

Misuse of Diesel Science by the California Air Resources Board

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June 23, 2009

Objectives of Talk

1. Understanding Good & Bad Science

2. CARB Diesel Science 1998-2009

3. PM2.5 & Premature Deaths in CA

4. Exaggerations by CARB

5. Actions to Combat CARB

1. Understanding Good & Bad Science

Good Science: The Internet

**“The Greatest Advance in Communication
Since the Printing Press”**

Fast, Inexpensive, Comprehensive

Based on Honest Scientific Discoveries

Made Possible this Session

Enstrom Meets Dunn Via Internet

December 22, 2004

***ACSH “Facts and Fears” Column by Dunn:
“EPA Junk Science on Air Pollution Deaths”***

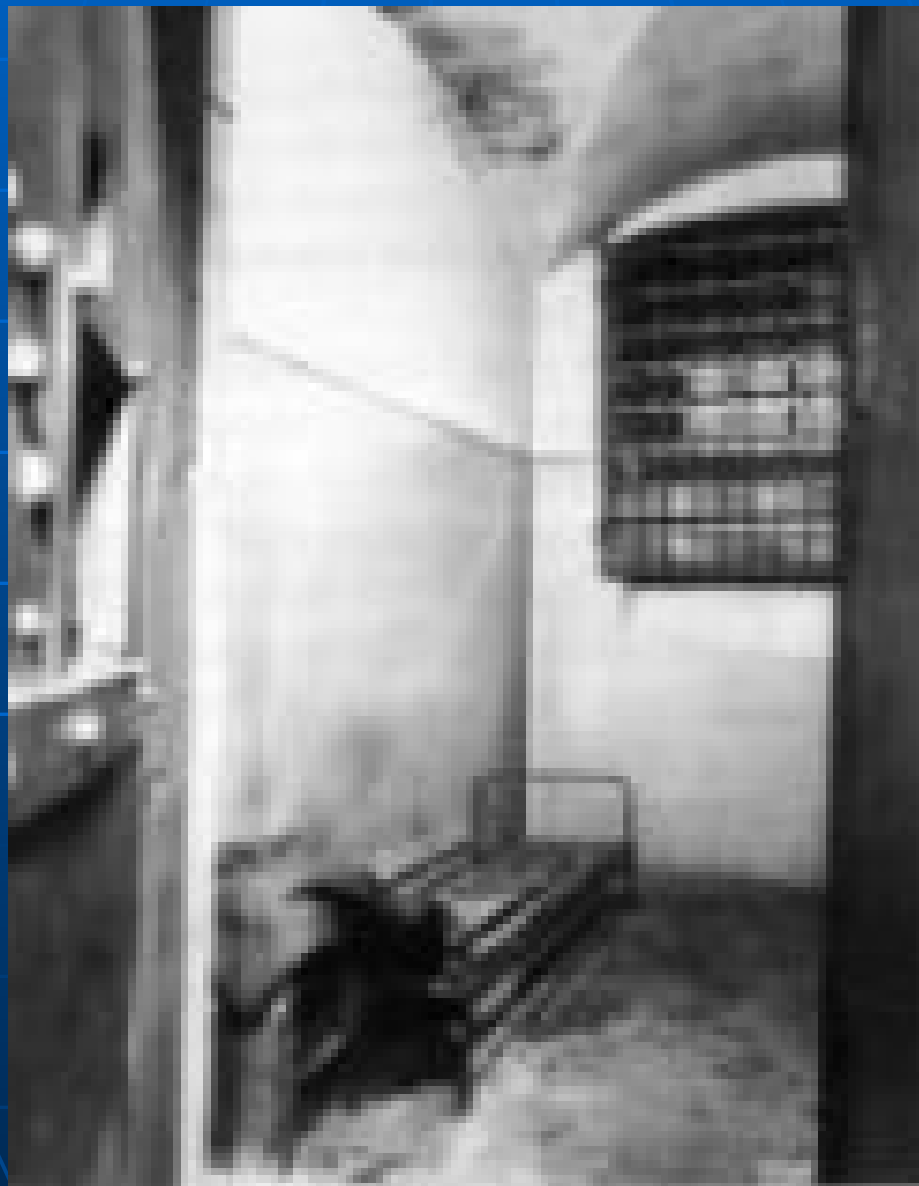
December 15, 2005

***Inhalation Toxicology Paper by Enstrom
“Fine Particulate Air Pollution and Total Mortality
Among Elderly Californians, 1973-2002”***

January 23, 2006

**Enstrom Email to Dunn Beginning Exchange
Regarding Air Pollution Epidemiology**

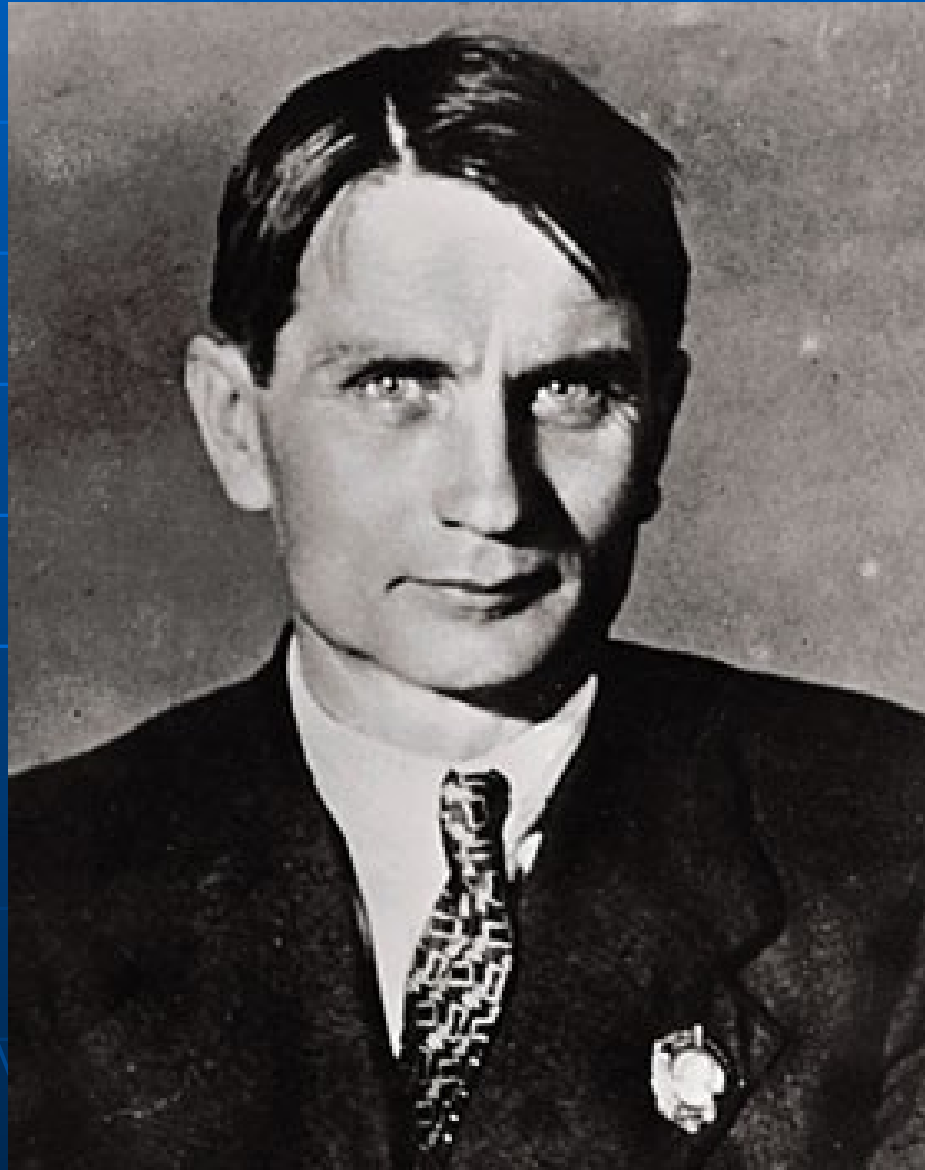
Can Anyone Identify This Photograph?



Nikolai Ivanovich Vavilov (1887-1943)



Trofim Denisovich Lysenko (1898-1976)



Mary Dolores Nichols, J.D.
Chair, CARB (1979-1983, July 2007→)
CARB: 1,300 employees, \$650 M budget



Lysenko Pseudoscience

Lysenko, non scientist, gained favor of Soviet leaders

Made false claims based on phony plant genetics

Ignored genuine Mendelian plant genetics

Purged opposing agronomists, like Vavilov

Famines resulted and Soviet citizens starved

Soviet agriculture was set back decades

Nichols Pseudoscience

Nichols, activist lawyer, backed by several politicians

Makes false claims about diesel health effects

Draconian regulations adopted only in CA

Descenting scientists ignored & never funded

CA truckers, contractors & economy hurt badly

2. CARB Diesel Science 1998-2009

AB 1807 (Tanner, Davis, Hayden, . . .) 1983

AB 3792 (La Follette) 1986

→ California Health and Safety Code

39670(a): A nine-member *Scientific Review Panel on Toxic Air Contaminants* shall . . . advise the state board . . . health effects toxicity of substances

39670(b): The members . . . shall be highly qualified and . . . appointed . . . for a term of three years

39670 (b)(4): Members . . . shall be appointed from a pool of nominees submitted . . . by the President . . . University of California. The pool shall include, at a minimum, three nominees for each discipline

Key Scientific Review Panel Members

Toxicologist: Chair John R. Froines, UCLA
Appointed ~1984; reappointed 1988, 1991, 1994, 1997, 2000, 2003, 2006, 2009?

Biostatistician: Stanton A. Glantz, UCSF
Appointed 1986; Reappointed 1987, 1990, 1993, 1996, 1999, 2002, 2005, 2008

Epidemiologist: Gary D. Friedman, Stanford
Appointed 1988; Reappointed 1991;
No action since 1991

April 22, 1998 Scientific Review Panel Identification of Diesel Exhaust as Toxic Air Contaminant (TAC)

Portion of Transcript by Key SRP Members

Froines (38.0%)

Glantz (18.9%)

Friedman (3.2%)

**May 27, 1998 Froines Letter to CARB
containing unit risk factor relating diesel
exhaust to lung cancer in spite of 1998 letter
from Garshick requesting that his studies
not be used for quantitative risk analysis**

July 29, 1998 CARB meeting was highly contentious and a delay in declaring diesel exhaust to be a TAC was supported by 66 legislators, CTA, and other industry groups, who questioned the effects of diesel on the general public and expressed concern about the economic impact of future regulations

August 27, 1998 CARB meeting was also highly contentious, but a compromise was reached whereby diesel particulate matter (PM), not diesel exhaust as a whole, was declared to be a TAC

Legal Actions Against Diesel PM as TAC

**Apadoco, CTA, CBA, CIAQC, ATA, others
v. CARB, OEHHA, SRP (and Chairs)**

**July 2, 1999 petition for reconsideration of diesel PM as TAC
denied by CARB on July 20, 1999**

December 23, 1999 lawsuit dismissed August 22, 2000

**October 10, 2000 lawsuit in Fresno County to set aside
CARB designation of diesel PM as TAC**

**June 2005 Superior Court Hearing reviewed 45 volumes of
Administrative Record and on February 17, 2006 ruled in favor
of CARB, et al., finding that proper process had been followed**

CARB Off-Road Diesel Vehicle Regulations

Approved July 26, 2007

Implementation began June 15, 2008

February 27, 2008 Pacific Merchant Shipping Association v CARB Decision

October 8, 2008 Federal Register EPA Notice

CARB does not currently have legal authority from US EPA to regulate diesel engines below 175 HP, which are used in majority of off-road vehicles

May 22, 2008 Draft CARB Report on PM2.5 & Premature Deaths by Hien T. Tran, Ph.D.

June 4, 2009 Enstrom testimony Re Nichols confirmation before Senate Rules Committee

July 11, 2008 Tran Teleconference with Enstrom and other key epidemiologists

July 11, 2008 148 pages of mostly critical public comments re Draft CARB Report

October 24, 2008 Final CARB Report ignores critical comments by Enstrom, Moolgavkar, Dunn, others

**December 12, 2008 CARB testimony
opposing on-road diesel vehicle regulations
(Delta, CDTOA, CIAQA, CCC, CTA, CIOMA, etc.)**

**December 12, 2008 CARB approval (8 to 0)
of on-road diesel vehicle regulations**

**February 17, 2009 DeVore Correa Villines letter
requesting reconsideration of on-road rules**

**April 9, 2009 CARB “Notice of Adverse Action”
regarding fabricated Ph.D. degree of Hien T. Tran**

**June 18, 2009 Pacific Legal Foundation lawsuit
requesting proper SRP nominations**

3. PM2.5 & Premature Deaths in CA

Line 2. Long-term exposure and mortality-- conclusions

Expanded analyses of Six-Cities and ACS cohorts → robust effect estimates.

Comparable PM-mortality effects have been observed in several other studies including:

- Infant mortality studies (Woodruff et al. 2006)
- Women's Health Initiative (Miller et al. 2004)
- Netherlands (Hoek et al. 2002)
- Hamilton, Canada (Finkelstein et al. 2004)

Mixed results have also been observed in:

- AHSMOG (McDonnell et al. 2000; Chen et al. 2005)
- French PAARC (Filleul et al. 2005)
- VA Cohort (Lipfert et al. 2000, 2003, 2006)
- 11 CA counties (Enstrom 2005)

- PM-mortality effect estimates tend to be larger when exposure estimates are based on more focused spatial resolution and/or when local sources of exposure, especially traffic sources, are accounted for.



Daniel Krewski



Richard Burnett



Arden Pope



Michael Jerrett



Doug Dockery



Francine Laden



Tracey Woodruff



Joel Kaufman



Bert Brunekreef



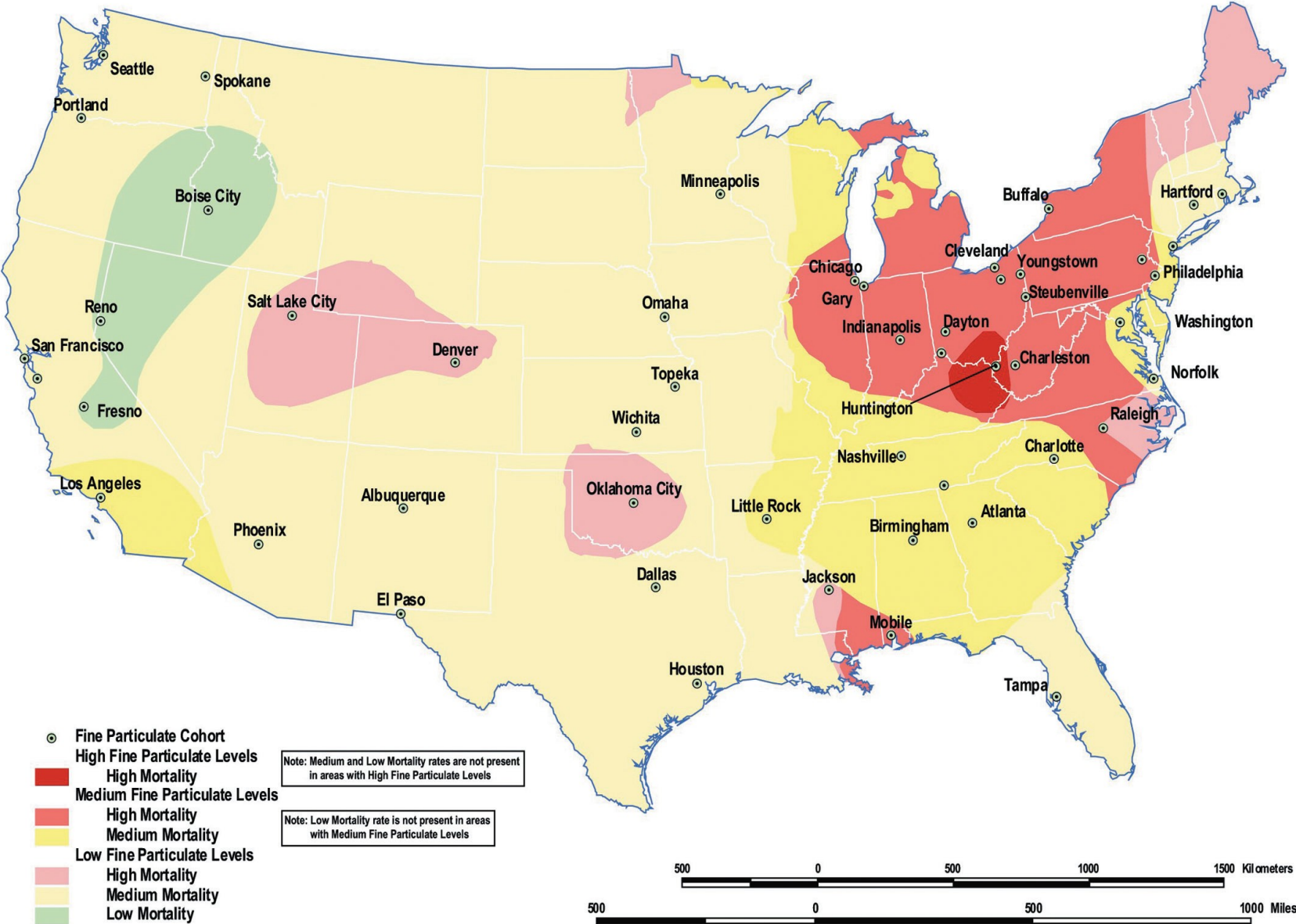
Frederick Lipfert



James E. Enstrom

2000 Krewski HEI Figure 21 (1982-1989 CPS II)

Fine Particles and Mortality Risk



2001 EPA CASAC Slide 46 (1982-1989 CPS II)

Regional Adjustment Models for NMMAPS Regions

Region*	PM _{2.5} Excess Risk Estimates		PM _{2.5} and SO ₂ Excess Risk Estimates			
	Risk	Conf. Limits	PM _{2.5} Risk	Conf. Limits	SO ₂ Risk	Conf. Limits
Northeast	14	(-7, 40)	3	(-15, 24)	19	(-2, 45)
Industrial Midwest	29	(10, 56)	9	(-12, 35)	19	(4, 38)
Southeast	25	(1, 54)	9	(-8, 29)	10	(-28, 48)
West*	-9	(-29, 17)	-9	(-28, 16)	31	(1, 69)

**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 PM_{2.5}.

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).”

December 2008

Environmental Health Perspectives

Paper by Zeger, Dominici, McDermott, Samet

**13.2 million Medicare enrollees residing in
4,568 U.S. zip codes followed 2000-2005**

**“Chronic exposure to PM_{2.5} was associated with
mortality in the eastern and central regions,
but not in the western United States.”**

**“This lack of association is largely because
the Los Angeles basin counties (California) have
higher PM levels than other West Coast urban
centers, but not higher adjusted mortality rates.”²⁵**

June 3, 2009 HEI Report 140: Extended Follow-up and Spatial Analysis of Fine Particulate Air Pollution and Mortality (1982-2000 CPS II)

Daniel Krewski, Michael Jerrett, Richard T Burnett, C Arden Pope III, George Thurston, Michael J Thun, others

<u>Author-year Reference</u>	<u>Follow-up</u>	<u>RR (95% CI)</u>
Pope 1995 equivalent	1982-1989	1.048 (1.022 - 1.076)
Pope 2002 equivalent	1982-1998	1.031 (1.015 - 1.047)
Krewski 2009	1982-2000	1.028 (1.014 - 1.043)
Pope 1995 equivalent	1982-1989	1.048 (1.022 - 1.076)
Pope 2002 latest years	1990-1998	1.021 (1.002 - 1.041)
Krewski 2009 latest years	1999-2000	1.014 (0.980 - 1.049)

“Particulate Mass Fallacy”

Robert F. Phalen, Ph.D., UC Irvine

“In Southern California, which has a dry climate, resuspended soil contributes a larger fraction of mass to PM 2.5 than is seen in more damp regions of the U.S. The use of mass as an indicator can lead to the use of technologies that may have more serious health effects due to changes in particle count, surface area, and composition. Until the science progresses, it seems premature to press for tighter standards for PM 2.5.

Since particle mass as an indicator is on shaky grounds, punishing a productive and needed technology, such as diesel engines, not only can harm the economy by raising the cost of goods and services and cutting job opportunities, but it can also backfire with respect to improving public health.”

4. Exaggerations by CARB

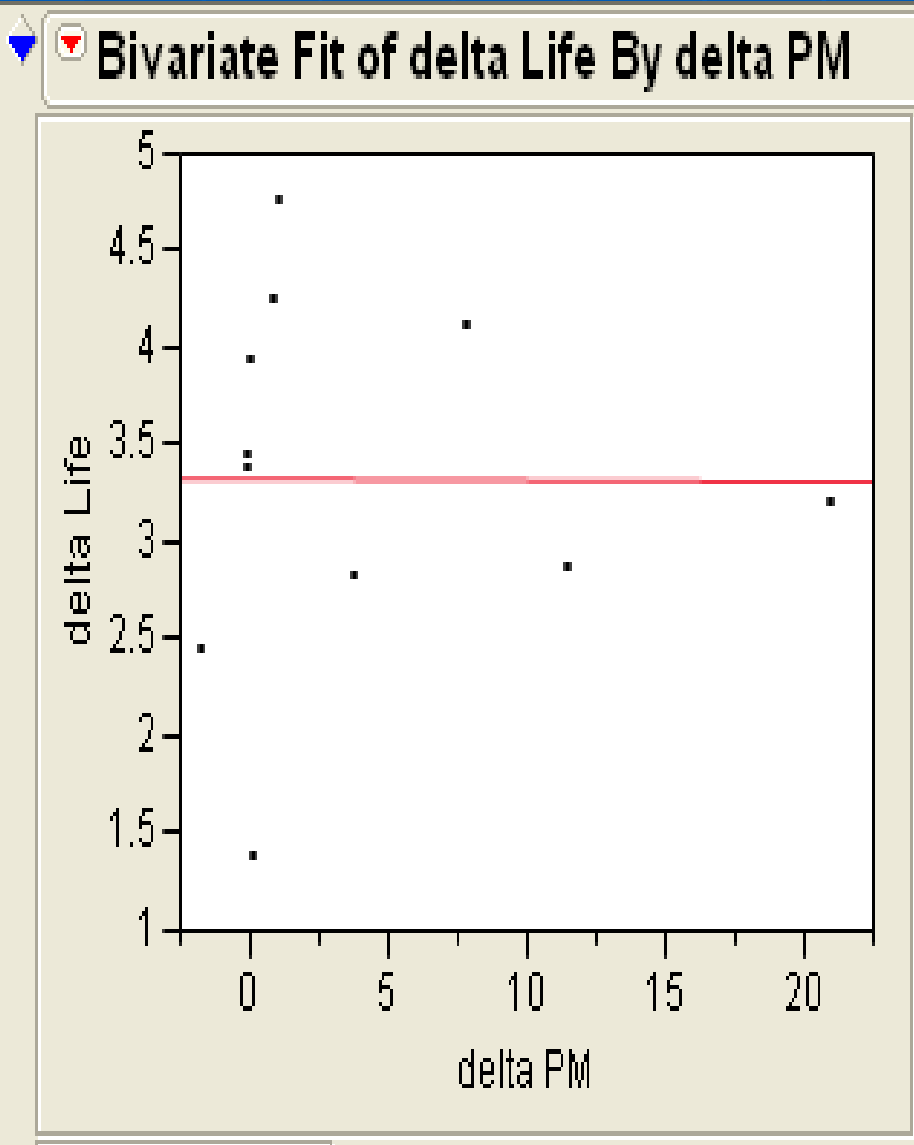
Example 1. CARB posted December 16, 2008 ten-page summary of “Health Effects of Diesel Exhaust Particulate Matter” that contains no contrary evidence and no criticism of CARB

Example 2. May 27, 2009 Enstrom comments that PM2.5 and life expectancy are not related in CA were submitted before May 28, 2009 CARB staff presentation of national findings in Pope NEJM paper: CARB ignored Enstrom comments and posted misleading press release on home page

Example 3. CARB provides no context regarding the health effects of air pollution and fails to point out that California is a very healthy state⁹

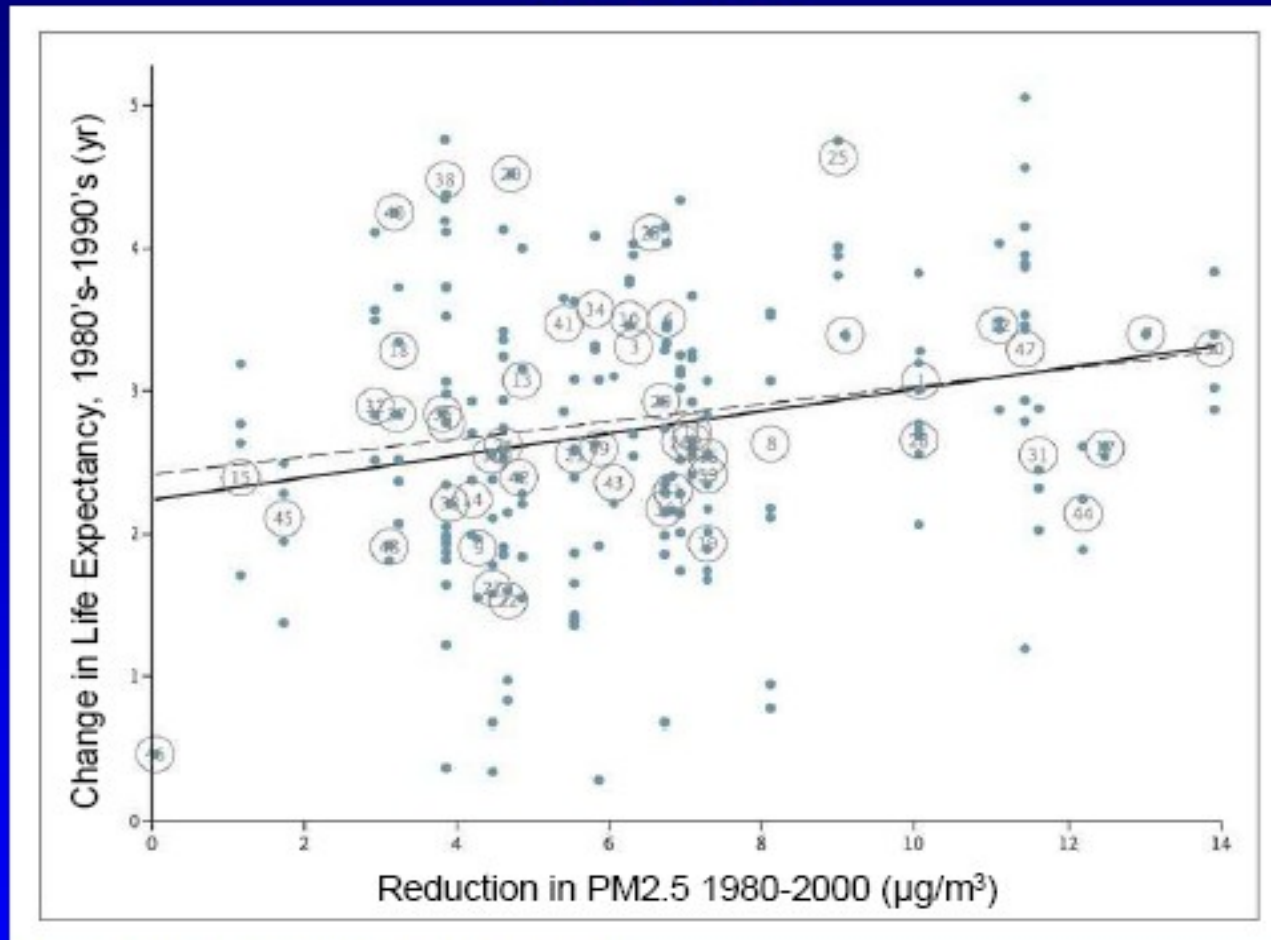
May 27, 2009 CARB public comments by Enstrom: PM2.5 and life expectancy changes not related in CA

	County	delta PM	delta Life
1	Santa Barbar	-0.1	3.45
2	Contra Cost	-0.1	3.38
3	Alameda	0	3.94
4	Butte	0.1	1.37
5	San Francisc	1	4.76
6	Santa Clara	0.8	4.25
7	Fresno	-1.8	2.45
8	San Diego	3.7	2.83
9	Los Angeles	7.8	4.11
10	Kern	11.5	2.87
11	Riverside	20.9	3.2



May 28, 2009 CARB Presentation and Press Release on Pope NEJM paper with no reference to Enstrom comments

Changes in Life Expectancy and PM2.5 1980-2000



2000-2005 Age-Adjusted Total Death Rate (annual deaths per 100,000 using 2000 US Standard)

<u>State</u>	<u>wonder.cdc.gov</u>		<u>NCHS</u>
	<u>2000-2005</u>	<u>2005</u>	<u>2005</u>
HI	653	628	609
MN	725	691	684
ND	746	714	699
CA	753	718	713
CT	756	726	696
US	833	799	799

5. Actions to Combat CARB

Prepare Understandable Critique of CARB Diesel Science & Regulations

**Bad Science
(PM2.5 and Mortality &
Particulate Mass Fallacy)**

**Bad Law
(CARB Scientific Review Panel &
CARB regulatory authority)**

**Bad Economy
(Adverse Impact of CARB Regulations)**

Distribute Critique of CARB Widely

California Legislators

Impacted Businesses

(DTCC, CIAQC, CDTOA, PMSA, Service Stations & Truck Stops)

Print Media

(Newspapers & Trade Magazines)

Talk Radio

(Andy Caldwell & other hosts)

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Thornhill University

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OF THE SCHOOL OF BUSINESS AND ADMINISTRATION
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Hien Thanh Tran

HAVING DEMONSTRATED ABILITY BY GENERAL SCHOLARSHIP

Magna cum Laude

THE DEGREE

Philosophiae Doctor in Applied Statistics

WITH ALL THE RIGHTS AND PRIVILEGES THERETO PERTAINING

GIVEN THIS TWENTY-EIGHTH DAY OF JUNE IN THE YEAR

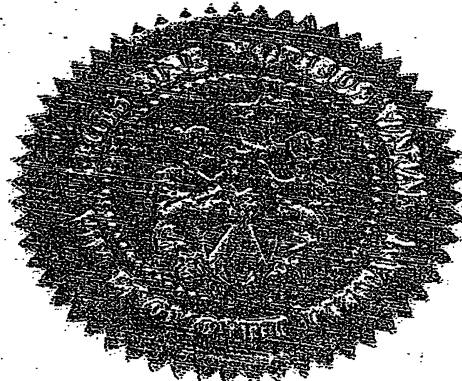
TWO THOUSAND SEVEN

Carol Anderson

PRESIDENT OF THE REGENTS

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PRESIDENT OF THE UNIVERSITY



Jonathan Korn

DEAN OF THE UNIVERSITY

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