



The Importance of Clean Air to Clean Water in the Chesapeake Bay



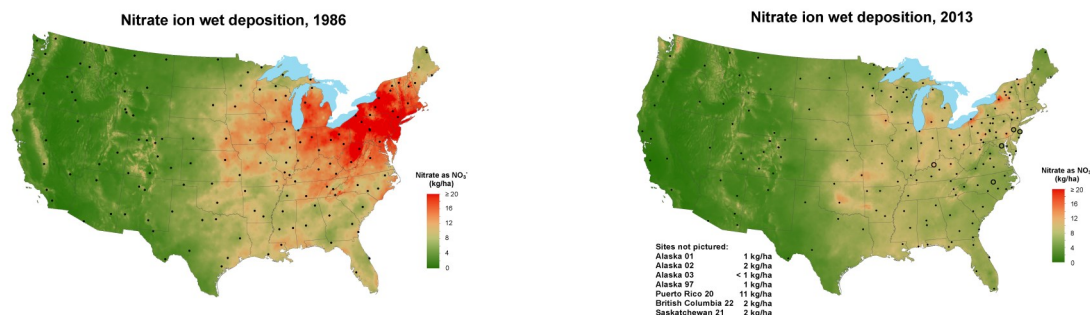
Overview

Actions by the U.S. Environmental Protection Agency and its state partners have led to significant reductions in one of the major sources of pollution impacting the Chesapeake Bay watershed and tidal Bay: the atmospheric deposition of nitrogen oxides, or NO_x.

The steady decline in nitrogen pollution that is carried by winds and falls to the Bay's waters and lands has been a key factor in the overall progress to date in meeting water quality goals of the historic Chesapeake Bay Total Maximum Daily Load ([Bay TMDL](#)).

In the Bay TMDL, EPA committed to reducing nitrogen deposition to the Bay and its surrounding waters by a total of 3.7 million pounds between 2009 and 2025, the year all practices are to be in place to meet the Bay TMDL goals. As of 2013, through actions under the Clean Air Act, EPA and its partners have achieved reductions of an estimated 2.5 million pounds, putting EPA on track to meet its commitment.

Clean Air Act regulations have also led to sharp reductions in nitrogen that washes into the Bay after falling on watershed lands and upstream waters.



Source: National Atmospheric Deposition Program (NRSP-3). 2007. NADP Program Office, Illinois State Water Survey, 2204 Griffith Dr., Champaign, IL 61820.

Cleaner Air Means Cleaner Water

The [Clean Air Act](#) has helped Americans breathe easier and live healthier, reducing illnesses and premature deaths and contributing to a stronger economy and better quality of life. At the same time, [the Act has helped protect our waters](#) by reducing NO_x pollution emitted by automobiles, trucks and various non-road vehicles, and industrial sources such as power plants, industrial boilers, cement kilns and turbines.

Air pollution contributes about one third of the total nitrogen loads delivered to the lands and tidal waters of the Bay watershed. The bulk of that nitrogen (75 percent of the NO_x) is generated by sources within the Bay's "airshed," which at 570,000 square miles is nine times the size of the Bay watershed.

Too much nitrogen (and phosphorus) in the water causes algae to grow faster than ecosystems can handle. Large growths of algae, called algal blooms, can severely reduce or eliminate oxygen in the water that fish and other aquatic life need to survive.

For more information on air deposition and its impact on the Chesapeake Bay, visit http://www.epa.gov/reg3wapd/pdf/pdf_chesbay/FinalBayTMDL/CBayFinalTMDLSection4_final.pdf (Section 4.6.2)

And for tips on what you can do to reduce air pollution, visit http://epa.gov/oaqps001/peg_caa/reduce.html

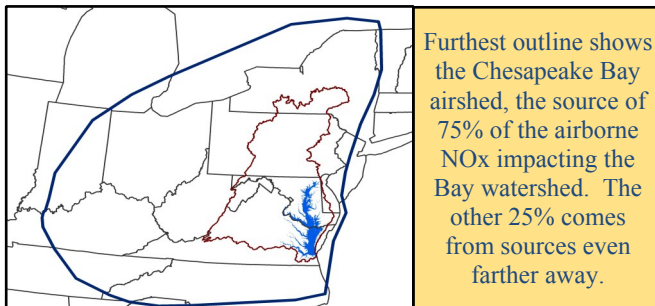
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Actions Produce Results

EPA actions to implement the Clean Air Act have led to sharp reductions in NO_x emissions. The results are reflected in:

- Widespread achievement of air quality standards with far fewer ozone action days. NO_x, in the presence of volatile organic compounds and sunlight, can lead to formation of ground-level ozone (smog).
- Long-term decreasing trends in atmospheric nitrogen deposition across the Bay watershed.
- Declining nitrogen concentrations in most headwater streams and the Bay watershed's largest rivers.

The Chesapeake Bay Program offers an extensive look at progress in reducing airborne nitrogen pollution. The Program's decision support tools show that nitrogen in NO_x form that landed on the Bay watershed as a



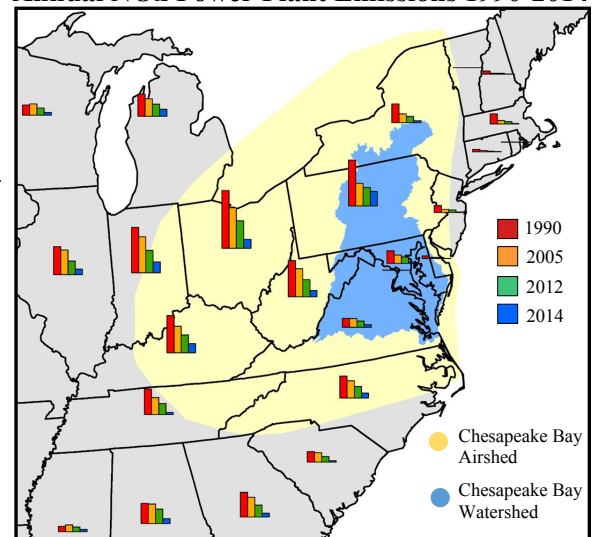
result of NO_x emissions dropped by more than half from 1986 to 2013, 447 million pounds to 190 million pounds. (A large portion of the nitrogen falling to land is absorbed by terrestrial plants or remitted back to the atmosphere). During the same period, the amount of nitrogen as NO_x falling directly on the Bay and its surrounding waters fell from 19 million pounds a year to 9 million, according to the estimates.

Clean Air Rules

Clean Air Act actions that have helped or will help reduce NO_x in the Chesapeake Bay watershed, include:

- Since 1995, implementation of the [Acid Rain Program](#), which focuses on reducing pollutants such as NO_x, has not only improved previously acidified water bodies so that they can once again support fish life, but has also reduced ground level ozone and fine particulate matter, such as nitrates.
- Implementation of rules that aim to reduce air pollution emissions in one state from impacting the air quality in another. The [NO_x Budget Trading Program](#) (NBP) was a 2003 market-based cap and trade program created to reduce emissions of NO_x from power plants and other large combustion sources in the eastern United States. The NBP was followed by the [Clean Air Interstate Rule](#) (CAIR) and the [Cross-State Air Pollution Rule](#) (CSAPR), calling for further reductions.
- The [Tier 2 On-Road Light Duty](#) final rule, issued in 1999, set more stringent NO_x standards for tailpipe emissions of all passenger vehicles, including sport utility vehicles, minivans, vans and pick-up trucks beginning in 2004.
- The [Tier 3 Light-Duty Vehicle Emissions and Fuel Standards](#) final rule, issued in April 2014, will implement new vehicle emissions standards and lower the sulfur content of gasoline beginning in 2017 and will result in significant reductions in pollutants such as NO_x.
- The EPA and the National Highway Traffic Safety Administration issued a [joint rule](#) in September 2011 for heavy duty trucks beginning with model year 2014 that will not only improve fuel economy and reduce greenhouse gas emissions but will also reduce NO_x.

Annual NO_x Power Plant Emissions 1990-2014



EPA and the states are continuing to take steps to reduce emissions that pollute the air – and water.