The predominant form of nitrogen in Minnesota River Basin streams is nitrate. Like phosphorus, nitrate can stimulate excessive levels of algal growth in streams. In recent years, this problem has been particularly severe in the Gulf of Mexico where development of a hypoxic zone (hypoxia means “low oxygen”) has been linked to elevated nitrate levels carried to the Gulf by the Mississippi River. Reduced oxygen levels in the hypoxic zone, brought on by decomposition of algae, have damaged the shellfish industry and continue to threaten the aquatic ecosystem of the Gulf Region. The Minnesota River has been identified as a substantial contributor of excess nitrate to the Mississippi River and the Gulf Region.

Nitrate-Nitrogen (nitrate-N) concentrations vary substantially across the Minnesota River Basin. Nitrate-N levels are lowest in the western part of the Basin, elevated in the central portion and greatest in agricultural watersheds in the most easterly part of the Basin. The watersheds shown in orange and red have concentrations that exceed the drinking water standard (10 mg/L). Most of the nitrate-N in the Minnesota River comes from fertilizer, manure, and agricultural drainage.

This image shows the hypoxic zone (sometimes referred to as the dead zone) in the Gulf of Mexico. Reds and orange indicate areas of low oxygen concentration. In July 2008, the hypoxic zone was mapped at 7,988 square miles—the second largest on record since measurements began in 1985. This is larger than the land area of the state of Massachusetts.

The presence of indicator bacteria (E. coli and fecal coliform) indicate the potential presence of disease-causing organisms. Indicator bacteria levels are elevated across the entire Basin with greater than 90 percent of monitored streams exceeding health standards for bacteria. Data shows the highest concentrations in the eastern portion of the Basin (see map). Many streams require an 80 to 90 percent reduction in levels to meet standards.

For more information, visit the Minnesota River Basin Data Center website: [http://mrbdc.mnsu.edu](http://mrbdc.mnsu.edu)