Phosphorous Technical Fact Sheet

Phosphorus Pollution & Control in Wisconsin

Phosphorus pollution fuels algae blooms in Wisconsin waters, contributes to smelly discolored water, robs needed oxygen from waters, threatens fish life, and may become toxic to humans and animals. After years of data collection and discussions with environmental, municipal and industrial stakeholders, the Wisconsin Department of Natural Resources ("WDNR") in late 2010 adopted water quality standards to protect Wisconsin lakes and streams from phosphorus pollution. Since 1992, Wisconsin municipal and industrial facilities have controlled phosphorus discharges from their facilities to a 1 mg/L effluent standard as required by the international Great Lakes Water Quality Agreement. But despite these efforts, phosphorus pollution remains one of the biggest water quality concerns in Wisconsin. As a result, water quality standards for receiving waters themselves were necessary for Wisconsin to further control phosphorus pollution that can harm property values and recreational businesses and cause our waters to turn into a green, gunky soup of algae and bacteria, including toxic algae that can sicken swimmers and pets and harm drinking water sources. These new phosphorus water quality standards require WDNR to impose effluent limits more stringent than the longstanding 1 mg/L limit if necessary to protect rivers, lakes and streams from phosphorus pollution.

Phosphorus Control in Surrounding States

Region 5 of the United States Environmental Protection Agency ("USEPA") oversees water pollution programs in several Great Lakes states, including Illinois, Indiana, Michigan, Minnesota and Ohio. Under the Great Lakes Water Quality Agreement, all states within USEPA Region 5 require facilities of a certain size that discharge wastewater to the Great Lakes Basin to meet a 1 mg/L phosphorus effluent limit. Most USEPA Region 5 states also impose a comparable, or more stringent, phosphorus limit on facilities outside the Great Lakes Basin.

In addition all USEPA Region 5 states have adopted standards that prohibit excessive algal growth and other objectionable conditions associated with phosphorus.[1] In Michigan, over 70 water pollution permits have been issued with limits more stringent than 1 mg/L to keep waters free from algal growth.

While Wisconsin should be proud to be the first state in USEPA Region 5 to adopt statewide numeric phosphorus water quality standards for all lakes and flowing waters within its boundaries, all USEPA Region 5 States have adopted numeric phosphorus standards for a subset of their waters. According to the USEPA, Minnesota, Illinois, Indiana, Michigan and Ohio have all adopted phosphorus water quality standards for the open waters of the Great Lakes that they border.[2] Illinois and Minnesota have adopted statewide phosphorus water quality standards that apply to lakes and reservoirs, and most USEPA Region 5 States have signaled their intent to adopt statewide water quality phosphorus standards for lakes and rivers in the next year or two.[3]

[1] *See* Phosphorus Standards in Region 5 States.
[2] State Adoption of Numeric Nutrient Standards (1998 – 2008) United States Environmental Protection Agency Office of Water EPA-821-F-08-007, December 2008, ("EPA 2008 Summary")
[3] Id.

Governor Walker's Budget Proposal to Roll Back Phosphorus Pollution Controls

Despite decades of scientific study and analysis establishing the negative water quality impacts associated with phosphorus pollution, Governor Walker's budget proposes to amend state statutes to relax or eliminate phosphorus water quality protections in Wisconsin. Budget bills SB 27 and AB 40 would prohibit WDNR from imposing the long-standing 1 mg/L phosphorus effluent limit in water pollution permits, unless certain other Great Lakes states - Illinois, Indiana, Michigan, Minnesota or Ohio - also impose such a limit.[4] However, all the listed states, like Wisconsin, are subject to the Great Lakes Water Quality Agreement and impose similar, if not identical, phosphorus limits in water pollution permits for specified dischargers to specified waters.[5] While some of the listed states do not require limits for as many facilities as Wisconsin does, the Governor's proposed rollback may not weaken phosphorus limits for the majority of Wisconsin facilities, because facilities currently meeting the 1 mg/L effluent limit may be barred under the Clean Water Act from increasing phosphorus pollution above currently attained levels.[6]

In many cases, the standardized 1 mg/L effluent limit will not be the most stringent phosphorus limit in a water pollution permit because more stringent water quality based limits will be necessary to ensure that the recently adopted phosphorus water quality standards are not exceeded and that water quality is protected. In the 2011-2013 budget proposal, Governor Walker, closely mimicking Wisconsin Manufacturers and Commerce's phosphorus regulation reform initiatives,[7] "recommends prohibiting the department from promulgating or enforcing a phosphorous administrative rule if the phosphorous rule establishes effluent limitations that are more stringent than the effluent limitations established by any of the states of Illinois, Indiana, Michigan, Minnesota, or Ohio."[8] The Governor's recommendation could signal his intent to prohibit WDNR from imposing water quality based phosphorus limits necessary to attain Wisconsin's phosphorus water quality standards adopted in 2010.

If Governor Walker's intent is to prohibit the WDNR from imposing these more stringent water quality based limits necessary to meet the newly adopted phosphorus standards, his proposal invites additional scrutiny and oversight from the USEPA, creates uncertainty, and leaves water pollution permits vulnerable to challenges by the USEPA or concerned individuals.

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[4] SECTION 2931. 283.11 (3) (am) 2. of the statutes is created to read:

a. In this subdivision, "region" means the geographic region composed of the states of Illinois, Indiana, Michigan, Minnesota, or Ohio.

b. The department may not promulgate or enforce any rule establishing an effluent limitation for the discharge of phosphorous if that effluent limitation is more stringent than the effluent limitation for the discharge of phosphorous that is established by any state in the region.

[5] *See* "Phosphorus Standards in Region 5 States" for specific 1 mg/L requirements.

[6] 33 U.S.C. § 1342(o).

[7] **WMC Reform Initiatives 2011-12: Phosphorous Regulation** – Prohibit the DNR from implementing a water quality criteria for phosphorous or nitrogen until all states located in the Environmental Protection Agency (EPA) Region 5 and EPA Region 7 have (1) enacted similar water quality criteria for each nutrient; and (2) have enacted a similar implementation mechanism to establish water quality based effluent limits for point source dischargers. http://www.wmc.org/PDFfiles/Reform-Initiatives-handout_2011-2012.pdf

[8] http://www.doa.state.wi.us/debf/docview.asp?budid=40

Because WDNR is implementing a federal program - the Clean Water Act - Wisconsin's adoption of phosphorus standards and establishment of water quality based phosphorus limits in water pollution permit is subject to USEPA oversight. State programs are subject to EPA approval, and repealing the administrative rules establishing Wisconsin's numeric phosphorus standards would not eliminate their applicability in Wisconsin. Because USEPA has "approved" the recent Wisconsin phosphorus water quality standards as compliant with the Clean Water Act, WDNR must impose phosphorus effluent limits in water pollution permits to meet these standards and protect against phosphorus pollution.[9] These USEPA approved phosphorus standards are applicable until USEPA approves a new phosphorus standard or imposes a more stringent phosphorus standard.[10] Since 1998 USEPA has urged states to adopt water quality standards for phosphorus and Wisconsin may not weaken or eliminate the phosphorus standard without EPA approval.[11]

USEPA further expects all states that are lacking numeric phosphorus standards to impose phosphorus limits in water pollution permits if necessary to meet narrative standards prohibiting excessive growth and objectionable conditions resulting from phosphorus pollution.[12] If Wisconsin rolls back the water quality based phosphorus standards, USEPA will likely require WDNR to impose phosphorus limits in water pollution permits where necessary to prohibit objectionable deposits on the shore or in the bed of a body of water, of scum, unsightliness or color, odor, or taste problems. Such limits are more difficult to calculate than limits based on the phosphorus water quality standards and are likely to create uncertainty for the permittee.

If the Governor simply chooses to forgo imposing water quality based phosphorus limits in water pollution permits where such a limit is necessary to meet the phosphorus water quality standard and keep waters free from nuisance conditions, USEPA may object to the issuance of the permits.[13] Wisconsin is prohibited from issuing a permit that USEPA has objected to, and where the objection cannot be resolved to USEPA's satisfaction, USEPA may gain exclusive authority to issue that permit.[14] If Wisconsin repeatedly fails to impose phosphorus limits necessary to meet phosphorus water quality standards and keep waters free from objectionable conditions, USEPA may even assume total water pollution permitting authority – if this happens USEPA, not WDNR, will issue all water pollution permits to Wisconsin facilities.[15]

Under the Clean Water Act, EPA generally leaves decisions related to pollution standards to the states –because states are more familiar with current water quality, uses of instate waters, and pollution problems within the state. It was absolutely necessary for Wisconsin to adopt water quality based phosphorus standards because a significant number of waters within the state are not useable due to phosphorus pollution. While other states may not experience as severe water

[9] 40 C.F.R. § 122.44(d)(1); 40 C.F.R. § 131.21(c)
[10] 40 C.F.R. § 122.4(d)(1); 40 C.F.R. § 131.21(c)
[11] 40 C.F.R. § 131.21.
[12] 40 C.F.R. § 122.44(d)(1), January 21, 2011 Letter from US EPA Region 5 to Illinois EPA.
[13] 40 C.F.R. § 122.44(d)(1), Wis. Stat. §§ 283.13, 283.31; 33 U.S.C. § 1342(d).
[14] 33 U.S.C. § 1342(d).
[15] 40 C.F.R. §§ 123.63-.64.

quality problems associated with phosphorous pollution, the surrounding Region 5 states will soon determine what water quality standards are necessary within their borders to protect water quality and will impose water quality based phosphorus limits necessary to protect their unique water interests in all their water pollution permits. The states identified in Governor Walker's budget proposal all: 1) require similar 1 mg/L phosphorus effluent limits for specified municipal or industrial dischargers, 2) have submitted plans to adopt water quality based phosphorus criteria and are moving towards adoption of those criteria; and 3) are required to impose phosphorus limits necessary to protect against narrative standards prohibiting objectionable conditions related to phosphorus pollution.

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Phosphorus Water Quality Criteria: Facts and Background

How Does Phosphorus Pollution Harm Wisconsin Waters?

Every summer, Wisconsin communities and tourism-related businesses cope with the detrimental effects of nutrient pollution, including foul, smelly water, nuisance algae blooms fish kills, and health threats, such as toxic algae and contaminated drinking water.

Phosphorus pollution caused over 30% of impairments on Wisconsin's 2008 impaired waters list and contributes to downstream water quality problems, such as the huge dead zone in the Gulf of Mexico that threatens numerous human and ecological communities.

Examples from 2009:

- Beaches in Madison, WI closed for a "combined total of 90 days" mostly due to algae.[16]
- At least 3 dogs reportedly died due to nutrient induced toxic blue-green algae.
- The Wisconsin Department of Health Services received 41 health complaints related to blue-green algae, including rashes, sore throats and eye irritation.[17]

What are Water Quality Standards?

The Clean Water Act requires Wisconsin to identify desired water quality goals for our lakes and streams so that the waters are "fishable and swimmable." These "water quality standards" set the levels of pollution that streams and lakes can withstand without harming fish, human health, recreation, or wildlife. These standards include both the designated use of a water (such as the protection of a cold or warm water fishery), and specific water quality "criteria" established to protect that use. Phosphorus water quality criteria set pollution levels that, if met, will protect the water's designated use. These numbers were developed by scientists at Wisconsin DNR (working with other scientists) by evaluating the effects of phosphorus pollution on Wisconsin

[16] Janie Boschma, *Algae, Bacteria Keep Madison Beaches Closed More Than Usual*, Wis. St. J., July 25, 2009

[17] *Stinky Blue-Green Algae Blamed for Dog Deaths*, Sept. 27, 2009,

rivers, lakes and streams. Waters having more phosphorus than these levels often had excessive algal growth, toxic cyano-bacteria or other serious problems. Of course, there are some water bodies with levels lower than these that had problems and some with more phosphorus that did not, but WDNR found that allowing more phosphorus than the levels chosen was likely to be bad for aquatic life, recreation or drinking water.

Why Are Phosphorus Standards Important in Wisconsin?

More than a decade ago the USEPA, recognizing the severity of nitrogen and phosphorus pollution in the United States, directed states to develop numeric criteria for those pollutants. Adoption of phosphorus water quality criteria will allow for:

- easier and faster development of clean up plans for impaired waters;
- quantitative targets to support trading programs;
- easier issuance of protective water pollution pmits;
- increased effectiveness in evaluating success of runoff management programs; and
- measurable, objective baselines against which to measure environmental progress.

What will numeric phosphorous standards accomplish?

Generally permits for industrial and municipal sources of pollution will have to be written with limits that prevent rivers, lakes and streams from having more phosphorus than the criteria established. These criteria will also be used in writing cleanup plans for Wisconsin rivers, lakes and streams that are already suffering from phosphorus pollution.

How Important is Clean Water in Wisconsin?

Wisconsin relies heavily on recreation-based tourism for income, ranking as the number two-ranked destination for fishing in the United States, with over 1.4 million licensed anglers.[18] DNR estimates that fishing in Wisconsin creates over 30,000 jobs in the state and $2.75 billion in economic benefits annually.[19]

Many Wisconsin residents pay premiums to live on or near waterways. Studies show that increased water clarity increases lakeshore property values, and property tax income. One study from Vilas County, Wisconsin estimated that an additional 30 cm of water clarity resulted in a 3.6% increase in lakefront property values.[20] Another study of lakefront property values in Minnesota's Mississippi Headwater Region found that each additional meter of water clarity resulted in an average increase in price of $45.64 per frontage foot, for an aggregate increase in property values of $5,884,200 in the region.[21]

What Are the Costs Associated with Meeting the Proposed Phosphorus Standards?

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[18] *2008 Wisconsin Fishing Report* 1 (2008).
[19] Id.
[20] *North temperate lakes' study ties lakefront property values to water clarity,* The LTER Network News, April 2005.
[21] C. Krysel, E.M.Boyer, C. Parson, and P. Welle, *Lakeshore property values and water quality:evidence from property sales in the Mississippi Headwaters Region*, (2003).

In April 2007 EPA released a study of phosphorus removal costs for advanced wastewater treatment technologies, finding that the 23 facilities assessed could reduce total discharges of phosphorus in effluent to low levels, consistently near or below the lowest levels recommended in this rule, with very low costs of operation, ranging from $18 to 46 per person per month in total sewerage rates to operate the entire treatment facility.[22] EPA observed that no technical or economic reason precludes other dischargers from using the treatment technologies employed at these facilities.[23] Under the Clean Water Act, industrial and municipal sources of phosphorus pollution can be gradually brought into compliance with criteria where this is shown to be necessary. Also, exceptions can be made for particular rivers, lakes and streams where meeting the criteria is not necessary or that meeting the criteria would have drastic economic effects.

What are other States doing to control phosphorus pollution?

- All states within the USEPA Region – including Minnesota, Michigan, Indiana, Illinois and Ohio - have adopted water quality standards prohibiting excessive algal growth and objectionable conditions associated with phosphorus pollution.
- All Region 5 states have adopted numeric phosphorus standards for the open waters of the Great Lakes that they border. [24]
- Minnesota and Illinois have adopted numeric phosphorus standards for lakes and reservoirs. [25], [26]
- Minnesota anticipates adoption of phosphorus standards for rivers and streams in 2011.
- Michigan has imposed phosphorus limits of less than 1 mg/L, ranging from .02 mg/L to .8 mg/L, in over 70 water pollution permits.

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[22] Advanced Treatment to Achieve Low Concentration of Phosphorus, EPA Region 10, April 2007, at 3-9.
[23] Id. at 3
[24] State Adoption of Numeric Nutrient Standards (1998 – 2008) United States Environmental Protection Agency Office of Water EPA-821-F-08-007, December 2008, ("EPA 2008 Summary")
[25] 35 Ill. Admin. Code § 302.504
[26] Minn R. 7050.022