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April 4, 2008

VIA E-MAIL

Dr. Jean Ospital
Health Effects Office
South Coast AQMD
21865 Copley Drive
Diamond Bar, CA 91765

Re: **EMA Comments on Draft MATES III Report**

Dear Dr. Ospital:

The Engine Manufacturers Association (EMA) appreciates the opportunity to provide comments to the South Coast Air Quality Management District (AQMD) on the draft MATES-III report released to the public in January, 2008. EMA is the international trade association representing the manufacturers of internal combustion engines. EMA's primary function is to work with federal and state regulatory agencies on issues affecting engine emissions. In addition, EMA and its members are actively involved in research and review efforts related to reducing emissions, as well as to the ameliorative effects of new engine technology. EMA participated in the review and release of the MATES-II report.

Although EMA appreciates the considerable effort that the AQMD staff has made to improve the source apportionment estimates, ambient air toxics sampling, and modeling results in the MATES-III report, we are very concerned that the draft report misinforms the public by presenting an inappropriate and misleading risk characterization. There also are several technical issues that need to be addressed in the final report.

Since the draft MATES-III report was released to the public before any review by the AQMD's own Technical Advisory Group, and its conclusions were reported widely in the press as final, there appears to be little value in making an exhaustive review of the technical methods utilized in the report. Rather, EMA has several comments regarding the presentation of the results and communicating risk and uncertainty to the public. We also comment on the report's use of the unjustified California unit risk factor for diesel exhaust and the apparent discrepancies of the modeling results in light of the available monitoring data.

EMA's comments follow, which we would be happy to discuss with you further at your convenience.

Sincerely,

Joseph L. Suchecki

Joseph L. Suchecki
Director, Public Affairs

CC: Health Effects Institute

Comments of
The Engine Manufacturers Association

On the Mates III Draft Report
South Coast Air Quality Management District

April 4, 2008

The Engine Manufacturers Association (EMA) has reviewed the draft copy of the MATES–III report prepared by the South Coast Air Quality Management District (AQMD) and released to the public in January 2008, and has the following comments and recommendations regarding the report.

1. The MATES–III final report should include a discussion on the relative risks of air toxics in comparison to other risk factors for disease in order to put the air-toxics risk discussion in proper perspective.

The draft MATES-III report (Draft) does not provide the reader or the public with sufficient information to put the reported relative risks from air toxics in proper perspective. The conclusions of the report state that the carcinogenic risk from all air toxics is approximately 1,200 per million and that 84% of the risk is attributable to diesel exhaust. Although there are a number of questions and concerns about how those numbers are derived, their applicability to real-world situations, and the uncertainty inherent in the risk values (especially with respect to the unit risk factor for diesel particulate emissions), a more critical issue is that the report does not put those risk numbers into perspective nor provide information to apprise the public as to what those risks really mean. As a consequence, widely circulated and publicized announcements reporting on the MATES-III results (including the AQMD's own press release) incorrectly and inappropriately leave the public with the impression that the reported MATES-III risk estimates refer to *all* cancers and not just the very small portion (approximately 1%) that may be attributable to air toxics.

As a result of this lack of truly necessary background information, the public may conclude that 84% of all cancers in the Los Angeles area are caused by diesel exhaust or that the 1,200 per million risk represents a very high number. Such erroneous conclusions serve neither the AQMD nor the public and should be corrected in the final report.

Accordingly, EMA strongly recommends that the following sections be added to the final MATES-III report:

- A better description and explanation of how the risk estimates are derived from the OEHHA standard procedures. The reported risks represent "worst-worst" case scenarios with the key assumption that area residents spend their entire life of 70 years outside, 24-7, exposed to the estimated levels of air toxics. In no case does this represent any real-world situation, and no person in southern California will actually be subject to such hypothetical exposures or risk levels. The report should clearly state that the reported risks are worst case estimates for comparative purposes and do not represent actual risks to the public or any specific person.

- A discussion of the total cancer risk to the population from all causes. The final report should include a discussion of the total cancer risk over a lifetime from all causes based on the latest information on cancer incidence from state or federal agencies. This information is necessary to put the risk of disease from air toxics in perspective. If the total risk of cancer is 250,000 per million, the public will be able to grasp and understand the contribution that exposure to air toxics makes to their potential risk of disease (approximately 1%). Without such necessary background comparative information, the reported risk factors are at best meaningless to the public, and at the worst totally misleading.

- A better and integrated discussion of the uncertainties inherent in the risk numbers. Although there is a section in the Draft that discusses uncertainties, that discussion focuses primarily on the uncertainties of measuring diesel particulate and not on the uncertainties or reliability of the risk estimates. AQMD needs to provide the public with good and accurate information on the caveats, uncertainties, and errors that are associated with the reported risk estimates. The uncertainties in the risk numbers are not only related to the estimates of diesel particulate matter and the unit risk factors, but also in the exposure assumptions, models, personal situations, and susceptibility to disease.

- Clear statements that the reported risks, relative contributions, and apportionments refer only to ambient air toxics and not to total risk. For example, whenever the report states that 84% of the risk is from diesel exhaust, it should be stated that this refers only to a percentage of the air toxics risk, which, as noted, amounts to approximately 1% of the total cancer risk for California residents. Consequently, the report needs to carefully inform the public of any true risks from ambient air toxics and not create graphics or state facts in a way that misleads or sensationalizes the results. Again, the potential risk from diesel exhaust (even if the MATES III report is entirely correct, which it is not) is 84% of 1%, not 84% of 100%. The MATES-III report must convey this critical information if its aim is to inform the public in a scientifically valid manner.

- The report also must place information presented in pie-charts and percentages in the proper perspective. Such metrics can be misleading by implying or signaling a very large and significant number, while in reality, they represent a very small risk. In a pie chart, some compound is always likely to represent a large percentage since the contributions of all compounds have to add up to 100%, even though the compound's contribution to disease may be extremely small or insignificant.

2. The risk associated with diesel exhaust is based on an invalid Unit Risk Factor

The estimated risks reported for diesel exhaust are based on an estimate of the concentration of diesel particulate matter as well as the Unit Risk Factor (URF) developed by OEHHA and the Scientific Review Panel for diesel particulate matter in 1998. Since diesel particulate matter is indistinguishable from other particulate matter and cannot be directly measured in ambient air, indirect methods are used by AQMD to estimate the mass concentration of diesel PM. The estimated concentration is then multiplied by the URF to arrive at an estimated carcinogenic risk attributable to diesel sources.

There are a number of scientific issues and concerns associated with the California URF that make its use to assess risk scientifically unacceptable. The CA URF is based on the results of an epidemiology study of railroad workers that the original principal investigator, the US EPA, the US EPA Clean Air Scientific Advisory Committee, and the independent Health Effects Institute have determined are not suitable for quantitative risk assessment. OEHHA remains the only regulatory body in the world to have approved a unit risk factor associated with diesel exhaust based on such data; data that could not establish a valid dose-response function for diesel exhaust. Furthermore, additional and more comprehensive studies of occupational exposure to diesel exhaust have continuously failed to identify a quantitative relationship between cancer incidence and exposure to diesel exhaust. Moreover, animal studies that were used to justify the need for a URF have been subsequently shown to not be applicable to humans. Thus, the scientific and regulatory communities outside of California do not support the unit risk factor for diesel PM used in the MATES-III study. Significantly, none of these caveats are found in the MATES-III report.

In addition, even if there were some scientific arguments to validate the California URF, which there are not, the URF should not be used since it is based on decades-old locomotive engine technology and emissions, i.e., locomotive engines from the 1950s and 1960s. Emissions from those old locomotives were not only higher in mass but also different in composition compared to engines in-use today. The railroad study used to develop the URF assessed potential cancer risk from worker exposure to emissions during the 1950's and 1960's prior to federal and California efforts to reduce emissions from diesel-fueled engines. Not only were the engines different, the fuels used were also much different. As a result, there is little or no relevance to any potential health effects from those emissions compared to today's diesel emissions in the South Coast Basin.

As EMA and others have argued in the past, the CA URF is not valid and should not be used in the MATES-III study. Despite the lack of sound scientific background for the URF, we understand that the AQMD may choose to continue to use the URF in the MATES III report since it is an OEHHA accepted value – as are the URFs for other air toxics. Nonetheless, EMA recommends that, at a minimum, the final report include a discussion regarding the controversy surrounding the validity of the URF used and the many uncertainties surrounding any cancer risk assessments completed by using that number. Readers of the MATES-III report should have access to such information in order to make an informed decision regarding the merits of the report.

3. Additional discussion is needed on the apportionment and estimation of diesel PM

Although the report does provide a brief discussion regarding the uncertainties relating to the ambient concentration of diesel PM, we recommend that the final report include more information on this topic. As discussed in more detail at the Technical Advisory Group Workshop, a number of methods were used to determine diesel PM concentrations in the modeling and ambient sample analyses. Those methods and results need to be discussed in more detail, and the differences and uncertainties regarding diesel PM apportionment need to be highlighted.

Of particular concern is the AQMD's abandonment of the Principal Components Analysis methodology. The District attempted to complete such an analysis but abandoned the effort before any source apportionment numbers were determined. Since other researches are using this method with success, it is not clear why AQMD abandoned this approach. In reviewing the literature using this method, the apportionment of PM attributed to diesel emissions is oftentimes much lower than other methods. We recommend that AQMD work with researchers familiar with this method in order to determine how it compares to the methods used in MATES-III. The final report should discuss the various methods and their affects on the diesel PM apportionment.

4. There appears to be a systematic error or bias between the modeled and measured risks. This difference needs to be examined and explained.

In reviewing the results of the MATES-III report, in particular comparing the risk estimates from modeling vs. measured concentrations, there appears to be a systematic error or bias.

Looking at information presented at the workshop comparing modeled risk to measured risk, the modeled risk is consistently higher than the measured risk for stations located nearer to the coast, and the modeled risk is consistently lower than the measured risk for stations away from the coast and to the east. This consistent pattern is troubling and signals that something is likely incorrect with the modeling effort or with the sampling effort and analysis. Although a discrepancy exists, one cannot determine from the information in the Draft the reasons that the modeling and measured values are not consistent. The model and data inputs may need further validation, the location of the sampling stations in different parts of the basin may be biased, or the apportionment and concentration results may be in error. Further investigation of these issues is needed before the report can be finalized.

EMA also noticed that this discrepancy is not clearly identified or discussed in the Draft. AQMD needs to acknowledge this and fully discuss the issue in the final report.

5. Due to the differences in methods used, the report should not attempt to compare MATES-II and MATES-III results.

There are a number of instances in the Draft where the report compares the results of the MATES-II and MATES-III reports. Although such a comparison would be desirable in order to identify improving trends and progress, the methodological differences used in source apportionment, ambient measurements, and modeling for MATES-III make such a comparison invalid.

It was clear from the materials presented and discussion during the Technical Advisory Group Workshop that different methods were used to develop the results in MATES-III compared to MATES-II. As explained, different methods were used to assess diesel PM, different methods were used to measure air toxics at the monitoring stations, and different inventory and modeling methods were used to develop the risk assessment results. As a result, there is really no value in trying to compare results between MATES-II and MATES-III as is attempted in Table ES-2, for example. Indeed, this table appears to show an increase in both diesel PM ambient concentrations as well as risk, which is facially incorrect. However, those apparent differences are due to the different methods utilized and not to any actual increases, and such inappropriate comparisons will lead readers to an incorrect conclusion.

EMA believes that since the methodology changes for MATES-III were so extensive and pervasive, that no valid comparison between the estimates from MATES-II and MATES-III are possible. We recommend that this be explained in the final report and that all quantitative comparisons be removed from the final report.

6. **The final report needs to identify and acknowledge the multiple regulatory solutions that are already in place to reduce emissions of diesel exhaust**.

The MATES-III report again concludes that a majority of the estimated health risk from air toxics in the Basin is attributable to diesel exhaust. EMA believes that this is an incorrect conclusion based on a number of erroneous assumptions used in the report, including the use of an invalid URF for diesel.

Regardless of our disagreements with the AQMD regarding the potential risks associated with diesel emissions, the report clearly fails to identify or address the considerable effort on the part of the diesel engine industry, the petroleum industry, and federal, state, and local regulators to significantly reduce diesel emissions over the last 20 years. Consequently, the reader and public are presented with an estimated health risk associated with diesel emissions but no information on the facts that the solution to reduce those potential risks is already in place and working. We believe this is a significant omission from the report that must be fixed.

When discussing the potential risks attributed to diesel, the report needs to include and acknowledge the multiple regulatory efforts in place or being implemented to reduce diesel emissions to near zero levels. The public needs to be educated on the fact that solutions are

already in place to reduce emissions from diesel sources, regardless of what the real air toxics risk from diesel may or may not be. Accordingly, EMA recommends that the final report include a discussion of these multiple regulatory measures in the body of the report as well as the Executive Summary, including specifically the following:

- The new and stringent EPA and ARB emissions standards for new diesel engines and fuels that reduce PM and air toxics emissions to near zero levels for all applications.

- The multiple regulatory efforts by ARB to address PM and NOx emissions reductions from the existing legacy fleet of diesel engines and vehicles, including the mandatory nonroad and on-highway retrofit/accelerated turnover regulations.

- The regulatory efforts by ARB to reduce unnecessary idling.

- The MOU with the railroads to reduce diesel emissions throughout the state.

- The successful efforts by ARB to reduce emissions through grants from the Carl Moyer Program.

- The ARB and local clean school bus initiatives.

- The State's goods movement initiative, with its many regulatory components to improve emissions associated with the import, export, and distribution of goods.

- The recent efforts by the Ports of Los Angeles and Long Beach to address port emissions and the State Bond Initiative to help pay to replace high-emitting trucks.

- The AQMD Fleet Rules.

Both government and industry are involved in these (and other) extraordinary efforts to reduce emissions, and this should be highlighted as a good news story and effective solution in the report.