

## Phosphorus: The Good and the Bad

Only when Lake Erie, one of the most important freshwater lakes in the world, was on the verge of a disastrous deterioration due to artificial fertilization from polluted wastewater did scientists and the general public alike finally become aware of a serious problem brewing in our nation's waterways: excess phosphorus was turning clear, pristine lakes into suffocated, unsightly harbingers of an impending ecological crisis.

That was in the 1960s. Today, it is estimated that around 50% of lakes in North America, including some of the lakes and streams in the Great Swamp watershed, are afflicted with the same problem, despite 50 years of research and advocacy. Soon, however, consumers in the United States will have the chance to start reversing this trend.

The over-fertilization of water that permits the rampant and uncontrollable growth of algae and bacteria that overrun their ecosystems and starve other water-borne species of oxygen is known as eutrophication. Increases in phosphorus, an element critical to all life, are considered responsible for eutrophication in freshwater; as phosphorus is a limiting nutrient in freshwater systems, a relatively small increase its concentration can sustain a tremendous algal bloom – one of up to 700 times the weight of the phosphorus nurturing it. The majority of phosphorus that entered Lake Erie in the 1960s in wastewater came from laundry detergents, of which the element was considered a necessary and effective component. However, a heated battle between environmental advocates and the detergent industry in the 1970s led to the industry relying less on phosphorus as an ingredient in the United States by the 1980s and abandoning it by the 1990s, which constituted a major victory for environmental groups and, many thought, mercy for Lake Erie.

But eutrophication did not abate as a result of this radical change; in fact, there was still a significant source of phosphorus in the wastewater of households across the country: dishwasher detergents. Left out of the conflict of the 1970s, dishwasher detergents can nevertheless have up to 9% phosphate content, while rinse-aids can contain up to 20% phosphate. With dishwashers in almost every household, the aggregate phosphorus in our water from dishwasher detergent is staggering and, along with plant fertilizers, is one of the primary sources of phosphate pollution today.

However, thanks in large part to successful grassroots efforts to ban phosphates locally in Spokane, Washington, the soap and detergent industry has finally agreed to eliminate phosphorus from dishwasher detergents in the U.S. starting in July 2010. As with laundry detergent, research has shown that phosphorus content is not the most important factor in the effectiveness of dishwasher detergent, so your dishes will remain as clean as ever. So look out for phosphate-free products that are already available, use smaller amounts of fertilizer on your lawn and in

your garden, and prepare to make the switch to no-phosphate dishwasher detergents everywhere this summer.

For further basic information about eutrophication, visit [Wikipedia](#). For more in-depth research, try starting with the USGS' [Toxic Substances Hydrology Program](#) and [National Water-Quality Assessment Program](#).

#### References

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