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August 23, 2011

California Air Resources Board
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

Attn: Lynn Terry
Deputy Executive Officer

RE: ARB's Response Letter Dated July 27, 2011

Dear Ms. Terry,

Your one page letter dated July 27, 2011 was so inadequate I could not tell which of two recent letters I sent to CARB was being responded to. I had to call you to find out whether my June 2, 1011 or June 9, 2011 letter was the focus of your response.

My June 2, 2011 letter of five pages outlining substantial criticisms and proposals for corrective action by CARB was composed as a resolution. I supported that proposed resolution with 16 pages of scientific and policy information that included clear cut examples of CARB scientific and policy making misconduct. These charges demand an analysis and point by point response as obliged by courtesy, professionalism, and the California law that requires agencies and their representatives to respectfully and thoughtfully, candidly and honestly address criticism of agency conduct from the public and provide the complainant with an adequate response.

I direct you to Government Code section 11346.9 that states:

“(3) A summary of **each objection** or recommendation made regarding the specific adoption, amendment, or repeal proposed, together with an explanation of how the proposed action has been changed to accommodate each objection or recommendation, or the reasons for making no change.”

Your letter appears to be an attempt to intimidate or dismiss with disrespect the criticisms presented in my letter of June 2, 2011 without even a gesture in the direction of compliance with California law for agency conduct in relations with the public.

Your letter of response said, briefly:

1. We don't need to explain anything; we are relying on US EPA research.
2. Even the premature and incomplete review by the Research Screening Committee is adequate to justify our new regulatory regime, and we expect that the final report will also support our policy making.

You consider the above to be an adequate response to an in depth and comprehensive expose' of the CARB sponsored research as unreliable and in some cases clearly not supportive of CARB policy making and new regulations?

Although I telephoned (as suggested in your letter), you failed to offer a more in depth response to a critique of CARB actions that I put in 21 pages with proper embeds and references.

I will not cater to your disrespectful conduct by just repeating all the objections presented by my letter of June 2, 2011, since there are many opportunities that have presented themselves to point out continuing CARB and Cal EPA misuse of research and creation of scares that are not supported by the research.

The August 10, 2010 report does not justify the new regulations proposed:

CARB's August 2010 report entitled "Estimate of Premature Deaths Associated with Fine Particle Pollution (PM2.5) in California Using a U.S. Environmental Protection Agency Methodology" is purported to justify the proposed new rules. However the unauthored report raises more questions than it answers and a reasonable analysis of the report would support a decision to cancel any new PM regulations.

For example from Page 3 of the report:

(<http://www.arb.ca.gov/regact/2010/truckbus10/res1044.pdf>)

"WHEREAS, the U.S. EPA risk assessment methodology is the basis for ARB's estimate that 9,200 (7,300 to 11,000, 95% confidence interval) premature deaths occur annually in California and that reducing emissions to meet the NAAQS standard would result in 2,700 (2,100 to 3,300, 95% confidence interval) fewer premature deaths annually;"

However, CARB says this in the news release on the report:

August 31, 2010 CARB News Release

(<http://www.arb.ca.gov/newsrel/newsrelease.php?id=149>). News Release contains links to CARB "Tran" Report itself & EPA ISA. Below statement in Resolution 10-44 comes from page 23 of this same report:

Table 10: All-Cause – Annual All-Cause Deaths in California Avoided by Attainment of the Annual-Average Federal PM2.5 NAAQS: 2,400 (1,500 to 3,300. 95% confidence interval).

These estimates are misleading because CARB on-road regulations, even accepting CARB sponsored research results, only prevent about 233 deaths, using projections from national studies. (<http://www.arb.ca.gov/regact/2010/truckbus10/truckbusappj.pdf>) and (<http://www.arb.ca.gov/regact/2010/truckbus10/correctedappj.pdf>)

Page J-17: Table 1: Estimate of Premature Deaths Avoided Associated with Emission Reductions from Implementation of the On-Road Truck Regulation (2010-2025)* Total deaths avoided (from PM & NOx) = 3,500 (2,700 - 4,400) in 15 years --- 233 / year (based on US EPA methodology using national results (Krewski 2009)).

Again the estimates appear to be on a whim of CARB from the December 17, 2010 CARB News Release for revised diesel regulations (<http://www.arb.ca.gov/newsrel/newsrelease.php?id=171>) which states:

"The diesel rules for vehicles cover almost everything that moves on or off the road, from trucks and buses to off-road construction equipment, and over the next 12 years they will prevent 3,900 premature deaths by removing thousands of tons of diesel soot from the air we breathe," said ARB Chairman Mary D. Nichols." --- $3,900 / 12 = 325$ deaths / year.

So, which is the "real" number of premature deaths "supposedly saved" via the on-road truck regulation: 2,400 or 2,700 per year (36,000-40,500 in 15 years) or 3,500 - 3,900 over 12 or 15 years? How can CARB continue to issue numbers of supposed deaths caused by PM2.5 that range from 3,500 to 40,500 in 15 years and you find no compulsion under the California law to respond to public criticism by just charging ahead and claiming no problem with these publications? I guess you can just call them more of your **FACTOIDS (something fictitious or unsubstantiated that is presented as fact, devised especially to gain publicity and accepted because of constant repetition).**

In another area of monetizing compliance costs, industry and business associations have estimated cost of the new regulations to be between \$10 and \$20 billion. If one averaged that at \$15B divided by the on-road "estimate of premature deaths prevented" of 3,500 people over 12 years, we are looking at \$4,285,714.20 cost "per (supposed) premature death". With that, you should add the well known resultant economic hardship and human health effects as a result of poverty and deprivation caused by the lack of opportunity to work due to the collapsing California businesses that will be unable to afford "compliance". What chance of economic recovery does California have with even more reduced employment (currently over 12%)?

In an already outdated and inapplicable policy statement, the CARB, in its Final Statement of Reasons for Rulemaking issued for the hearing on December 11 and 12, 2008, page 45 said:

"For example, the Technical Support Document indicates that cumulative benefits over the period 2010 to 2025 will be between \$48 billion and \$69 billion depending on the discount rate assumed, while estimated benefits from avoiding morbidity range from \$350 million to \$500 million. There, the overwhelming proportion of the estimated benefits comes from avoided premature mortality."

However all the recent California specific studies fail to show **ANY** risk of premature mortality (see Attachments). Without these hyped up savings, there is no health benefit anywhere near the amount that could justify regulation. **In fact, the California deaths are not in the thousands, nor hundreds; there are none.**

Legal standards for proof of toxicity:

There is no study pertinent to this discussion, supported by or sponsored by CARB, that complies with the requirements for magnitude of effect of the Federal Judicial Center's *Reference Manual on Scientific Evidence* (2nd Ed. West Publishing) chapter on epidemiology. All of the studies have Relative Risk in the ranges below 1.1 (1.0 is zero effect) when a minimum of 2 is prescribed before an honest epidemiologist could even suggest causation. My position is that under a reasonable test of evidentiary admissibility the CARB studies and the US EPA studies are not adequate evidence of catching a cold, much less causing premature death from PM2.5,¹ yet CARB posts deceptive propaganda as truthful and applicable to California. See Appendix H.²

New Studies Continue to Show that PM2.5 Mortality Not an Issue in Western U.S. and disappearing in the East:

A new paper with PM2.5 and mortality results from the Harvard Health Professionals went online at EHP on March 31, 2011. This paper from University of South Carolina and Harvard finds **NO relationship between PM2.5 and all-cause mortality in the Northeastern and Midwestern US during 1989-2002, as shown in Table 2: HR: (0.94; 95%CI: 0.87,1.00)**. This is evidence that the PM2.5 mortality effect is even now disappearing from the Eastern US.

Another new paper with PM2.5 and mortality results from the California Teachers Study (CTS) just went online. This paper clearly finds NO relationship between PM2.5 and all-cause mortality, as shown in Table 3: HR = 1.01 (0.95 - 1.09). These results contradict the LARGE HR ~ 1.8 for all cause mortality in CTS, as presented in Jerrett slide 26 in Sacramento on February 26, 2010 (<http://www.scientificintegrityinstitute.org/carbjerrett022610.pdf>).

These and the other latest findings suggest no California evidence of deaths from air pollution in California for the study period. No evidence of PM2.5 impact on all-cause mortality (premature death). The Board should ask Dr. Jerrett about this LARGE inconsistency, particularly since he is a co-author on the new CTS paper, which was funded largely by California Air Resources Board Contract #06-336.

Federal Environmental Agency Charged with Deception:

Your reliance on the U.S. EPA research that is the fundamental basis for your answer is ill advised and misplaced. Senator James Inhofe, Ranking Member of the Committee on Environment and Public Works wrote the linked letter to the Inspector General of the US EPA accusing US EPA of wide spread and invidious misconduct in research on air pollution matters (<http://junksciencecom.files.wordpress.com/2011/08/inhofe-to-epa-ig.pdf>).

¹ Reference Manual on Scientific Evidence, Pg 375-384 (2nd ed., Federal Judicial Center, 2000)

² Delta Letter of June 2, 2011.

This letter outlines several identical charges that I claimed against CARB in my letter of February 17, 2010. Some of these identical charges include:

- Lack of impartiality and unethical peer reviews
- Failure to balance perspectives and politically motivated actions
- Failure to rotate members on review panels
- Financial conflicts of interest in reviews and research

Your claim of peer review “by an independent panel of national scientists on the Clean Air Scientific Advisory Committee” is risible, since the small clique of air pollution “experts” is recycled and the individuals involved in US EPA and CARB reviews are frequently reviewing their own documents or papers of their friends and working associates.

Senator Inhofe states: “Based on these nine individuals’ involvement in the 2006 PM NAAQS Panel and their public opposition to EPA retaining the annual PM standard, these panelists have an appearance of a lack of impartiality that should disqualify them for service on the 2011 PM Review Panel”³ and, “Simply acknowledging the income received, which is the current Administration policy, does not correct the problem or ensure objectivity in the panel members when they are: (1) selected by EPA; (2) opining on their own work products funded by EPA; (3) reviewing EPA reports; and (4) receiving millions in dollars in grant funding from EPA”.⁴

My assertion is that the same corruption and conflicts that plague research and policy/science review at the US EPA level are the problems of CAL EPA and CARB.

These serious charges are itemized and documented in my letter and in the letter from Senator Inhofe to the USEPA Inspector General. For the California Air Resources Board to rely upon an agency with noted charges of violations to such things as their own Peer Review Bulletin and Peer Review Handbook could only be described as irresponsible and unethical. CARB and CAL EPA cannot, in good faith, use US EPA sponsored research and policy making as cover, given that it is possibly derivative of an unethical and unscientific, corrupted process.

Compare the Inhofe accusations with my charges against CARB in my letter of February 17, 2010:

- Incestuous relationships of “experts”
- Unethical behavior of SRP Chair
- Lack of following stated governmental appointment requirements
- Ignoring of California specific studies showing no relationship of PM or NOx to health issues
- Refusal to release data used to make decisions; no independent oversight.
- Rejecting the studies that don’t support CARB claims
- Lack of any admissible and valid evidence of causation in any study used to date.

Do you see the striking similarity? The US EPA and the CARB have ignored their missions as manager and guarantor to the public of good public health and environmental effects science. They have become nothing more than propaganda mills and no longer deserve the trust of the citizens.

³ Senator Inhofe Letter to the Inspector General of EPA, Attachment, Page 2

⁴ Senator Inhofe Letter, Attachment, Page 6

Recent California Study Submitted to the Research Screening Committee:

You have mentioned Dr. Jerrett's new report as your second "justification" for regulation. This report was submitted to the Research Screening Committee on June 9, 2011. I attended that meeting and provided a letter dated June 9, 2011 **supporting Dr. Jerrett's findings that refutes any claim that there is premature mortality in California caused by PM2.5. All 9 studies used by Dr. Jerrett show the confidence intervals meeting or crossing 1.0, confirming that there is NO EFFECT of all cause premature death from PM2.5.**

I along with others are still waiting for a response to the letters submitted at that meeting (which I assume will come following Dr. Jerrett's "clarifications" to his report). Until this "clarification" is received, I find it illogical, unconscionable and unscientific, and in-consistent with good policy and regulatory decision making to claim Jarrett's null results study as justification for the proposed regulatory regime.

The attached summary of studies within the past 10 years shows little or no relative risk of premature death from PM2.5 in California. This lack of evidence of risk along with the recent charges against the Federal EPA (who you have relied upon for support) speaks strongly in favor of a stand down from writing or implementing any stringent air pollution regulations and supports a decision to perform a complete review of all of the facts proffered, both herein and prior unanswered letters before continuing the implementation of regulations for engines, whether they are on-road, off-road, portable diesel engines or LSI (Large Spark Ignition).

Sincerely,



Skip Brown

Attachment: Major Epidemiologic Studies of PM2.5 and Total Mortality in California

cc: Senator Ted Gaines
Senator Bob Dutton
Assemblyman Tim Donnelly
Assemblyman Dan Logue
Assemblyman Bill Berryhill
Assemblyman Jim Nielsen
Assemblyperson Diane Harkey
Assemblyperson Alyson Huber
Assemblyperson Shannon Grove

Major Epidemiologic Studies of PM_{2.5} and Total Mortality in California

(<http://scientificintegrityinstitute.org/Enstrom081111.pdf>)

Relative risk of death from all causes (RR and 95% CI) associated with increase of 10 µg/m³ in PM_{2.5}

James E. Enstrom, Ph.D., M.P.H.
University of California, Los Angeles
jenstrom@ucla.edu

August 11, 2011

McDonnell 2000	CA AHSMOG Cohort (N=3,800 [1,347 M + 2,422 F]; Adventists in 9 airsheds, used to estimate PM _{2.5})	RR ~ 1.03 (0.95 – 1.12) during 1976-1992
Krewski 2000 (from Krewski 2010)	CA CPS II Cohort (N=40,408 [18,000 M + 22,408 F]; 4 MSAs; 1979-1983 PM _{2.5} ; 44 covariates)	RR = 0.872 (0.805-0.944) during 1982-1989
Enstrom 2005	CA CPS I Cohort (N=35,783 [15,573 M + 20,210 F]; 11 counties; 1979-1983 PM _{2.5})	RR = 1.039 (1.010-1.069) during 1973-1982 RR = 0.997 (0.978-1.016) during 1983-2002
Enstrom 2006	CA CPS I Cohort (N=35,783 [15,573 M + 20,210 F]; 11 counties; 1979-1983 & 1999-2001 PM _{2.5})	RR = 1.061 (1.017-1.106) during 1973-1982 RR = 0.995 (0.968-1.024) during 1983-2002
Zeger 2008	“West” portion of MCAPS Cohort (3.1 M [1.5 M M + 1.6 M F]; Medicare enrollees in CA+OR+WA; 2000-2005 PM _{2.5})	RR = 0.989 (0.970-1.008) during 2000-2005
Jerrett 2010	CA CPS II Cohort (N=77,767 [34,367 M + 43,400 F]; ~50 counties; 2000 PM _{2.5} ; KRG ZIP; 20 Ind Cov+7 Eco Var; Slide 12)	RR ~ 0.994 (0.965-1.025) during 1982-2000
Krewski 2010	CA CPS II Cohort (N=40,408; 4 MSAs; 1979-1983 PM _{2.5}) 44 covariates (N=50,930; 7 MSAs; 1999-2000 PM _{2.5})	RR = 0.960 (0.920-1.002) during 1982-2000 RR = 0.968 (0.916-1.022) during 1982-2000
Jerrett 2011	CA CPS II Cohort (N=73,609 [32,509 M + 41,100 F]; ~50 counties; 2000 PM _{2.5} ; KRG ZIP Model; 20 Ind Cov+7 Eco Var; Table 28)	RR = 0.994 (0.965-1.024) during 1982-2000
Jerrett 2011	CA CPS II Cohort (N=73,609 [32,509 M + 41,100 F]; ~50 counties; 2000 PM _{2.5} ; Nine Model Ave; 20 IC+7 EV; Fig 22 & Tab 27-32)	RR = 1.002 (0.992-1.012) during 1982-2000

Lipsett 2011 CA Teachers Cohort (N=73,489 [73,489 F]; 2000-2005 PM_{2.5}) RR = 1.01 (0.95 – 1.09) during 2000-2005

Ostro 2011 replaced Ostro 2010 CA Teachers Cohort (N=43,220 [43,220 F]; 2002-2007 PM_{2.5}) RR = 1.06 (0.96 – 1.16) during 2002-2007
 Incorrect 2010 Result: RR = 1.84 (1.66 – 2.05) during 2002-2007

Epidemiologic Study of PM_{2.5} and Total Mortality in Los Angeles Basin
Relative risk of death from all causes (RR and 95% CI) associated with increase of 10 µg/m³ in PM_{2.5}

Jerrett 2005 CPS II Cohort in Los Angeles Basin (N=22,905; 267 zip code areas; 1999-2000 PM_{2.5}; 44 covariates + maximal confounders) RR = 1.11 (0.99 - 1.25) during 1982-2000

Epidemiologic Study of PM_{2.5} and Total Mortality in United States Relied Upon by CARB and US EPA as of 2010
Relative risk of death from all causes (RR and 95% CI) associated with increase of 10 µg/m³ in PM_{2.5}

Krewski 2009 CPS II Cohort (N=342,521; 58 MSAs; 1979-1983 PM_{2.5}) RR = 1.028 (1.014-1.043) during 1982-2000
 44 covariates (N=488,370; 116 MSAs; 1999-2000 PM_{2.5}) RR = 1.036 (1.017-1.054) during 1982-2000

FJC Requirement to establish causal epidemiologic relationship RR >= 2.0

Federal Judiciary Center “Reference Manual on Scientific Evidence, 2nd Edition”
 ([\\$file/sciman06.pdf](http://www.fjc.gov/public/pdf.nsf/lookup/sciman06.pdf))
 Reference Guide on Epidemiology
 ([\\$File/6.epide.pdf](http://www.fjc.gov/public/pdf.nsf/lookup/6.epide.pdf))

References for Epidemiologic Studies of PM_{2.5} and Total Mortality

Author & Year	Home Institution	Underlying Study Cohort	Primary Funding
<u>California-wide Studies</u>			
McDonnell 2000	Loma Linda U, CA	California Adventist Health Study of Smog (AHSMOG)	CARB and US EPA
1) McDonnell WF; Nishino-Ishikawa N; Petersen FF; Chen LH; Abbey DE (2000). Relationships of mortality with the fine and coarse fractions of long-term ambient PM ₁₀ concentrations in nonsmokers. <i>J Expo Sci Environ Epidemiol</i> 2000;10:427-436. EPA ISA No 010319 Peer-Reviewed Journal (http://scientificintegrityinstitute.org/JEAEE090100.pdf)			
Krewski 2000	U Ottawa, CN	1982 ACS Cancer Prevention Study (CPS II)	Assume HEI
1) Unpublished August 31, 2010 letter from Krewski to HEI with California-specific results from Table 33 in Krewski 2009 (http://www.arb.ca.gov/research/health/pm-mort/HEI_Correspondence.pdf)			
2) "Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality: HEI Special Report. July 2000" (http://pubs.healtheffects.org/view.php?id=6). Figure 21 on page 197 of Part II: Sensitivity Analyses (http://pubs.healtheffects.org/getfile.php?u=275).			
3) Enstrom JE (2006). Response to "A Critique of Fine Particulate Air Pollution and Total Mortality Among Elderly Californians, 1973-2002" by Bert Brunekreef, PhD, and Gerard Hoek, PhD, <i>Inhal Toxicol</i> 2006;18:509-514 (http://scientificintegrityinstitute.org/IT060106.pdf)			
Enstrom 2005	UCLA, CA	1959 California Cancer Prevention Study (CA CPS I)	EPRJ
Enstrom JE (2005). Fine particulate air pollution and total mortality among elderly Californians, 1973-2002. <i>Inhal Toxicol</i> 2005;17:803-816. EPA ISA No. 087356 Peer Reviewed Journal (http://www.arb.ca.gov/planning/gmerp/declplan/gmerp_comments/enstrom.pdf) and (http://scientificintegrityinstitute.org/IT121505.pdf)			
Enstrom 2006	UCLA, CA	1959 California Cancer Prevention Study (CA CPS I)	EPRJ
Enstrom JE (2006). Response to "A Critique of Fine Particulate Air Pollution and Total Mortality Among Elderly Californians, 1973-2002" by Bert Brunekreef, PhD, and Gerard Hoek, PhD, <i>Inhal Toxicol</i> 2006;18:509-514 (http://scientificintegrityinstitute.org/IT060106.pdf)			
Zeger 2008	Johns Hopkins U, MD	2000 US Medicare Cohort (MCAPS)	EPA and NIEHS
Zeger SL, Dominici F, McDermott A, Samet JM (2008). Mortality in the Medicare Population and Chronic Exposure to Fine Particulate Air Pollution in Urban Centers (2000-2005). <i>Environ Health Perspect</i> 2008;116:1614-1619 (http://ehp03.niehs.nih.gov/article/info:doi/10.1289/ehp.11449)			

- Jerrett 2010 UC Berkeley, CA 1982 ACS Cancer Prevention Study (CPS II) CARB
Principal Investigator, Michael Jerrett, UC Berkeley/CARB Proposal No. 2624-254 "Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort"
- Co-Investigators: Burnett RT, Krewski D, Pope CA III, Thurston G, Christakos G, Hughes E, Calle E, Thun M.
Unpublished February 26, 2010 CARB presentation (<http://scientificintegrityinstitute.org/carbjerrett022610.pdf>)
- Krewski 2010 U Ottawa, CN 1982 ACS Cancer Prevention Study (CPS II) Assume HEI
1) Unpublished August 31, 2010 letter from Krewski to HEI with California-specific results from Krewski 2009 (http://www.arb.ca.gov/research/health/pm-mort/HEI_Correspondence.pdf)
- Ostro 2010 & 2011 Cal EPA OEHHA 1995 California Teachers Cohort CARB and NCI
Ostro B, Lipsett M, Reynolds P, Goldberg D, Hertz A, Garcia C, Henderson KD, Bernstein L (2010). Long-Term Exposure to Constituents of Fine Particulate Air Pollution and Mortality: Results from the California Teachers Study. *Environ Health Perspect* 2010;118:363-369 with June 2011 Erratum (<http://ehp03.niehs.nih.gov/article/info:doi/10.1289/ehp.0901181>)
- Jerrett 2011 UC Berkeley, CA 1982 ACS Cancer Prevention Study (CPS II) CARB
Principal Investigator Michael Jerrett, June 9, 2011 Draft Final Report for Contract No. 06-332 to CARB Research Screening Committee. "Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort"
- Co-Investigators: Burnett RT, Pope CA III, Krewski D, Thurston G, Christakos G, Hughes E, Ross Z, Shi Y, Thun M (http://www.arb.ca.gov/research/rsc/06-09-11/agenda4_contract06-332_draft_report_cynthia_0520_v2.pdf).
- Lipsett 2011
Lipsett MJ, Ostro BD, Reynolds P, Goldberg D, Hertz A, Jerrett M, Smith DF, Garcia C, Chang ET, Bernstein L (2011). Long-term Exposure to Air Pollution and Cardiorespiratory Disease in the California Teachers Study Cohort. *AJRCCM* Article in Press (June 23, 2011) as doi:10.1164/rccm.201012-2082OC (<http://ajrccm.atsjournals.org/cgi/reprint/201012-2082OCv1>)
- Los Angeles Basin and US Studies
- Jerrett 2005 USC, CA 1982 ACS Cancer Prevention Study (CPS II) HEI, NIEHS, U Ottawa
Jerrett M, Burnett RT, Ma R, Pope CA III, Krewski D, Newbold KB, Thurston G, Shi Y, Finkelstein N, Calle EE, Thun MJ (2005). Spatial Analysis of Air Pollution and Mortality in Los Angeles. *Epidemiology* 2005;16:727-736. (<http://www.ncbi.nlm.nih.gov/pubmed/16222161>)

Krewski 2009 U Ottawa, CN 1982 ACS Cancer Prevention Study (CPS II) HEI, NIEHS, CARB, US EPA
Krewski D, Jerrett M, Burnett RT, Ma R, Hughes E, Shi Y, Turner MC, Pope CA III, Thurston G, Calle EE, Thun MJ. Extended
Analysis of the American Cancer Society Study of Particulate Air Pollution and Mortality. HEI Research Report 140. May 2009
(<http://pubs.healtheffects.org/view.php?id=315>)

References Explaining Epidemiologic Studies of PM_{2.5} and Total Mortality in California

- April 21, 2010 Enstrom Comments to CARB on PM_{2.5} and Mortality in California
(http://www.arb.ca.gov/lists/offroad09/25-carb_enstrom_comments_on_pm2.5_mortality_in_ca_042110.pdf)
- August 31, 2010 CARB Report "Estimate of Premature Deaths Associated with Fine Particle Pollution in California Using the United States Environmental Protection Agency Methodology"
(<http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm>)
- October 10, 2010 Bakersfield Californian article by Lois Henry "Air board must be held accountable"
(<http://www.bakersfield.com/news/local/x618251275/Air-board-must-be-held-accountable>)
- November 14, 2010 Bakersfield Californian article by Lois Henry "Air pollution 'deaths' all over the map"
(<http://www.bakersfield.com/news/local/x1613299841/LOIS-HENRY-Air-pollution-deaths-all-over-the-map>)

CARB Diesel Regulatory Documents Based in Part on Epidemiologic Studies of PM_{2.5} and Total Mortality

Proposed Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use On-Road Diesel-Fueled Vehicles, the Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure, and the Regulation to Control Emissions from In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Intermodal Rail Yard Facilities
(<http://www.arb.ca.gov/regact/2010/truckbus10/truckbus10.htm>)

Appendix J Methodology for Estimating Ambient Concentrations of Particulate Matter from Diesel-Fueled Engine Emissions And Health Benefits Associated with Reductions in Diesel PM Emissions from In-Use On-Road Heavy-Duty Diesel-Fueled Vehicles (<http://www.arb.ca.gov/regact/2010/truckbus10/truckbusappj.pdf>)
Page J-17:

Table 1: Estimate of Premature Deaths Avoided Associated with Emission Reductions from Implementation of the On-Road Truck Regulation (2010-2025)*
Total deaths avoided (from PM & NOx) = 3,500 (2,700 - 4,400) in 15 years --> 233 / year
(based on US EPA methodology using national results (Krewski 2009))

Proposed Amendments to the Regulations for In-Use Off-Road Diesel-Fueled Fleets and Off-Road Large Spark Ignition Engine Fleet Requirements
(<http://www.arb.ca.gov/regact/2010/offroadlsi10/offroadlsi10.htm>)

APPENDIX G: HEALTH BENEFITS AND METHODOLOGY
APPENDIX G1: HEALTH BENEFITS ASSOCIATED WITH REDUCTIONS IN DIESEL PM EMISSIONS FROM OFF-ROAD DIESEL VEHICLES
APPENDIX G2: METHODOLOGY FOR ESTIMATING AMBIENT CONCENTRATIONS OF PARTICULATE MATTER FROM DIESEL-FUELED ENGINE EMISSIONS
(<http://www.arb.ca.gov/regact/2010/offroadlsi10/offroadappg.pdf>)
Page G1-1:

Table 1: Estimate of Premature Deaths Avoided Associated with Emission Reductions from Implementation of the Off-Road Vehicle Regulation (2010-2029)*
Total deaths avoided (from PM & NOx) = 470 (360-570) in 19 years --> 25 / year
(based on US EPA methodology using national results (Krewski 2009))

Total deaths avoided = 233 (on-road) + 25 (off-road) = 258 per year
(based on US EPA methodology using national results)

Total deaths avoided ~ 0 (on-road) + 0 (off-road) = 0 per year
(based on US EPA methodology using CA-specific results)

Total deaths in CA ~ 235,000 per year