

# Pollution in chesapeake bay problems and solutions - essay

[Environment](#), [Pollution](#)



The Chesapeake Bay is the biggest estuary in the country, bordering Virginia and Maryland, and runs around 200 miles inland. However, despite its natural value and unique status as an estuary, it is being plagued by immense levels of pollution. Despite the efforts being put forth by the government and various organizations, the bay is still incredibly polluted, posing a danger to wildlife, marine life, and even people in the surrounding area. In this paper, we will evaluate the causes of this pollution, as well as the condition of the bay and what is being done about it. A customized solution will be proposed to help address the various problems that contribute to the Bay's increasing pollution levels.

One of the biggest problems with Chesapeake Bay is that it is one of the first "marine dead zones" encountered in the planet - essentially, the bay is so polluted that it cannot support marine life any more. This poses a threat to many species of marine life that thrive in the bay, as not only will they be killed off, their eradication paves the way for a lack of food source for quite a few other animals, such as the blue crab and various wildlife. (CITE) This is due to intense hypoxia in the water due to a lack of oxygen.

This hypoxia occurs as a result of harmful algal blooms (HABs) in the water, blocking sunlight from reaching the bottom of the bay. When the algae dies, it sinks to the bottom of the bay in order to rot, which further deoxygenates the bay bottom. They also cause health problems in fish and humans, including skin abnormalities and bacterial infections. (Magnien 2001) Also, the increased levels of CO<sub>2</sub> are dramatically affecting the levels of evapotranspiration in the bay area, furthering the deoxygenation of the bay. (Drake et al. 2010)

One strain of bacteria that is causing a major problem in the bay is Pfiesteria, which is found near fish kills and within HABs all throughout Chesapeake Bay. They are the major source for health complications in fish and people in the area, creating a substantial problem with the bay's ecology. (Magnien 2001) The blue crab in particular is taking a massive hit from the pollution, as the deoxygenization of the bay is leading to destruction of its food source, making the blue crab population decrease by 70% in the past twenty years. (Woodard 2001)

One of the biggest sources of pollution for the bay stem from its tributaries, including the Susquehanna, Potomac and James Rivers. (USGS 1995) These tributaries bring in a lot of freshwater, and also a great deal of pollution in the form of nitrogen and phosphorus. The Potomac is the largest contributor of phosphorus, 30 million pounds of which enter the bay each year. Also, the Susquehanna River brings in fertilizer and animal waste, which is a major source of nitrogen. (USGS 1995)

There are many solutions being attempted at the present time by a variety of organizations to help combat the pollution being found in Chesapeake Bay. To address the problem of Pfiesteria, an action commission was started in 1997 to investigate the policies and science behind the problem of this bacteria. A panel of experts were convened "to evaluate the possible relationships between Pfiesteria and nutrients", coming to the conclusion that nutrient loading of the bay could help "lower the risk of toxic outbreaks" of HABs and Pfiesteria. (Magnien 2001)

The biggest change came in 1998, when the Water Quality Improvement Act was passed by Maryland in an attempt to curtail many of the agricultural

waste that was leaking into the river, adding to the phosphorus and nitrogen levels of the bay. In this, farmers were required “ to produce and implement nutrient management plans on all but the smallest farms in the state.”

(Magnien 2001) Phosphorus management was phased into the program in 2005, requiring farmers to regulate the phosphorus on animal farms, as their waste is the primary source of that element. Strategies have also been developed between the US Department of Agriculture and the EPA to create “ a unified national strategy for animal feeding operations,” citing Pfiesteria to be a major threat to the quality of water in Chesapeake Bay. (Magnien 2001)

All of the surrounding states (Maryland, Virginia, Pennsylvania, the District of Columbia) are working tirelessly to restore the bay’s ecology. (Woodard 2001) Industrial waste water treatment is being regulated, steps are being taken to protect wetlands, and fisheries are concentrating on improving the health of their fish. However, these efforts are being curtailed by numerous problems, including careful examination of the surrounding food chain and difficulties in removing municipal sewers and factories. (Woodard 2001)

According to experts, the primary objective for cleaning up Chesapeake Bay has to be lowering the nutrient input coming into the Bay, namely phosphorus and nitrogen, as more than 310 million pounds of nitrogen is being introduced to the Bay each year.

Congress has been enlisted to raise \$660 million to get the sewage treatment plants in the Chesapeake area up to current standards, and federal officials have a more stringent restoration plan in place to reduce urban sprawl in the area by 30 percent by 2012. (Woodard 2001) They also

wish to boost the oyster population tenfold and stave off development in about a fifth of the watershed of the Bay.

In more recent years, the Strategy for Protecting and Restoring the Chesapeake Bay Watershed was signed in 2009 to establish the Federal Leadership Committee for the Chesapeake Bay, a group of experts and officials set to get the Chesapeake Bay Program back on track. It had only achieved a quarter of its goals by 2009, and the total maximum daily load of the bay was established to handle what reductions need to be made.

(Landers 2010) Their strategies aim to have at least 60% of the water quality standards of the state be met by the bay. These include water clarity, dissolved oxygen, and many more. By 2025, they also aim to have all of their pollution reduction actions finished and completed. (Landers 2010) Among these initiatives are restoration of headwater streams which are havens for brook trout.

The solution that is proposed in this paper to help fix the bay is one to supplement the already valiant work performed by these organizations and volunteers to restore its natural beauty. One of the greatest things that can be done is to restore the oyster population of Chesapeake Bay. The reason for this is that, in sufficient numbers, they would be able to reduce the algal blooms, as they are very efficient at filtering the water of the bay. (Woodard 2001) Over harvesting has led them to be significantly lowered, but if there were to be a better, more pollution-resistant oyster variant out there to be transplanted into the Bay, they could filter the pollutants out of the water and help create a natural solution for the problem of the Bay's poor health. There also needs to be greater accountability for the federal initiatives which

are working hard to restore the quality of the bay and its ecology. Stricter landmarks need to be reached, and Congress needs to supply the appropriate budget to offer the resources that are required to get the bay where it needs to be. Strategic initiatives would be started for massive lobbies and legislation pushes to get the funding demanded of this massive project. With the help of a properly high budget and media and legislative support, the manpower and resources to make restoration of the Bay possible would be put to bear.

In conclusion, there are quite a few problems with pollution in the Chesapeake Bay. High levels of nitrogen and phosphorus from agriculture leads to deoxygenization of the water, and HABs contribute to the endangerment of a variety of species within the bay itself. There are myriad solutions and initiatives being put forth by the government and organizations to prevent urban sprawl, improve water treatment plants, and restore the populations of a great many species, but there is more that could be done. The initiatives are perfectly adequate, but greater support needs to be given to these programs, as well as greater accountability to keep them on their timeline. Also, more concerted efforts to restore the oyster population to the bay would significantly raise the water filtering efficiency in the bay, as well as restore its ecosystem to an extent.

## **Works Cited**

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