

## Phosphorus

Human Health Risk	—
Ecological Risk	M
Socioeconomic Risk	M - H

Phosphorus, or phosphate, is an essential nutrient required for plant growth. Natural concentrations of phosphorus in freshwater environments support an ecologically balanced aquatic community. Excessive amounts of phosphorus result in an overabundance of plant and algae growth in lakes, a condition known as eutrophication. Phosphates enter New Jersey lakes from incoming streams which have been affected by fertilizer runoff from farms and lawns, discharges from sewage treatment plants and septic systems, and possibly other sources. Eutrophic lakes are characteristically cloudy and choked with weeds and algae, making them less able to support healthy populations of fish and other wildlife. Recreational and aesthetic value is also affected, potentially affecting lakeshore property values.

### What's at risk?

Freshwater ecosystems statewide are at risk, although lakes are typically more vulnerable than streams or rivers. More than 100 lakes in New Jersey are classified as eutrophic, potentially affecting property values and local recreation opportunities.

### What are the ecological impacts in New Jersey?

Eutrophic lakes are found throughout the state, and it is difficult to reverse a eutrophic trend once it has become established. Excess phosphorus stimulates plant growth, changing the ecological balance of plants and animals living in and near an affected lake. Eutrophication occasionally results in serious damage to ecosystems, with significant changes in habitat and wildlife populations. More frequently, habitats remain intact, but the distribution and abundance of some species are reduced. Increasing rates of development have the potential to increase phosphorus input, but there is also a potential for decreased phosphorus levels if regulatory efforts are strengthened or if agricultural and residential uses of fertilizers decline in the future.

### What are the socioeconomic impacts in New Jersey?

The loss of water clarity and negative impacts on the overall health of lakes is considered a moderate aesthetic impact. Economic models suggest that the loss of amenities suffered as a result of eutrophication in New Jersey could be valued at approximately \$20 million. Reductions in lakefront property values, should they materialize, would not create much of an impact at the state level, but could be locally significant where a large proportion of property is located on an affected lake. Eutrophication could also affect jobs in the tourism or recreation sectors, but even worst-case estimates demonstrate that this would be a very small impact.

### What's being done?

Phosphates were banned from detergents in 1972. The federal Clean Water Action Plan specifies that states establish water quality standards for nutrients based on the characteristics of water bodies and the ecoregions where they are located. Department of Environmental Protection monitors nutrient levels in lakes and coordinates water quality planning for achieving state water quality goals, including reducing nutrient loads to streams, rivers, and lakes.