Attachment

ARB Staff Response on Scientific Integrity of the Report on the Relationship Between Diesel Soot and Premature Death in California

Summary

ARB stands by the data and conclusions contained within the PM2.5 health effects report supporting the "Statewide Truck and Bus Regulation" due to a rigorous internal and external peer review process that went well beyond the normal requirements.

Background

ARB previously estimated that diesel soot was responsible for 2200 deaths (year 2000).

This was based on diesel soot exposures in a 1998 report reviewed by Cal/EPA's Scientific Review Panel and a 6% increase in all-cause mortality for a 10 $\mu g/m^3$ increase in PM2.5 (based on a major 16-year nationwide study of 319,000 individuals by Professor Arden Pope of BYU and colleagues published in a peer-reviewed article in 2002). The 6% increase was in alignment with U.S. EPA and other organizations.

In a report finalized last October, ARB now estimates 3500 deaths (year 2005).

A study of the Los Angeles subset (22,905 individuals) of the national study by Pope and colleagues in 2005 found a 17% increase. In March 2006, the Board asked staff to review all available evidence on the relationship between PM2.5 and premature death. A draft report was presented to the Board and public on May 22, 2008 and concluded a 10% increase in all-cause mortality for a 10 $\mu g/m^3$ increase in PM2.5. The report was finalized October 24, 2008 (see http://www.arb.ca.gov/research/health/pm-mort/pm-mort_final.pdf).

The report went through three levels of formal, independent, external peer review.

We only used scientific publications from the open peer-reviewed literature.

We considered 78 peer-reviewed scientific journal articles and eight reports from the National Academies of Science, the U.S. Environmental Protection Agency and the World Health Organization. We did not include secondary literature, such as books or opinion pieces.

Three nationally recognized scientific advisors from BYU, Harvard and OEHHA reviewed all aspects of our work, including all publicly released versions of the report.

We received comments throughout the process from our three advisors: Dr. Jonathon Levy from Harvard, Dr. Arden Pope from Brigham Young University and Dr. Bart Ostro from the Office of Environmental Health Hazard Assessment. They publish frequently in

the areas of air pollution and statistical relationships with premature death, the main subject of our report, and concurred with our finding.

The UC Berkeley Institute of the Environment selected six peer reviewers for the report.

Our draft report was reviewed following the Cal/EPA external scientific peer review guidelines for independent review. In this process the UC Berkeley Institute of the Environment selects the peer reviewers without input from staff. Staff was only allowed to submit a list of individual who may have a conflict of interest and so could not participate. Furthermore, candidates were accepted as reviewers only if the disclosure information showed they had no conflict of interest related to the report.

The six reviewers identified by UC Berkeley and selected by the Cal/EPA Project Director to review the proposed methodology in the PM2.5 Mortality staff report are: Dr. Jeff Brook from Environment Canada, Professor Mark D. Eisner of UC San Francisco, Professor Richard C. Flagan of the California Institute of Technology, Professor Alan Hubbard of UC Berkeley, Professor Joel Kaufman of University of Washington and Professor Joel Schwartz of Harvard University. Collectively, their expertise is based on research in the areas of chronic obstructive pulmonary disease related to air pollution, statistical analysis of epidemiological data, particle formation and measurements in air, air quality risk management, air pollution and daily mortality associations, and epidemiology. They all concurred with our basic conclusions.

In addition, the report went through several levels of informal, independent peer review.

Linda Tombras Smith, a Ph.D. in Chemistry (with a Biochemistry thesis topic) from UC San Diego with lead experience on PM and other major ambient air quality standard reviews, oversaw the entire project and reviewed all versions of the report.

Dr. Smith is Hien Tran's direct supervisor.

At the request of Board Chairman Mary Nichols, ARB staff convened a panel of worldwide PM health effects experts.

Participants included U.S. EPA, Environment Canada, the World Health Organization, the Cahirs of Cal/EPA's Clean Air Scientific Advisory Committee and Scientific Review Panel, the Health Effects Institute and several internally recognized academic researchers. There was general concurrence on the basic conclusions of the report.

At the request of the Engine Manufacturers Association, the diesel soot exposure estimates were reviewed by Professor Philip Hopke of Clarkson University.

Dr. Hopke was supportive of the basic conceptual framework of ARB's approach (see http://www.arb.ca.gov/research/health/pm-mort/pm-mort_app6.pdf), and asked for additional information that was included in the final report.

Other organizations are coming into alignment with our methodology.

The U.S. EPA is transitioning to using a range of 6% to 16% (versus our 10%) increase in all-cause mortality for a 10 μg/m^3 increase in PM2.5.

This is not official yet.

A 2007 peer-reviewed elicitation of European experts also concluded 6% is too low.

NOTICE OF ADVERSE ACTION

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In an internal response, titled "ARB Staff Response on Scientific Integrity of the Report on the Relationship between Diesel Soot and Premature Death in California," dated December 19, 2008, ARB stated they stood by the data and conclusions contained in the PM 2.5 Mortality Report supporting the Regulation" due to the rigorous internal as well as external peer review that was done. (Exhibit #22)

ARB firmly stands behind the integrity of our report, having gone through an independent peer review, with all reviewers finding our methodology scientifically sound and reasonable. However, because the report provides input into the Regulation, which in turn results in increased regulations to the trucking industry (whose affects are far reaching), the credibility of the lead author and project coordinator is paramount. Due to your misrepresentation of your Ph.D., management was led to believe that you had attained your Ph.D. from UC Davis. Consequently, when your credentials were called into question, ARB was placed in an untenable position to defend your credentials with inaccurate information.