

Nutrient Pollution: The Water Quality Challenge of Our Time

The Healthy Waters Coalition: A diverse cross-section of municipal water and wastewater, conservation, state agencies, agriculture and forest organizations have come together to urge Congress to develop a Farm Bill that improves both our nation's water resources and the health of our agriculture working lands. America's clean water resources and agriculture practices are inextricably linked. In fact, over the next five years agricultural policies and practices will have the single greatest impact on our lakes, rivers and estuaries. According to State water quality reports, 80,000 miles of rivers and streams, 2.5 million acres of lakes, reservoirs and ponds, 78% of the assessed continental U.S. coastal areas and more than 30% of estuaries are impaired due to nutrient over-enrichment. In all, the U.S. Environmental Protection Agency attributes nutrients as the direct or indirect cause of impairments in over 50% of impaired river and stream miles; over 50% of impaired lake acres; and nearly 60% of impaired bay and estuarine square miles.ⁱ In the majority of these waters, nutrient run-off from agricultural lands is the dominant source of the nutrient impairments.ⁱⁱ

Congress has an opportunity in the upcoming Farm Bill reauthorization to make important strides toward reducing nutrient contamination in our waters.

Drinking Water Impacts of Nutrient-Contaminated Water Supplies

- **Methemoglobinemia:** High nitrate levels in drinking water have been linked to methemoglobinemia, a decrease in oxygen-carrying capacity of red blood cells, which causes serious illness and sometimes death in infants (Blue Baby Syndrome).
- **Risk of Cancer and Disinfection By-products:** High levels of organic nitrogen compounds in drinking water supplies can lead to the creation of disinfection byproducts, such as trihalomethanes, haloacetic acids, bromated and chlorite which have been linked to increased cancer and reproductive health risks in humans, as well as liver, kidney and central nervous system problems.^{iii iv}
- **Costs to Communities:** Recently, the City of Waco, Texas, completed a \$40 million upgrade project to its drinking water treatment process to address problems caused by excess nutrients in the North Bosque River watershed. The City of Columbus, Ohio is installing a \$20 million ion exchange nutrient removal plant for its drinking water system to operate only during high nutrient events in Scioto River.

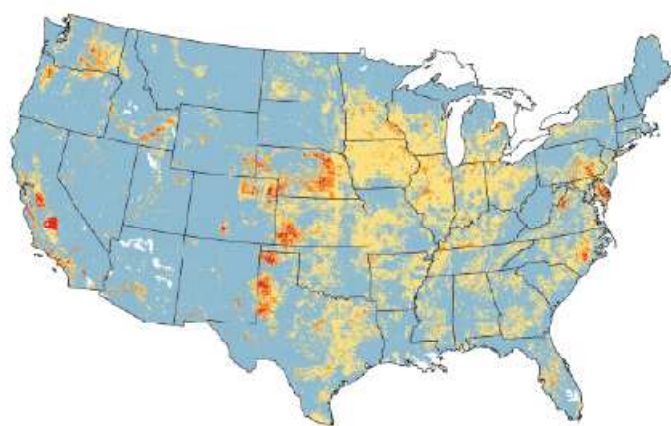
Recreational Water Quality and Human Health Impacts of Nutrient- Contaminated Water Bodies

- **Eutrophication and Harmful Algal Blooms (HABs):** High concentrations of nutrients in surface waters lead to eutrophication, a process by which elevated nutrient levels stimulate excessive plant growth or algal blooms. Some of these algal blooms are toxic and generate a range of paralytic, diarrhetic and neurotoxic effects with negative impacts on animals, humans and aquatic species.^v
- **Human Contact and HABs:** Human contact with HABs can cause rash, hives or skin blisters. If ingested, contaminated water may cause gastrointestinal illness, and potentially cause liver, kidney or neurological issues.^{vi}

Coastal Water Quality, Aquatic Species and Economic Impacts of Nutrient Contamination

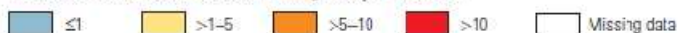
- **Eutrophication and Coastal Deadzones:** Eutrophication causes a condition known as hypoxia, or deadzones, in estuarine and coastal waters in which no aquatic life can survive because of low oxygen levels.
- **More than 40% (168) of the 400 deadzones worldwide have been located in U.S. estuarine and coastal waters from 2000 to 2007.** The Chesapeake Bay deadzone covers up to 40% of its surface area; in 2007, the Gulf of Mexico deadzone measured the size of Massachusetts.
- **Economic Costs:** HABs along coastal areas cause nearly \$100 million of economic losses each year due to disruptions to commercial, recreational and subsistence seafood harvesting as well as disruptions to recreational beach activities.^{vii}

Nitrate Concentration in Groundwater Supplies (USGS Circular 1350, 2010)

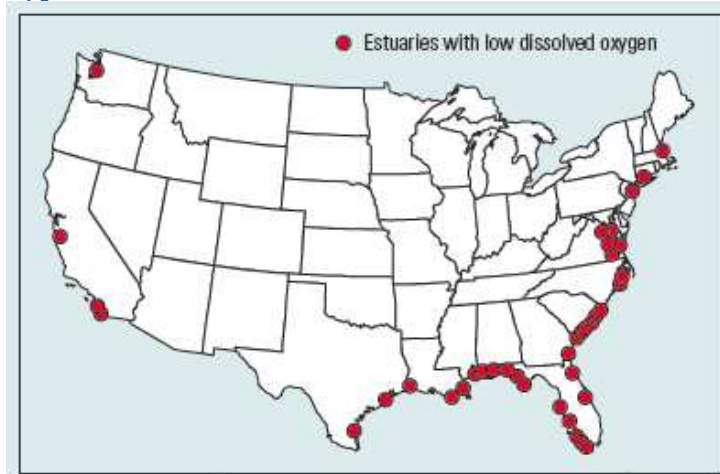


EXPLANATION

Predicted nitrate concentration, in milligrams per liter as N



Hypoxia in U.S. Coastal Waters (USGS Circular 1350, 2010)



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ⁱ *An Urgent Call to Action*, Report of the State-EPA Nutrient Innovations Task Group, August 2009. EPA's report also notes that these figures are likely an underestimate of the problem's scope given that they are based on only assessed water bodies rather than the full universe of potentially impaired water bodies.

ⁱⁱ *ibid*

ⁱⁱⁱ *Nutrients in the Nation's Streams and Groundwater, 1992 – 2004*, U.S. Geological Survey, Circular 1350

^{iv} EPA, 2009 Report

^v National Oceanic and Atmospheric Administration, *Harmful Algal Blooms*, 2009

^{vi} The Ohio Environmental Protection Agency 2010 factsheet on Grand Lake St. Mary's Algal Toxins recommended no human contact with the Lake last summer because of HABs and the potential harmful human health impacts.

^{vii} NOAA, 2009 Factsheet on HABs