

Ohio Lake Erie Phosphorus Task Force Meeting Minutes
October 23, 2007
Riffe Center, Columbus, OH

Meeting Objective: *Work through a draft of observations to date and agree to next steps, particularly in regard to agriculture.*

Gail Hesse opened the meeting with welcoming remarks. The meeting would focus on working through a draft of observations from the previous meetings and determining what the group could all agree on, particularly in regard to the discussions on agriculture. The draft was provided to members prior to the meeting. The day prior to this meeting, Senator Niehaus introduced a bill amending S.B. 214 (Phosphorus laundry detergent ban legislation) to ban the use of phosphorus in automatic dishwashers. Testimony was to begin on October 24.

Based on the list of observations from previous meetings, the group worked through the design of a table that would identify the topic, frame the issue and propose recommendations/next steps. The next part of these minutes presents the discussions around the topics and text that would ultimately be entered onto the table.

Dissolved reactive phosphorus has been increasing everywhere. In the Sandusky watershed, it is dominated by nonpoint sources, while in the more urban, industrial Cuyahoga watershed it is dominated by point sources. This is reflected in the Sandusky River where higher DRP concentrations are measured at high flows and in the Cuyahoga where higher DRP concentrations are measured at low flows. This suggests that the increasing DRP load across the basin is not solely an agricultural issue.

Overall, we are missing a benchmark for determining if existing phosphorus concentrations are good or bad. Numerical phosphorus standards are needed to set these benchmarks. Should the standards be in terms of loads or concentrations? Should we have standards for DRP as well as TP? When determining standards or acceptable loadings, we need to take into account the characteristics of the receiving waters (rivers, nearshore, open lake, western basin, central basin, etc.) as they are all somewhat different and may process phosphorus concentrations/loadings differently. Monitoring needs to be done to determine ambient concentrations and ultimately to determine when standards are being met.

Currently, there are several phosphorus criteria in existence for the open waters of Lake Erie. The Lake Erie Committee of the Great Lakes Fishery Commission recommends a TP concentration of 10-20ppb to maintain mesotrophic conditions in the central and western basins. Concentrations associated with the Great Lakes Water Quality Agreement that are intended to be reflective of achieving

the target loading of 11,000 metric tons of TP are 10ppb for the central basin and 15ppb for the western basin.

The lake's ability to sequester/process phosphorus has changed since the advent of zebra/quagga mussels. The new process/cycle is not fully understood, however, changes in the internal phosphorus cycling appear to be most pronounced in the nearshore waters.

The current Bray soil test number of 150ppm used in Ohio is based on Indiana tests of Indiana soils' ability to adsorb phosphorus. They are neither numbers that result in the lowest environmental impact nor the numbers that will result in ultimate production levels. While phosphorus stratification in soils due to reduced and no-till practices has been documented in Wisconsin, there is still not enough data in Ohio to confirm this. Data collected by Heidelberg to date (66 samples collected in Rock Creek) do indicate high DRP in the top 2 inches. Heidelberg also has tillage and manure application history for these sites.

What additional information is needed? Phosphorus input to the lake is related to manure application, soil stratification, soil test results, fertilizer application practices and history, and areas that are properly managed. Is there something that can be used as a "phosphorus tracer" to determine how much phosphorus is contributed by each of these practices? Need to determine an environmental soil test number for each type of soil. Need to maintain a history of nutrient application, cropping and tillage practices along with the soil type.

What is needed to get people to back off on adding Phosphorus fertilizers? The price of fertilizer is now high which should help in reducing applications. The State of Delaware requires nutrient management plans whereby you must demonstrate that your soil needs phosphorus before you can add it. This program costs them \$3 million/year. However, the size of Delaware's program would cover only 2 counties in Ohio. The P index is rarely used in Nutrient Management Plans in Ohio.

What can we do to now to decrease DRP loads? We need to encourage the use of the P index more often as it better addresses the transport factor. Keep allowable P test results/requirements as low as possible in regard to the level at which additional phosphorus application would be needed. It must be proven that P test results are too low before allowing the application of additional phosphorus. Incorporate P into soils when it is applied to avoid runoff. Need more stratification results. Increased soil test P results equate with elevated P concentrations in tile runoff.

Current studies underway in Ohio by Heidelberg College include:

- Great Lakes Protection Fund project to determine soil test metrics for the management of DRP. (2007-2012)
- Targeted watershed project on Honey Creek (2008 – 2013)

- Lake Erie Protection Fund project looking a soil stratification on Rock Creek (concludes 2008)

Presentations

As a follow-up to further explore orthophosphate treatment of drinking water as a potential source of increasing DRP, Ohio EPA reviewed discharge data from several wastewater treatment plants (WWTPs) located in areas that used orthophosphate at their water treatment plants (WTPs). Several WWTPs were examined as pilots. Preliminarily, the Bucyrus WWTP showed a general downward trend of TP from 1994-2006, with higher levels noted in the winter. Fremont and Upper Sandusky showed an upward trend. Orthophosphate treatment at the associated WTPs began in 1994. In the Northeast Ohio Regional Sewer District (NEORS), TP limits came on line about 1988 -1989. TP in discharges dropped initially. An increase in TP discharge concentrations was noted in 1994 from the easterly and southerly WWTPs perhaps associated with the initiation of orthophosphate at the associated WTPs in 1994. A similar increase was noted in the TP discharge at the westerly WWTP when it's associated WTP began adding orthophosphate in 1997. After the initial increases, TP concentrations decreased some and then leveled out. DRP is about 70 to 80% of the phosphorus coming into the plant.

Discussions that followed asked: what justification is needed for Ohio EPA to require a lower TP limit; do we know what comes into a plant vs. what goes out. Historical monitoring for phosphorus loading done by Dave Dolan for the IJC shows that TP loads from WWTPs are pretty consistent over the last 15 years. It is the tributary loading that is fluctuating.

Perhaps we should look at a WWTP in southern Ohio where there are no P limits. What might cause P concentrations to vary? – precipitation, infiltration and inflow, CSOs, temperature (time of year), addition of more homes tied into sewer lines, age of the system, check amount of orthophosphate used in WTP, look at loading trends rather than concentrations. We may also want to look at the Akron WWTP. They do look at influent and effluent, and orthophosphate is used at their WTP.

In further discussion, it was noted that Minnesota and Wisconsin have instituted bans on phosphorus in lawn fertilizers. This started as a focus on smaller areas to protect a more local water resource. However, they went statewide to deal with purchasing issues (i.e. difficult to police the sale of various types of fertilizers in different parts of the state). For now, Michigan has passed a number of local ordinances banning the use of phosphorus lawn fertilizers. Need to investigate which areas may lay in the Lake Erie basin. All lawn fertilizers are surface applied which may be an issue in contributing to increasing P loads and concentrations. Why has phosphorus fertilizer on lawns become an issue over the last 10 years? Is it related to the explosion of housing developments and establishment of new lawns?

USGS is doing a topical study on urban gradients. They are looking at larger watersheds by breaking them up into ~ 30 acre parcels and defining all the urban characteristics of those smaller areas.

For future meetings we need to get TP data from storm water programs and CSOs. Need to measure how the adoption of BMPs has affected volume reduction of flows and TP loads. We need loading data from the Detroit WWTP. NEORSD just completed a study on TP in CSOs this summer. What is the status of the CSO Longterm Control Plans for Cleveland and Toledo? Still need to look at other sources of TP loading to the nearshore. May want to look at: bioturbation from mayflies and zebra mussels; Canadian studies on loadings to the Detroit River (includes some input from Detroit WWTP), sources of TP identified in Lake Erie watershed TMDLs completed to date, how many package plants there are (small plants do not have TP limits).

Julie Weatherington-Rice is coordinating a session at the Ohio Academy of Science meeting in April. Tom Bridgeman will be presenting on blue-green algae in the western basin, Dave Baker will present Heidelberg data, Rick Wilson will present a review of literature on P research. Other presenters are from BGSU and UM.

The July issue of the Journal of Soil and Water Conservation has several articles on changes in transport and hydrology. Next Task Force Meeting was scheduled for December 4.

Attendance: Larry Antosch, Dave Baker, Paul Bertram, John Crumrine, Dave Culver, Steve Davis, Kevin Elder, Norm Fausey, Gail Hesse, Todd Hesterman, Seth Hothem, John Kessler, Jack Kramer, Julie Letterhos, Robert Mullen, Jeff Reutter, Peter Richards, Julie Weatherington-Rice, Rick Wilson, Nick Basta, Libby Dayton, Eric Partee, Robert Bonnett