National Air Emissions Monitoring Study Questions

USDA Agricultural Air Quality Task Force
Animal Feeding Operations Subcommittee

This document represents a list of questions from the Animal Feeding Operations (AFO) Subcommittee of the USDA Agricultural Air Quality Task Force (AAQTF) about the National Air Emissions Monitoring Study (NAEMS).

1) Scenario: We know very little about how the environmental impacts of a 'large' CAFO compare to the impacts of a 'small' AFO. (Are the impacts of a single 4000-hd unit the same as the combined impacts of 8 500-hd units?) Emissions are often reported on a per animal basis. This allows values developed under a specific set of conditions to be applied to a different scenario. However, this also assumes linearity in response to size which may or may not be correct. So the issue is whether or not the data generated is 'scalable' for various parameters.

   What model parameters will result from this study? (Examples would be species, size, manure storage, housing ventilation, …..). Add as many columns and rows as needed.

   What are the specific parameter definitions of each monitored site?

Site number	Parameter A (i.e. species)	Parameter B (animal units)	Parameter C (i.e. manure storage type)	Parameter D (i.e. ventilation type)
1				
2				
3				
4				

   The objective is to determine which parameters are scalable and therefore able to be evaluated robustly in the model. Additional objective is to better visualize how the data can be applied to the industry across the board.

2) Please provide a table of gases and pollutants to be measured as well as the methodology to be used for each site. If all sites within a species use the same protocol and all of the same pollutants are measured, a single row can be used to represent a species with a footnote indicating the number of sites for the species. Use as many columns and rows as needed for each species. See example below:

Swine site number	Pollutant A (i.e. PM)	Pollutant B (i.e. NH3)	Pollutant C (i.e. H2S)	Pollutant D (i.e. VOC)
1	TEOM	TEI Model 17C	TEI Model 450C	TEI Model 55C
2				
3				
4				

3) Scenario: There are on-going concerns with the potential for significant over sampling of agricultural PM emissions, especially PM_{10} and $PM_{2.5}$, which have been raised over the past several years during several AAQTF meetings and technical society meetings. Over-sampling bias associated with field measurement of PM concentrations could form the basis for amplification of error in PM concentration estimates from dispersion models.

Does the sampling methodology and analysis of results include measures to address sampler bias? Will corrections be applied to the field measurements?

Will TSP measurements be taken in conjunction with particle size distributions be obtained as a point of comparison with PM_{10} and $PM_{2.5}$ sampler measurements? If not, what method(s) will be used to ensure measurement of "true" PM?

Will the measurement timeframe and method for $PM_{2.5}$ adequately represent the $PM_{2.5}$ concentrations for subsequent inclusion in a dispersion model? Which models will be used and evaluated for accuracy in the study?

4) What is the fate and transport of any of the pollutants measured? Producers need to know also what is leaving the property and in what quantities.

5) Will conservation management practices be evaluated as part of the study to determine the efficiency of various practices for each pollutant? If yes, how will this be accomplished? Will cost vs. control efficiency for each conservation management practice be determined?