

**Preliminary Comments from Members of the Clean Air Scientific  
Advisory Committee (CASAC) Air Monitoring and Methods  
Subcommittee (AMMS)**

**Preliminary Comments received on 2/15/11**

**In Preparation for Public Meeting, February 16, 2011**

Carolina Inn, 211 Pittsboro Street, Chapel Hill, NC, 27516 (919-933-2001)

**Purpose:** To review and provide advice on the scientific adequacy and appropriateness of EPA draft documents on monitoring and methods for Oxides of Nitrogen (NO<sub>x</sub>) and Sulfur (SO<sub>x</sub>).

**Preliminary Comments from Dr. Rudolf Husar**

**CASAC Review of Monitoring Options for NO<sub>x</sub>/SO<sub>x</sub> Secondary NAAQS  
Preliminary Comments in Response to the Charge Questions**

**1. What are the panel's views on using the CASTNET filter pack (FP) to measure particulate sulfate for the purpose of providing annual average values as an indicator for the NO<sub>x</sub>/SO<sub>x</sub> standard? Given EPA plans primarily to document the capability of the CASTNET FP and develop the FRM for particulate sulfate based on the existing information and procedures, what are the panel's views of this approach for setting the FRM?**

*CASTNET FP should be appropriate for the annual average sulfate. If the CASTNET PF is certified as FRM, does it mean that sulfate from IMPROVE/STN would not be used in estimating the sulfur indicator? If so, why not use these long-term, robust multi-use networks?*

**2. What are the panel's views on using the CASTNET filter pack (FP) to measure sulfur dioxide gas for the purpose of providing annual average values as an indicator for the NO<sub>x</sub>/SO<sub>x</sub> standard? If EPA would document the capability of the CASTNET FP and develops an FRM for sulfur dioxide gas based on the existing information and procedures, what are the panel's views of this approach for setting the FRM?**

**3. What are the panel's views on using the current primary FRM (high time resolution UVF) to measure sulfur dioxide gas for the purpose of providing annual average values as an indicator for the NO<sub>x</sub>/SO<sub>x</sub> standard?**

*I strongly recommend high time resolution SO<sub>2</sub> at rural sites, particularly for model evaluation/calibration. The highly variable SO<sub>2</sub> concentration over rural regions along with extensive SO<sub>4</sub> data from IMPROVE/STN is the best index for evaluating the (important and highly uncertain) sulfur dry deposition in the model.*

**4. What are the panel's views on using existing NO<sub>y</sub> methods that are deployed, for example, in NCore as the measurement approach for NO<sub>y</sub> for the purpose of providing annual average values as an indicator for the NO<sub>x</sub>/SO<sub>x</sub> standard? What are the panel's views on panel's assessment that additional study is needed before establishing an FRM based on the existing NO<sub>y</sub> methods? That is, are the methods already adequately demonstrated as a reference method to determine compliance with a NAAQS? What are the panel's views on the research plan for establishing existing NO<sub>y</sub> methods as an FRM? [Note suggested improvement to the plan would be appreciated, particularly ones that would help complete the study on time.]**

*I am not qualified to comment on the NO<sub>y</sub> measurement.*

**5. What are the panel's views on using the CASTNET filter pack (FP) to measure total nitrate for the purpose of providing annual average values as a surrogate indicator for the NO<sub>x</sub>/SO<sub>x</sub> standard? If EPA would document the capability of the CASTNET FP and develops an FRM for total nitrate based on the existing information and procedures, what are the panel's views of this approach for setting the FRM?**

*I am not qualified to comment on total nitrate measurement.*

**6. What are the panel's views on using the emerging AMoN ammonia monitoring network that uses passive sampling technology as a tool for evaluating air quality model behavior with respect to characterizing ambient air patterns of ammonia?**

*Not familiar with the AMoN network*

**7. What are the panel's views on co-locating ammonia measurements at each location where the indicators are measured?**

*In general, co-location of different measurements is desirable since it enhances the context of the air quality characterization. However, for the proposed standard, ammonia is to be provided by the CMAQ model, not from observations. Accordingly, the primary use of the ammonia measurements is linked to the model: e.g. verification of ammonia emissions, spatial and seasonal pattern, information about deposition and chemical reactions, etc. The indicator measurements for NO<sub>y</sub>, SO<sub>x</sub> are receptor-oriented at the eco-regions.*

*Hence, for optimal network design the ammonia-for-model and the indicator-for-AAI may lead to different configuration, e.g. higher ammonia monitoring density in the Upper Midwest.*

**8. What are the panel's views on using the CASTNET filter pack (FP) to measure ammonium ion as a tool for evaluating air quality model behavior with respect to characterizing ambient air patterns of ammonia?**

*Given that the pattern of ambient ammonia is both cyclic (diurnal) and episodic, ammonia measurements should be at higher time resolution to discern these variations and to compare them with the model.*

**9. What are the panel's views on establishing a suite of NO<sub>y</sub> species measurements at 2- 5 locations in different atmospheric and ecological regions for the purpose of evaluating air quality model and NO<sub>y</sub> instrument behavior?**

*Measuring the complete NO<sub>y</sub> mix at a few characteristic locations is a terrific idea. As much as possible, those 'super sites' should also contain other observations that would increase the width of the pollutant characterisation.*

**10. What are the panel's views on utilizing the existing CASTNET and rural NCore networks as a starting infrastructure for the purpose of supporting the NO<sub>x</sub>/SO<sub>x</sub> standard?**

*No, one should ignore both existing networks and start a brand new one since CASTNET and NCore is not exactly what is the perceived need now. (just kidding!). Of course one should reuse existing networks and begin integrating the observations arising from these existing and persistent networks, regardless of their respective 'original' purpose.*

*Actually I would ask why are the IMPROVE/STN and the NADP not included in the pool of relevant measurements? They are not 'FRM'? They are NIH*

**11. What are the panel's views on using CASTNET filter pack (FP) to measure total nitrate (particulate nitrate plus nitric acid) as the measurement approach for the purpose of providing annual average values to support the NO<sub>x</sub>/SO<sub>x</sub> standard in diagnosing NO<sub>y</sub> instrument behavior and assist in delineating the relative fractions of contributing oxidized nitrogen species to total ambient oxidized nitrogen.**

**12. What are the panel's view of the broader consideration of using CASTNET, complemented by rural NCore, to serve as a framework for the nation's rural monitoring of important gases and aerosols in support of secondary standards and evaluating the behavior of regional air quality models?**