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Phosphorus-free Fertilizer Regulations

A number of communities are enacting phosphorus-free fertilizer regulations. The reason for these regulations is that the community leaders feel that homeowners are a major source of phosphorous pollution of their water systems. Too much phosphorous in the water results in an over-abundance of algae growth in the water which lowers the oxygen levels, introduces poisonous toxins and results in fish kill.

While it is true that phosphorus can cause increased algae growth, whether the algae growth is the result of increased phosphorous levels, and, if it is from increased phosphorous levels, is the source of that phosphorus from lawn fertilizers is questionable and still being debated.

In the 1960s when the Great Lakes were being overwhelmed by algal blooms, legislation was put in place to ban phosphorous from laundry soaps. Many states banned phosphorus in laundry soaps, yet they exempted dishwashing machine detergents. In the 60s dishwashing machines were a luxury and few homes actually had them. Yet today, very few homes are without dishwashing machines and are pumping great amounts of phosphorous into our sewage systems which do not adequately treat for this.

Another factor is that in the early 60s few homeowners did much to improve their lawns other than to keep them mowed. The lawn care industry as we know it today really didn't come into wide scale acceptance until the mid 70s, yet the Great Lakes were being smothered in algae long before lawn care interest became widespread! These algae blooms of the 60s could not be blamed on lawn fertilizer runoff.

Today, the lawn care industry is indeed widespread and a lot of fertilizer is now being spread across the nation. And yes, there maybe some runoff, but not as most people considering this legislation think.

University experts believe only a small percentage of runoff originates from consumer lawns. A recent study conducted by Texas A&M University on the "Evaluation of Resource-Efficient Landscape Plants to Reduce Contaminants in Urban Runoff" found that "The concentration of nitrate and orthophosphate in runoff was consistently very low, suggesting that fertilizer usage in residential landscapes poses little water quality risk."*

Phosphorus attaches itself to soil particles. It is this process that enables plants to absorb phosphorus. Once attached, it remains until extracted by the plants. When there's excess

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water, it doesn't just float away and into the streams. What does float away are soil particles. Ever notice how streams always look muddy after a heavy rain? That is soil erosion taking place. Whatever phosphorus is attached to those particles is indeed entering the water system.

Turf grass is a great filtering agent that prevents a lot of runoff. Runoff is when during heavy rains, water actually runs through the grass and into the street and then into the storm sewer system and then into the local river systems. Turf grass helps hold the soil in place preventing muddy runoff. In fact, the EPA recommends installation of grassy areas around farm fields to prevent soil runoff.

The next time you have a heavy rain and there's enough water to run through the grass and over the curb, take a good look at it. Is it muddy? Most likely it's not. The reason is that turf grass does a very good job at keeping soil in place.

Banning phosphorus in lawn fertilizers will, in time, weaken the turf grass and reduce its ability to filter the water and hold the soil in place. This will only increase the amount of muddy runoff and increase phosphorus levels in the water.

Much of this prohibitive regulation is based on the "precautionary principle." This means that the regulations are meant to prohibit things that might cause harm to our environment, not that it does cause harm, not because there is scientific evidence that proves there is an effect and cause, but only a fear that it might cause harm.



Phosphorus runoff comes from a variety of sources other than lawn fertilizers. These sources can come from a number of non-lawn fertilizer related items such as the leaching of organic phosphorus from dead vegetation during the winter, laundry detergents and dishwashing detergents (*dishwashing detergents were exempt from the phosphate bans of the 70s in many states*) and the phosphorus content in goose excrement.

Canadian geese are everywhere. Studies have shown that one adult goose will excrete 0.86 pounds of phosphorus a year, over twice the amount of organic phosphorus (0.42 pounds) in runoff from an acre of unfertilized turf, and almost three times the amount of organic phosphorus (0.3 pounds) in runoff from an acre of fertilized turf.

Goose droppings are easy to understand because we see them everywhere. Other large sources come from our pets and ourselves. Pet and human excrement is extremely high in phosphorus. Unless waste treatment plants are specifically set up to remove phosphorus, these waste products get flushed downstream.

Another source is from farms. Farmers typically apply fertilizers in the spring on either tilled, or untilled ground. Because of the abundance of rainfall in the spring when crops have not yet developed, there is considerable runoff, carrying with the water much of the phosphorus. I'm not implying that farmers shouldn't fertilize their fields, they should, otherwise crop production would fall. The reason the United States is the major food provider for the world is because our farmers are so productive and part of that high production level is because of the use of fertilizers. Farmers should be encouraged to create strips of natural vegetation along waterways to absorb excess phosphorus that may get washed away during heavy rains.

Another cause is based on the fact that we have cleaned up our water. Our rivers, streams and lakes are cleaner/clearer today than they were in the 1960s. The cleaner/clearer water allows sunlight to penetrate deeper into the lakes, possibly enabling algae to thrive at greater depths and thus in greater number than before. This can be clearly observed today in the Great Lakes where the *zebra mussel* and its cousin, the *quagga mussel* have reached epidemic proportions.

One of the results of this mussel infestation is that the water in the Great Lakes has become quite clear. In fact, the water is clearer now than perhaps it has ever been, yet algae blooms have been on the rise since the mid-1990s in parts of all the Great Lakes

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except Lake Superior where the water is too cold for algae to thrive. These increases in algae blooms are not from increases in phosphorous. According to John Berges, a biologist with the University of Wisconsin at Milwaukee's Great Lakes Water Institute, "*Phosphorus levels are lower in the lakes than they were in the 1960s.*"

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Reducing the use of phosphorus in lawn fertilization will undoubtedly have a negligible effect on our streams. Most in favor of the ban, site that most soils in their area already have an abundance of phosphorus and additional phosphorus is not needed. If that were the case, then might not that be the cause of having too much phosphorus in the water?

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Phosphorus is an essential element in fertilizers for lawns, gardens and food crops. Wise use of that chemical, like any chemical should be followed. The reason most communities leader site that additional phosphorus isn't necessary is because they don't see an immediate change in lawns that use phosphorus-free fertilizers. Phosphorus is necessary for vigorous root development. Remove that source and in time, the lawn's root system will begin to suffer. It will remain green for years. What it won't do is remain vigorous.

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I do agree with one recommendation from these community leaders: *have your soil tested regularly*. This is the only way you'll know for sure what your soil needs or doesn't need.

There is no substitute for phosphorus. It doesn't matter if you obtain a bag of fertilizer with phosphorus or use composted chicken manure in an organic program. Phosphorus is phosphorus, no matter where it comes from.

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We need to act wisely and not make assumptions that lawn care products are the primary cause, the secondary or even tertiary cause for foul smelling ponds and lakes. It's very easy to point a finger at one industry and blame them for everything when the real causes are left in the shadows to continue the process. What happens when every lawn goes phosphorus free? Our waterways will be worse off, and our regulators will be pointing fingers at violators of their phosphorus regulation as the cause.

If your area is one of those that has enacted phosphorus bans, you'll want to purchase lawn fertilizers in bags marked with a "0" for the center number, i.e. 22-0-15. This product is phosphorus free.

*Reinert, J.A., S.J. Maranz, B. Hipp and M.C. Engelke. 2005. Evaluation of Resource-Efficient Landscape Plants to Reduce Contaminates in Urban Runoff. Am. Chem. Soc. RISE Symposium on Water Quality. Washington D.C. 12-13 Oct 2005. (In Press).

Additional Sources:

[Michigan Environmental Council Report 6-2006](#)

[Phosphorus, Urban Runoff & Aquatic Weeds](#)

[Illinois EPA- Canadian Geese](#)

[Should Phosphorus Be Banned from Lawn Fertilizer by Dr. Wayne Kusow](#)

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