June 11, 2007

Dr. Vanessa T. Vu, Ph.D.
Director, EPA Science Advisory Board
US EPA SAB Office
Woodies Building
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Washington, DC 20004

Dear Dr. Vu:

The Iowa Farm Bureau Federation (IFBF), the state's largest general farm organization with more than 154,000 members, wishes to express its ideas about the Science Advisory Board (SAB) Hypoxia Advisory Panel draft report to be discussed at the June 13-15 meeting of the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force.

Because this is a national issue, the Iowa Farm Bureau is guided on this issue by American Farm Bureau policy. AFBF hypoxia policy says, "We support the right of the state to develop a volunteer plan of action to address the agricultural nonpoint source portion of the EPA's Gulf of Mexico program. We believe the program's goals and objectives can best be administered at the local level through soil and water conservation organizations and farm Groups. Any policies made regarding the Gulf of Mexico hypoxia area must be backed by sound scientific research and give proper consideration to impacts on agriculture production."

The draft report recommendations on goals and management options to reduce nutrient loss from agriculture sources are clearly inconsistent with AFBF policy regarding state voluntary approaches to hypoxia. The ag nonpoint source recommendations are focused on federal policy implementation, not local, voluntary watershed approaches. In fact, the draft recommendations fly in the face of all of state's historic and current voluntary practices with respect to nonpoint source agriculture.

And while most sections in the draft report appropriately identify the need for more knowledge, data and understanding of the hypoxic processes and point sources, it clearly veers to prescription of many economic policy recommendations for nonpoint source agriculture.

This is a science reassessment process. Based on the emerging science we've seen from the Iowa Governors' Water Summit (2003), the Gulf Hypoxia and Local Water Quality Concerns Workshop in Ames (September 2005), and the Hypoxia in the Northern Gulf of Mexico: Assessing the State of the Science meeting in New Orleans (April 2006), variability in weather

dominates both short- and long-term outcomes. Variability in weather, and in volumes of surface run-off and subsurface drainage, may lead to highly variable nutrient exports at times. Emerging science suggests that current nutrient impairment problems are not mainly due to mismanagement of fertilizers and manures, but more to historic changes in land use and hydrology that came with the conversion of prairie and wetlands to cropland.

These draft recommendations indicate that nutrients in water resources are the result of the loss of "excess nutrients" present in the soil, implying if there were no "excess nutrients," losses would not occur. The Corn Belt and Iowa have fertile soils and generally ample precipitation. Whenever excess water moves over/through the soil, nutrient losses can occur. The emerging science indicates the factors influencing losses are mainly changes in land use over time and hydrology.

It is also important for the SAB and the public to understand that for optimal crop production, significant amounts of N and P must be present in the soil. It is important for public communication and education that to obtain economically viable crop yields in Iowa, nitrate from farm field groundwater can still be above the drinking water standard of 10 mg/L.

Also, precipitation that results in excess water (thus, surface run-off and/or subsurface drainage) can and does come at any time. When that happens, some nutrients can be lost. In tile-drained landscapes, N losses can be greater, are dominated by nitrate, usually occur with sustained flows, and usually in the spring at a time when there is little evapotranspiration or nutrient uptake by crops.

Citizens, watershed residents and farmers also need better information regarding the potential for reducing nitrate leaching losses with N management, and to understand that its success is highly dependent on many complicated factors. The complexity of managing these factors need to be better explained to the public in the report.

Challenges of Best Management

In Iowa, for example, the Iowa State University recommended fertilizer rate for corn after soybeans is 100-150 pounds of nitrogen per acre, depending on the price of fertilizer, the expected price for grain produced and the supply of subsoil moisture. This amount of fertilizer is necessary to produce economically viable corn yields and can result in soil water nitrate concentrations of as high as 22-45 milligrams per liter. If applied N or mineralized organic matter N (conversion from organic to ammonium) would stay in the ammonium form, then losses would not occur. Unfortunately, that isn't the way it works. Ammonium is converted to nitrate via nitrification. Nitrate is the form that can be moved out of the soil profile by leaching or lost by denitrification. Potential N loss is dependent upon factors that influence each--for nitrification, soil temperature is very important, and for denitrification soil temperature and soil moisture are important. Conversion to nitrate does not equal loss; it just means the N is

susceptible to loss. However, losses occur only with excess leaching or with saturated soils. Clearly, these relationships are complex and largely dependent on weather. And while farmers take steps to manage these factors and minimize the potential for N loss, the cost for available management practices and their effectiveness varies.

Soil quality and soil sustainability are also important issues related to nutrient management decisions. Mass balance calculations based on zero or low N rates on corn have shown soil organic mater content decreases over time. Consideration must also be given to both water and soil quality when making nutrient management recommendations.

According to information presented at the hypoxia science assessment meeting in New Orleans and the Gulf Hypoxia and Local Water Quality Concerns Workshop in Ames, some improvement in in-field nutrient management is possible, but within limits. Off-site practices are also likely needed. There are no easy answers and any improvements will be incremental. Targeting of current best management practices and site-specific design of treatment technologies is critical.

The potential for relative reductions in nitrate leaching in Iowa and the Corn Belt for specific corn-soybean management changes shows that switching from row crops to perennials may yield the largest relative reduction in N losses, compared with reductions in fertilizer rates and timing, reduced tillage or installation of wetlands (due to current federal regulatory limitations for adoption of this technology), as suggested by the draft recommendations. However, limited economic returns and management gaps inhibit the adoption of perennials.

Therefore, care must be taken in the science reassessment process to avoid premature economic policy recommendations that may promote the wrong practices (e.g., restructuring of current agricultural support payments or the reduction or elimination of economic incentives for corn-soybeans). It may be that after the science reassessment process is complete, the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force consider policy recommendations in a separate process for Congress to consider. Some of those options may include creation of economic incentives for specific technologies, but these must be considered in the context of the available peer-reviewed science, social structures and political realities.

The draft SAB report on options for reduced nutrient loss from agricultural sources is focused on economic policy options, which was not part of the SAB's federally mandated charge. This is a science-reassessment, and any potential policy option recommendations to Congress are the responsibility of the task force, not the SAB. We ask the panel to delete this section from the report.

Recent CARD Research

One way the federal government could help is through significant federal investment in monitoring and evaluation that would enable states and local watersheds to be more strategic

with their program implementation. This is supported by preliminary research conducted by the Center for Agriculture and Rural Development conducted an analysis in 2006 of Conservation Practices in Iowa: Historical Investments, Water Quality and Gaps, with the Iowa Corn Growers Association, the Iowa Farm Bureau Federation, the Iowa Soybean Association, and the Leopold Center for Sustainable Agriculture.

While the analysis is preliminary and a final report is not yet available, CARD estimated that the statewide cumulative annual cost was about $435 million for installation of seven major conservation practices considered by the assessment and for which data were readily available ($37 million for terraces and grass waterways and $397 million for other five practices). As a result of these practices, total nitrogen reductions in the 13 watersheds representing the majority of Iowa were 11 to 38 percent. Nitrate reductions range from 6 to 28 percent. Total phosphorus reductions were 25-58 percent.

Also, with the set and placement of practices considered by the evolutional algorithm that was used, the EPA Regional Nutrient Criteria targets currently being discussed were generally unattainable.

However, to achieve an alternative 40 percent reduction in phosphorous, the total gross cost of implementing an "optimal mix" of conservation practices (may include some practices and structures that are already on the ground but may also require installation of new structure or practices) was estimated to be almost $613 million a year in Iowa. Implementing the phosphorous target would also simultaneously result in a state-wide reduction in nitrate loadings of over 31 percent. These reductions may get us closer to the proposed EPA nutrient criteria, but will not achieve the targets. The financial and technical limitations of these goals need to be communicated to the public in the report.

The other draft findings that the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force (not the SAB) should consider include:

- Cost-effective measures are different across different watersheds, and watershed residents should gain a good knowledge of their watersheds before adopting any control policies that have been promising elsewhere;
- Targeting different pollutants will mean different land use options, so it is important watersheds identify their needs before any policy discussions;
- Programs must target N & P reductions to be the most effective;
- This work creates a reasonable baseline to evaluate the value of the work already completed by Iowans, and the optimal combinations to address future needs;
- This gives us an idea of the magnitude of the work remaining and the challenges of meeting aquatic life standards;
- These standards need to be accompanied by significant resources and given adequate time for implementation; and,

- Significant investment in monitoring and evaluation would enable us to be more strategic with our program implementation.

With this information in mind, the IFBF asks the SAB to focus its efforts on the reassessment of the original hypoxia science, to remove the economic policy recommendations, and to leave all other policy recommendations to the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force.

Sincerely,

Rick Robinson
Environmental Policy Advisor