

SYSTEM DIMENSIONS	CHEMICAL AND PHYSICAL	BIOLOGICAL COMPONENTS	HUMAN USES
Extent Pattern	Nutrients, Carbon, Oxygen Contaminants Physical	Plants and Animals Communities Ecological Productivity	Food, Fiber, and Water Recreation and Other Services

Phosphorus in Lakes, Reservoirs, and Large Rivers

What Is This Indicator, and Why Is It Important? This indicator reports the average concentration of phosphorus in lakes, reservoirs, and large rivers. Total phosphorus concentrations are reported in four ranges: below 20 parts per billion (ppb), from 20 to 50 ppb, from 50 to 100 ppb, and 100 ppb or more.

Increased phosphorus concentrations are associated with increased algae growth in lakes, reservoirs, and large rivers. Algae are tiny aquatic plants that sustain the growth of most other aquatic life forms; when overabundant, however, they can contribute to reductions in dissolved oxygen, cause fish kills, and cause shifts in the number and type of fish and other aquatic animals. Algae blooms can also harm aesthetic and recreational values.

Lakes and reservoirs with phosphorus concentration of less than 20 ppb are generally free of negative effects; higher concentrations are accompanied by increasing effects. The U.S. Environmental Protection Agency’s (EPA) recommended goal for preventing excess algae growth in streams that do not flow directly into lakes or other impoundments is 100 ppb. In 2000, EPA took steps to facilitate development of regional phosphorus criteria, but the regional criteria have not yet been adopted. There is no federal drinking water standard for phosphorus.

Why Can’t This Entire Indicator Be Reported at This Time? There are no datasets that are known to provide representative phosphorus values for the nation’s lakes and reservoirs. EPA’s STORET data archive might serve as a source of data, but considerable research would be required to determine whether the samples reported there are representative of overall conditions.

This report also includes indicators for total phosphorus concentrations in farmland streams and urban and suburban streams (pp. 96 and 187).

What Do the Data Show? About half of all river sites tested had phosphorus concentration levels of 100 ppb or higher. About one-fourth of the tested sites had concentrations below 50 ppb. Since some areas have higher natural levels of phosphorus than others, interpreting this indicator will become much easier when trend information is available.

The technical note for this indicator is on page 248.

