



Keck School of Medicine
University of Southern California

20 March 2008

Department of
Preventive Medicine

Dr. Jean Ospital
Health Officer,
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar CA 91765

Re: Comments on Draft MATES III Report, January 2008

Dear Jean:

Thank you for the opportunity to attend the Technical Advisory Group Meeting to hear summary presentations about and comments concerning the January 2008 Draft MATES III report. The presentations and discussions were informative and helped to clarify several points, while illuminating others for further consideration. The MATES III dataset and ensuing analyses represent a current benchmark in our understanding of the status of air quality in the Southern California region and will serve as the basis for future research, mitigation approaches, and public health strategies in the coming years. It is therefore critically important that the document describing the study, its results, and implications be as accessible, clear, and definitive as possible in its discussion and description of the total effort.

Based on discussions at the Advisory meeting and a review of the draft document, I would like to offer some additional written comments for your consideration as you revise and improve the draft MATES III report.

In terms of comments and perspectives:

- (1) I believe the report could be improved through a partial revision of the packaging and presentation of the presented results. Although it is not especially highlighted, three different approaches – one based one to two years of multiple-site monitoring, one based on several different modeling approaches, and one based on the 2005 Emissions Inventory – were utilized, presented, and essentially reached the same basic conclusions regarding study findings. Presentation of the results from this perspective (or at the least, acknowledgement and discussion of this fact) should be an

important portion of the report discussion, which is currently quite brief and somewhat lacking.

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- (2) Whether the District wants to accept it or not, the fact remains that the District itself will be viewed as the authority on MATES III and the MATES II efforts that preceded it. Accordingly, I believe the District should clearly lay out its perspective on how to compare MATES III results to MATES II and provide a clear and succinct interpretation of what the comparison means. Avoidance of direct comparisons due to explanations about different methodologies, models, analytical instrumentation, and detection limits may all be relevant but will undercut the credibility of the District efforts to establish MATES III as the current best estimate of the state of air toxics exposure in the region. It would be more productive to explain how one should and can compare the trends, results, status and interpretation of air toxics exposure as provided by MATES III data with previous available data than to devote any substantive effort to distancing or de-coupling the current work from previous MATES or regional monitoring, modeling, or inventory-based assessments.
- (3) The sensitivity of year-to-year variations in observed levels (due to growth, meteorology, and a number of other considerations) and the related variability in calculated health risk is not directly addressed but could be used to comment on the level of confidence in the actual or relative risk numbers presented. Due to the reasonable expectation that sampling conducted during the first year of field operations (which turned out to be a wet and meteorologically unstable year) might lead to lower observed ambient levels than were truly representative of typical conditions, the study was extended to provide for a second year of field monitoring. However, the observed levels of a number of monitored air toxics were not dramatically different between years. Concurrent years of data offers the possibility of comparing calculated levels (which was done in the report) and risk (which was not done in the report) and should be considered, as a way of evaluating year-to-year variability in the calculated risk, and providing the public with a perspective on possible ranges in year-to-year measurement variability. Rather than undercutting the message in the document, I believe it will strengthen the overall

credibility of the document and make the public more confident about the stated level of calculated health risk.

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- (4) The use of terminologies and assignments based on “average” and “weighted” risk should be re-considered, clarified, and revised. By the District’s own observations, there are a substantive number of regional residents who live in close proximity to major sources of air toxics exposures (freeways, the ports, the railyards, etc). In that sense, use of an “average” risk number may be a dramatic underestimate of the presumed risk assignable to those residents. Assigning a “weighted” risk would be appropriate, were it to be done in a defensible and logical manner, but simply using the county population count to “weight” the calculated risk dilutes the potential importance of exposure in those areas most exposed. This is important in terms of public perception as to where the exposures and potential public health problems are in the basin, and for the levels of commitment and pressure for regulatory, policy, and societal action that might be leveraged to ameliorate the identified risks, were they determined to be truly pressing and of significant health concern.

In addition to the issues raised above, several comments seem appropriate regarding the Powerpoint presentation, summary, and description of the report by SCAQMD staff. In the individual pollutant slide summaries, there was discussion about the assignment and use of detection limits, half-the-detection limits, and non-detects in obtaining longer-term summary information of relevance. A comment was made that the MATES II approach to dealing with detection limits had led to over-predicted concentrations where there were a substantial number of non-detects, so the decision was made to assign a value of zero concentration to non-detects in MATES III. If there are a substantial number of non-detects in the MATES III dataset, in my opinion, this approach will likely lead to a under-prediction of actual ambient values. Moreover, there have been substantial advances in several of the analytical techniques available for analysis of several of the air toxics of interest, resulting in dramatically-lowered levels of detection for pollutants between data collected during MATES II and MATES III. This might serve to minimize the occurrence of the lower-limit detection issue, or it might lead to esoteric debates at ambient levels inconsistent with current states of knowledge. For clarification purposes, this could be addressed in a discussion comment or appendix section.



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For the purpose of public display and reporting, it would seem more productive to include a horizontal line in the concentration plots showing the detection level, so the reader can judge how close the reported values are to the lower limit and how much confidence one might assign to the reported values. This would provide the reader with a useful benchmark for visual comparisons.

The claim was made that PM₁₀ Elemental Carbon (EC) was declining in recent years, and a slide was presented for the years 1998 to 2005 to demonstrate this observation. In fact however, if one disregards the 1998 to 2000 decrease in EC, there has been virtually no decrease in observed levels. Therefore, claims about decreases in ambient PM₁₀ EC should be corrected or (at the least) diluted.

The MATES III effort will be viewed as "standard" for the current best estimate of regional air toxics data for several years to come. Thank you for the opportunity to participate in the discussions and help to clarify the message.

Respectfully,

A handwritten signature in cursive script that reads "Ed Avol".

Ed Avol
Environmental Health Division