

How Clean is the River?

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

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,
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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

Phosphorus continues to decline in the Upper Mississippi River System largely due to successes from nonpoint source such as soil health management. Reduction measures at point sources throughout the System have also led to these improvements. 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, work remains to further reduce nitrogen and phosphorus loading to the Gulf of Mexico Hypoxic Zone. Overall the nitrogen trend is weak in confidence, but there are select areas in the System that are increasing and decreasing in concentration (see the Report for additional details). 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

Significant successes have resulted from many pollution reduction efforts under the Clean Water Act from State-driven activities such as permitting, watershed improvement, and monitoring. Heavy metals 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 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

There have been decreases in total suspended solids of at least 40% across the System. Dissolved oxygen has increased. These increases 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

