

Misuse of Epidemiology and Misallocation of State Resources by the California Air Resources Board: Goods Movement Emission Reduction Plan

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1) Background on the CARB Goods Movement Emission Reduction Plan

During the past two years the California Air Resources Board (CARB) has approved and implemented a “Goods Movement Emission Reduction Plan” (GMERP) to reduce the diesel exhaust emissions from diesel trucks and ships. This plan is described in the April 20, 2006 CARB Resolution 06-14 (http://www.arb.ca.gov/planning/gmerp/march21plan/docs/resolution_06-14.pdf) and on a CARB GMERP website (<http://www.arb.ca.gov/planning/gmerp/gmerp.htm>). GMERP has led to the 2007 “Goods Movement Action Plan” (<http://www.arb.ca.gov/gmp/gmp.htm>). Also, GMERP has led to the 2008 “Strategic Plan for Enforcement of Diesel Emissions Control Regulations” (<http://www.arb.ca.gov/enf/hhla/hhla.htm>). The funding for GMERP comes from Proposition 1B, the wide-reaching transportation bond approved by California voters in 2006, which includes one billion dollars to reduce diesel exhaust emissions (<http://www.aqmd.gov/tao/Implementation/Prop1B.htm>).

As a UCLA epidemiologist who has spent the past 35 years studying and publishing research findings on the most important risk factors that affect the mortality of Californians, I believe that CARB is misrepresenting and misusing the epidemiologic evidence on the health effects of diesel exhaust in California in order to justify spending one billion dollars on a very minor health risk. I believe that this money should be used in other ways that would have much greater net benefits for Californians. Further, I believe that the GMERP is one example of the overregulation that is adversely impacting the California economy and contributing to the current state budget deficit.

2) Controversial History Regarding Declaration of Diesel Exhaust as a Toxic Air Contaminant

After about 10 years of intense controversy, diesel exhaust was declared to be a toxic air contaminant (TAC) by the CARB Scientific Review Panel (SRP) on Toxic Air Contaminants on April 22, 1998 (<http://www.arb.ca.gov/srp/mt042298.htm>). A summary of the controversy was given in the April 23, 1998 Los Angeles Times article “Diesel Exhaust Found to Pose Strong Cancer Risk; State must decide whether to declare fumes a toxic threat requiring safeguards. Business leaders attack report” (<http://proquest.umi.com/pqdweb?did=28940780&sid=1&Fmt=3&clie%20ntId=1564&RQT=309&VName=PQD>). Then, on August 27, 1998 the CARB declared diesel exhaust particulate matter to be a TAC. This action was taken after industry groups, including trucking and oil companies, agreed to end years of

intense opposition to CARB action on diesel as long as only diesel exhaust particulate matter, not diesel exhaust as a whole, was identified as a TAC. This action was described in an August 28, 1998 Los Angeles Times article “Board Declares Diesel Soot a Cancer-Causing Pollutant” (<http://proquest.umi.com/pqdweb?did=33480494&sid=1&Fmt=3&cli%20ntId=1564&RQT=309&VName=PQD>).

Since 1998, diesel exhaust and diesel exhaust particulate matter levels in California and the US have declined substantially. These improved air quality trends are documented in the January 2008 book “Air Quality in America” by Joel M. Schwartz and Steven F. Hayward (http://www.aei.org/books/bookID.918/book_detail.asp). Indeed, tremendous progress has been made in improving overall air quality during the past 50 years and that this progress must be acknowledged in current assessments by CARB. In addition, there is substantial new epidemiologic evidence relevant to the health effects of diesel exhaust that was not considered when the 1998 TAC declaration was made. For instance, the 2007 paper on mortality in the unionized U.S. trucking industry by Francine Laden et al. (*Environ Health Perspect* 2007;115:1192-1196), found that 36,000 diesel truck drivers had death rates from all causes and all cancer that were substantially below the rates among US males, as might be expected in a working population, likely due to the “healthy worker effect.” Furthermore, unlike some earlier evidence, the lung cancer death rate was not elevated among these truckers (<http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1940099&blobtype=pdf>). This new evidence must be fully evaluated and included in the assessment of the current health effects of diesel exhaust.

3) Exaggerated “Premature Mortality” Calculation in March 21, 2006 GMERP Appendix A “Quantification of the Health Impacts and Economic Valuation of Air Pollution from Ports and Goods Movement in California” (http://www.arb.ca.gov/planning/gmerp/march21plan/appendix_a.pdf)

My December 15, 2005 paper, “Fine particulate air pollution and total mortality among elderly Californians, 1973-2002” (*Inhalation Toxicology* 2005;17:803-816), along with a cover letter, was submitted to CARB on January 9, 2006 for consideration regarding the GMERP (http://www.arb.ca.gov/planning/gmerp/dec1plan/gmerp_comments/enstrom.pdf). My paper, which found no relationship between fine particulate matter (PM_{2.5}) and mortality in elderly Californians after 1982, is directly relevant to the “PM-related Mortality” calculation described on pages A-29 and A-30 of Appendix A. Although it represents the most detailed and comprehensive analysis of PM_{2.5} and mortality ever published on a California cohort, my paper (Enstrom, 2005) was not included in the calculation of premature deaths, largely because of the claim that “this study has generated a great deal of controversy” However, the nature of the controversy was not specified and no specific justification for exclusion was given. Instead, primary emphasis was given to the November 1, 2005 paper “Spatial Analysis of Air Pollution and Mortality in Los Angeles” by Michael Jerrett et al. (*Epidemiology* 2005;16:727-736), which found an unusually large relationship between PM_{2.5} and mortality in the Los Angeles basin after 1982. This led to the Appendix A estimate that particulate matter is responsible for 2,400 premature deaths (page A-6), out of the total of about 230,000 California deaths per year. However, the Jerrett results are inconsistent with both my 2005 results and the 2000 US map of “fine particles and mortality risk” by Daniel Krewski et al. (<http://pubs.healtheffects.org/view.php?id=6>, Part II, page 197). The 2000 US map, which is shown at the end of this letter, indicates the fine particles are associated with only “medium mortality” risk in the Los Angeles basin, while the “high mortality” risk is concentrated in the Appalachian states around West Virginia. The inconsistencies between the results in my paper, the 2000 US map, and the Jerrett

paper must be resolved before definitive conclusions can be drawn about the number of premature deaths in California that might be due to particulate matter.

Furthermore, the March 23, 2006 Staff Presentation to CARB, “Stronger Relationship Between Particulate Matter (PM) and Premature Death,” made absolutely no mention of my study (<ftp://ftp.arb.ca.gov/carbis/board/books/2006/032306/06-3-1pres.pdf>). For instance, slide 14 cites eight major studies, including the Jerrett study, but omitted my study entirely. Then slides 15-23 described only the Jerrett study, with no mention of any contrary evidence. Inclusion of all relevant evidence, particularly California-specific evidence, is critical because the estimation of premature deaths involves great uncertainty. For example, the November 2005 GMERP Appendix A did not rely on the Jerrett study and calculated that there were only 750 premature deaths per year (see pages A-5, A-40, and A-41). The November 2005 GMERP Appendix A is no longer posted, but can be found on my website (<http://www.scientificintegrityinstitute.org/GMERPAppA120205.pdf>). Furthermore, reservations must be exercised regarding all the Appendix A analyses, because they represent the assessment of the CARB staff and they have not been subjected to the same kind of independent critical evaluation that the peer reviewed Enstrom and Jerrett papers have received.

4) The California Health and Safety Code and Appointments to the Scientific Review Panel (<http://caselaw.lp.findlaw.com/cacodes/hsc/39670-39671.html>)

California Health and Safety Code (CHSC) Sections 39670-39671 define the CARB Scientific Review Panel on Toxic Air Contaminants and the specific way in which the nine members of the panel are to be appointed (<http://caselaw.lp.findlaw.com/cacodes/hsc/39670-39671.html>). In particular, each panel member is appointed “for a term of three years” and “the terms of three members expire each year.” However, although I have been receiving CARB listserv messages continuously since 2005, I have never seen any announcement requesting nominations or applications for new panel members. Indeed, based on a comparison of the April 22, 1998 SRP transcript (<http://www.arb.ca.gov/srp/mt042298.htm>, page ii) with the 2008 CARB list of SRP members (<http://www.arb.ca.gov/srp/public.htm>), five SRP members have served for at least ten years. Other evidence indicates that at least two panel members have served for over twenty years. I believe that the clear intent of the CHSC is timely turnover on the SRP, not repeated reappointment of the same panel members. Lack of turnover, as specified in the CHSC, has denied many other qualified California scientists an opportunity to be on the SRP and to provide new perspective and expertise on the important issues related to TAC assessment.

Conclusions and Requests to CARB

As a UCLA epidemiologist who has spend the past 35 years conducting research on important risk factors related to the health of Californians, I believe that the mortality effects of diesel exhaust on the general public have been exaggerated by the April 22, 1998 SRP decision and by the March 21, 2006 GMERP Appendix A. Consequently, I believe that the one billion dollars currently set aside to reduce diesel exhaust emissions should be used in other more productive ways to benefit Californians. Furthermore, I believe that the GMERP is having an adverse impact on the California economy, is driving essential business out of California, and is generating unwarranted lawsuits. To illustrate the adverse impacts of the GMERP, there have been recent efforts to establish a new port in Baja

California because of the environmental regulations and constraints on development associated with the existing ports in Southern California, as described in the March 25, 2008 Los Angeles Times (<http://articles.latimes.com/2008/03/25/news/fi-mexport25>). Also, there have been recent threats by environmental activists to sue the Port of Long Beach in order to force a reduction in diesel emissions, as described in the February 7, 2008 Los Angeles Times (http://www.latimes.com/news/science/environment/la-me-port7feb07_0_3674984.story).

In response to my above points, CARB and the California Legislature should make sure that appointments to the SRP are consistent with the provisions of the CHSC. In this regard, CARB should promptly post announcements soliciting new candidates for the three SRP positions that expire at the end of 2008. Furthermore, CARB should undertake objective updated assessments of the relationship between fine particles and mortality in California and of the overall health effects of diesel exhaust in California. At a time when the California economy is facing major challenges and the state budget has a large deficit, there should be a proper prioritization of the most important needs in the California, with the GMERP assigned a priority that is consistent with the actual health risks of diesel exhaust.

Map reprinted from Krewski et al (2000) (<http://pubs.healtheffects.org/view.php?id=6>, Part II, page 197) or (<http://www.scientificintegrityinstitute.org/IT060106.pdf> , page 513)

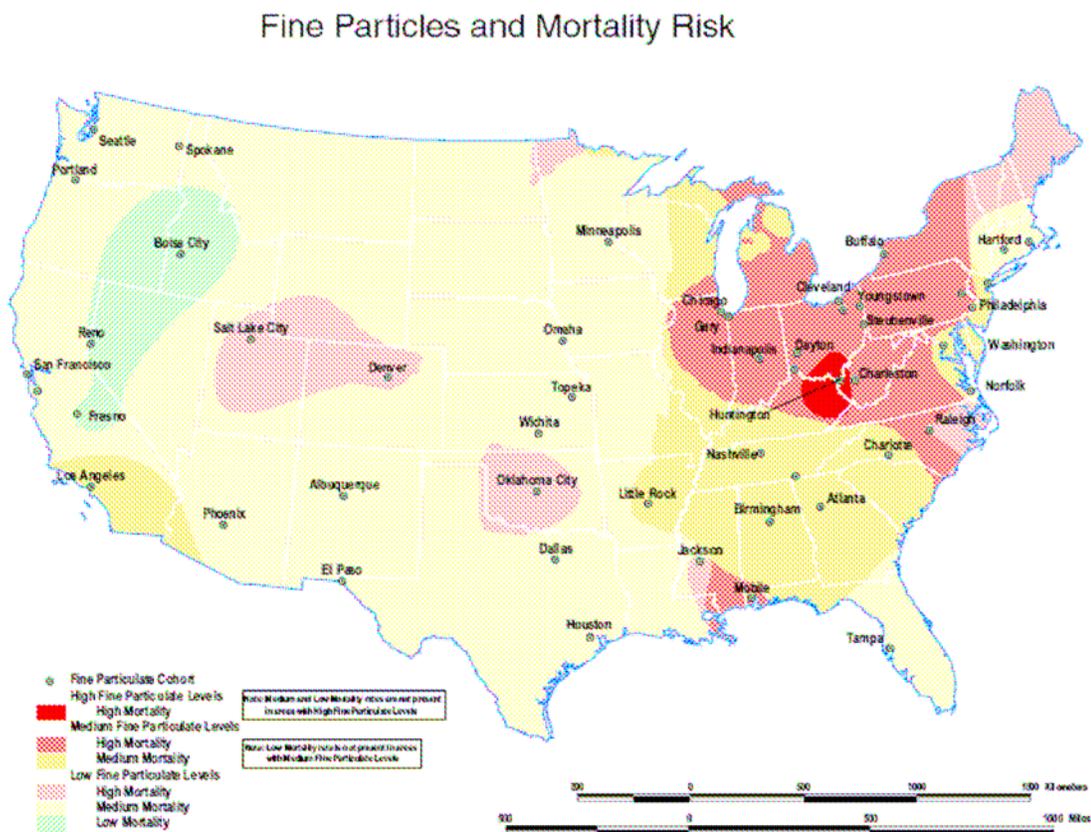


Figure 21. Spatial overlay of fine particle levels and relative risk of mortality. Interval classifications for fine particles ($\mu\text{g}/\text{m}^3$): low 8.99–17.03; medium 17.03–25.07; high 25.07–33. Interval classifications for relative risks of mortality: low 0.502–0.711; medium 0.711–0.919; high 0.919–1.128.