SIERRA CLUB **IOWA CHAPTER**

Green is the Wrong Color for Iowa's Lakes and Streams

Excess nitrogen and phosphorus, which are also called nutrients[1], lead to the growth of algae[2]. These microscopic plants turn Iowa's water bodies green. This leads to a reduced level of oxygen in the water. Hypoxia, or the "dead zone," is an area that is so depleted of oxygen that fish, mussels and other animals are not able to live in the water. The nutrients and algae can also lead to foul-smelling surface water and bad-tasting drinking water.

Algae in a lake. Photo Credit: Lynn Betts, USDA NRCS

Iowa Nitrogen and Phosphorus Pollution Contributes to the Dead Zone in the Gulf of Mexico.

The water in Iowa's streams and rivers eventually flows into the Mississippi River and the Gulf of Mexico. The northern Gulf of Mexico has the largest area affected by hypoxia in the United States.[3] The nitrogen and phosphorus pollution from Iowa's waters is a direct contributor to the dead zone as it flows into the Mississippi River and down to the Gulf of Mexico. [4]

Sources of Nitrogen and Phosphorus Pollution

Ninety-two percent of the nitrogen and eighty percent of the phosphorus in Iowa's waters originates from non-point sources.[5] The following sources contribute to nutrient pollution in Iowa's waters.

- Manure has large quantities of nitrogen and phosphorus. When it is over-applied to fields, storm water and thaws flush the water off the fields, into tile drains and then into waterways. Likewise, storm water can wash manure off open feedlots into water bodies.
- Pet feces that has been left on the ground. Storm water can transport the feces into water bodies. Picking up pet feces and discarding it in the trash will reduce nutrient pollution.
- Commercial fertilizers that are over-applied or inappropriately applied to lawns, golf courses and agricultural lands. These fertilizers can wash off the land and into storm sewers, drainage ditches, or tile lines where they then are swept into Iowa's water bodies.
- Septic tanks can be a source of nutrients entering Iowa's lakes, streams and rivers. Septic tanks need to be emptied periodically and maintained to keep them functioning properly.
- Partially treated or untreated effluent that is discharged from wastewater treatment facilities carries nutrients into water bodies. Wastewater treatment plants need to be maintained and upgraded so that untreated effluent is not discharged. The plants need enough capacity to handle the wastewater that is piped to it.

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[1] "Hypoxia and Nutrient Reduction Zone: Advice for Prevention, Remediation and Research", Scientific and Advisory Panel of the Global Environment Facility, September, 2011, page 1

[2] In addition to nitrogen and phosphorus, silicon and organic matter are also nutrients.

[3] "Hypoxia and Nutrient Reduction Zone: Advice for Prevention, Remediation and Research", Scientific and Advisory Panel of the Global Environment Facility, September, 2011, page 41

[4] The Deep Water Horizon oil spill, also called the BP oil spill, in 2010 caused significant pollution to enter the Gulf of Mexico. The Dead Zone existed before the oil spill and is caused by a different set of pollutants than the oil spill.

[5] Craig Cox and Andrew Hug, "Murky Waters: Farm Pollution Stalls Cleanup of Iowa Streams," Environmental Working Group, December, 2012, page 5.

- Depositions from air pollution. Sources of airborne nutrients include the combustion of fossil fuels (coal and gasoline) and evaporation from manure storage pits.
- Nitrates can also enter water bodies from organic material in the soil.
- Phosphorus is often carried in eroded soil that enters a water body.

Public Policy Solutions for Reducing Nitrogen and Phosphorus Pollution

Algae in a backwater of the Wapsipinicon River at Pinicon Ridge Park near Central City, Iowa. Photo credit: Pam Mackey Taylor

The Iowa Chapter supports the following policies to reduce nitrogen and phosphorus pollution:

- The Iowa Department of Natural Resources must set appropriate numeric water quality standards for nutrients to limit discharges of nitrogen and phosphorus by permitted sources such as factories and wastewater treatment plants.
- Each watershed should be given an appropriate standard for non-point discharges, those pollutants that are not released through wastewater pipes, with goals and implementation set to attain water quality levels. These standards should be accompanied by a requirement that all landowners in the watershed must contribute to efforts to meet the water quality standard.
- Additionally, an on-going water monitoring program can verify the progress that is being made in reducing nutrient pollution in Iowa's water bodies.
- These policies must be accompanied by aggressive enforcement and stiff penalties for violations.
- Require federally-funded crop insurance and other farm programs to implement conservation practices that control soil erosion and the loss of nitrogen and phosphorus off agriculture lands. These policies can include planting cover crops and maintaining grass waterways in farm fields.
- Ensure that all streams have buffers.
- Restore wetlands and ensure that wetlands are not destroyed so that storm water runoff is held.
- Increase planting of perennials, such as prairie plants, in ditches to collect and retain nitrogen.
- Aggressive efforts to reduce storm water runoff in urban areas, include building bioswales and retention basins.
- Switch to automatic dish washer detergents that do not contain phosphorus or phosphates.
- Require installation of silt fences or sediment traps on construction sites to ensure sediment is not carried off the site by stormwater runoff and enforcement of the requirements.

Effects of Nitrogen and Phosphorus on drinking water

Rock Creek, Mitchell County, Iowa. Photo credit: Ben Curtis

Private wells and urban drinking water sources can be polluted by manure and commercial fertilizers. Owners of private wells need to have their drinking water tested annually for nitrates.

Urban water treatment plants must periodically test the water being delivered to its customers. When drinking water is out of compliance with nitrate levels, then nitrate removal systems must be installed. The City of Des Moines installed nitrate-removal equipment in 1991. The cost of the treatment plant plus the on-going operation of the plant increases the cost of the drinking water provided to the customers.