

March 22, 2023 CARB Public Meeting
of Emerging Research on Air Pollution Health Outcomes and Valuation
(<https://ww2.arb.ca.gov/events/public-meeting-emerging-research-air-pollution-health-outcomes-and-valuation>)

April 6, 2023 Written Comment to CARB Air Pollution Research Meeting

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The following 44 pages provide detailed 2010-2019 documentation that CARB-funded researcher Michael Jerrett, PhD, has seriously misrepresented and exaggerated the relationship between PM2.5 and total mortality in California in spite of presenting his own evidence of NO relationship at the February 26, 2010 CARB Symposium. There is now overwhelming evidence of NO relationship in California during 1960-2020 (<http://scientificintegrityinstitute.org/CARBProp012323.pdf>).

March 22, 2023 Verbal Comment to CARB Air Pollution Research Meeting via Zoom
James E. Enstrom, PhD, MPH, FFACE

I am Dr. James Enstrom. Since 2002 I have done extensive epidemiologic research that shows there are no significant air pollution health effects in California. CARB unprofessionally ignores null evidence from me and many other accomplished scientists. Also, CARB-funded scientists are unwilling to examine my evidence of NO air pollution deaths in CA and Jennifer Hernandez's evidence that CARB policies undermine economics, civil rights, and racial equity in CA.

Air pollution in California is at a record low level and cannot be realistically lowered because up to 30% of CA pollution comes from heavily polluted places like China. Because people spend most of their time indoors, actual personal exposure to air pollution is much lower than the ambient air levels measured by CARB. CARB needs to sponsor a day-long seminar on air pollution health effects that allows equal time for presentation of evidence from CARB-funded scientists, CARB critics like myself, and impacted California business groups. CARB held such a seminar on February 26, 2010 (https://cal-span.org/meeting/carb_20100226/). CARB must realize that competitor nations like Communist China tolerate much higher levels of air pollution in order to gain an economic advantage over America.

It is very important that CARB address the extensive criticism from me, Jennifer Hernandez, numerous other scientists, and hundreds of adversely impacted CA business groups. In any case, this criticism will increase until we can stop unjustified CARB regulations. Thank you.

Allegations of Scientific Misconduct by Former USC Professor Michael Jerrett Regarding PM2.5 Deaths

Supplement to March 5, 2019 Presentation to USC Vice President of Research

James E. Enstrom, PhD, MPH, FFACE

March 19, 2019

As per our telephone conference on March 5, 2019, I am supplementing my March 5, 2019 allegations that numerous current and former USC Preventive Medicine Professors have engaged in falsification as defined by DHHS and Section 3.2 of USC's policy on scientific misconduct (<https://policy.usc.edu/scientific-misconduct/>). This supplement summarizes specific evidence of falsification (exaggeration) of the relationship between fine particulate matter (PM2.5) and total mortality in four publications during 2000-2009 that are co-authored by Michael Jerrett, PhD (Jerrett), a USC Associate Professor of Preventive Medicine during 2003-2006. This specific evidence is described in detail in Enstrom 2017 and Enstrom 2018, which are attached below as the bulk of my 29-page PDF of *Dose-Response* articles and letters (<http://scientificintegrityinstitute.org/DRPM25JEEPope052918.pdf>). Additional background is provided in the 22-page document to the USC President and Provost that I left in your office on February 22, 2019 (<http://scientificintegrityinstitute.org/USCVPres022219.pdf>).

While at USC during 2003-2006, Jerrett interacted closely with current USC Preventive Medicine Professors Kiros T. Berhane (Berhane), Duncan C. Thomas (Thomas), and Rob S. McConnell (McConnell), who were involved with hiring him in 2003. My allegations of falsification by Berhane, Thomas, and McConnell are described in my March 5, 2019 submission below. These three professors have been familiar with null evidence on PM deaths since at least 2000, when Berhane and Thomas described the 2000 Dominici, Samet, and Zeger JRSS article "Combining evidence on air pollution and daily mortality from the 20 largest US cities" as "seminal and academically stimulating." This article found that PM10, which includes PM2.5, was NOT related to daily mortality in Los Angeles. The conclusion was "These analyses alone cannot establish that increased levels of particulate air pollution as measured by PM10 cause an increase in mortality." Although they acknowledged null evidence in 2000, a Google Scholar search reveals that Berhane, Thomas, and McConnell have NEVER cited any of my evidence of NO PM2.5 deaths in Los Angeles County and CA. In addition, they have refused to engage with me on PM2.5 deaths and they have not opposed the SCAQMD claims about PM2.5 deaths or the proposed new SCAQMD PM2.5 sales tax. Jerrett has NEVER cited me in any of his many journal articles that promote PM2.5 deaths. I document his falsification in four key publications below. All the publications cited below are identified by the last name of the first author and the year of publication and they can be found in Enstrom 2017, Enstrom 2018, and/or PubMed.gov.

Dr. S. Stanley Young, an ASA Fellow and EPA Science Advisory Board Member, supports my evidence of falsification of PM2.5 mortality risk and has published his own evidence of no relationship between PM2.5 and daily mortality in Los Angeles and California, which is consistent with the null JRSS evidence. He spoke to these USC professors in 2011 and 2014, but they ignore his null evidence on PM2.5 deaths.

Four Jerrett Publications That Contain Specific Evidence of Falsification (Exaggeration) of the Relationship of PM2.5 and Total Mortality:

1) HEI 2000 (Jerrett is sixth author of Part II “Sensitivity Analyses”) was shown to be severely flawed by Enstrom 2017 and Enstrom 2018. Five examples of falsification of the relationship between PM2.5 and total mortality are as follows: 1) The best available 1979-1983 PM2.5 measurements as of 2000 (Hinton 1984 and Hinton 1986) were partially included in HEI 2000 Appendix Table D, but they were not used to calculate the relationship between PM2.5 and total mortality. If the Hinton PM2.5 data had been used, HEI 2000 would have found no relationship in the United States (US). 2) Enstrom 2017 found that 85 counties with ACS CPS II subjects had Hinton PM2.5 data, but only 50 counties were analyzed in HEI 2000. 3) Among the 35 counties omitted from HEI 2000 were 7 of the 11 California (CA) counties, including the county with the highest PM2.5 level (Riverside County) and the county with the lowest PM2.5 level (Santa Barbara County). 4) When the US was divided into the five Ohio Valley states and the remaining states, there was no PM2.5 mortality risk in either area. 5) There was no PM2.5 mortality risk in CA no matter what PM2.5 data was used. These findings were possible only because I gained access in 2016 to an early version of ACS CSP II data, as per proposed EPA transparency in regulatory science.

2) Jerrett 2005 “Spatial Analysis of Air Pollution and Mortality in Los Angeles” was conducted and published while Jerrett was at USC. It found that the relative risk for PM2.5 deaths within different areas of Los Angeles was unusually high, but never mentioned that the overall PM2.5 mortality risk for Los Angeles was LOW, as shown in HEI 2000 Figure 21. One month after Jerrett 2005, Enstrom 2005 found NO PM2.5 mortality risk in Los Angeles. Nevertheless, Jerrett 2005 was cited and hyped by CARB, SCAQMD, and the press in 2006, but Enstrom 2005 was totally ignored.

3) Jerrett 2007 “Geographies of uncertainty in the health benefits of air quality improvements” found NO PM2.5 mortality risk in the ACS CPS II cohort during five mortality follow-up periods from 1982 to 2000, as shown in Enstrom 2018. The null findings in Jerrett 2007 are not cited in Jerrett’s subsequent publications, such as, HEI 2009. Failure to cite of his own null findings is further evidence of falsification.

4) HEI 2009 (Jerrett is second author), extended mortality follow-up of ACS CPS II cohort, was shown to be severely flawed by Enstrom 2017 and Enstrom 2018. HEI 2009 did not cite the criticism of HEI 2000 by Lipfert and Enstrom. HEI 2009 did not present any null results based on analysis of the Hinton PM2.5 data. The HEI 2000 Figure 21 evidence of geographic variation in PM2.5 mortality risk was not addressed or preserved in HEI 2009. Extensive 2000-2008 evidence of NO PM2.5 mortality risk in CA (Enstrom 2017 Appendix Table B1) was not cited in HEI 2009. HEI 2009 did not address the criticisms of PM2.5 deaths that I stated to HEI 2009 co-authors Jerrett, Pope, and Burnett during the July 11, 2008 CARB PM2.5 Premature Deaths Teleconference (<http://scientificintegrityinstitute.org/CARB071108.pdf>).

The above four Jerrett publications did not cite any of the major criticisms of PM2.5 deaths that were published in peer-reviewed journals during 2000-2008 by experts like Enstrom, Phalen, Lipfert, Moolgavkar, and McClellan. All these criticisms revealed null evidence and/or described flaws in the claims of PM2.5 deaths. The claim that PM2.5 *causes* premature death violates basic epidemiologic principles like the Hill criteria for establishing causality. No causal etiologic mechanism has been established. The observed relative risks for PM2.5 mortality effects are too small, given confounding variables. The PM2.5 exposure levels in the US are below the threshold for a mortality effect.

I conclude by noting that the falsification of PM2.5 deaths by Jerrett is continuing. None of the evidence of NO PM2.5 deaths in the US that I assembled from several sources as of October 1, 2018 (<http://scientificintegrityinstitute.org/PM25WGJEE100118.pdf>) was cited in Jerrett’s September 18, 2018 PNAS article on PM2.5 deaths (<https://www.pnas.org/content/pnas/115/38/9592.full.pdf>).

Fine Particulate Matter and Total Mortality in Cancer Prevention Study Cohort Reanalysis

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James E. Enstrom¹

Abstract

Background: In 1997 the US Environmental Protection Agency (EPA) established the National Ambient Air Quality Standard (NAAQS) for fine particulate matter (PM_{2.5}), largely because of its positive relationship to total mortality in the 1982 American Cancer Society Cancer Prevention Study (CPS II) cohort. Subsequently, EPA has used this relationship as the primary justification for many costly regulations, most recently the Clean Power Plan. An independent analysis of the CPS II data was conducted in order to test the validity of this relationship.

Methods: The original CPS II questionnaire data, including 1982 to 1988 mortality follow-up, were analyzed using Cox proportional hazards regression. Results were obtained for 292 277 participants in 85 counties with 1979-1983 EPA Inhalable Particulate Network PM_{2.5} measurements, as well as for 212 370 participants in the 50 counties used in the original 1995 analysis.

Results: The 1982 to 1988 relative risk (RR) of death from all causes and 95% confidence interval adjusted for age, sex, race, education, and smoking status was 1.023 (0.997-1.049) for a 10 µg/m³ increase in PM_{2.5} in 85 counties and 1.025 (0.990-1.061) in the 50 original counties. The fully adjusted RR was null in the western and eastern portions of the United States, including in areas with somewhat higher PM_{2.5} levels, particularly 5 Ohio Valley states and California.

Conclusion: No significant relationship between PM_{2.5} and total mortality in the CPS II cohort was found when the best available PM_{2.5} data were used. The original 1995 analysis found a positive relationship by selective use of CPS II and PM_{2.5} data. This independent analysis of underlying data raises serious doubts about the CPS II epidemiologic evidence supporting the PM_{2.5} NAAQS. These findings provide strong justification for further independent analysis of the CPS II data.

Keywords

epidemiology, PM_{2.5}, deaths, CPS II, reanalysis

Introduction

In 1997 the US Environmental Protection Agency (EPA) established the National Ambient Air Quality Standard (NAAQS) for fine particulate matter (PM_{2.5}), largely because of its positive relationship to total mortality in the 1982 American Cancer Society (ACS) Cancer Prevention Study (CPS II) cohort, as published in 1995 by Pope et al.¹ The EPA uses this positive relationship to claim that PM_{2.5} causes premature deaths. However, the validity of this finding was immediately challenged with detailed and well-reasoned criticism.²⁻⁴ The relationship still remains contested and much of the original criticism has never been properly addressed, particularly the need for truly independent analysis of the CPS II data.

The EPA claim that PM_{2.5} causes premature deaths is implausible because no etiologic mechanism has ever been established and because it involves the lifetime inhalation of

only about 5 g of particles that are less than 2.5 µm in diameter.⁵ The PM_{2.5} mortality relationship has been further challenged because the small increased risk could be due to well-known epidemiological biases, such as, the ecological fallacy, inaccurate exposure measurements, and confounding variables like copollutants. In addition, there is extensive evidence of spatial and temporal variation in PM_{2.5} mortality risk (MR) that does not support 1 national standard for PM_{2.5}.

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Table 3. Age–Sex-Adjusted and Fully Adjusted Relative Risk of Death From All Causes (RR and 95% CI) From September 1, 1982 Through August 31, 1988 Associated With 10 $\mu\text{g}/\text{m}^3$ Increase in $\text{PM}_{2.5}$ for California CPS II Participants Living in 4 and 11 Counties With 1979 to 1983 IPN $\text{PM}_{2.5}$ Measurements.^a

$\text{PM}_{2.5}$ Years and Source	Number of Counties	Number of Participants	Number of Deaths	RR	95% CI of RR		Average $\text{PM}_{2.5}$
					Lower	Upper	
Age–sex adjusted RR for California during 1982 to 1988							
1979-1983 IPN	11	66 615	3856	1.005	(0.968-1.043)		24.08
1979-1983 IPN	4	40 527	2146	0.904	(0.831-0.983)		24.90
1979-1983 HEI	4	40 527	2146	0.894	(0.817-0.986)		18.83
Fully adjusted (age, sex, race, education, and smoking status) RR for California during 1982 to 1988							
1979-1983 IPN	11	60 521	3512	0.992	(0.954-1.032)		24.11
1979-1983 IPN	4	36 201	1939	0.879	(0.805-0.960)		25.01
1979-1983 HEI	4	36 201	1939	0.870	(0.788-0.960)		18.91
Fully adjusted (44 confounders) RR for California during 1982 to 1989 as per Krewski ²¹							
“Same” Standard Cox Model 1979-1983 HEI	4	40 408		0.872	(0.805-0.944)		~ 19
“Different” Standard Cox Model 1979-1983 HEI	4	38 925		0.893	(0.823-0.969)		~ 19

Abbreviations: CI, confidence interval; CPS, Cancer Prevention Study; HEI, Health Effects Institute; IPN, Inhalable Particulate Network; $\text{PM}_{2.5}$, particulate matter.
^aAlso, fully adjusted RR for California participants in 4 counties from September 1, 1982 through December 31, 1989 as calculated by Krewski.²¹

Table 4. Linear Regression Results for 1979 to 1983 IPN $\text{PM}_{2.5}$ and 1979 to 1983 HEI $\text{PM}_{2.5}$ Versus 1980 Age-Adjusted White Total Death Rate (DR) for 85 Counties With IPN $\text{PM}_{2.5}$ Data and for 50 HEI 2000 Counties With IPN $\text{PM}_{2.5}$ and HEI $\text{PM}_{2.5}$ data.

DR or MR, $\text{PM}_{2.5}$ Years and Source	Number of Counties	DR or MR Intercept	DR or MR Slope	95% CI of DR or MR Slope		P Value
				Lower	Upper	
Entire continental United States						
DR and 1979-1983 IPN	85	892.68	6.8331	3.8483	9.8180	0.0000
DR and 1979-1983 HEI	50	910.92	6.9557	3.2452	10.6662	0.0004
MR and 1979-1983 IPN	50	0.6821	0.0102	0.0044	0.0160	0.0009
MR and 1979-1983 HEI	50	0.6754	0.0121	0.0068	0.0173	0.0000
Ohio Valley states (IN, KY, OH, PA, and WV)						
DR and 1979-1983 IPN	17	941.77	6.0705	−0.0730	12.2139	0.0524
DR and 1979-1983 HEI	12	1067.29	1.3235	−7.3460	9.9930	0.7408
MR and 1979-1983 IPN	12	0.8153	0.0077	−0.0054	0.0208	0.2202
MR and 1979-1983 HEI	12	0.9628	0.0020	−0.0080	0.0121	0.6608
States other than the Ohio Valley states						
DR and 1979-1983 IPN	68	921.45	4.8639	0.9093	8.8186	0.0167
DR and 1979-1983 HEI	38	934.66	4.8940	−0.4337	10.2218	0.0706
MR and 1979-1983 IPN	38	0.8111	0.0020	−0.0054	0.0094	0.5891
MR and 1979-1983 HEI	38	0.7334	0.0072	0.0000	0.0144	0.0491
States west of the Mississippi river						
DR and 1979-1983 IPN	36	920.10	4.0155	−0.9396	8.9706	0.1088
DR and 1979-1983 HEI	22	930.11	4.1726	−5.2015	13.5468	0.3642
MR and 1979-1983 IPN	22	0.8663	−0.0025	−0.0162	0.0112	0.7067
MR and 1979-1983 HEI	22	0.6413	0.0134	−0.0018	0.0285	0.0807
California						
DR and 1979-1983 IPN	11	921.71	3.6516	−1.8230	9.1262	0.1656
DR and 1979-1983 HEI	4	992.50	1.9664	−46.6929	50.6256	0.8780
MR and 1979-1983 IPN	4	0.9529	−0.0074	−0.0600	0.0453	0.6072
MR and 1979-1983 HEI	4	0.8336	−0.0021	−0.0618	0.0576	0.8935

Abbreviations: CI, confidence interval; HEI, Health Effects Institute; IPN, Inhalable Particulate Network; MR, mortality risk; $\text{PM}_{2.5}$, particulate matter.

^aLinear regression results are also shown for 1979 to 1983 IPN $\text{PM}_{2.5}$ and 1979 to 1983 HEI $\text{PM}_{2.5}$ versus MR for the 50 “cities” (metropolitan areas) in figures 5 and 21 in HEI 2000.

misleading because both DRs and $\text{PM}_{2.5}$ levels are higher in the East than in the West. Regional regression analyses did not generally yield significant regression coefficients. Specifically, there were no significant regression coefficients

for California, the 5 Ohio Valley states, or all states west of the Mississippi River. These findings reinforce the CPS II cohort evidence of statistically insignificant $\text{PM}_{2.5}$ MR throughout the United States.

Conclusion

This independent analysis of the CPS II cohort found that there was no significant relationship between $PM_{2.5}$ and death from all causes during 1982 to 1988, when the best available $PM_{2.5}$ measurements were used for the 50 original counties and for all 85 counties with $PM_{2.5}$ data and CPS II participants. However, a positive relationship was found when the HEI $PM_{2.5}$ measurements were used for the 50 original counties, consistent with the findings in Pope 1995 and HEI 2000. This null and positive evidence demonstrates that the $PM_{2.5}$ mortality relationship is not robust and is quite sensitive to the $PM_{2.5}$ data and CPS II participants used in the analysis.

Furthermore, the following statement on page 80 of HEI 2000 raises serious doubts about the quality of the air pollution data used in Pope 1995 and HEI 2000: "AUDIT OF AIR QUALITY DATA. The ACS study was not originally designed as an air pollution study. The air quality monitoring data used for the ACS analyses came from various sources, some of which are now technologically difficult to access. Documentation of the statistical reduction procedures has been lost. Summary statistics for different groups of standard metropolitan statistical areas had been derived by different investigators. These data sources do not indicate whether the tabulated values refer to all or a subset of monitors in a region or whether they represent means or medians."⁷

The Pope 1995 and HEI 2000 analyses were based on 50 median $PM_{2.5}$ values shown in Appendix A of the 1988 Brookhaven National Laboratory Report 52122 by Lipfert et al.²² These analyses did not use or cite the high quality and widely known EPA IPN $PM_{2.5}$ data in spite of the fact that these data have been available in 2 detailed EPA reports since 1986.^{16,17} Lipfert informed HEI about the IPN data in 1998: "During the early stages of the Reanalysis Project, I notified HEI and the reanalysis contractors of the availability of an updated version of the IPN data from EPA, which they apparently obtained. This version includes more locations and a slightly longer period of time. It does not appear that the newer IPN data are listed in Appendix G, and it is thus not possible to confirm if SMSA assignments were made properly."²³

Thus, the HEI Reanalysis Team failed to properly "evaluate the sensitivity of the original findings to the indicators of exposure to fine particle air pollution used by the Original Investigators" and failed to select "all participants who lived within each MA for which data on sulfate or fine particle pollution were available."⁷ Furthermore, HEI 2009 did not use these data even though the investigators were aware of my 2005 null $PM_{2.5}$ mortality findings in California,⁸ which were based on the IPN data for 11 California counties, instead of the 4 California counties used in Pope 1995 and HEI 2000. Indeed, HEI 2009 did not cite my 2005 findings, in spite of my personal discussion of these findings with Pope, Jerrett, and Burnett on July 11, 2008.²⁴ Finally,

HEI 2009 did not acknowledge or address my 2006 concerns about the geographic variation in $PM_{2.5}$ MR clearly shown in HEI 2000 Figure 21,⁷ which is included here as Appendix Figure C1. HEI 2009 entirely avoided the issue of geographic variation in $PM_{2.5}$ MR and omitted the equivalent to HEI 2000 Figure 21.

Since 2002, HEI has repeatedly refused to provide the city-specific $PM_{2.5}$ -related MR for the 50 cities included in HEI 2000 Figure 21.¹⁵ I estimated these MRs in 2010 based on visual measurements of HEI 2000 Figure 5, and my estimates are shown in Appendix Table A1.²⁵ Figure 21 and its MRs represented early evidence that there was no $PM_{2.5}$ -related MR in California. Appendix Table B1 shows the now overwhelming 2000 to 2016 evidence from 6 different cohorts that there is no relationship between $PM_{2.5}$ and total mortality in California. Indeed, the weighted average RR of the latest results from the 6 California cohorts is $RR = 0.999$ (0.988-1.010).²⁶

The authors of the CPS II $PM_{2.5}$ mortality publications, which began with Pope 1995, have faced original criticism,²⁻⁴ my criticism,^{6-10,14,15} and the criticism of the HSSTC and its subpoena.¹¹⁻¹³ Now, my null findings represent a direct challenge to the positive findings of Pope 1995. All of this criticism is relevant to the EPA claim that $PM_{2.5}$ has a *causal* relationship to total mortality. The authors of Pope 1995, HEI 2000, and HEI 2009 need to promptly address my findings, as well as the earlier criticism. Then, they need to cooperate with critics on transparent air pollution epidemiology analyses of the CPS II cohort data.

Also, major scientific journals like the *New England Journal of Medicine (NEJM)* and *Science*, which have consistently written about the positive relationship between $PM_{2.5}$ and total mortality, need to publish evidence of no relationship when strong null evidence is submitted to them. In 2015, *Science* immediately rejected without peer reviewing 3 versions of strong evidence that $PM_{2.5}$ does not *cause* premature deaths.⁵ In 2016, *Science* immediately rejected without peer reviewing this article. Indeed, this article was rejected by *NEJM*, *Science*, and 5 other major journals, as described in a detailed compilation of relevant correspondence.²⁷ Most troubling is the rejection by the *American Journal of Respiratory and Clinical Care Medicine*, which has published Pope 1995 and several other $PM_{2.5}$ mortality articles based on the CPS II cohort data.

In summary, the null CPS II $PM_{2.5}$ mortality findings in this article directly challenge the original positive Pope 1995 findings, and they raise serious doubts about the CPS II epidemiologic evidence supporting the $PM_{2.5}$ NAAQS. These findings demonstrate the importance of independent and transparent analysis of underlying data. Finally, these findings provide strong justification for further independent analysis of CPS II cohort data.

From: Hohmann, Ann (HHS/OASH) <Ann.Hohmann@hhs.gov>
Sent: Wednesday, December 21, 2016 10:46 AM
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Subject: DIO 6351

Dear Dr. Enstrom,

As the ORI expert in biostatistics and public health, Dr. Garfinkel gave me the materials that ORI has regarding your November 7 conversation with Dr. Trenkle about the Jerrett et al. 2013 paper and your emailed materials to AskORI on November 11, 2016. I have read and reviewed all of the materials. I understand your concern about the way the data were presented in the paper and used elsewhere. Though I have no clinical training, it appears that the relative risks reported do not seem to rise to the level of clinical significance and do not provide evidence that air pollution is directly responsible for mortality. Presenting this data as such, may be a question only of bad science.

However, “bad” or sloppy science is not the same as research misconduct. ORI’s regulation (42 CFR 93.103) defines research misconduct, as you know, as “fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.” While it is true that Dr. Jerrell and colleagues did not cite all the research showing that the relative risk is very, very close to 1 and only emphasized specific numbers, they did not, as far as I can tell, change their data to get a statistically and clinically significant result. The weak results are there for all to see. Thus, there does not appear to be falsification.

To overinterpret one’s data is certainly inappropriate, but would be a matter to raise with the reviewers and the journal editors, who apparently did not insist that the authors tone down their conclusions. ORI is aware that the research on the effects of air pollution is certainly not the only area of science where there is open controversy. Just this morning, *The Scientist* ran an article on the controversy regarding the effects of sugar intake (http://www.the-scientist.com/?articles.view/articleNo/47819/title/Industry-Funded-Sugar-Study--Don-t-Trust-Other-Sugar-Studies/&utm_campaign=NEWSLETTER_TS_The-Scientist-Daily_2016&utm_source=hs_email&utm_medium=email&utm_content=39616948&_hsenc=p2ANqtz-8Q5JhLgCWe4CJboPROHvuvP0x1fr3XLwxkrNXixW4tqdO_29UCNh4fj6q1lwpolH0ferca7iYMwC0oyjX7kTTvwmW8mA&_hsmi=39616948). Unfortunately, we all are aware that science loses when research is influenced by special interest groups.

The Public Health Service (PHS) regulation, under which ORI acts, is not meant to be a way to put the brakes on controversial science. The mission of our Office is to protect PHS research funds from researchers who knowingly and intentionally make up data or change them to serve their purposes. In the documents you provided, there does not appear to be evidence that Dr. Jerrell and his colleagues have done that. Without clear evidence of fabrication and/or falsification of data (and not just failing to cite contrary data), ORI is unable to further pursue your allegations. What you do and have been doing for decades – promoting your own research results – in scientific and other venues may be the best way to combat opposing viewpoints. Good luck in the future.

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Allegation of Research Misconduct by Dr. Michael Jerrett and Co-Authors

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November 11, 2016

I allege research misconduct (falsification) by UCLA Professor Michael Jerrett, Ph.D., and his primary co-authors C. Arden Pope, Ph.D., Daniel Krewski, Ph.D., George Thurston, Sc.D., Richard T. Burnett, Ph.D., Michael J. Thun, M.D., and Susan P. Gapstur, Ph.D., regarding their attached September 1, 2013 *AJRCCM* paper “Spatial Analysis of Air Pollution and Mortality in California” (<http://www.atsjournals.org/doi/abs/10.1164/rccm.201303-0609OC>). The authors received a portion of their funding for this research from NIEHS and CDC within DHHS. While claiming that fine particulate matter (PM_{2.5}) was associated with mortality from all causes (total mortality) in their study, the authors omitted their own null findings and the null findings of others. These omitted findings clearly show NO association. Thus, they have engaged in falsification as defined by DHHS and the Public Health Service: “omitting data or results such that the research is not accurately represented in the research record” (Section 93.103(b) of 42 CFR 93) (http://ori.hhs.gov/sites/default/files/42_cfr_parts_50_and_93_2005.pdf).

The *AJRCCM* paper claims there is a positive relationship between PM_{2.5} and mortality from all causes in California because their “conurbation” land use regression (LUR) model yielded a slightly positive relative risk of RR=1.060 (1.003-1.120), as shown in Table 6. However, complete study results are in the October 28, 2011 Jerrett CARB Final Report “Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort: Final Report” (<http://www.arb.ca.gov/research/apr/past/06-332.pdf>). The eight entirely null models, shown in the attached Report Table 22, were omitted from the paper. The results for all nine models are shown in my Summary Table on the next page. The weighted average relative risk for all nine models is RR=1.002 (0.992-1.012), which means NO relationship.

Furthermore, the *AJRCCM* paper does not cite any of the null California PM_{2.5}-mortality results from other papers and reports dating back to 2000, including earlier findings by Dr. Jerrett. These results are shown on the next page, as well as on the attached August 15, 2016 Summary Table that I presented to SCAQMD (<http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/Draft2016AQMP/2016-aqmp-appendix-i-comment-letter> (letter #7)). The weighted average relative risk for the most recent result from each of the six different California cohorts is RR=0.999 (0.988-1.010), which means NO relationship.

I contend that the falsification in the paper was deliberate because it was done after extensive criticism of the June 9, 2011 Draft Report and the October 28, 2011 Final Report. This criticism was presented to the authors via CARB by myself, William M. Briggs, Ph.D., John D. Dunn, M.D., S. Stanley Young, Ph.D., Gordon Fulks, Ph.D., and Frederick W. Lipfert, Ph.D. A compilation of all criticism of the 2011 Report is attached (<http://www.scientificintegrityinstitute.org/JerrettCriticism102811.pdf>). Detailed criticism of the *AJRCCM* paper, including its misrepresentation of the results contained in the CARB Report, was given by Dr. Briggs in his statistical blogs of August 6, 2013 (<http://wmbriggs.com/blog/?p=8720>), September 11, 2013 (<http://wmbriggs.com/blog/?p=8990>), and September 25, 2013 (<http://wmbriggs.com/blog/?p=9241>).

In conclusion, Dr. Jerrett and his co-authors falsified the relationship between PM_{2.5} and total mortality in California in their *AJRCCM* paper by deliberately omitting their own null evidence and the null evidence of others. This is quite disturbing because PM_{2.5}-mortality claims in the paper are being used as public health justification for the very costly SCAQMD 2016 Air Quality Management Plan (<http://www.aqmd.gov/>).

Summary Table. Epidemiologic cohort studies of PM_{2.5} and total mortality in California, 2000-2016
Relative risk of death from all causes (RR and 95% CI) associated with increase of 10 µg/m³ (IQR=10) in PM_{2.5}

<u>Study (Year)</u>	<u>Cohort</u>	<u>RR</u>	<u>95% CI</u>	<u>F-U Years</u>
Jerrett 2013 (<i>AJRCCM</i> Table 6 Model)	CA CPS II	1.060	(1.003–1.120)	1982-2000
Jerrett 2011 (CARB Report Figure 22)	CA CPS II			
KRG IND Model (Table 30, IQR=8.52902→10.0)		0.992	(0.965-1.020)	1982-2000
KRG ZIP Model (Table 28, IQR=8.4735→10.0)		0.993	(0.964-1.023)	1982-2000
KRG IND+O ₃ Model (Figure 22 extrapolated, IQR=10.0)		1.020	(0.980-1.060)	1982-2000
IDW IND Model (Table 29, IQR=8.74→10.0)		1.003	(0.978-1.028)	1982-2000
IDW ZIP Model (Table 27, IQR=9.37→10.0)		0.995	(0.967-1.025)	1982-2000
BME IND Model (Figure 22 extrapolated, IQR=10.0)		1.000	(0.975-1.025)	1982-2000
LUR IND Model (Table 31, IQR=5.35→10.0)		1.009	(0.980-1.039)	1982-2000
LUR IND+5 Metro Model (Abstract Table 1, IQR=10.0) [Jerrett 2013 Model]		1.080	(1.000-1.150)	1982-2000
RS IND Model (Table 32, IQR= 5.39→10.0)		0.998	(0.968-1.029)	1982-2000
Weighted Average of All Nine Models		1.002	(0.992-1.012)	1982-2000
Other Results by Jerrett and Other Investigators				
Krewski Jerrett 2000 (RR for CA 2010)	CA CPS II	0.872	(0.805-0.944)	1982-1989
McDonnell 2000 *	CA AHSMOG	~ 1.00	(0.95 – 1.05)	1977-1992
Jerrett 2005	CPS II (LA Basin Only)	1.11	(0.99 - 1.25)	1982-2000
Enstrom 2005 *	CA CPS I	0.997	(0.978-1.016)	1983-2002
Zeger 2008 *	MCAPS “West=CA+OR+WA”	0.989	(0.970-1.008)	2000-2005
Jerrett 2010	CA CPS II	~ 0.994	(0.965-1.025)	1982-2000
Krewski Jerrett 2009 (RR for CA 2010)*	CA CPS II	0.968	(0.916-1.022)	1982-2000
Lipsett Jerrett 2011	CA Teachers	1.01	(0.95 – 1.09)	2000-2005
Ostro 2011	CA Teachers	1.06	(0.96 – 1.16)	2002-2007
Ostro 2015 *	CA Teachers	1.01	(0.98 - 1.05)	2001-2007
Thurston 2016 *	CA NIH-AARP	1.02	(0.99 - 1.04)	2000-2009
Weighted Average of Latest Results (*) from Six California Cohorts		0.999	(0.988-1.010)	



Spatial Analysis of Air Pollution and Mortality in California

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Rationale: Although substantial scientific evidence suggests that chronic exposure to ambient air pollution contributes to premature mortality, uncertainties exist in the size and consistency of this association. Uncertainty may arise from inaccurate exposure assessment. **Objectives:** To assess the associations of three types of air pollutants (fine particulate matter, ozone [O₃], and nitrogen dioxide [NO₂]) with the risk of mortality in a large cohort of California adults using individualized exposure assessments.

Methods: For fine particulate matter and NO₂, we used land use regression models to derive predicted individualized exposure at the home address. For O₃, we estimated exposure with an inverse distance weighting interpolation. Standard and multilevel Cox survival models were used to assess the association between air pollution and mortality.

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Author Contributions: M.J. conceived the study, led all analyses, contributed to the development of the exposure models, drafted much of the text, and responded to comments from co-author reviewers. B.S.B. ran many of the statistical models that led to the exposure assessments, conducted geographic analyses, contributed text, and assisted with interpreting the results. R.T.B. supplied expert statistical advice on the analyses, drafted sections of the paper, and assisted with the interpretation of the results. E.H. developed the statistical programs used to interpret the random effects models, helped to interpret the results, and supplied key statistical advice on the interpretation. D.K. contributed to the original grant proposal, assisted with interpretation of the results, and wrote sections of the paper. C.A.P. contributed to the statistical analyses, wrote sections of the text, and assisted with interpreting the results. S.M.G. is the Principal Investigator of the ACS CPS-II cohort and commented on the final draft of the paper. She also oversaw the geocoding process for exposure assignment. M.J.T. assisted with interpretation of the statistical models and supplied expert medical epidemiological advice on the results. G.T. assisted with the conception of the study, supplied key information on interpreting the pollution models, and commented on several drafts of the paper, which changed the interpretation of the results. M.C.T. contributed text and tables, helped to assemble supporting data, assisted with the statistical modeling, interpreted the results, and served as a liaison with the American Cancer Society for code review and data access. R.V.M. and A.V.D. contributed the remote sensing models used to derive estimates of PM_{2.5}, supplied text, edited versions of the paper, and gave advice on atmospheric chemistry issues. Y.S. ran the statistical models, managed the data, prepared code for review by the American Cancer Society, prepared all of the tables and associated text, and assisted with the interpretation of the results.

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AT A GLANCE COMMENTARY

Scientific Knowledge on the Subject

Several cohort studies have examined whether long-term exposure to air pollution is associated with premature death. The results of these studies have been mixed, possibly due to errors introduced in the exposure assessment process.

What This Study Adds to the Field

To address this potential problem, this study assigned members of the American Cancer Society Cancer Prevention Study II Cohort residing in California more precise exposure assignments at their home address using advanced exposure models. The study provides the first evidence that ozone is significantly associated with cardiovascular mortality, particularly from ischemic heart disease; shows a strong association between nitrogen dioxide (NO₂) and lung cancer; and demonstrates that that fine particulate matter with aerodynamic diameter of 2.5 μm or less (PM_{2.5}) and NO₂ associate independently with premature death from all causes and cardiovascular disease. The findings from this study confirm earlier evidence on PM_{2.5} associations with mortality and expand the evidence base markedly on associations between ozone or NO₂ and premature death.

Measurements and Main Results: Data for 73,711 subjects who resided in California were abstracted from the American Cancer Society Cancer Prevention II Study cohort, with baseline ascertainment of individual characteristics in 1982 and follow-up of vital status through to 2000. Exposure data were derived from government monitors. Exposure to fine particulate matter, O₃, and NO₂ was positively associated with ischemic heart disease mortality. NO₂ (a marker for traffic pollution) and fine particulate matter were also associated with mortality from all causes combined. Only NO₂ had significant positive association with lung cancer mortality.

Conclusions: Using the first individualized exposure assignments in this important cohort, we found positive associations of fine particulate matter, O₃, and NO₂ with mortality. The positive associations of NO₂ suggest that traffic pollution relates to premature death.

Keywords: air pollution; mortality; survival analyses; GIS; spatial analyses

A substantial body of evidence suggests that long-term exposure to combustion-related air pollution contributes to the development of chronic disease and can lead to premature death (1–6). Exposure to air pollution affects huge populations globally. As a result, the public health impact can be large (7, 8).

*Spatiotemporal Analysis of Air Pollution
and Mortality in California Based on the
American Cancer Society Cohort: Final Report*

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Summary Table. Epidemiologic cohort studies of PM_{2.5} and total mortality in California, 2000-2016
Relative risk of death from all causes (RR and 95% CI) associated with increase of 10 µg/m³ in PM_{2.5}
<http://scientificintegrityinstitute.org/NoPMDeaths112215.pdf>

Krewski 2000 & 2010	CA CPS II Cohort	N=40,408	RR = 0.872 (0.805-0.944)	1982-1989
(N=[18,000 M + 22,408 F]; 4 MSAs; 1979-1983 PM _{2.5} ; 44 covariates)				
McDonnell 2000	CA AHSMOG Cohort	N~3,800	RR ~ 1.00 (0.95 – 1.05)	1977-1992
(N~[1,347 M + 2,422 F]; SC&SD&SF AB; M RR=1.09(0.98-1.21) & F RR~0.98(0.92-1.03))				
Jerrett 2005	CPS II Cohort in LA Basin	N=22,905	RR = 1.11 (0.99 - 1.25)	1982-2000
(N=22,905 M & F; 267 zip code areas; 1999-2000 PM _{2.5} ; 44 cov + max confounders)				
Enstrom 2005	CA CPS I Cohort	N=35,783	RR = 1.039 (1.010-1.069)	1973-1982
(N=[15,573 M + 20,210 F]; 11 counties; 1979-1983 PM _{2.5})				
Enstrom 2006	CA CPS I Cohort	N=35,783	RR = 1.061 (1.017-1.106)	1973-1982
(11 counties; 1979-1983 & 1999-2001 PM _{2.5})				
Zeger 2008	MCAPS Cohort “West”	N=3,100,000	RR = 0.989 (0.970-1.008)	2000-2005
(N=[1.5 M M + 1.6 M F]; Medicare enrollees in CA+OR+WA (CA=73%); 2000-2005 PM _{2.5})				
Jerrett 2010	CA CPS II Cohort	N=77,767	RR ~ 0.994 (0.965-1.025)	1982-2000
(N=[34,367 M + 43,400 F]; 54 counties; 2000 PM _{2.5} ; KRG ZIP; 20 ind cov+7 eco var; Slide 12)				
Krewski 2010 (2009)	CA CPS II Cohort			
(4 MSAs; 1979-1983 PM _{2.5} ; 44 cov)		N=40,408	RR = 0.960 (0.920-1.002)	1982-2000
(7 MSAs; 1999-2000 PM _{2.5} ; 44 cov)		N=50,930	RR = 0.968 (0.916-1.022)	1982-2000
Jerrett 2011	CA CPS II Cohort	N=73,609	RR = 0.994 (0.965-1.024)	1982-2000
(N=[32,509 M + 41,100 F]; 54 counties; 2000 PM _{2.5} ; KRG ZIP Model; 20 ind cov+7 eco var; Table 28)				
Jerrett 2011	CA CPS II Cohort	N=73,609	RR = 1.002 (0.992-1.012)	1982-2000
(N=[32,509 M + 41,100 F]; 54 counties; 2000 PM _{2.5} ; Nine Model Ave; 20 ic+7 ev; Fig 22 & Tab 27-32)				
Lipsett 2011	CA Teachers Cohort	N=73,489	RR = 1.01 (0.95 – 1.09)	2000-2005
(N=[73,489 F]; 2000-2005 PM _{2.5})				
Ostro 2011	CA Teachers Cohort	N=43,220	RR = 1.06 (0.96 – 1.16)	2002-2007
(N=[43,220 F]; 2002-2007 PM _{2.5})				
Jerrett 2013	CA CPS II Cohort	N=73,711	RR = 1.060 (1.003–1.120)	1982-2000
(N=[~32,550 M + ~41,161 F]; 54 counties; 2000 PM _{2.5} ; LUR Conurb Model; 42 ind cov+7 eco var+5 metro; Table 6)				
Jerrett 2013	CA CPS II Cohort	N=73,711	RR = 1.028 (0.957-1.104)	1982-2000
(same parameters and model as above, except including co-pollutants NO ₂ and Ozone; Table 5)				
Ostro 2015	CA Teachers Cohort	N=101,884	RR = 1.01 (0.98 -1.05)	2001-2007
(N=[101,881 F]; 2002-2007 PM _{2.5}) (all natural causes of death)				
Thurston 2016	CA NIH-AARP Cohort	N=160,209	RR = 1.02 (0.99 -1.04)	2000-2009
(N=[~95,965 M + ~64,245 F]; full baseline model: PM _{2.5} by zip code; Table 3) (all natural causes of death)				
Enstrom 2016 unpub	CA NIH-AARP Cohort	N=160,368	RR = 1.001 (0.949-1.055)	2000-2009
(N=[~96,059 M + ~64,309 F]; full baseline model: 2000 PM _{2.5} by county)				

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August 15, 2014

Chancellor Gene D. Block
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Re: Reject Michael Jerrett, Ph.D., as UCLA Environmental Health Sciences Chair

Dear Chancellor Block,

We know that UCLA is searching for a new Environmental Health Sciences (EHS) Chair (<http://ph.ucla.edu/sites/default/files/attachments/EHS%20Chair%20Search%20oct2513.pdf>) and we understand that one of the top candidates for this position is UC Berkeley Prof. Michael Jerrett (<http://ph.ucla.edu/events/ehs-seminar-michael-jerrett-phd-ubiquitous-and-participatory-sensing-assessing-individual>). As knowledgeable California businessmen who financially support the University of California as long-term taxpayers, we strongly urge you to reject Prof. Jerrett for this influential position for two major reasons.

The first reason we are against Jerrett's hiring, is the almost laughable volume of research largess Jerrett has engaged in, mostly synonymous with scientific misconduct by systematically misrepresenting and exaggerating the relationship between fine particulate matter and total mortality and even heart disease in California. During 2010 and 2011 we wrote several letters to UC President Mark G. Yudof regarding Jerrett, which give detailed criticism of his PM2.5 epidemiologic research. Our correspondence and UC responses are contained in a 50-page attachment (<http://calcontrk.org/Jerrett051711.pdf>). The latest misconduct by Jerrett is his September 1, 2013 *AJRCCM* paper "*Spatial Analysis of Air Pollution and Mortality in California*" (<http://www.atsjournals.org/doi/abs/10.1164/rccm.201303-0609OC>). His paper focuses on questionable measures of significant PM2.5 and mortality relationship based on one obviously tortured ad hoc model, but it completely ignores the overwhelmingly null evidence in his October 28, 2011 CARB Final Report "*Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort*" (<http://www.arb.ca.gov/research/apr/past/06-332.pdf>).

Furthermore, his paper does not cite the insignificant California PM2.5 mortality evidence from at least ten other studies, summarized in a 2012 American Statistical Association Joint Statistical Meeting paper "Particulate Matter is Not Killing Californians" (<http://www.scientificintegrityinstitute.org/ASAS092812.pdf>). The serious misconduct in the *AJRCCM* paper is described in detail by statistician Dr. William M. Briggs in his blogs of August 6, 2013 (<http://wmbriggs.com/blog/?p=8720>) and September 11, 2013 (<http://wmbriggs.com/blog/?p=8990>).

The continued demonization of diesel exhaust by researchers such as Jerrett for personal and professional advancement flies in the face of clearly objective scientific analysis such as the United Nations Economic

Commission for Europe that released this summer a paper titled, "[*Diesel Engines Exhausts: Myths and Realities.*](#)" The authors' findings and an expressive conclusion #121 on page 41 of report concluded:

"Eighty three per cent of particulate matters emissions in European Union countries (EEA, 2012a) and 97 per cent in the United States of America (EPA 2013) and Canada, is generated by other economic sectors, mainly the commercial, institutional and household sector. **Therefore, the claim that emissions from diesel engine exhausts from road transport are the main**

cause of lung cancer in humans needs to be seriously challenged.” (Note the bolding in the report).”

The U.N. conclusion is not really all that surprising considering a mortality study on those most closely exposed to diesel exhaust with decades of exposure – truck drivers. This study didn’t find elevated mortality levels for truck drivers compared with the general population. The study was performed by the National Institutes of Occupational Safety and Health and is titled: *Mortality Among Members of a Truck Driver Trade Association.*” The only surprise about this study is how the findings are ignored by most researchers in lieu of outdated and problematic mortality studies of coal miners and union truck drivers because they fit nice and tidy within the box of their preconceived conclusions – which isn’t science.

The academic dishonesty that is all too common in today’s research universities, where adherence to “faith and doctrine” and a desire to give those funding studies what they want to hear (or what they’ve paid for) when researching health effects and mortality related to diesel exhaust exposure was further confirmed by Dr. Boffetta, Director of the Institute for Translational Epidemiology. His 2012 study, “A review of cancer risk in the trucking industry, with emphasis on exposure to diesel exhaust” found that researchers must recognize the limitations in using older studies based on totally different formulated fuels, he also recognizes the changes in diesel engine technology that makes reliance on outdated studies skew conclusions. Boffetta found that many current studies (used to regulate the trucking industry) have inherent biases and that occupational exposure and evidence of increased risk of lung cancer are “limited” and “inconclusive.” Meanwhile, Jerrett, et al continues to generate fabulously one-sided studies that delight environmental regulators because without these slanted studies, they could not continue to blindly regulate.

As an indication of the national concern about his research, the U.S. House Science Committee has challenged EPA regarding the validity and transparency of the PM2.5 epidemiologic findings of Jerrett and his collaborators, primarily because these findings are based on ‘secret science’ data from the American Cancer Society (ACS) Cancer Prevention Study (CPS II). A June 12, 2013 letter from Committee Chair Lamar Smith to EPA discusses four papers co-authored by Jerrett that are based on ACS CPS II data and that have been used by EPA to justify costly regulations (<http://science.house.gov/press-release/committee-threatens-subpoena-epa-secret-science>). Because EPA did not comply with repeated data requests, the Committee issued an August 1, 2013 subpoena demanding that EPA produce the ‘secret science’ data that is possessed primarily by ACS (<http://science.house.gov/press-release/smith-subpoenas-epa-s-secret-science>). Jerrett is first author or co-author on three of the seven papers specifically cited in the subpoena. Since EPA and ACS have defied the August 1, 2013 subpoena, the House Science Committee approved the ‘*Secret Science Reform Act of 2014*’ (H.R. 4012) on June 24, 2014. This bill forbids EPA from using unverifiable studies that are based on ‘secret science’ data, like those of Jerrett (<http://science.house.gov/press-release/committee-approves-bill-prohibit-epa-using-secret-science>). Our June 17, 2014 letter of support ([CCTA Letter of Support](#)) has been specifically cited in the Committee press release. H.R. 4012 is supposed to come before the full House of Representatives in September and it was introduced in the U.S. Senate in July.

Second, there is overwhelming evidence that Jerrett is not an objective environmental scientist, activist yes, but scientist – no! Much of his research has blatantly exaggerated the health effects of air pollution in California and the United States. He has not given a balanced assessment of air pollution that is in context with other health risk factors and socioeconomic impacts. In particular, during the past decade, Jerrett has worked closely with CARB, CARB Chair and UCLA Law Professor, Mary D. Nichols, and UCLA EHS Prof. John Froines in providing the scientific justification for draconian CARB diesel vehicle regulations that have unjustly harmed businesses like ours. Several of Jerrett’s PM2.5 mortality papers since 2000, including those subject to the August 1, 2013 subpoena, were specifically cited in the October 24, 2008 CARB “Tran” Report (<http://killcarb.org/tranpage.html>) and the August 31, 2010 CARB “EPA” Report (<http://www.bakersfieldcalifornian.com/columnists/lois-henry/x618251275/Air-board-must-be-held-accountable>). These two reports have been used to justify the CARB diesel regulations with the now discredited CARB claim that PM2.5 contributes to up to 18,000 “premature deaths” per year in California. The CARB regulations have forced California businesses like ours, which depend heavily upon diesel powered vehicles, to pay billions of dollars in scientifically unjustified costs for diesel truck replacement and diesel particulate

filters. In addition, many of these businesses have closed or moved out of California because they are unable to comply with the CARB regulations.

Extreme activism conduct by Professors Nichols and Froines connected with the CARB diesel regulations is described in several detailed letters that Delta Construction Company has submitted to UCLA since March 11, 2009, articles written in the California Transportation News magazine and even published by inquisitive reporters such as Lois Henry of the Bakersfield Californian newspaper. An October 9, 2013 Delta's letter to the Council on Education for Public Health opposing the reaccreditation of the UCLA School of Public Health includes these prior letters as part of a 32-page attachment (<http://calcontrk.org/Delta100913.pdf>).

We are puzzled as to why Mr. Jerrett, a Canadian environmental activist academic, has been endowed this position. Are there no American's qualified for such a prestigious and obviously lucrative position?

Mr. Jerrett, much like his predecessor John Froines clearly does not understand, respect or minimally empathize with the plight of California business people like us, many of which are part of the struggling middle class and represented by a growing minority community. Indeed, he fits the profile of the "new" and very disturbing politicization activism class of "for sale" academics described in the April 2, 2012 National Association of Scholars Report "*A Crisis of Competence: The Corrupting Effect of Political Activism in the University of California*". (http://www.nas.org/images/documents/A_Crisis_of_Competence.pdf).

We strongly recommend that you reject Prof. Jerrett and select as EHS Chair an honest, ethical, and objective scientist who conducts environmental health research that is in the best interest of all Californians, including those most affected by specious research adored by activists. We will finish with this quote from the NAS report, "When that marketplace is functioning effectively, ideas progress to the extent they can be supported by evidence and logic; they cannot prevail because of their political value, because a political faction is able to enforce their dominance through sheer weight of numbers, or because ideas threatening to an orthodoxy are artificially excluded. Yet that is what has now happened in certain important areas of (UC) campus life. How has this happened?"

Clearly, "A great system of higher education has been corrupted." You need to stop this now and seriously look at ways to fix it; rejecting Mr. Jerrett is a good start.

Thank you very much for your consideration regarding this important matter.

Sincerely yours,



Lee Brown
Executive Director, CCTA



Norman R. ("Skip") Brown
Owner, Delta Construction Company

cc: UCLA Provost Scott Waugh
US House Science Committee Chair Lamar Smith
US House Science Committee Vice Chair Dana Rohrabacher

Critiques of Final Report for CARB Contract No. 06-332
(<http://www.scientificintegrityinstitute.org/JerrettCriticism102811.pdf>)

“Spatiotemporal Analysis of Air Pollution and Mortality in California
Based on the American Cancer Society Cohort: Final Report”

Michael Jerrett, Richard T. Burnett, Arden Pope III, Daniel Krewski, George Thurston,
George Christakos, Edward Hughes, Zev Ross, Yuanli Shi, Michael Thun, et al.

Compiled by
James E. Enstrom, Ph.D., M.P.H.
October 28, 2011

June 9, 2011 and October 28, 2011 CARB Research Screening Committee Meeting Information
(<http://www.arb.ca.gov/research/rsc/rsc.htm>)

June 9, 2011 Draft Final Report “Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort: Final Report” (145 pages)
(http://www.arb.ca.gov/research/rsc/06-09-11/agenda4_contract06-332_draft_report_cynthia_0520_v2.pdf).

October 28, 2011 Revised Final Report “Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort: Final Report” (148 pages)
(<http://www.arb.ca.gov/research/rsc/10-28-11/item1dfr06-332.pdf>).

June 9, 2011 written comments by James E. Enstrom, Ph.D., M.P.H., UCLA, Los Angeles, CA
(Summary read by Enstrom on June 9, 2011)
(<http://www.scientificintegrityinstitute.org/Enstrom060911.pdf>)

June 9, 2011 written comments by Norman R. “Skip” Brown of Delta Construction Company, Sacramento, CA (Summary read by Brown on June 9, 2011)
(<http://www.scientificintegrityinstitute.org/Delta060911.pdf>)

June 9, 2011 written comments by John D. Dunn, M.D., J.D., Lake Brownwood, TX
(Summary read by Hank de Carbonel on June 9, 2011)
(<http://www.scientificintegrityinstitute.org/Dunn060911.pdf>)

June 27, 2011 written comments by Frederick W. Lipfert, Ph.D., Northport, NY
(<http://www.scientificintegrityinstitute.org/Lipfert062711.pdf>)

August 17, 2011 Bakersfield Californian article by Lois Henry
“New study doesn’t hit the mark for air pollution deaths”
(<http://www.bakersfield.com/news/columnist/henry/x560461816/New-study-doesnt-hit-the-mark-for-air-pollution-deaths>) or (<http://www.scientificintegrityinstitute.org/Henry081711.pdf>)

September 13, 2011 written comments of William Matt Briggs, Ph.D., New York, NY
(<http://wmbriggs.com/blog/?p=4353>) or
(<http://www.scientificintegrityinstitute.org/Briggs091311.pdf>)

October 20, 2011 Second Delta (Brown) Critique
(Summary read by Allen Faris on October 28, 2011)
(<http://www.scientificintegrityinstitute.org/Delta102011.pdf>)

October 24, 2011 Briggs Critique
(Summary not read on October 28, 2011)
(<http://www.scientificintegrityinstitute.org/Briggs102411.pdf>)

October 26, 2011 Second Enstrom Critique
(Statement read by Betty Plowman on October 28, 2011)
(<http://www.scientificintegrityinstitute.org/Enstrom102611.pdf>)

October 26, 2011 Second Malkan Critique
(Statement read by Richard Fields on October 28, 2011)
(<http://www.scientificintegrityinstitute.org/Malkan102611.pdf>)

October 26, 2011 Second Dunn Critique
(Summary read by Hank de Carbonel on October 28, 2011)
(<http://www.scientificintegrityinstitute.org/Dunn102611.pdf>)

October 26, 2011 Lipfert Critique
(Summary read by Eric Eisenhammer on October 28, 2011)
(<http://www.scientificintegrityinstitute.org/Lipfert102611.pdf>)

October 26, 2011 Fulks Critique
(Summary read by Daniel Robertson on October 28, 2011)
(<http://www.scientificintegrityinstitute.org/Fulks102611.pdf>)

October 30, 2011 Briggs Blog re Jerrett Report
“A Case Of Failed Peer Review: Dust And Death”
(<http://wmbiggs.com/blog/?p=4587>)

June 9, 2011 verbal comments by Dr. Enstrom, Dr. Matthew A. Malkan of UCLA, Mr. Brown, and Dr. Dunn as read by Hank de Carbonel
(<http://www.scientificintegrityinstitute.org/CARBRSC060911.mp3>)

October 28, 2011 verbal comments read for Drs. Enstrom, Malkan, Dunn, Lipfert, and Fulks, and Mr. Brown (<http://www.scientificintegrityinstitute.org/CARBRSC102811.mp3>) or
(<http://www.cdtoa.org/CARBdocs/2011-10-28-SRatCARBreJerret.MP3>)

Statement to CARB Research Screening Committee

"Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort: Final Report (Revised October 28, 2011)" by Michael Jerrett, Richard T. Burnett, Arden Pope III, Daniel Krewski, George Thurston, George Christakos, Edward Hughes, Zev Ross, Yuanli Shi, Michael Thun, et al.

James E. Enstrom, Ph.D., M.P.H.
University of California, Los Angeles
Los Angeles, CA 90095-1772
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October 28, 2011

This statement is in addition to the formal comments that I submitted to CARB earlier this week. I am deeply disturbed by this Jerrett Report because its fourteen co-authors have ignored the massive amount of detailed criticism that has been submitted to CARB since June 9, 2011. This lack of response to criticism reinforces my long-standing concern about their scientific integrity. On July 11, 2008 I spoke personally with Drs. Michael Jerrett, Arden Pope, and Richard Burnett on a CARB teleconference organized by "Dr." Hein T. Tran. I tried to get these three prominent experts to seriously address my 2005 *Inhalation Toxicology* paper, which showed NO relationship between PM2.5 and total mortality in California. Instead of acting in a professional and responsible matter, they evaded my repeated requests that they reveal their own California-specific evidence.

Now, 3.3 years later, the Jerrett Report contains extensive evidence that there is indeed NO relationship between PM2.5 and total mortality in California. However, the Abstract and Conclusion of the Jerrett Report are unchanged since June 9, 2011 and do not properly acknowledge the extensive null findings in their report. There is now overwhelming epidemiologic evidence from several independent sources that PM2.5 does not cause "premature deaths" in California, including an October 1, 2011 paper co-authored by Dr. Jerrett.

Given the circuitous way the null evidence has emerged and the way they have prepared the Jerrett Report, I believe that Drs. Pope, Thun, Krewski, Jerrett, and Burnett (in that order) have known since at least 2000 that PM2.5 does not cause "premature deaths" in California. Furthermore, because these same scientists are well aware that CARB has relied primarily on their prominently published national relationships between PM2.5 and total mortality to calculate "premature deaths," they bear the primary responsibility for an erroneous public health justification of the CARB diesel vehicle regulations. I urge you to carefully consider all the criticism of the June 9, 2011 and October 28, 2011 versions of the Jerrett Report and to reject both versions.

Thank you very much for your consideration.

October 26, 2011

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

Re: Revised Final Report for Contract No. 06-332 “Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort: Final Report”

Dear Committee Members,

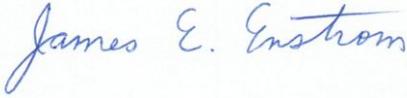
I strongly recommend that you reject the 148-page October 28, 2011 Revised Final Report for Contract No. 06-332 by Principal Investigator Michael Jerrett, Ph.D., “Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort: Final Report” (<http://www.arb.ca.gov/research/rsc/10-28-11/item1dfr06-332.pdf>). This “Jerrett Report” is virtually unchanged from the 145-page June 9, 2011 Draft Final Report by Dr. Jerrett (http://www.arb.ca.gov/research/rsc/06-09-11/agenda4_contract06-332_draft_report_cynthia_0520_v2.pdf). Dr. Jerrett and the other 13 co-authors did not specifically address the extensive criticism that was submitted regarding their June 9, 2011 Draft. The existing criticism is itemized at the end of this letter. This criticism and all future criticism of the Jerrett Report will be posted on my Scientific Integrity Institution website (<http://www.scientificintegrityinstitute.org/JerrettCriticism102811.pdf>).

Tables 27-32 of the Jerrett Report contain overwhelming evidence that there is NO relationship between fine particulate air pollution (PM_{2.5}) and total (all cause) mortality in California. This evidence should be clearly reflected in their Abstract, Key Results, Key Findings, Discussion, and Conclusion. Furthermore, the Jerrett Report should cite the overwhelming evidence from other epidemiologic studies that there is NO relationship between PM_{2.5} and total mortality in California. This null evidence is presented in my detailed August 11, 2011 summary (<http://www.scientificintegrityinstitute.org/Enstrom081111.pdf>) and in my September 16, 2011 US Small Business Administration PPT presentation on overestimation of PM_{2.5} deaths (<http://www.scientificintegrityinstitute.org/Enstrom091611.pdf>). This evidence includes my unpublished analysis of Figure 5 from the 2000 Krewski Jerrett HEI Reanalysis Report (<http://scientificintegrityinstitute.org/HEIFigure5093010.pdf>) and the October 1, 2011 AJRCCM paper co-authored by Dr. Jerrett (<http://ajrccm.atsjournals.org/cgi/reprint/184/7/828>).

The results in the Jerrett Report do not support the authors’ claim “We conclude that combustion-source air pollution, especially from traffic, is significantly associated with premature death in this large cohort of Californians.” Because of the evidence discussed above, the existing criticism itemized below, and forthcoming criticism, and I strongly recommend that you reject the Jerrett Report.

Thank you very much for your consideration.

Sincerely yours,



James E. Enstrom, Ph.D., M.P.H.
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(310) 825-2048

Existing criticism of June 9, 2011 Jerrett Report:

June 9, 2011 written comments by James E. Enstrom, Ph.D., M.P.H., UCLA, Los Angeles, CA
(<http://www.scientificintegrityinstitute.org/Enstrom060911.pdf>)

June 9, 2011 written comments by Norman R. "Skip" Brown of Delta Construction Company,
Sacramento, CA (<http://www.scientificintegrityinstitute.org/Delta060911.pdf>)

June 9, 2011 written comments by John D. Dunn, M.D., J.D., Lake Brownwood, TX
(<http://www.scientificintegrityinstitute.org/Dunn060911.pdf>)

June 27, 2011 written comments by Frederick W. Lipfert, Ph.D., Northport, NY
(<http://www.scientificintegrityinstitute.org/Lipfert062711.pdf>)

August 17, 2011 Bakersfield Californian article by Lois Henry "New study doesn't hit the mark
for air pollution deaths" (<http://www.bakersfield.com/news/columnist/henry/x560461816/New-study-doesnt-hit-the-mark-for-air-pollution-deaths>) or
(<http://www.scientificintegrityinstitute.org/Henry081711.pdf>)

September 13, 2011 written comments of William Matt Briggs, Ph.D., New York, NY
(<http://wmbriggs.com/blog/?p=4353>) or
(<http://www.scientificintegrityinstitute.org/Briggs091311.pdf>)

June 9, 2011 verbal comments by Dr. James E. Enstrom of UCLA, Dr. Matthew A. Malkan of
UCLA, Dr. John D. Dunn as read by Hank de Carbonel, and Skip Brown of Delta Construction
Company (<http://www.scientificintegrityinstitute.org/CARBRSC060911.mp3>)

June 16, 2010

VIA CERTIFIED MAIL and E-MAIL

California Air Resources Board Members:

Ms. Mary D. Nichols, Chair
Dr. John R. Balmes, Ph.D. M.D.
Ms. Sandra Berg
Ms. Dorene D'Adamo
Hon. Ken Yeager, Santa Clara County Supervisor
Ms. Lydia H. Kennard

Hon. Ronald O. Loveridge, Mayor, City of Riverside
Ms. Barbara Riordan
Hon. Ron Roberts, San Diego County Supervisor
Dr. Daniel Sperling, Ph.D.
Dr. John G. Telles, M.D.

1001 I Street, P.O. Box 2815
Sacramento, CA 95812-2815
arbboard@arb.ca.gov

Re: "Replacement Tran Report" on Premature Deaths in California Associated with PM2.5 Exposure

Dear Chairman Nichols and Board Members:

The purpose of this letter is to demand that all generally-accepted scientific standards are fully complied with prior to finalizing the "Replacement Tran Report."

The October 24, 2008 CARB Staff Report "Methodology for Estimating Premature Deaths Associated with Long-term Exposure to Fine Airborne Particulate Matter in California" (original "Tran Report") was admittedly flawed and unreliable. However, it still provided the primary public health justification for the Statewide Truck and Bus Regulation approved December 12, 2008. As you know, when fully implemented this regulation will cost all affected industries, by your own estimate, more than ten billion dollars in compliance actions. Given that the process used to produce the original Tran Report was severely flawed (both ethically and scientifically), it is imperative that the "Replacement Tran Report" be thoroughly vetted in an open, transparent manner by the unbiased scientists and the general public prior to Board acceptance.

As members of the impacted industries, we request that the final "Replacement Tran Report" meet the following minimum conditions:

1. Since this is a California regulation, the data used to support the report should be California-only data. It is unacceptable that U.S. EPA Integrated Science Assessment for Particulate Matter be "moved to become the basis for" the "Replacement Tran Report" because, in California, PM2.5 (a measurement of mass, not a substance) is not associated with increased mortality or any other significant public health issue.
2. The report should be initially issued in draft form, similar to the May 22, 2008 draft version of the Tran Report.
3. A Curriculum Vitae (CV) should be included for every person who contributes to the authorship of the "Replacement Tran Report."
4. There should be at least three months for public comment and CARB responses to those comments on the draft report.
5. The "Replacement Tran Report" should be based on all research studies published in peer reviewed journals and it should make reference to other major studies that are in progress and

should be reviewed by independent, impartial external experts with no ties, financial or otherwise, to either the Air Resources Board or affected industries.

6. These expert reviewers should be selected by an impartial authority, outside of CARB, such as the President of the University of California.
7. External experts should not review and evaluate the importance or validity of their own work or work of their coworkers on research or coauthors on publications.
8. Certain experts should be disqualified as expert reviewers, including those who were aware that PM2.5 was not associated with increased mortality in California but failed to say so, e.g., Drs. Michael Jerrett, C. Arden Pope, and Daniel Krewski.
9. All correspondence and commentary (including internal emails) between CARB and review panel members writing and reviewing the new report should be part of the public record, in compliance with the California Public Records Act.
10. Appropriate data sets for the accepted and approved studies used to create a new report and justify a regulatory regime should be available for review by the public.

Satisfaction of these conditions would go a long way toward restoring confidence in CARB and the CARB policy-making process, addressing and repairing CARB's currently perceived lack of trustworthiness in research and policy making and CARB's past unwillingness to seek and promote constructive input from the citizens of California and independent scientists regarding air pollution human health effects and implications for policy making and regulatory regimes. At this point any action that fails to incorporate the requested procedures above, or any CARB action to rush the final "Replacement Tran Report" in a closed-to-the-public process, will further diminish CARB's compromised reputation in the eyes of California citizens, the California Legislature, and the national scientific community. The following information serves as background on this critical issue.

BACKGROUND

Lead Technical Report Author Committed Credential Fraud

The scientific and public health basis for CARB's Statewide Truck and Bus Regulation (on-road in-use diesel regulation or "Truck Rule") is the October 24, 2008 CARB Staff Report on "Methodology for Estimating Premature Deaths Associated with Long term Exposure to Fine Airborne Particulate Matter in California" by lead author Hien T. Tran. However, Tran admittedly misrepresented his scientific qualifications and education. He did not in fact have a Ph.D. from U.C. Davis as he had originally claimed. Rather, Tran purchased a mail-order Ph.D. degree in June 2007 from "Thornhill University," which operates out of a New York City UPS Store. As documented in CARB's April 2009 Notice of Adverse Action, CARB found Tran guilty of "fraud, dishonesty and other failure of good behavior." Further, page 4 of the Notice states "Since you were the lead author and project coordinator of this report which was used to support the Regulation, your lack of credibility has called into question the credibility of the entire Regulation." However, despite fundamentally misrepresenting his credentials, Hien Tran still remains employed by the California Air Resources Board. We find it unacceptable that a 11-year employee who is very familiar with CARB's employment guidelines, was in fact only demoted and his salary was cut by only \$1,066 per month, down to \$7,899 per month (\$94,788/yr.). We remain curious as to why CARB continues to protect this employee.

Key CARB Personnel Knew About Fraud, Yet Failed to Disclose Crucial Information to the Full CARB Board and Public Prior to Important Vote, and Subsequently Perpetrated a Cover-up

Prior to approving the extremely costly Truck Rule on December 12, 2008, which affects nearly a million trucks and buses in the state, key CARB officials including Chair Mary Nichols, Executive Director James Goldstene, Chief Legal Counsel Ellen Peter and at least one Board Member, Dr. John Balmes, had actual knowledge that the project leader Hien Tran had falsified his Ph.D. credentials. In addition, on

December 3, 2008, Board Members Ronald Loveridge and Barbara Riordan were directly informed by four California scientists that Tran had misrepresented his Ph.D. However, the staff and Board Members chose to conceal this crucial information from the full 11-member Board, as well as the public, until after the Board adopted the controversial Truck Rule. Essentially, CARB purposefully withheld fundamental misrepresentations from the public in order to pass this contentious and costly rule.

In a November 10, 2009 email message to Board Member Dr. John Telles, CARB Chair Mary Nichols admitted she knew of the falsified credentials prior to the Board's vote on December 12, 2008. She also acknowledged that Tran's conduct was illegal and unethical, and admitted that it was a "mistake" to have concealed the information from the other Board Members. Ms. Nichols justified her cover-up by claiming to know that Tran's report was true despite his lies, and therefore decided that the vote should go forward without revealing the "distraction" of his misrepresentations. Dr. Telles filed a formal, November 16, 2009 complaint with CARB Chief Legal Counsel Ellen Peter claiming that key CARB officials had actual knowledge that Tran lied about his qualifications on or before December 10, 2008.

Extreme Negative Economic Impact of the Rule

It is imperative to state the severe economic consequences this rule will have on California's already struggling businesses and taxpayers. By CARB's own admission, the on-road rule alone will result in a \$5.5 billion cost to California's businesses, and tens of millions of dollars to public school districts. Based on CARB's past documented regulatory underestimates, industry now calculates the costs of this rule alone to be over \$20 billion, four times CARB's original estimate. Given the current economic collapse in this state, this regulation is likely to become the premiere "job-killer" government regulation of all time that will cause businesses that are already operating under thin profit margins to either shut down or avoid business in California altogether. Certainly a rule with such huge financial consequences deserves a fair, unprejudiced reevaluation and substantiated scientific justification.

CARB Agreed to Withdraw and "Redo" the Tran Report at its December 9, 2009 Board Meeting

In light of the fraudulent nature of the original Tran Report, the Board directed staff to withdraw and redo the report, with Chair Nichols stating "With today's set of actions, we confidently set out to revalidate the science supporting our rules..." (CARB Press Release, 12/9/09) In fact, Governor Schwarzenegger publicly stated in regards to the scandal, "It is clear...clear responsible action is needed." (*Capitol Weekly*, 12/17/09) Furthermore, CARB spokeswoman Mary Salas Fricke specified that the "Replacement Tran Report" would be completed by April, "There is going to be a series of workshops and an update to the board in April with some new provisions and a new health report." (*Capitol Weekly*, 12/17/09) To date, the above statements appear to be no more than mere hot air. The April date came and went without any mention of the "Replacement Tran Report." Compliance with our above-mentioned conditions will certainly be necessary to "revalidate the science supporting our rules" as Chair Nichols desires.

The February 26, 2010 CARB Science Symposium Showed that the Substantive Contents of Tran's Report Likely Cannot be Recreated Without Fraud

While Tran's lack of adequate credentials should in itself call into question the validity of his report, independent scientists continue to dispute the validity of his original report based on a number of reasons, including:

1. Substantial epidemiologic evidence from six different sources indicates that there is no current relationship between PM2.5 (specifically diesel PM) and premature deaths in California. The EPA's own (most recent 2005) California source data of PM2.5 indicates that on- and off-road diesel powered vehicles (this includes on-road diesel trucks and cars) account for just over 10% of the total PM2.5 in California. Consequently fully regulating the existing fleet of on-road diesel

powered vehicles will have virtually no quantifiable impact on reducing total PM2.5 levels in CA, but will cost in excess of \$20-billion to implement or \$896,740/ton.

2. The key epidemiologists relied upon by CARB in the October 24, 2008 CARB Staff Report (Drs. C. Arden Pope, Michael Jerrett, Daniel Krewski, and Michael J. Thun) have clear conflicts of interest because they are recipients of CARB and EPA funding, and/or were also involved in review of report. Furthermore, they have repeatedly refused to allow reanalysis of the key American Cancer Society Cancer Prevention Study (CPS II) database, which is in violation of Federal Data Access Act.
3. CARB has not considered several factors relevant to the justification of their diesel emission regulations. California has the fourth lowest total age-adjusted death rate of all 50 states; California is currently experiencing 13% unemployment and 25% underemployment, the highest levels since the Great Depression; none of the epidemiologic evidence used by CARB satisfies the Federal Judiciary Center standards for establishing a causal relationship between PM2.5 and premature deaths.
4. On May 22, 2008 a Draft CARB Report on PM2.5 & Premature Deaths by Hien T. Tran was published. On July 11, 2008 Tran conducted a detailed teleconference with Drs. Enstrom, Pope, Jerrett, and other key scientists who explained their data which was extremely relevant to the rule.
5. On July 11, 2008, 148 pages of mostly critical scientific comments were submitted to CARB in response to the May 22, 2008 Draft CARB Report. The October 24, 2008 Final CARB Report (Tran Report) does not properly include or address the critical comments by Drs. Enstrom, Moolgavkar, North, Dunn and Lipfert, and others.
6. CARB's February 26, 2010 Symposium on "Estimating Premature Deaths from Long-term Exposures to PM2.5" included comments by Dr. Jerrett of UC Berkeley, Dr. Enstrom of UCLA, and many other experts on PM2.5 health effects. Among other Symposium findings, based on the CA CPS I and CA CPS II results, by far the two largest California-specific studies, the number of "premature deaths" associated with PM2.5 exposure is zero, not the thousands of deaths presented to the CARB members when it voted to approve the off-road and on-road diesel regulations. Furthermore, Dr. Jerrett stated in regards to PM2.5 "...we are getting a null result for all causes now and it's because we do see this negative association with all cancer." Dr. Enstrom agreed, "In terms of total deaths, which are what are used to calculate premature deaths by the Air Resources Board, if I didn't misinterpret what he [Dr. Jerrett] said, there was no effect – very consistent with my findings."

CARB Staff Continues to Make Scientific and Data Mistakes on the Diesel Rules

In April 2010, more evidence was unveiled to further damage CARB's already shaky reputation. A computer model that CARB used to justify their off-road diesel regulations mistakenly attributed at least twice as much pollution to the off-road equipment as they actually produce and, in the case of the off-road rule, the error was up to 379 percent. CARB is still attempting to discern the full impacts of this "mistake," but clearly it means that the construction industry is producing only a fraction of the pollutants that CARB believed was the case when it adopted the off-road regulations in 2007. This display of incompetence could not have come at a worse time for CARB's credibility with the public.

Furthermore, it must be noted that Hien Tran's work was also fundamental to the justification of this off-road regulation. Tran was the "Primary Author" of the 2006 report "Quantification of the Health Impacts and Economic Valuation of Air Pollution from Ports and Goods Movement in California." This Tran report provided the methodology for the 2006 CARB report "Emission Reduction Plan for Ports and Goods Movement in California." (Appendix A). Per CARB's own admission in the Final Statement of Reasons for the off-road rule, "The methodology used to quantify health impacts was the same as that used in the Emission Reduction Plan for Ports and Goods Movement in California." (FSOR, page 44). Additionally, the off-road rule's technical supporting document "Assessment of Health Impacts from Off-

Road Diesel Vehicles” relied solely on this same Tran methodology (Appendix C, footnote 1). As you can see, Tran’s “work” is inextricably intertwined within the diesel regulations. To further withhold from the public a legitimate, full-vetted analysis is completely inexcusable.

REQUEST

Given CARB’s recent reputation for creating scientifically-unsupportable regulations, we once again must demand that the “Replacement Tran Report” be completed in an open and above-board manner so that California’s citizens can rest assured that all costly regulations are 100% necessary and justified. We call for you, as Board Members, to insist that CARB staff meet each and every one of the ten conditions detailed on page one of this letter prior to placing the “Replacement Tran Report” before you for adoption.

Respectfully,

From all signatories of interest below,



Lee Brown, Executive Director
CA Dump Truck Owners Association (CDTOA)



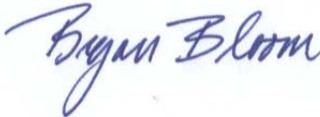
Bill Davis, Executive Vice President
Southern California Contractors Association (SCCA)



Skip Brown, Owner
Delta Construction



Jay McKeeman, Vice President, Government Relations
California Independent Oil Marketers Association (CIOMA)



Bryan Bloom, Owner
Priority Moving, Inc.



Mike Lewis, Senior Vice President,
Construction Industry Air Quality Coalition (CIAQC)



Steve Weitekamp, President
California Moving & Storage Association (CMSA)

CC: The Honorable Arnold Schwarzenegger, Governor of California
Jerry Brown, Attorney General
Ms. Linda Adams, Secretary, California Environmental Protection Agency
Members, California State Legislature



(916) 364-0292
FAX (916) 364-7641
P.O. Box 277517
Sacramento, CA 95827
CLN 257024

CONSTRUCTION CO., INC.

March 24, 2010

President Mark G. Yudof
Office of the President
University of California
1111 Franklin Street, 12th Floor
Oakland, CA 94607
president@ucop.edu

Re: Alleged Research Misconduct (Falsification) by UC Berkeley Professor Michael L. Jerrett

Dear President Yudof:

Thank you for your January 26, 2010 response to our January 6, 2010 letter regarding UC Berkeley Professor Michael L. Jerrett. In addition, we received the February 5, 2010 email response from Dr. Jerrett shown below. We are writing you again because we believe that Dr. Jerrett has seriously misled both your staff and us regarding his knowledge about the relationship between fine particulate air pollution (PM_{2.5}) and mortality in California. At the February 26, 2010 CARB Symposium on PM_{2.5} and Premature Deaths, Dr. Jerrett revealed that his research using the ACS CPS II cohort shows NO relationship between PM_{2.5} and all cause mortality in California, consistent with the findings discussed in our January 6, 2010 letter. Based on this revelation and other evidence that we have gathered, we allege that since 2006, when he became a UC Berkeley faculty member, Dr. Jerrett has engaged in clearly documented falsification related to the relationship between PM_{2.5} and total mortality in California.

In particular, we allege that Dr. Jerrett has violated the *UC Standards of Ethical Conduct*, which states "Members of the University community engaged in research are not to . . . knowingly omit data or results to misrepresent results in the research record All those engaged in research are expected to pursue the advancement of knowledge while meeting the highest standards of honesty, accuracy, and objectivity." Also, we allege that Dr. Jerrett has violated the *UC Berkeley Updated Summary Statement of University Policy Related to Conduct of Research*, which "applies to all individuals engaged in University research whatever the funding source." This policy states "*Research misconduct* means fabrication, falsification, or plagiarism, in proposing, performing, or reviewing research, or in reporting research results" and "*Falsification* is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record."

To document our allegation of research misconduct (falsification) by Dr. Jerrett, we provide the essential details below, which we believe are sufficient to initiate a formal investigation. During

your formal investigation, we can provide you with any or all of the underlying documents discussed below, most of which can also be obtained from the Internet or from Dr. Jerrett.

The evidence begins when Dr. Jerrett co-authored the 2000 HEI Reanalysis Report (Krewski 2000) that confirmed a national relationship between PM_{2.5} and total mortality based on the ACS CPS II cohort. Included in this report is Figure 21, a U.S. map of “Fine Particulates and Mortality Risk” that indicates no excess mortality risk in California, as best as can be interpreted from the information on the map and from a slide presented at the July 23, 2001 US EPA CASAC meeting. Then Dr. Jerrett co-authored a November 2005 *Epidemiology* paper “Spatial Analysis of Air Pollution and Mortality in Los Angeles,” which found an unusually large relationship between PM_{2.5} and mortality in the Los Angeles basin during 1982-2000 (Jerrett 2005). Then Dr. James E. Enstrom authored a December 15, 2005 *Inhalation Toxicology* paper “Fine Particulate Air Pollution and Total Mortality Among Elderly Californians, 1973–2002” (Enstrom 2005), which found no relationship between PM_{2.5} and mortality in California during 1983-2002. Dr. Enstrom’s paper is the first, largest, and most detailed peer reviewed publication that focuses on the relationship between PM_{2.5} and total mortality in California.

At the March 23, 2006 CARB meeting a staff Power Point (PPT) presentation gave extensive details on Jerrett 2005 and cited numerous other studies, including Krewski 2000, Pope 2002, and Laden 2006. In addition, Abbey 1999 and Chen 2005 were cited as key papers from the Adventist Health Study of Smog (AHSMOG), which has been conducted at Loma Linda University and has been largely funded by CARB. AHSMOG is the first study of air pollution and mortality in California, dating back to Abbey 1991, but it is a small study that has published no findings on PM_{2.5} and total mortality. The CARB PPT presentation made no mention of Enstrom 2005, in spite of the fact that it was published the same month as Chen 2005 and one month before Laden 2006 appeared online. Because Enstrom 2005 was submitted directly to CARB scientist Linda Smith on January 9, 2006, we believe that the CARB staff members who prepared the PPT presentation knew about the highly relevant statewide results in this paper and knowingly omitted them from the PPT presentation.

Our view is supported by Joel M. Schwartz in his May 2006 AEI paper “*Air Pollution and Health: Do Popular Portrayals Reflect the Scientific Evidence?*” Schwartz stated “At the March meeting of the California Air Resources Board, staff members gave a detailed presentation on Jerrett et al. (2005)—a new epidemiological study of the Los Angeles region that reported a stronger link between PM_{2.5} and mortality than suggested in previous research regulators have used to support tougher PM_{2.5} standards.⁴⁶ What CARB’s staff did not tell its board is that right around the same time that Jerrett et al. was published, another study of PM_{2.5} risks in California by Enstrom (2005) concluded that PM_{2.5} was having no effect on mortality.⁴⁷ Several California papers, including the *Los Angeles Times*, covered the alarming findings of Jerrett et al. but none covered the benign results reported by Enstrom.”

The 1041-word March 25, 2006 Los Angeles Times article “Study Doubles Estimates of Smog Deaths” described Jerrett 2005 in detail, quoted Dr. Jerrett extensively, and discussed Chen 2005 and Laden 2006. However, there was no mention of Enstrom 2005 or its null results. The March 30, 2006 Health & Clean Air Newsletter No 8 “An Inconvenient Reality” presented seven pages on Jerrett 2005 and strongly praised the paper and its results. However, the Newsletter

completely ignored the null California results in Enstrom 2005 and used ad hominem comments to impugn the null results in a major national study (Lipfert 2000). In spite of substantial evidence to the contrary, the Newsletter concluded “In short, any remaining doubt that fine particles cause death and illness—and are not merely associated with these outcomes—is a scintilla.” We allege that Dr. Jerrett was aware of the CARB PPT presentation, the Los Angeles Times article, and the Newsletter and the fact that all three of these items about Jerrett 2005 omitted any mention of Enstrom 2005.

The June 1, 2006 *Inhalation Toxicology* contains criticism by Drs. Brunekreef and Hoek of Enstrom 2005 (Brunekreef 2006), as well as Dr. Enstrom’s response to this criticism (Enstrom 2006). Enstrom 2006 included Figure 21 from Krewski 2000 and permission to reproduce Figure 21 was obtained from Dr. Krewski via a January 22, 2006 email message to Dr. Enstrom. In addition, Dr. Krewski sent a January 30, 2006 email message to Dr. Enstrom, with cc’s to Drs. Burnett and Jerrett, regarding Dr. Enstrom’s January 29, 2006 email query requesting clarification of the California-specific results contained in Figure 21. Dr. Enstrom’s direct contact with Dr. Jerrett goes back to December 2003 when they exchanged email messages and had a telephone conversation about their respective ongoing epidemiologic studies on PM2.5 and mortality in California. These email messages are shown below and they clearly document that Dr. Jerrett has been aware of Dr. Enstrom’s research on PM2.5 and mortality for over six years.

On August 21, 2006 CARB scientists Richard Bode, Linda Smith, and Hien T. Tran conducted a “Public Workshop on Updating the Methodology for Estimating Premature Death Associated with PM2.5 Exposures.” The PPT presentation for this Workshop specifically shows Jerrett 2005 and Laden 2006, but not Enstrom 2005, as “New studies emerged since 2002.” In addition, Dr. Arden Pope is shown as a CARB advisor and Drs. Pope, Krewski, and Thurston are shown as members of the EPA expert elicitation panel assessing the relationship between PM2.5 and all-cause mortality. Joel M. Schwartz testified at the Workshop and then on August 29, 2006 submitted to CARB ten pages of formal comments and three of his AEI papers, including his May 2006 paper cited above. His formal comments stated “The discussions and handouts at the August 21 workshop indicate that CARB’s approach to evaluating the association of PM2.5 and mortality tends to omit contrary evidence and to uncritically accept supportive evidence. This would cause CARB to overstate the magnitude and certainty of the association of air pollution and premature mortality.” This statement also describes the approach used in the three March 2006 items about Jerrett 2005 discussed earlier.

During 2006 Dr. Jerrett prepared and submitted to CARB, as a Principal Investigator from UC Berkeley, Proposal No. 2624-254 “Spatiotemporal Analysis of Air Pollution and Mortality in California Based on the American Cancer Society Cohort.” The proposal listed eight co-investigators, including Drs. Pope, Krewski, Burnett, and Thurston. This three-year project for \$749,706 was approved at the January 25, 2007 CARB meeting, where Board Members were told “California currently has no statewide studies assessing mortality resulting from air pollution in the general population.” This approved project, which became “ARB/UCB Agreement No. 06-332,” contains the following statements relevant to our allegation of falsification: “California currently has no statewide studies assessing mortality resulting from air pollution in the general population.” (page 3); “California has no state-wide estimates of mortality to support policymaking and regulatory activities. Extension of the ACS study to

address scientific uncertainties and to derive estimates specific to California will assist the Air Resources Board and others to assess the benefits of policy interventions.” (page 4); “*This study will derive the first California wide estimates of mortality associated with PM2.5 exposure and other criteria co-pollutants, thus supplying policymakers with a valuable resource for deriving benefit estimates.*” (page 5); “We recognize the urgent need for statewide estimates of mortality effects. We will therefore put as our highest priority delivery of California-wide estimates” (page 27); and “We will also submit an interim progress report after the first 18 months of the contract documenting the results of our statewide analysis” (page 31).

The Agreement does not mention AHSMOG or its publications on air pollution and mortality in California, dating from August 1991 (Abbey 1991) to December 2005 (Chen 2005), and does not mention Dr. Enstrom’s California study (Enstrom 2005) or its related publications (Moolgavkar 2006 and Enstrom 2006). However, the Agreement contains reference 4 on page 35: “Pope CA III, Dockery DW. 2006. Critical Review—Health effects of fine particulate air pollution: Lines that connect. *Journal of the Air & Waste Management Association* 56:709-742.” In this June 2006 review article Drs. Pope and Dockery list and discuss Enstrom 2005 and Moolgavkar 2006 among a total of 502 references. Given the fact that the Agreement contains a detailed and up-to-date citation of the relevant scientific literature, including 20 references from 2006, one of which is the review by co-investigator Pope, we allege that Dr. Jerrett engaged in falsification by omitting Enstrom 2005. If Enstrom 2005 had been cited, the Agreement would have had to acknowledge that a very large and detailed study of PM2.5 and mortality in California had already been conducted and published. Enstrom 2005 and its null findings should have been revealed to the CARB Research Screening Committee during the development of the proposal in 2006 and to CARB members at the January 25, 2007 CARB meeting, because this information could have influenced the specific aims and approval of the Jerrett proposal.

On May 25, 2007 the CARB members discussed the public health justification for the “in-use off-road diesel vehicle regulation.” CARB staff members made statements about the dangers of diesel that included “Diesel PM is responsible for 70 percent of the known risk from air toxics and causes thousands of deaths each year in California. . . . In 2005, emissions from the off-road diesel vehicles covered by this proposed regulation caused 1100 premature deaths as well as tens of thousands of cases of asthma and other effects.” The estimate for premature deaths was based on a March 21, 2006 CARB report by Hien T. Tran that relied primarily on the nationwide results in the Pope 2002 paper and the Krewski 2000 report. On July 26, 2007 CARB members voted unanimously to approve the “in-use off-road diesel vehicle regulation.”

The May 22, 2008 Draft CARB Staff Report by Hien T. Tran states that PM2.5 contributes to as many as 24,000 annual premature deaths in California, with 3,900 of these deaths due to diesel PM. The most important studies used to calculate these numbers of premature deaths were Pope 2002 and Jerrett 2005, with no consideration given to Enstrom 2005. These estimates of premature deaths provided the primary public health justification for new on-road diesel vehicle regulations being proposed by CARB. However, because of public concerns that had been raised about the relationship of PM2.5 and mortality in California, CARB hosted a July 11, 2008 teleconference that included Drs. Enstrom, Jerrett, and Pope, as well as CARB scientists Hien T. Tran and Linda Smith (see December 10, 2008 CARB public comments). Dr. Enstrom repeatedly requested California-specific results from the Krewski 2000 report, the Pope 2002

paper, and the above Jerrett research project. However, Drs. Jerrett and Pope refused to provide any California-specific results, although these results should have been available for Dr. Jerrett's interim progress report due in July 2008. Given that Dr. Jerrett and the project co-investigators recognized "the urgent need for statewide estimates of mortality effect," we allege that Dr. Jerrett had findings available in July 2008 and may have included them in his interim progress report.

On October 24, 2008 the final CARB Staff Report by Hien T. Tran (Tran Report) was released with no changes in the studies used to calculate the number of premature deaths and with the slightly revised conclusion that diesel PM contributes to 3,500 premature deaths in California annually. The Tran Report did not properly address the extensive criticism contained in 148 pages of July 11, 2008 public comments submitted to CARB, particularly the criticism regarding California-specific results. On December 12, 2008 CARB members unanimously approved the on-road diesel vehicle regulations, with the primary public health justification being the premature deaths claimed to be due to diesel PM. CARB members were not properly informed of the ongoing scientific controversy regarding relationship between PM_{2.5} and mortality in California and other issues regarding the scientific integrity of Hien T. Tran and the Tran Report.

On June 3, 2009 the HEI Research Report No.140 "Extended Follow-Up and Spatial Analysis of the American Cancer Society Study Linking Particulate Air Pollution and Mortality," with Drs. Krewski and Jerrett as the first two authors, was released but it did not cite Enstrom 2005, did not include a U.S. map of "Fine Particulates and Mortality Risk" (the equivalent of Figure 21 in Krewski 2000), and did not present any California-specific results. The report did present the Los Angeles basin results contained in Jerrett 2005. Because of his ongoing ARB/UCB project and the July 11, 2008 request from Dr. Enstrom, Dr. Jerrett was well aware of importance of California-specific results but he did not include any such results in the 2009 HEI report. Thus, we allege that Dr. Jerrett engaged in falsification by omitting from this report California-specific results and mention of Enstrom 2005.

On November 19, 2009 CARB Member John G. Telles read his November 16, 2009 letter requesting that the Tran Report be redone and the diesel regulations be suspended because of the fraud committed by lead author Hien T. Tran. CARB Chair Mary D. Nichols agreed to host an open symposium on the Tran Report science. In addition, she acknowledged that four Board members, including herself, knew of the fraud perpetrated by Tran about his Ph.D. degree and knew that this information was withheld from other Board members before the December 12, 2008 vote to approve the on-road diesel truck regulations.

The resulting February 26, 2010 CARB Symposium on "Estimating Premature Deaths from Long-term Exposures to PM_{2.5}" included talks by Drs. Enstrom, Jerrett, Pope, Krewski, and many other experts on PM_{2.5}. The Jerrett PPT presentation on "California-specific Studies on the PM_{2.5} Mortality Association" (28 slides), particularly slide 26 "Summary of California cohort studies associated with long-term particulate matter exposure" makes no mention of Enstrom 2005. However, Jerrett slides 12 and 26 present relative risk (RR) results for the CA CPS II cohort showing RR = 1.00 (0.97-1.03) for all causes of death during 1982-2000. Note that RR = 1.00 means no increased risk due to PM_{2.5} and that 95% confidence limits including 1.00 mean no statistically significant effect. The Jerrett result is in exact agreement with the Enstrom 2005 result for the CA CPS I cohort RR = 1.00 (0.98-1.02) for all causes of death during 1983-2002. Based on the CA CPS I and CA CPS II results, by far the two largest California-specific

studies, the number of "premature deaths" associated with PM2.5 exposure is zero, not the thousands of deaths presented to the Board when it voted to approve the off-road and on-road diesel regulations. Since the computations to produce the RRs in slides 12 and 26 are relatively simple, we allege Dr. Jerrett has known these results since July 2008 or earlier. Furthermore, since specific RRs were presented in slides 12 and 26 on February 26, 2010 we believe that there is substantial obfuscation contained in Dr. Jerrett's February 5, 2010 email message below.

It is clear to the undersigned that Dr. Jerrett has engaged in a sustained pattern of falsification ("knowingly omit data or results to misrepresent results in the research record") regarding evidence on the relationship of PM2.5 and mortality in California dating from his 2006 CARB proposal and up to his February 26, 2010 CARB PPT presentation. He has repeatedly failed to cite the Enstrom 2005 study and has repeatedly failed to clarify the various forms of California-specific evidence from the CPS II cohort that he has possessed for the past ten years, dating back to Figure 21 in the 2000 HEI Report. Because of this falsification, CARB members and the general public did not know that overwhelming epidemiologic evidence from CA CPS I and CA CPS II shows no relationship between PM2.5 and mortality in California since 1983. CARB members should have been informed of these California-specific results before they voted on major California diesel vehicle regulations in 2007 and 2008.

Because of the serious nature of the alleged research misconduct (falsification) and because of the serious economic consequences to California businessmen resulting from the CARB diesel regulations that have been approved, at least in part, because of this falsification, we request that you assess our allegations as soon as possible. If Dr. Jerrett disputes the accuracy of any of the statements above, we will provide you with our evidence supporting their accuracy. Most of this evidence is either contained in the letter itself or is freely posted on the Internet. Once you have assessed our allegations, we request that you prepare a detailed account of your findings that can be released to the public. Also, if you confirm that our allegations are valid, we request that you take appropriate action against Dr. Jerrett.

While only the undersigned are responsible for this letter, all the signers of January 6, 2010 letter to you are interested in knowing your findings and conclusions regarding the above allegations. For your reference, we have attached a copy of the January 6, 2010 letter.

Thank you very much for your assistance regarding this important matter.

Sincerely yours,



Norman R. "Skip" Brown
President and Owner
Delta Construction Company



Lee Brown

I have carefully examined the letter of particulars concerning Professor Jerrett. I am familiar with literature in this area and statistical technologies used to evaluate observational data. The particulars should be thoroughly and expeditiously evaluated as important decisions have been made and will be made based on Professor Jerrett's work.

A handwritten signature in cursive script, appearing to read "S. Stanley Young", is displayed on a light gray, textured background.

S. Stanley Young, PhD, FASA, FAAAS

Attachments:

Email dated February 05, 2010 from Michael Jerrett to Lee Brown

Email dated 30 January 2006 from Daniel Krewski to James E. Enstrom (with others leading to this email). 4 pages total

Email dated 22 Dec 2003 from Michael Jerrett to James E. Enstrom

From: Michael Jerrett [mailto:jerrett@berkeley.edu]
Sent: Friday, February 05, 2010 3:44 PM
To: Lee Brown
Cc: 'Ellison Wilson Advocacy, LLC'; john.balmes@ucsf.edu; 'Ellen Auriti'
Subject: response to your request for California-specific results

Dear Mr. Brown:

I apologize for this delayed reply, but I had to coordinate with President Yudof and his staff. I understand that President Yudof has now replied, and I would like to elaborate on where we are with the research you are interested in having published.

My colleagues and I are continuing to work on the Air Resources Board contract to establish definitive estimates of the mortality risks associated with particulate matter and other criteria air pollutants in California. Last year, however, the State of California suspended hundreds of contracts due to budgetary problems. Our contract was suspended for some 4 months and as a result key personnel could not be hired or had to be laid off the project, which has put us behind schedule. After this considerable delay and disruption it took some time to get the project back on track. We have now just developed the personal exposure measures at the home addresses of the subjects in our study and are now just starting the "formal" analyses of them, which will take another 6-12 months to complete.

As I explained in my earlier communications, I was out of the country when you invited me to speak on August 1, 2009. As the results become available and are properly vetted through rigorous peer review, I would be happy to speak to you and others about our findings.

I should also point out that none of the subject-specific health data needed to conduct the health analyses is resident on the University of California campus. These data are housed and analyzed at the University of Ottawa, Canada. In any event, the data contain sensitive health information on hundreds of thousands of people, and there are means within the data to identify some individuals. On entering the American Cancer Society Cancer Prevention II study, all individuals signed informed consent forms and were guaranteed that their identities would remain confidential. Thus any request to access the data would have to through ethics review to protect the subjects' identities and ensure these identities would remain confidential. There are also provisions from all involved institutions regarding the protection of human subjects, to which any of the researchers accessing the data would have to adhere. The data I use for the study component here at UC Berkeley is publicly available air pollution monitoring data that is downloadable through the ARB website.

We will endeavor to supply the results as quickly as possible, but we cannot rush these analyses. They are technically intricate, extremely complex, and we need to take appropriate care to ensure the results are valid. Your recommendation to replicate the national analysis here in California is not feasible or scientifically defensible because there are so few metropolitan areas with central monitors from our other national studies that the exposure assignment would be so crude that we could not trust the results. Results produced from such analyses would likely not be publishable in the scientific literature and even if they were published, they would have little or no

credibility in the scientific community given the limitations of the exposure assessment.

One of the reasons our research is so widely cited relates to the great care we take in applying the most sophisticated and scientifically valid methods to understand this complex relationship between air pollution and mortality. We cannot rush such analyses without jeopardizing our extensive quality control and peer review process, which is essential for ensuring the scientific findings are valid and accepted by scientific and policy communities. We will not rush these analyses for any given external concern because the integrity and quality of the findings is of utmost importance to my colleagues and I, who are conducting the research and are ultimately responsible for the scientific results that we publish.

I understand how your organization and many others would like to see our results published. It is unfortunate that the budgetary problem in California has led to delays in finalizing science that may help to inform decisions affecting your industry and more generally public health. But these matters were beyond my control or the control of anyone at the University of California. We are working hard to supply those results through publication in journals of the highest standing in the fields of Medicine and Environmental Health.

Thank you for your interest in our research.

With best regards,

Michael Jerrett

Michael Jerrett, PhD

Director, Doctor of Public Health Program

Associate Professor

University of California, Berkeley

School of Public Health

Division of Environmental Health Sciences

710 University Hall (Office and GIS Lab)

Berkeley, CA 94720-7360

jerrett@berkeley.edu

Tel: 510-642-3960

Fax: 510-642-5815

X-Sieve: CMU Sieve 2.2
Reply-To: <dkrewski@uottawa.ca>
From: "Daniel Krewski" <dkrewski@uottawa.ca>
To: "James E. Enstrom" <jenstrom@ucla.edu>
Cc: "Rick Burnett" <Rick_Burnett@hc-sc.gc.ca>,
"Michael Jerrett" <jerrett@usc.edu>
Subject: RE: Request Regarding HEI Special Report
Date: Mon, 30 Jan 2006 18:51:17 -0500
X-Mailer: Microsoft Office Outlook, Build 11.0.6353
Thread-Index: AcYIBPeNuCLIfNbARKG1QslpyUN8GAA8ikMg
X-Probable-Spam: no
X-Spam-Report: none
X-Scanned-By: smtp.ucla.edu on 169.232.47.138

Without having the report at hand here in Lyon, France, my recollection was that we used only urban centres such as Los Angeles (and all counties therein). There may be other California cities as well, but I would have to check.

Rick Burnett or Mike Jerrett may be able to comment in advance of my return next week.

With best regards.

Daniel Krewski, PhD, MHA
Professor and Director
McLaughlin Centre for Population Health Risk Assessment
University of Ottawa
Room 320, One Stewart Street
Ottawa, Ontario CANADA K1N 6N5

Assistant: Suzanne Therien
Tel: 613-562-5381
Fax: 613-562-5380
Email: stherien@uottawa.ca

-----Original Message-----

From: James E. Enstrom [<mailto:jenstrom@ucla.edu>]
Sent: Sunday, January 29, 2006 1:49 PM
To: Daniel Krewski
Subject: Request Regarding HEI Special Report

Dear Dr. Krewski:

I have a question regarding Figure 21, "Fine Particles and Mortality Risk," and the related text, "Spatial Patterns in the Data," in your 2000 HEI

Special Report. Did you determine the relative risk of mortality from all causes for specific counties in California and/or the relative risk of mortality from all causes associated with an increase in fine particles for California as a whole? If you did, are your results available in one of the HEI Special Report Appendices or elsewhere? If you did not, can you calculate them now using the underlying ACS CPS II data described in Figure 14?

Thank you very much for any information you can give me. If you wish, I can explain why this information would be valuable to me.

Best regards,

James E. Enstrom, Ph.D., M.P.H.

At 09:03 PM 1/22/2006, you wrote:

>Thanks for keeping me informed.

>

>With best regards.

>

>Daniel Krewski, PhD, MHA

>Professor and Director

>McLaughlin Centre for Population Health Risk Assessment

>University of Ottawa

>Room 320, One Stewart Street

>Ottawa, Ontario CANADA K1N 6N5

>

>Assistant: Suzanne Therien

>Tel: 613-562-5381

>Fax: 613-562-5380

>Email: stherien@uottawa.ca

>

>

>-----Original Message-----

>From: James E. Enstrom [<mailto:jenstrom@ucla.edu>]

>Sent: Wednesday, January 18, 2006 2:12 PM

>To: Daniel Krewski

>Subject: Fwd: RE: Permission to Reprint HEI Material

>

>Dear Dr. Krewski,

>

>As per the request below from Virgi Hepner, I am writing to notify you

>about the reprinting of material from your HEI Special Report, as described

>below.

>

>Best regards,

>
>James E. Enstrom, Ph.D., M.P.H.
>
>
>
>>Subject: RE: Permission to Reprint HEI Material
>>Date: Wed, 18 Jan 2006 13:23:47 -0500
>>From: "Virgi Hepner" <VHepner@healtheffects.org>
>>To: "James E. Enstrom" <jenstrom@ucla.edu>
>>
>>To: James E. Enstrom
>>
>>The Health Effects Institute hereby gives permission to reprint Figure
>>21 from the HEI Special Report "Reanalysis of the Harvard Six Cities
>>Study and the American Cancer Society Study of Particulate Air Pollution
>>and Mortality" published in 2000.
>>
>>We understand that the figure will appear in an article you are
>>submitting to Inhalation Toxicology and that credit will be given to HEI
>>as the source.
>>
>>We would appreciate it if you would also notify Dr Daniel Krewski (the
>>Principal Investigator for this project) at
>>
>>University of Ottawa
>>Institute of Population Health
>>McLaughlin Centre for Population Health Risk Assessment
>>One Stewart St.
>>Room 320
>>Ottawa Ontario K1N 6N5 Canada
>>613-562 5379
>>dkrewski@uottawa.ca
>>
>>Thanks for your interest in the research sponsored by HEI.
>>Virgi Hepner
>>Senior Science Editor
>>
>>
>>
>>-----Original Message-----
>>From: James E. Enstrom [mailto:jenstrom@ucla.edu]
>>Sent: Thursday, January 05, 2006 1:09 PM
>>To: Carol Moyer
>>Cc: Virgi Hepner
>>Subject: Permission to Reprint HEI Material
>>

>>Dear Carol Moyer and Virgi Hepner:
>>
>>I am writing to request permission to reprint one page from a Health
>>Effects Institute publication. Specifically, I would like permission to
>>reprint Figure 21 (page 197) from the following HEI Special
>>Report: <http://www.healtheffects.org/Pubs/Rean-part2.pdf> . Figure 21
>>(printed page 197) is on page 70 of the .pdf file. I would like to use
>>this figure in a commentary on fine particles and mortality that I have
>>written for publication in a peer-reviewed journal. I would properly
>>cite HEI as the source of this figure.
>>
>>Please let me know if you need any additional information regarding this
>>request.
>>
>>Thank you very much for your consideration.
>>
>>Best regards,
>>
>>James E. Enstrom, Ph.D., M.P.H.
>>UCLA School of Public Health and
>>Jonsson Comprehensive Cancer Center
>>jenstrom@ucla.edu
>>(310) 825-2048

X-Sieve: CMU Sieve 2.2
Date: Mon, 22 Dec 2003 18:09:31 -0800
From: michael jerrett <jerrett@usc.edu>
Subject: Re: Potential Air Pollution Study
To: "James E. Enstrom" <jenstrom@ucla.edu>
X-Mailer: iPlanet Messenger Express 5.2 HotFix 1.21 (built Sep 8 2003)
X-Accept-Language: en
Priority: normal
X-Probable-Spam: no
X-Spam-Hits: -1.6
X-Scanned-By: vscan.smtp.ucla.edu

Dear Dr. Enstrom:

I apologize for my delayed reply. I've just now gotten access to USC's email. I will call you tomorrow regarding your study.

With best regards,

Mike Jerrett

----- Original Message -----

From: "James E. Enstrom" <jenstrom@ucla.edu>
Date: Wednesday, December 10, 2003 2:23 pm
Subject: Potential Air Pollution Study

> Dear Dr. Jerrett,
>
> I am an epidemiologist at UCLA and Dr. Rob McConnell suggested that I
> contact you. This regards a potential air pollution epidemiologic study
> which would combine my prospective cohort data with your GIS data. I
> would
> appreciate it if you can call me and I will describe in more detail what I
> have in mind.
>
> Thank you very much.
>
> Best regards,
>
> Jim Enstrom, Ph.D.
> (310) 825-2048
>
>

Estimating Premature Deaths From Long-term Exposure to PM2.5

Summary of Major Evidence on PM2.5 and Premature Deaths in California

The February 26, 2010 California Air Resources Board (CARB) Symposium on “Estimating Premature Deaths from Long-term Exposures to PM2.5” included talks by Michael Jerrett, Ph.D., of UC Berkeley, James E. Enstrom, Ph.D., of UCLA, and many other experts on PM2.5 health effects. The Jerrett PPT presentation on “California-specific Studies on the PM2.5 Mortality Association”



provides important new evidence. Jerrett slides 12 and 26 present relative risk (RR) results for the CA CPS II cohort showing RR ~ 1.00 (0.97-1.03) for all causes of death during 1982-2000. Jerrett slides 13 and 14 discuss these results. Note that RR = 1.00 means no increased risk due to PM2.5 and that 95% confidence limits including 1.00 mean no statistically significant effect. The Jerrett result is in exact agreement with the Enstrom 2005 result for the CA CPS I cohort RR = 1.00 (0.98-1.02) for all causes of death during 1983-2002. The Enstrom PPT presentation on “Critique of CARB Diesel Science, 1998-2010” shows Enstrom 2005 results on Enstrom slide 22. Based on the CA CPS I and CA CPS II results, by far the two largest California-specific studies, the number of “premature deaths” associated with PM2.5 exposure is zero, not the thousands of deaths presented to the CARB members when it voted to approve the off-road and on-road diesel regulations.

Relevant Internet Websites:

Webcast of Entire Symposium

(<http://www.cal-span.org/cgi-bin/archive.php?owner=CARB&date=2010-02-26>)

Jerrett PPT Presentation “California-specific Studies on the PM2.5 Mortality Association”

(<http://www.arb.ca.gov/research/health/pm-mort/jerrett.pdf>)

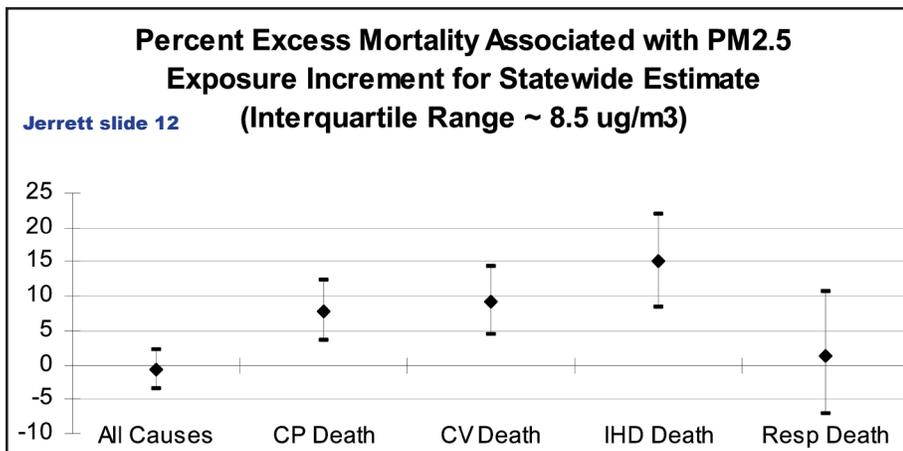
Enstrom PPT Presentation “Critique of CARB Diesel Science, 1998-2010”

(<http://www.arb.ca.gov/research/health/pm-mort/enstrom.pdf>)

Transcript of Statements by Michael Jerrett, Ph.D. - UC Berkeley

California Results from 1982 ACS Cancer Prevention Study (CA CPS II):

Minutes 2:20:48 – 2:23:22 of Webcast



CP - Cardiopulmonary, CV - Cardiovascular, IHD - Ischemic Heart Disease, Resp - Respiratory

“This is from the statewide study and this is against the interquartile range of about 8.5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). [See Jerrett slide 12]. These are percent increases in mortality and we don’t see in the statewide assessment an elevation in all cause mortality in relation to particulate matter [Jerrett slide 12 shows about -0.5% for ‘All Causes’]. But we do see this pattern that’s been observed in numerous other studies that Arden Pope brought up that cardiopulmonary mortality [CP Death], cardiovascular [CV Death] and ischemic heart disease [IHD Death] they order so as we move

from less to even more plausible biological end points we see larger effects and we see an elevated effect for respiratory mortality [Resp Death], but we don’t have a lot of sample here so it’s not significantly elevated. So we tested for latitude, county clustering, and ozone as a co-pollutant and these results stand up [Jerrett slide 13, first point]. So

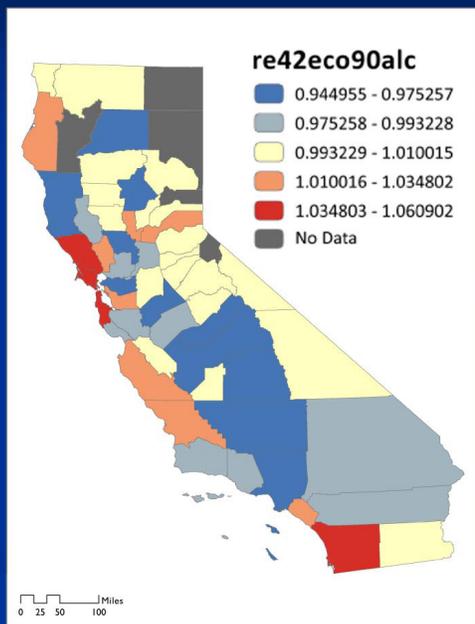
Results Continued Jerrett slide 13

- Results for PM2.5 not confounded by latitude, county clustering or by ozone as a co-pollutant
- All cause without cancer: RR = 1.04 (95% CI: 1.00,1.08)
- Why null results for PM2.5 on all causes?

All Cancer Death Negative

Jerrett slide 14

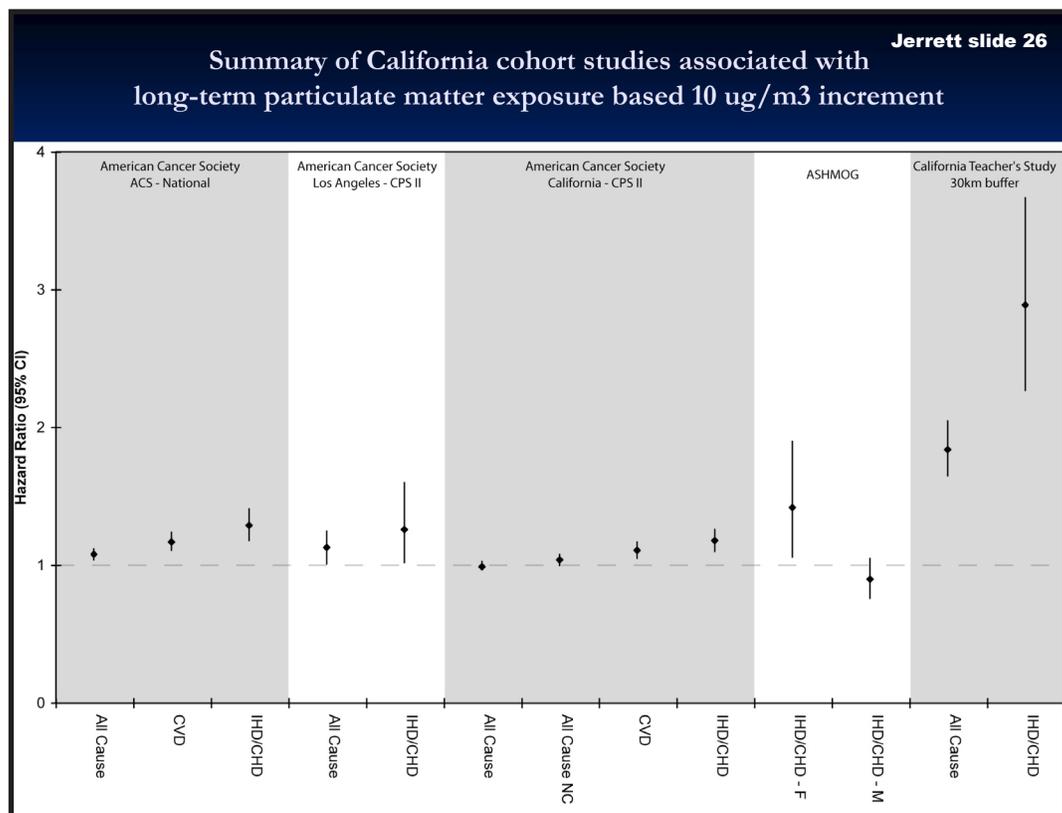
- Null PM2.5 effects on all cause mortality resulted from strong negative association with cancer risk
- Statistical models geared toward predicting for cardiopulmonary death
- Unexpected low cancer mortality residuals in LA and Central Valley where PM2.5 is high



that they are slightly lowered when we include ozone but significantly elevated. We started wondering why would we see such high elevation in cardiovascular disease but not high elevations in all cause mortality [Jerrett slide 13, third point]. Well if we look at our 22,000 deaths close to 10,000 of them are coming from cardiovascular disease but there's another 9,000 from other causes and the dominate cause in that other grouping is cancer. And what we see is when we take cancer out of the all cause, we see a risk estimate that is very similar to what Dr. Enstrom got about 4% increase [Jerrett slide 13, second point] and we have to ask "well, what does cancer have to do with it?" [Dr. Jerrett made an incorrect statement regarding Dr. Enstrom's 4% increase. As shown below in slide 22 of Dr. Enstrom's

presentation, the 4% increase involved the RR = 1.04 for all cause mortality during 1973-1982, not the RR = 1.04 for non-cancer mortality during 1982-2000 shown in Jerrett slide 13.] And this is a map you can think of this as the mortality that we weren't able to predict with our individual level variables like smoking and alcohol consumption [Jerrett slide 14: map "re42eco90alc"]. And what we see is that after we apply all those individual variables there isn't much residual variation left in the cancer outcome where we have the most pollution [Jerrett slide 14, third point]. So our model is predicting these outcomes very well where we have a lot of pollution. We haven't honed our statistical models to look at cancer outcomes because we've been focused on cardiovascular mortality [Jerrett slide 14, second point]. I think we probably need these preliminary results. We need to go back and to include things like family history of cancer and other variables to get a better assessment of why we are seeing this negative association with cancer. But we do understand why we are getting a null result for all cause now and it's because we do see this negative association with all cancer [Jerrett slide 14, first point]."

Minutes 2:28:50 – 2:31:10 of Webcast
 "Now, sometimes you need a picture to tell many words and I think this picture summarizes things quite nicely. I have the national level American Cancer Society Study risk estimates that are in the so called Krewski report [Jerrett slide 26, ACS CPS II National results]. So this shows them for all causes, cardiovascular disease, ischemic heart disease. This is from my Los Angeles study [Jerrett slide 26, ACS CPS II Los Angeles



CHD - Coronary Heart Disease, CVD - Cardiovascular Disease, IHD - Ischemic Heart Disease

results]. Bigger error bars because we have a smaller sample, but comparable risk estimates. This is the California-wide study [Jerrett slide 26, ACS CPS II California results]. They are slightly smaller overall than what we are seeing in some of the other studies, but significantly elevated for cardiovascular, ischemic heart disease, and cardio pulmonary, not shown here, and all causes minus cancer. The Adventist study we see this large increase for women but not for men [Jerrett slide 26, AHSMOG results]. And then the California Teachers Study we see a very large increase, nearly tripling of ischemic heart disease deaths and a near doubling of deaths for all causes [Jerrett slide 26, California Teachers Study results]. So, if we go back and we think about what leading epidemiologists like Rothman will say.... they'll say don't worry about single studies, don't worry about particular confidence intervals. Look at the pattern in the risks. And the pattern we see here is that for every California-wide study, there is a significantly elevated risk of dying in relation to air pollution." [Dr. Jerrett made two incorrect statements in his last sentence. First, Jerrett slide 26 entirely omits the California-wide results from Enstrom 2005 that are shown in Enstrom slide 22 below. Second, the phrase "significantly elevated risk of dying" is misleading with respect to all causes of death, since only two points in Jerrett slide 26 pertain to California-wide deaths from all causes and the most significant of those two points (CA CPS II) is not elevated.]

Transcript of Statements by James E. Enstrom, Ph.D. - UCLA

California Results from 1959 California Cancer Prevention Study (CA CPS I)

Minutes 1:53:10 – 1:53:37 of Webcast

"My study came out at the end of 2005 using the original CPS I cohort for California subjects. And I found a small effect from 73 to 82, but no risk at all, 1.00, from 1983 to 2002 [Enstrom slide 22]. And so this again is shown no effect in California."

Minutes 2:32:23 – 2:32:41 of Webcast

"In terms of total deaths, which are what are used to calculate premature deaths by the Air Resources Board, if I didn't misinterpret what he [Dr. Jerrett] said, there was no effect— very consistent with my findings. And so that would make my study and his study by far the two largest studies in California."

Enstrom slide 22

December 15, 2005 *Inhalation Toxicology* Paper by James E Enstrom

49,975 elderly Californians in 11 counties followed during 1973-2002 in California Cancer Prevention Study (CA CPS I)

**"For the initial period, 1973–1982, a small positive risk was found: RR was 1.04 (1.01–1.07) for a 10- $\mu\text{g}/\text{m}^3$ increase in PM2.5.
For the subsequent period, 1983–2002, this risk was no longer present: RR was 1.00 (0.98–1.02).
For the entire follow-up period, RR was 1.01 (0.99–1.03)."**

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