

# NITROGEN

## ***What is nitrogen?***

Nitrogen is an essential nutrient for all life on Earth. Bacteria living in soil convert nitrogen in the atmosphere into ammonia, which plants use to grow. Plants also use other types of nitrogen to make proteins and amino acids that animals need.

## ***How is nitrogen measured?***

**Ammonia nitrogen, nitrite nitrate, and total nitrogen** (mg/L) are measured using lab analyses of water samples taken in the field.

**Nitrate nitrogen** (mg/L) is measured in the field using a colorimetric kit with either a cadmium or zinc reduction method, or by lab analyses of water samples taken in the field.

## ***What can nitrogen tell us about the Bay?***

High nitrogen content in water is an indication of nutrient pollution input from the watershed. Lower levels of nitrogen often mean the ecosystem is healthy and the food web is balanced and not dominated by macroalgae and phytoplankton.

Nitrogen occurs naturally in ecosystems and fuels the food web by providing nutrients to algae and other plants. Although nitrogen is essential for plant life, it is found at unnaturally high concentrations in fertilizers and wastewater. Rain pushes nitrogen-rich stormwater runoff from lawns, farms, and overflowing sewers and septic systems into the Chesapeake Bay. Nitrogen pollution causes algae overgrowth and can result in an algal bloom that eventually dies and decays—a process that uses up dissolved oxygen. Low dissolved oxygen levels cause fish kills and decrease habitat quality for plants and animals living in the Chesapeake Bay and its tributaries.

*Top: Collecting water samples to measure nitrogen (C. Donovan). Bottom: Nitrogen-rich stormwater runoff creates algal blooms in the Bay (A. Jones).*

