

U.S. Environmental Protection Agency
Science Advisory Board
Integrated Nitrogen Committee
March 19, 2008 INC Teleconference
Final Minutes

Date and Time: March 19, 2008 from 2-4 p.m. (Eastern Time).

Location: by telephone only.

Purpose: On this conference call, the working groups summarized progress on their assignments and identified what else was needed to complete the work.

Materials Available: Materials made available for the INC's earlier meetings and teleconferences are identified in the minutes for those meetings. The only additional item made available for this meeting was the agenda.

Attendees: The following INC members were on the call: Aneja, Boyer, Cowling, Dickerson, Doering, Galloway, Herz, Hey, Lighty, Moomaw, Mosier, Paerl, Stacey and Theis. Science Advisory Board Staff Office DFO was on the call as was EPA/ORD's Jana Compton. Kate Winston of Inside EPA and both Sue Grey and Tyler Wegmeyer of John Deere were present.

Summary: After the DFO called the roll, Dr. Galloway reviewed the INC's assignments and schedule. Chapter 2 is in preparation. Sections 3.1, 3.2, 3.3, 3.4 and Chapter 4 have been drafted and distributed to the Committee for review. The remaining contributions to the "ten-pager" to be released to the public before the April 9-11 INC meeting are due Monday March 24. Drs. Galloway and Theis will use the contributions from the working group leads as a basis for the "ten-pager".

The Working Group leads addressed the progress on writing assignments. The next steps in report preparation were addressed by working group rather than as a separate agenda item.

Dr. Aneja described the Producer Working Group's Section 3.2 as a complete and wonderful working draft. Improvements are needed ensure the numbers used are consistent and appropriate references are given. INC will need consistency within the sections and between as well as within sections. Dr. Doering agreed to review all of Section 3.2.

Dr. Aneja asked the PWG members if they had anything to add. Dr. Lighty had checked some of the numbers on fossil energy and found the numbers to be pretty close to what she would have expected.

Dr. Galloway remarked that it is essential that the members read all that has been sent. Because the INC meets April 9-11, members should send comments back to the working

group leads by April 1. This will give the leads time to read, collate, and understand the comments so that further progress can be made at the April meeting. Dr. Aneja said this schedule worked for him.

Dr. Mosier said the Environmental System Working Group's Section 3.3 is in pretty good shape. With the exception of some discussion on nitrogen flows in terrestrial system and the preparation of a rough nitrogen cascade for the U.S, it is complete. ESWG has yet to rationalize all the numbers with Table 1 in Section 3.1. Once that is done the section will be wrapped up. Dr. Dickerson noted that the atmospheric flux section is long, possibly because it is an interesting research topic. There is some good news to report, nitrate has decreased. Measurements, models, and mass balance approaches allowed ESWG to estimate nitrogen flux from the atmosphere to the terrestrial systems. He highlighted these two points.

1. There is no monitoring of ammonia, a critical component of nitrogen balance.
2. Fossil fuels are probably not an important source of ammonia outside of certain urban areas.

Dr. Dickerson also noted the need to go from the analysis of the 16 watersheds to an analysis at the national scale.

No one else from the ESWG or INC chose to speak. Dr. Theis offered to go over Section 3.3 carefully. Drs. Boyer and Galloway both plan to go over 3.2 and 3.3 very carefully.

Dr. Theis noted that Impacts & Metrics Working Group's Section 3.4 is in pretty good condition. He needs to add a piece Dr. Dickerson wrote linking the nitrogen and sulfur budgets, a table Dr. Stacey sent, and a piece from Dr. Moomaw on monetization. Dr. Moomaw expects to have that piece this week. Dr. Paerl had sent some of his own photographs which Dr. Theis plans to add. Dr. Paerl will read thoroughly and provide comments by April 1.

We will collect the photos, but not add them until the document is more stable.

Dr. Dickerson noted that a few degrees increase in temperature over the next few decades in North America could exacerbate the problems related to reactive nitrogen. He will develop a few paragraphs on this from an atmospheric perspective. Dr. Paerl noted that there are also problems with algal blooms and hypoxia because nuisance organisms are encouraged by the higher temperatures and other changes to the environment. He offered to write something oriented towards water after he sees Dr. Dickerson's piece on air. Dr. Theis noted everything he's read about climate change indicates some things increase and others decrease and these changes have impacts. It is not obvious to him what the final outcomes would be.

Dr. Dickerson will prepare something brief on the links between Global Climate Change and nitrogen impacts from the atmospheric and terrestrial perspective, sending to the whole INC this week. INC members, especially Drs. Cassman, Mosier and Paerl, will add aquatic and terrestrial perspectives. These should be sent to Dr. Dickerson by April 1. Dr. Paerl will send INC something he has written once it has been published in *Science*.

Dr. Theis spoke briefly about Chapter 4, noting it is currently longer than it needs to be. The April 9-11 INC meeting will provide an opportunity to work on this chapter. No one was assigned to give it a careful read.

In addressing the preparation for the April 9-11 meeting, Dr. Galloway announced he would be unable to attend and thanked Theis for agreeing to chair.

The DFO noted that the purpose of the April 9-11 meeting has changed. The purpose now is to get input from invited speakers relating to policies and programs, past and present, that directly or indirectly affect how reactive nitrogen is managed. This information will provide a basis for the development of Chapter 4. A subsequent workshop will be held to get reaction from practitioners to the INC's risk reduction recommendations. At this time, it is not clear whether the INC will meet July 21-23 and, if so, what the nature of that meeting will be. She asked that, for now, INC members continue to reserve the dates for the July meeting.

Dr. Theis addressed expectations for the April 9-11 meeting. Now that INC has a sense of how much nitrogen is being generated, where it is, where it is moving, and what some of the impacts are, the question arises, "What are managers to do?" INC is inviting speakers to the April 9-11 meeting to provide a basis for developing further points of consensus and drafting that Chapter 4 of the report and, possibly, for beginning Chapter 5.

Dr. Theis asked if there were questions about expectations. Dr. Aneja asked whether the INC was in any way going to suggest the advancements the INC has made and or how its recommendations differ from those that currently exist. Dr. Theis responded that they would. INC is one of the few groups that is trying to look at the totality of reactive nitrogen interactions in the environment. He anticipates that INC will make management and research recommendations, telling EPA what they think it ought to be doing. He thinks the closest that anyone has come to this is the SAB's Hypoxia report (available through the SAB website www.epa.gov/sab), which should be required reading for the INC even though it only addressed one impact. Dr. Moomaw also noted that INC provides a way to think about reactive nitrogen and the use of the nitrogen cascade to assist in regulatory decisions, not just scientific ones.

The DFO summarized the speakers who have agreed to speak at the April 9-11 meeting and the additional kinds of speakers being sought. Dr. Theis mentioned that no one thinks grains are the way to go, but cellulose feed stocks are. It would be good to have someone speak on this issue. Dr. Dickerson noted that Dr. Kohn is doing some work on

this; there are about eight technologies out there being explored. The idea is to bring the INC to the point where it can make reasonable management recommendations on this very important development in the agricultural field; biofuels is about ready to take off and has clear implications for nitrogen in the environment. There are different biofuels and different results from their combustion.

Dr. Paerl asked about the issue of the use of nitrogen fertilizer with biofuels. Dr. Doering responded that there is a lot of work on the impacts of growing cellulosic materials. The Ecological Society of America had a workshop on this last week and NAS has a committee on liquid natural fuels on this.

Dr. Theis thinks it will be a good meeting and INC will have time to work on their recommendations.

As usual, each working group will say a few words about what they are doing. Dr. Theis asked Dr. Moomaw to provide a brief (15-20 minutes) presentation on the economic impacts as a means of seeing the kinds of return you would get on the option that you choose. Although the text will go in Section 3.4, it would fit well in the context of the April meeting.

Dr. Theis asked Dr. Boyer to give an overview of the budget; she looks forward to informing INC about some of the options. Currently this presentation has been scheduled for the morning of April 11.

Dr. Cowling suggested spending some time April 1 and 2 on the CASAC's consideration of the secondary standard for NO_x. He reminded the INC of the resolution they had sent the chair concerning the need to monitor for ammonia.

It might be good to hear what the consensus views of CASAC are, which is that the reduced and oxidized forms should both be considered. He volunteered to brief the INC on the outcome of the April 1-2 CASAC meeting.

The Chair offered the public an opportunity to comment. Kate Winston has been covering biofuels, global warming, green house gas life cycle analysis for the energy bill renewable fuels standard. Will INC provide any input? Dr. Theis said the chartered SAB is providing input from its February meeting. Dr. Doering said that EPA has to have it together by September or October. While some of what INC is doing might be helpful to EPA in terms of ammonia from agriculture, he hadn't anticipated INC providing any direct advice. Dr. Dickerson spoke to difficulties relating to NO_x. Dr. Theis noted that the existing draft does address the trade-offs between the carbon and nitrogen. However, the INC hasn't talked about that issue as a Committee. Right now individuals are just articulating their personal preferences.

Ms. Winston asked about the CASAC resolution. The entire INC passed a resolution which they forwarded to CASAC. That's INC's input; Dr. Cowling is a member of both Committees. She can contact the DFO to get the language.

Theis asked DFO to get a hold of the language for the Energy Bill of December 2007 which he regards as a ray of hope for EPA.

There was no other public comment.

EPA's Jana Compton from EPA looks forward to INC's input.

The potential consensus points were briefly addressed during the Committee Discussion period. Mr. Herz noted that, in general he agrees with the content, but finds some points muddy. Some statements need to be substantiated with citations. Dr. Cowling asked if there some particularly muddy ones that the full INC should attend to. Mr. Herz is most interested in 4, 5, 10, and 11. He doesn't think INC should focus on agriculture is the only source left to control nitrogen. Rather than taking the full INC's time, he'll send comments by April 1.

The meeting adjourned at 3:15.

Respectfully Submitted:

/s/

Ms. Kathleen E. White
Designated Federal Official

Certified as True:

/s/

Dr. James N. Galloway, Chair
SAB Integrated Nitrogen Committee