How Clean is the River?

UMRBA
Upper Mississippi River Basin Association

Jeff Janvrin, Wisconsin DNR

A 30-YEAR EVALUATION OF WATER QUALITY IN THE UPPER MISSISSIPPI RIVER SYSTEM

EXECUTIVE SUMMARY

The Upper Mississippi River System is a nationally significant economic, environmental, social, and cultural resource that requires balanced, integrated, and collaborative management. **How Clean is the River?** provides valuable insights for those who manage this resource and all who rely upon it.

A product of the Upper Mississippi River Basin Association (UMRBA), **How Clean is the River?** is the result of a second, collective effort to understand water quality trends in the System, which includes Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The first report was published in 1989 and led UMRBA to focus its work on heavy metals and sediment. This new analysis includes water quality data from 1989 to 2018 and supports UMRBA's current focus on nutrients and chloride.

Based on review of 19 water quality parameters grouped into four categories—nutrients, heavy metals, salts and pathogens, and physical—the new analysis finds that **water quality between 1989 and 2018 has generally improved, while there are pollutants of concern that have varying trends**.

Decreases in legacy heavy metals, sediment, and phosphorus, for example, show that **public and private investments in managing water quality are beneficial and that the approaches taken have been effective**.

Nitrogen, chloride, and contemporary or emerging pollutants of concern, however, are rising and require a five-state approach to develop effective solutions.

How Clean is the River? underscores the value of coordinated and comprehensive water quality monitoring for the System. In combination with UMRBA's Interstate Water Quality Monitoring Program, the report's findings will allow the five states to more effectively identify problem areas, target management actions, and measure progress in protecting water quality.

See the report at umrba.org/howcleanriver.
To learn more, contact **Lauren Salvato,** *UMRBA's Policy and Programs Director, at* lsalvato@umrba.org

The **Upper Mississippi River Basin Association** is the Governor-established forum for discussion, study, and evaluation of Upper Mississippi River-related issues of common concern to the five states.

Representing its member states of Illinois, Iowa, Minnesota, Missouri and Wisconsin, UMRBA:

- **Facilitates cooperative planning and coordinated management** of the region's water and related land resources.
- **Creates opportunities** for the five states and federal agencies to exchange information.
- **Develops regional positions** on river resource issues and serves as an advocate of the five states' collective interests before Congress and the federal agencies.

KEY FINDINGS:

What's in the Report?

How Clean is the River? suggests progress in the Upper Mississippi River System—and frames challenges and questions for the future.

Nutrients (Total Phosphorus, Total Nitrogen, Inorganic Nitrogen, Ammonia, Chlorophyll-a)

Although phosphorus reduction goals are yet to be met, phosphorus continues to decline in the System due to successes of the Clean Water Act. Ammonia, a fraction of total nitrogen, is also generally decreasing. Ammonia can be toxic to aquatic life.

These are important improvements in water quality because excess nutrients cause algae overgrowth, which can harm water quality, food resources, habitat, and decrease oxygen concentrations, all which have an effect on aquatic life and outdoor recreation opportunities.

Excess nutrients in the river originate from various sources, including agriculture, stormwater runoff, and wastewater. Achieving nutrient reductions requires a multifaceted approach.

Even with these successes, there are some concerns. Despite efforts to reduce nitrogen and phosphorus pollution to the Gulf of Mexico Hypoxic Zone, total nitrogen is increasing. Nitrogen originates from nonpoint sources, such as urban and agricultural runoff, or pollution runoff from a broad area. The Hypoxic Zone receives attention nationwide because of its low oxygen levels—conditions that are not suitable for aquatic life to survive. Local problems with excess nutrients cause the overgrowth of algae and result in diminished recreational opportunities.

Heavy Metals (Aluminum, Arsenic, Lead, Zinc, Copper, Mercury, Cadmium)

Significant successes have resulted from implementation of pollution reduction efforts under the Clean Water Act. There has been a general decrease in heavy metals, which are both naturally occurring from underlying geology and human-made from manufacturing and industrial processes.

Still, while well below the maximum contaminant level set by the federal Safe Drinking Water Act, lead is increasing in Pools 15 and 17 near the Quad Cities in Illinois and Iowa and New Boston, Illinois, respectively. The reasons for this are not completely understood and warrant investigation and research.

Salts and Pathogens (Chloride, Sulfate, Fecal Coliform)

Chloride increased at least 35% in the System. The primary source is salt used to de-ice roads during winter. While road salt makes transit safer for people, too much of it is toxic to aquatic life that live in water bodies. Other dominant chloride sources include household water softeners and fertilizers.

Physical (Conductivity, Total Suspended Solids, pH, Dissolved Oxygen)

There have been decreases in total suspended solids of at least 40% across the System. Dissolved oxygen has also decreased. These reductions allow for light to reach aquatic vegetation, increasing its growth and thereby providing habitat and food for aquatic organisms.

Left: USFWS; right: Preston Keres, USDA

UMRBA
Upper Mississippi River Basin Association
7831 East Bush Lake Road, Suite 302
Bloomington, Minnesota 55439
Phone: 651-224-2880 | umrba.org