The Fertilizer Institute

Gary D. Myers
President

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Gulf of Mexico Hypoxia Working Group
National Oceanic and Atmospheric Administration
National Centers for Coastal Ocean Science
Room 9127
1305 East-West Highway
Silver Spring, MD 20910

RE: Comments on the Integrated Assessment of Hypoxia
In the northern Gulf of Mexico

Dear Sir or Madam:

The Fertilizer Institute (TFI), on behalf of its member companies, is pleased to submit these comments on the Gulf of Mexico Hypoxia Working Group's Integrated Assessment of Hypoxia in the northern Gulf of Mexico.

TFI is a voluntary, non-profit trade association of the fertilizer industry. TFI's nearly 250 members manufacture over 90 percent of the domestically produced fertilizer. TFI's membership includes producers, manufacturers, distributors, transporters and retail dealers of fertilizer and fertilizer materials. TFI's members are committed to working with farmers to make them more efficient in their input use, and therefore, have a strong interest in helping farmers implement practices that make them more efficient and also reduce nutrient losses.

The integrated assessment (IA), as a summary of the six scientific assessments, carries the same strengths and weakness of the original work. While there appears to be a great deal of reaching for definitive statements, taken as a whole the report makes it clear that the causes and consequences of hypoxia are not well understand, and a great deal of further research is needed.

The lack of definitive science, however, is not a reason or an excuse for inaction. The goal of reducing nutrient losses is supported by the fertilizer industry. Indeed, the fertilizer industry is on the front lines of working with farmers to reduce nutrient losses each day.

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The fertilizer industry has been instrumental in raising the agronomic knowledge base of expertise farmers have to draw on through its support of and participation in the Certified Crop Advisor (CCA) program. The fertilizer industry has provided a great deal of technical and financial resources to encourage farmers to implement conservation buffer strips. Fertilizer distribution companies have developed numerous nutrient management planning tools to help farmers make judicious use of each pound of nutrient they apply. The fertilizer industry has worked to bring the tools of technology to bear on U.S. farms to allow farmers access to information that helps them better manage all their inputs, including nutrients. We have worked to help our farmers reduce their nutrient losses because in so doing, our farmers are more efficient, more productive and more profitable. At the same time, the environmental impact of farming is reduced.

The integrated assessment provides strong evidence that these efforts are working to reduce nutrient losses. Figure 2.6 shows that in the past 45 years – the time frame of rapid increases in U.S. fertilizer use – residual nitrogen has trended downward. Increases in outputs have risen faster than increases in inputs, leaving LESS residual nitrogen, which is subject to runoff, and leaching.

We note the continued lack of scientific agreement on causes and consequences, and we applaud and support the research and monitoring needs that are outlined. We strongly urge the authors of the final report to address the issue of consistent units in nitrogen loads to the river, as discussed in detail during the fifth meeting of the MR/GM Watershed Task Force. We also encourage scientists, in their public statements, to reflect the uncertainties contained in the assessment. Most importantly, we urge that the action plan build on the successes that have been achieved at reducing nutrient losses, and discard the regulatory options outlined in the assessment. The assessment outlines some of the federal programs – Conservation Buffer Program, Environmental Quality Incentive Program, Conservation Reserve Program, etc. – that have contributed to this success. As outlined above, there is a vast array of private sector efforts that have also played a large role in reducing nutrient losses. These public and private successes should be built upon to achieve greater loss reductions.

To this end, the entire CENR process continues to suffer from the lack of the kind broad participation required in section 603 (c) of Public Law 105-383. It continues to be a federally driven process of public personnel only. We urge the Committee, even at this late date, to open the process and bring in private sector individuals – scientists, farmers, retail dealers and other – who have hands-on experience at implementing measures that reduce nutrient losses. Without this input, the action plan is doomed to be limited to federal, top-down regulatory approaches that have limited reach and limited chance of success.

At the same time, we continue to ask for access to the blind peer reviews of the six scientific assessments. Clearly, the scientific assessments form the basis for policy recommendations contained not only in the assessments but in the action plan as well. Lack of access to the full range of scientific opinion on these issues is a debilitating disadvantage in our effort to evaluate the science and provide meaningful input.

Specific comments

The integrated assessment is largely an attempt to buttress the pre-determined conclusion. Examples:

1. Page 6. "Scientific investigations over the last several decades indicate overwhelmingly that hypoxia in the northern Gulf of Mexico is caused primarily by excess nutrients delivered to those waters . . . in combination with stratification of Gulf waters."

   As the references appear only to list work done in the current decade, we are unaware of investigations done over several decades. Please provide further information on the historical work implied in this term.

2. Top of page 7. The first paragraph lists three key changes in the basin during this century: 1) channelization of the river; 2) alterations in the landscape; and 3) a "dramatic increase in fertilizer nitrogen input into the Mississippi River drainage basin.

   We continue to protest the clear implication that there is a correlation between increased fertilizer use and the hypoxic zone. We request that this item 3 be deleted. In the alternative, we ask that a fourth item be listed here: 4) "A dramatic increase in nitrogen removal from the basin in the form of increased crop production." The increase in fertilizer nitrogen input is irrelevant to the discussion unless considered in tandem with resulting crop production. As is pointed out later in the integrated assessment, production has increased faster than inputs, meaning residual nitrogen has trended down.

3. Page 7, paragraph three. The clearly stated conclusion of the second scientific assessment was that "economic analysis of fisheries catch data did not demonstrate statistically significant effects attributable to hypoxia." So why does this paragraph begin with the unsupported statement "fisheries are affected by this large hypoxic zone? We ask that the last sentence be made the first sentence in this paragraph, as that is the true conclusion of the scientific assessment. Also, no evidence is presented in this or previous documents to indicate that the decline in brown shrimp catch is correlated with hypoxia.

4. Page 8, first full paragraph. The final sentence reads "nutrient impairments to water quality in the basin are unlikely to improve without some changes in current activities." What basis is there for this statement? Indeed, if residual nitrogen in the basin is trending down, there appears to be a basis for expecting nutrient impairments will decline. This statement fails to recognize current agriculture best management and conservation practices. Also, this statement fails to heed its own conclusion that "environmental responses . . . likely will be slow, possibly requiring decades ... " (p. 42.)

5. Page 8, second paragraph: Why will increases in food production and population lead to greater nutrient losses? Indeed, in the past 40 years population has increased, food production has increased, and nutrient losses appear to be declining based on the downward trend in residual losses and the greater efficiencies gain in input use. The implication seems to be greater food production demands greater fertilizer use, which adds to nutrient losses. This is not so. Increased fertilizer use, with good management practices, leading to greater food production can lead to less nutrient loss. This seems to be taking place already, based on data presented in the IA. Again, the report refuses to acknowledge ongoing, successful research, education and implementation of conservation programs.

6. Same paragraph: "If experiences in other systems are applicable to the Gulf of Mexico . . ." Experiences in other systems are not, in fact, applicable. There is a great deal of discussion about how collapses of fisheries in the Black Sea, Baltic Sea and other waterbodies are a precursor for what will happen in the Gulf. Yet the hydrology, oceanography, land uses in the basin and other characteristics are quite dissimilar. If these "other experiences" continue to be cited, please supply scientific evidence of why the comparison is valid.

7. Page 7, second line: The most effective actions for reducing inputs of nitrogen to water include "reducing application of nitrogen fertilizer (particularly) above recommended rates." We are troubled by lack of definition or discussion about recommended rates. We do believe that farmers and their private or public advisors need flexibility to determine scientifically and agronomically defensible rates on a field-specific basis. Reduction of nitrogen fertilizer is effective ONLY when applications exceed recommended rates. The use of the word "particularly" seems to leave room for reducing rates even when less than recommended rates are used. Generally, the result of reducing use from less than recommended rates will be loss of productivity and profitability for the farmer, and could even lead to additional losses to the environment. Please remove the word "particularly."

8. Page 9, last paragraph: "Other potential benefits of nutrient reduction activities include more efficient use of organic and inorganic fertilizers . . . lower fertilizer costs . . ." In this instance, the term "nutrient reduction" clearly

refers to reducing use, not reducing nutrient loss. Much of the controversy surrounding the CENR effort stems from the interchangeable use of the terms "nutrient loss," "nutrient use" and "reducing nutrients." The integrated assessment and the action plan must use these terms more precisely, and define which one constitutes the goal. We support the goal of reducing nutrient losses. That does not require use reductions. We strongly urge that this report be revised with a critical eye towards the use of proper terminology for the following concepts: nutrient inputs to the soil, edge-of-field nutrient load lost to the river, and nutrient loss reductions.

Further, there is no evidence that reducing use results in greater efficiency. In fact, we have presented evidence that efficiencies have been increased without reducing use. Use reductions employed across the board without any consideration of site-specific practices will reduce productivity and in all likelihood reduce, not enhance, efficiency. We continue to maintain that use reduction, as opposed to best management and conservation practices, does nothing to slow the loss of nutrients, sediments, and other nonpoint source pollutants to waterbodies. The report in this paragraph is reaching beyond the data for some benefits of reducing nutrient use across the board. They do not exist and this paragraph should be modified.

9. We note the following excerpts:

P. 6 – Scientific investigations over the last several decades indicate overwhelmingly that hypoxia in the northern Gulf of Mexico *is caused primarily* by excess nutrients delivered to those waters from the Basin, in combination with stratification of Gulf waters. (emphasis added)

p. 14 – While information gaps still exist and several factors discussed below may contribute to hypoxia, the overwhelming scientific evidence indicates that inputs of nitrogen from the basin is the primary factor driving hypoxia.

p. 19 – Analysis of river discharge data and sediment cores from the Louisiana shelf in the Mississippi River delta bight indicate that eutrophication and hypoxia in the northern Gulf increased *coincidentally* (emphasis added) with increased in nutrient loads from the Mississippi River.

p. 24 – It also describes the consequences of excess nutrients, *the probable primary cause* of hypoxia. (emphasis added)

p. 27 – Evidence described in the previous chapter indicates that high nutrient loads, particularly nitrogen, from the basin is *a primary cause* of hypoxia in the Gulf of Mexico. (emphasis added)

This is a scientific assessment. "Cause" is a scientifically precise term. Is nitrogen the primary cause, the primary factor, the probable primary cause or the primary cause of hypoxia? We suggest the loose interchangeability of these terms is inappropriate in a scientific assessment, and reflects the admitted uncertainties contained in the assessments. We ask for more uniformity of the terminology used, and that it go only as far as the science allows. There is no data provided in this or the previous six reports to show causality between nitrogen inputs to the river and the hypoxic zone. We believe there is consensus that nitrogen does appear to be a "contributing factor." The report should be revised to use this term consistently throughout.

10. Page 21. The discussion about nutrient loads, and particularly figures 2.5A, should not treat inputs to land the same as point sources. We ask that "municipal and industrial," "atmospheric ammonia," and "atmospheric nitrate" be treated separately in the text and graphically. These are direct inputs into water. All the others are land applications and in no way reflect water loadings. Some additional scientific research should be undertaken to determine a universal unit for nutrient loads entering the river, and the report should be rewritten with some modeled or estimated data for edge-of-field nitrogen inputs from land runoff. We urge the authors to use nitrogen residuals (figure 2.6) as the best indication of potential amounts for river loads.

11. Page 28, the discussion about "increased loading scenario": The text provides an admission that increased fertilizer use may be necessary to provide food for a growing population. We reject the implication – based on data in the integrated assessment – that increased fertilizer use necessarily increases loadings and drives hypoxia. Residual nitrogen in the basin has decreased as fertilizer use has increased.

    Further, since you accept the assumptions that population will increase and food demand will increase, why recommend an across-the-board 20 percent reduction in nitrogen use? The economic assessment that recommends a 20 percent use reduction fails to deal with the population and food production consequences alluded to here.

    In the final paragraph, there is discussion of increased stream flow in the basin. Does increased flow into the Gulf increase stratification, and what effect does that have on hypoxia?

    The discussion about "No Load Change" Scenario":

    There is no such scenario in the United States. Again, the report refuses to acknowledge ongoing, successful research, education, and implementation of best management agriculture and conservation programs. Fertilizer use is

decreasing per unit of production, meaning farmers are becoming more efficient. EPA's Section 319 program continues to assist states in minimizing the impact of nonpoint source pollution on waterbodies. By refusing to build on existing, voluntary, incentive-based programs to address nonpoint source pressures in order to justify a command-and-control legacy, the authors run the risk of undermining these ongoing efforts as the uncertainty surrounding future regulatory programs force unintended resource allocation,

12. Page 29, second paragraph: Again, without evidence of the comparability of the Kattegat, Baltic, Adriatic and Black Seas, this is a false comparison and should be removed.

13. Page 31, first line: Simulations with a quantitative water quality model indicate that dissolved oxygen and chlorophyll concentrations on the Louisiana Inner Shelf do appear to be responsive to reductions in nutrient loadings. . . however, there are large uncertainties in the magnitudes of these responses." This statement does not seem to carry the same certainty as the conclusion on page 10: "The conclusions provide a solid foundation on which to build an appropriate response strategy.

14. Page 34: We continue to object to the discussion about insurance rates of nitrogen. The first bullet point in the middle of the page reads "Reduced applications of nitrogen fertilizer – This is estimated to offer the greatest potential reduction of nitrogen loading. BY reducing 'insurance' rates of nitrogen fertilizer . . ." The last statement is footnoted, and the footnote informs the reader that data on insurance applications "are sparse." True, data is sparse. In fact, there is none presented here, and the original assessment contained anecdotal examples from one region of one state. Thus, the sweeping conclusion that reducing this practice offers the greatest potential reduction of nitrogen loading is speculative and should be removed. It appears from evidence presented in comments that the incidence of nitrogen applications exceeding recommended rates only happens when farmers fail to credit manure and legume nitrogen. In commercial fertilizer only systems, nitrogen applications are below recommended rates. Thus, the most effective way of dealing with so-called "insurance" applications is not with an across-the-board reduction in nitrogen fertilizer use, but in education and outreach to farmers to help them better account for all sources of nitrogen available to their crops through the use of comprehensive nutrient management plans and other best management practices.

15. Page 41. We are supportive of the chapter on adaptive management. We agree with the additional research and monitoring needs. But this very accurate and reasonable outline of additional research needs to better understand the phenomenon belies the certitude contained in the preceding portions of the assessment. For instance, on p. 31 the IA asserts "The most direct effect of action to reduce nutrient loading to surface waters in the

MARB will be to decrease concentrations and shift the composition of nutrients in its rivers and streams." Yet by p. 41, it says, "The complex nature of nutrient cycling and transport with the MARB and Gulf of Mexico make it difficult to predict specific improvements in water quality that will occur for a given reduction in nutrient inputs."

We request two modifications to this chapter. First, on page 44, there is a list of federal programs that have and can improve water quality conditions. As previously stated, there is an even longer list of private sector initiatives that have and can improve water quality conditions. We ask that an effort be to catalog and include those private sector programs, as the action plan should be built on both private and public programs that are currently in place and work.

Second, the last line on page 46 reads "Better estimates of cost savings to agricultural products from reduced fertilizer nutrient inputs are needed." Please strike this sentence. As we have argued, the only water quality goal here is reduced nutrient loss, not reduced use. There is no evidence that reduced use improves water quality. The data needed is data about applications above recommended, agronomic rates rather than the assertions about the incidence of this practice.

Summary

The scientific assessments, culminating in this integrated assessment, have failed to establish a factual basis for the sole hypothesis considered, which is that increased nutrient loadings are responsible for increased hypoxia in the Gulf of Mexico. We believe there is evidence in the assessments that there are multiple factors driving this phenomenon and that nutrients are one of many contributing factors. Therefore, an action plan addressing only one factor is a prescription for failure. The action plan must carefully consider the multiple contributors, the affordability and consequences of addressing each of the contributors, the potential for leveraging existing public and private water quality improvement initiatives and establishment of reasonable goals.

At the same time, we believe there is ample justification, notwithstanding Gulf hypoxia, for private and public entities to work together to reduce nutrient loss from America's farms. The conclusions in the assessment that reach beyond the science and the punitive policy recommendations in the assessment ignore and fail to build on the successes that are currently being achieved.

Every day we work with farms to implement practices to reduce nutrient loss and make our farmer customers more efficient. We believe those efforts are working, and the integrated assessment contains evidence that those efforts are working. We strongly suggest the subsequent action plan be built on these current successes and not resort to new regulation.

Sincerely,

Gary D. Myers

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