

Water Quality



Photo by NOAA

The Chesapeake Basin is particularly favorable for agricultural production because the soils respond well to management, the temperate climate provides a fairly long growing season, and the rainfall is well distributed. Currently, agriculture makes up 50 percent of the land use, forestry makes up 39 percent, and other land uses/urban development makes up the other 11 percent.



Agriculture

Agricultural activities (primarily the wide spread application of fertilizers) and the onsite wastewater discharge associated with residential and commercial development have significantly impacted ground-water quality over much of the Basin. Because of its common occurrence, nitrate is often used as an indicator of impacted ground water.

Pesticide use is widespread throughout the Chesapeake Basin. Herbicides (atrazine, cyanazine, metolachlor, and simazine) are readily detected in shallow unconfined ground water beneath sandy soils with low organic matter. Atrazine is the most frequently detected herbicide and occurs at the highest concentrations. More than 95 percent of the herbicides detected are at concentrations generally at or near the 0.1 microgram per liter laboratory detection limit. In most cases, this limit is substantially below the drinking water standards set by the EPA.

Most farmers in the Chesapeake Basin now voluntarily use *Best Management Practices* to limit their application of nitrates and pesticides on farmland in order to protect water quality. These practices aid farmers in retaining nutrients by identifying the appropriate times, conditions, and quantities for fertilizer application.

Septic Systems

The Chesapeake Basin has one of the highest percentages (95 percent) of land area served by septic systems. Thousands of recorded, but currently undeveloped, lots will eventually add to the number of septic systems. Most of these undeveloped lots are stripped from farm-field frontages along county roadways and waterways. Overall, the Basin has moderate to severe limitations for onsite septic disposal due to the moderate to poorly-drained soil conditions.

Current septic regulations deny the placement of standard (gravity and elevated sand mounds) and/or alternatively designed low-pressure pipe

septic systems on soils where the seasonal high water table is within 20 inches of the soil surface. As an option for those property owners, septic regulations allow for alternatively designed systems on a case-by-case basis. These alternative septic systems utilize technologies that pre-treat the effluent to a specific level, usually to levels below 10 parts per million (ppm) of nitrate-nitrogen. Total and fecal coliform levels are also significantly reduced within these pretreatment units. (Coliform bacteria are a by-product of both human and animal waste.) The soil must still dispose of the effluent. The cost of these pretreatment units has dropped significantly so more people can afford them, however some soils are too wet even for these new systems.

Standard home septic systems trap sewage solids in a tank and disperse the remainder under ground. Although some nitrogen will escape a septic system that is working correctly, a septic tank must be emptied regularly to maintain maximum performance and prevent unnecessary leaking. Septic systems have a direct impact on ground water, the primary source of drinking water for residents of the Chesapeake Basin. At the back of this book you'll find more detailed information about maintaining your septic system.

A number of water quality issues have arisen in the Chesapeake Basin over the past several years, from how to address habitat loss to concerns about toxic outbreaks of *Pfiesteria*, which is believed to be caused in part by excess nutrients. Changes in environmental quality have led to fish kills, loss of desirable submerged aquatic vegetation, (SAV), and declines in desirable finfish and shellfish habitat.

Delaware continues to experience serious water pollution and public health problems. The focus of water quality management has expanded, therefore, from point source discharges to nonpoint source problems such as urban and agricultural runoff, erosion, and sedimentation. Unaddressed, these problems lead to poor habitat conditions for fish and other aquatic life, diminished enjoyment of water-related recreation, and conditions that can create illness for people. Additional research and assessment efforts will be necessary to better understand how this complex aquatic system responds to pollutants.



The Nanticoke River has been designated as having Exceptional Recreational and Ecologic Significance (ERES) by the Federal Government