

**SAB Climate & Atmospheric Sciences Standing Committee
Conference call, May 13, 2011, 10:30 AM to 11:30 AM.**

On the call: Joann Held, Alan Robock, Phil Hopke, Greg Pope, Tony Broccoli, Mark Chopping, and Bill McMillin, all of the Standing Committee, and Peg Hanna, Tony Iavarone, and Mike Aucott of DEP.

The purpose of this call was to discuss the findings and recommendations from the Standing Committee work group regarding the question: What is the most effective way to determine the improvement in ambient air quality from requiring non-road diesel construction equipment to install retrofit technology and how do we quantify the health benefit to the worker and surrounding population (community) from requiring said retrofits?

Mike introduced the topic and stated that after this call, the next expected steps are approval of final draft recommendations from Climate & Atmospheric Sciences Standing Committee (C&AS), which will then be presented to full SAB at the next opportunity, which could be at full SAB meeting being scheduled, probably in mid- to late-June. Tony stated that the findings and recommendations that were sent out were revised based on the last conference call, which included DEP staff Mike Aucott, Tony Iavarone, Peg Hanna, Linda Bonanno, John Greg, Charlie Pietarinen; and Tony Broccoli, Joann Held, and Phil Hopke from SAB, and which took place 4/15/11.

Joann reviewed the question before the participants in this call, and stated that the use of a model is recommended to answer this question, but noted that there is a weakness with the input parameters and so there is a need to train, or fine-tune, the model, so therefore the recommendations include some discussion of what the model should include, plus recommendations for the monitoring. Phil described the proposed monitoring referred to by Joann as being near-field, at a reasonable construction site, both upwind and downwind. He also stated that a digital video camera could be used to observe the equipment actually in use, and that in this way the variability of the downwind emissions could be linked to the activity on the site. Regarding the weather variable, he stated that 3 to 4 days with acceptably good weather conditions would be needed, and that reserving a time block of 5 to 7 days should be sufficient to result in 3 or 4 such days.

Alan wondered if 3 days was too short a time frame. Phil stated that since they would be doing continuous monitoring, 3 days would provide lots of data points. Alan stated that with wind varying, the emissions monitors might not be in the plume for much of the time. Phil said that with a little bit of planning, it would be possible to ensure that the measurements were taken from within the plume. Joann noted that in this case the goal is just trying to better describe the emissions source. We want steady wind conditions so that we can mostly catch the plume. We're trying to better describe the emissions input, not capture the effects over a full range of weather.

Alan asked if the purpose of the monitoring was to get input or to check the model. Joann answered that the effort will not be to validate the model, but will be more like

calibrating the model. The model will be used to describe the emissions, but the question is whether the inputs to the model are representative of what's really happening. The existing emissions inventory is potentially too broad to determine this representativeness.

Alan asked if the model needs vertical stability data. Phil replied that if the measurements are taken within 20 to 40 meters of the equipment, vertical dispersion will not be a big deal. Joann added that vertical dispersion comes into play when we want to gauge how the program will help the people of NJ; at that point, the (meteorological) data from Philadelphia or Newark would be good enough. Greg wondered whether the monitoring at a micro-scale still could be affected by vertical stability. Joann said that more data on vertical stability might be needed for the northwest part of the state and the shore area.

Greg asked what would be the scale of the modeling. Phil replied that the recommended model, AERMOD, will look at an area within 1 to 2 km of a construction site. Greg asked whether at that scale micro-turbulence would be important. Tony stated that AERMOD is a documented model that does pollutant dispersion calculations, and the effort will not be to try to validate it. Discussion among the callers continued, with the consensus that AERMOD is EPA's preferred model and freely available to everyone.

Greg said he understood that AERMOD has an accepted track record, but thought that micro-scale met data finer than the 1 km resolution needed for and produced by AERMOD (i.e., turbulence at a very local scale) would still be needed. Phil replied that it would not be difficult to get uv and wind at the site, and that it would be possible to look at near-term turbulence; it's not difficult to go out with a "sonic" and get the 3D components of the local met data. Joann commented that we should note that these data should be gathered. Alan said that there are radiosonde data available for Philadelphia and Newark. Joann stated that sophisticated inputs have been built into AERMOD; it takes data that are typically available and that she didn't think that radiosonde data was necessary. Phil added that we would not be doing hysplit type analyses; not doing regional transport stuff.

Joann pointed out that local data would be collected, not for AERMOD, but for the monitoring so that there are two things under discussion here; 1) data for the monitoring effort, 2) Philadelphia and Newark (met data) for the state modeling. Phil added that AERMOD is just a simple Gaussian dispersion model; the recommendation is not to do sophisticated regional transport type modeling.

Tony summarized by stating that it's clear that the effects (of the retrofits) can't be determined by direct measurements because there will be too much noise, so there's a need to use a model. The main purpose of the monitoring recommendation is to demonstrate that the modeling works. If the scientists can't have confidence then how can the stakeholders, so the SAB needs to provide more info on how the modeling works, so people can be confident that it is the best approach to answering the question. Joann and Phil agreed that modeling is the only way to gauge the effectiveness of the retrofits.

Tony asked if there were still issues that needed to be discussed. Greg replied that he was satisfied that AERMOD is long-established, but if there's a question re the applicability/appropriateness of this model, e.g. if there are issues with dispersion, those doing the modeling/monitoring will need to explain it. Phil said that that would be no problem, that he was on another project to improve emission estimates for airports and that they were looking at impacts of activity on near-term levels.

Phil asked what else needed to be done with the recommendations. Joann stated that it needs to be stated that there's a need for some more meteorological data to be collected at the monitoring site, and for the big picture modeling. Greg stated that the final version of the report (on the modeling results) should add some case studies and/or other references to demonstrate that this is a valid approach. Tony stated that ideally we'd want to explain better that it's not feasible to get enough measurement data but that AERMOD is built to exploit the existing meteorological network, and to go beyond that would be prohibitively expensive. He stated that it needs to be explained that use of the model is use of the "best available practices" and that this should be stated in an executive summary. Joann said that she was willing to come in to the DEP to help write the final version. Tony said that the C&AS Standing Committee would then need to see the final document.

The discussion concluded with Mike agreeing to make sure that Joann and Phil are included in the doodle poll for the full SAB meeting. He stated that he would work with Joann and Linda to finalize the findings/recommendations document which would include points from this call, and that then he would then get the document to Tony and then to full C&AS Standing Committee.