groundwater; and fall to the land surface and into the water from polluted air. And, as elsewhere, bay pollutants come from a variety of sources: wastewater treatment plants and industrial facilities, urban streets, suburban lawns, construction sites, and farm fields. Over the years, almost all pollutant sources have made some progress in cleaning up. Some have been more successful than others, however.

Current estimates indicate that agriculture is the single biggest pollution culprit, contributing nearly half of the bay’s phosphorus and nitrogen and more than half of the sediment.⁵ About half of that agricultural pollution is directly associated with manure from livestock and poultry operations.

According to the U.S. Department of Agriculture (USDA), the recommended practices for using manure as a crop fertilizer are not being implemented on a staggering 99 percent of manured cropland in the bay watershed. “[T]he majority of the acres in the region lack consistent use of appropriate rates, timing *and* method



Broiler chickens, whose manure is a major source of pollution in the Chesapeake Bay watershed, often spend their short lives in cavernous buildings on the Delmarva peninsula.

PHOTO: DAVID HARRP



Chicken houses and soybean crops share space on a farm on Maryland's Eastern Shore, where animal waste is a major cause of bay pollution. Roughly half of the nitrogen and phosphorus flowing into the bay comes from agriculture, and about half of that pollution comes from animal operations.

PHOTO: DAVID HARP

of application ... including nearly all of the acres receiving manure," the USDA found.⁶

Reductions in bay nutrients will require significant improvements in manure management, particularly those practices associated with concentrated animal feeding operations. CAFOs, as they are known, often house thousands of animals under one roof and in many instances generate more manure than can responsibly be used as fertilizer for local crops.

To reduce this pollution threat to the bay, The Pew Charitable Trusts urges the president to direct the EPA to revise its rule on CAFOs under the Clean Water Act. A rule requiring CAFOs throughout the country, including those within the Chesapeake Bay watershed, to obtain Clean Water Act permits and take responsibility for proper management of all the manure they generate would significantly improve the bay's health and help to ensure that all pollution sources do their share to clean up.

¹ U.S. Environmental Protection Agency (EPA). (2008) EPA Needs to Better Report Chesapeake Bay Challenges: A Summary Report, Evaluation Report. Office of Inspector General. www.epa.gov/oig/reports/2008/20080714-08-P-0199.pdf.

² EPA. (2002) The State of the Chesapeake Bay: A Report to the Citizens of the Bay Region. http://www.chesapeakebay.net/content/publications/cbp_13112_13116.pdf

³ Chesapeake Bay Program. Chesapeake Bay Program History. <http://www.chesapeakebay.net/about/how/history>

⁴ Chesapeake Bay Program. 1983 Chesapeake Bay Agreement. http://www.chesapeakebay.net/content/publications/cbp_12512.pdf.

⁵ More information can be found at the EPA's Chesapeake Bay TMDL website. <http://www.epa.gov/chesapeakebaytmdl/>.

⁶ U.S. Department of Agriculture. (2011) Natural Resources Conservation Service. Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcsdev11_023934.pdf

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