Phosphorus Based Nutrient Management: Essential for Clean Water

Fact: Excessive phosphorus is a key culprit in the growth of algae and nuisance plants in freshwater aquatic ecosystems.[1]

There are 17 nutrients essential for plant growth and production. An insufficient or excess supply of one or more can have an adverse effect on plant growth, maturity, and yield.

Because limited phosphorus often controls the growth of aquatic plants and algae, adding phosphorus to waterways results in excessive blooms of algae and rampant growth of other aquatic plants. These blooms block out light needed by underwater plants, depletes critical oxygen levels, and degrades recreational experiences.

Fact: Eutrophication (premature aging) of ponds and lakes and nuisance blooms of algae in rivers and streams is caused by excess phosphorus inputs from agriculture and urban areas.

Eutrophication is the premature aging of ponds and lakes that occurs when production of plants and algae increases. (Fig. 1) *Cultural eutrophication* is the term that describes eutrophication caused by human activities that add phosphorus to waterways.

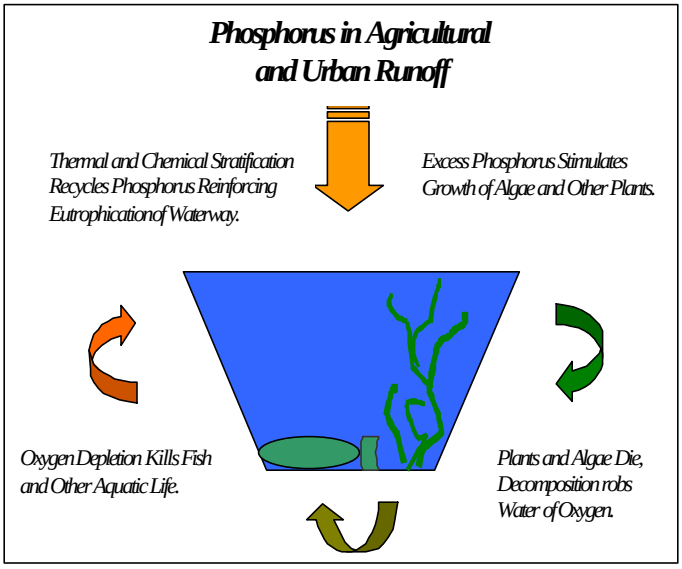

Figure 1. Effects of Phosphorus on Freshwater Aquatic Ecosystems.

In general, biologically active forms of phosphorus do not dissolve in water and do not travel readily through soils into groundwater, although some leaching through soils can occur.

Common forms of phosphate are often attached to organic and inorganic molecules such as plant materials (e.g. yard clippings), soil and clay. As a result, phosphorus is likely to enter waterways when it is attached to soils or other organic materials coming from croplands, feedlots or turf or when fertilizers and animal wastes enter water directly.[2]

[1] Horne, A.J. and C.R. Goldman. Limnology 2nd Edition, McGraw-Hill, New York. 1994.

[2] http://www.agnr.umd.edu/users/agron/nutrient/Factshee/Phosphorus/Eutrop.html

Fact: Controlling soil levels of phosphorus is essential to controlling eutrophication.

According to the US EPA, "the rapid growth and intensification of crop and animal farming … has created regional and local imbalances in phosphorus inputs and outputs. On average, only 30 percent of the fertilizer and feed phosphorus input to farming systems is output in crop and animal produce."

EPA also notes that "[c]ontinual long-term application of fertilizer or manure at levels exceeding crop needs will increase soil phosphorus levels. In many areas of intensive, confined animal production, manures are normally applied at rates designed to meet crop Nitrogen requirements…. This often results in a buildup of soil test phosphorus above amounts sufficient for optimal crop yields."

Fact: Currently, over 50 percent of Wisconsin soil samples tested had excessive levels of phosphorus.[3]

Unfortunately, Wisconsin relies upon a nitrogen-based nutrient management system that allows continuing applications of phosphorus to soils well above crop needs.

Tuesday, December 11, 2001

[3] U.S. EPA Agricultural Phosphorus and Eutrophication, USDA Agriculture Research Service ARS – 149, July 1999.

Fact: Reducing excess phosphorus applications to agricultural lands and controlling erosion is the basis for successful management of aquatic ecosystems.

The proposed rules to control polluted runoff would require crop and livestock producers who apply manure or commercial fertilizer to create and follow a nutrient management plan. The plans use soil tests to determine the amount of fertilizer that needs to be applied.

Problem: The proposed rules do not require plans to manage for phosphorus. Despite the fact that phosphorus is known to be the most problematic nutrient for Wisconsin's freshwaters, it is conspicuously absent from the rules.

What can you do to help?

Please write a letter to the Agriculture, Trade, and Consumer Protection Board encouraging them to include phosphorus in the rule for nutrient management planning.

Department of Agriculture Trade and Consumer Protection Board
John Malchine, Chairman
P.O. Box 8911
Madison, WI 53708

For more information, please contact Steph Adams, Clean Water Coalition coordinator.
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