

“None of This is Real”
Misuse of Diesel Science by the
California Air Resources Board

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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

Three Nobel Prizes That Have Made Internet Possible

1906 Discovery of the Electron

1956 Discovery of the Transistor Effect

2000 Invention of the Integrated Circuit

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”***

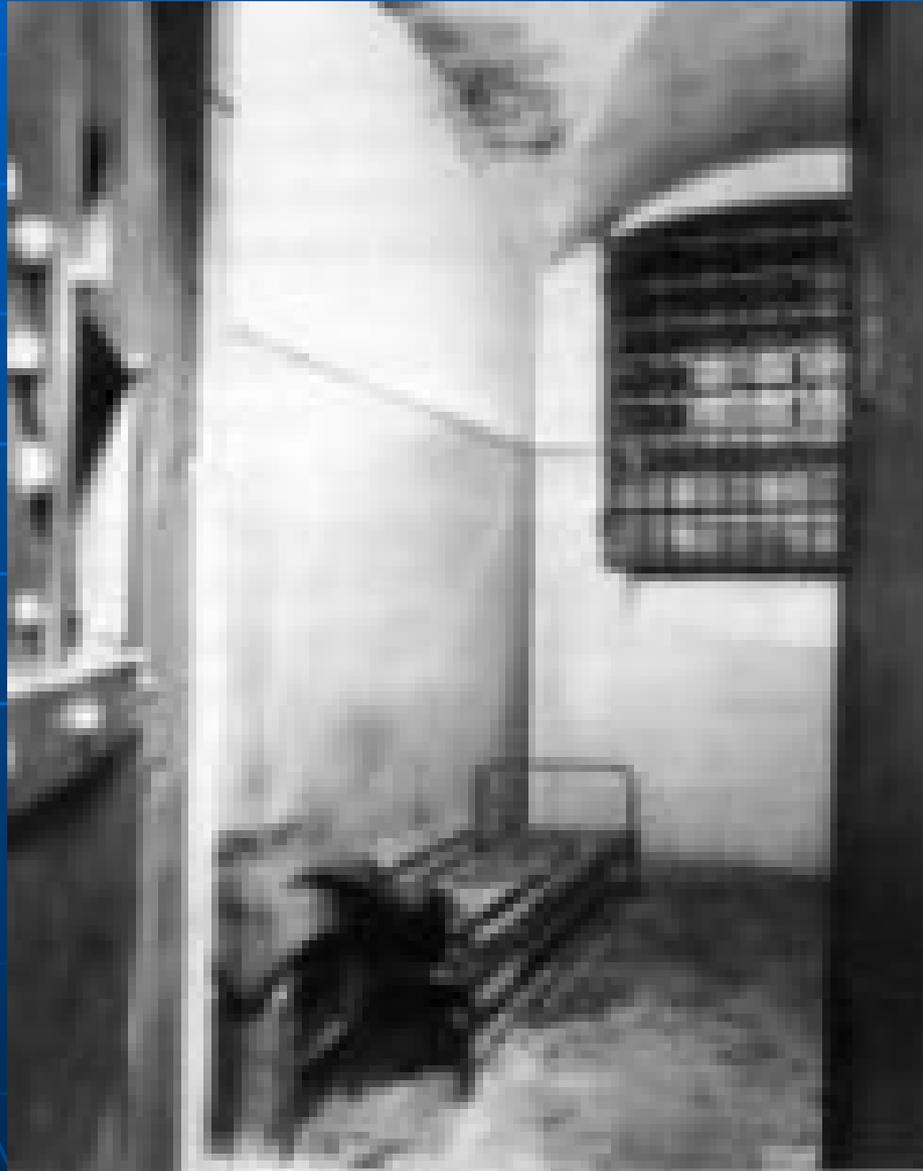
December 15, 2005

***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**

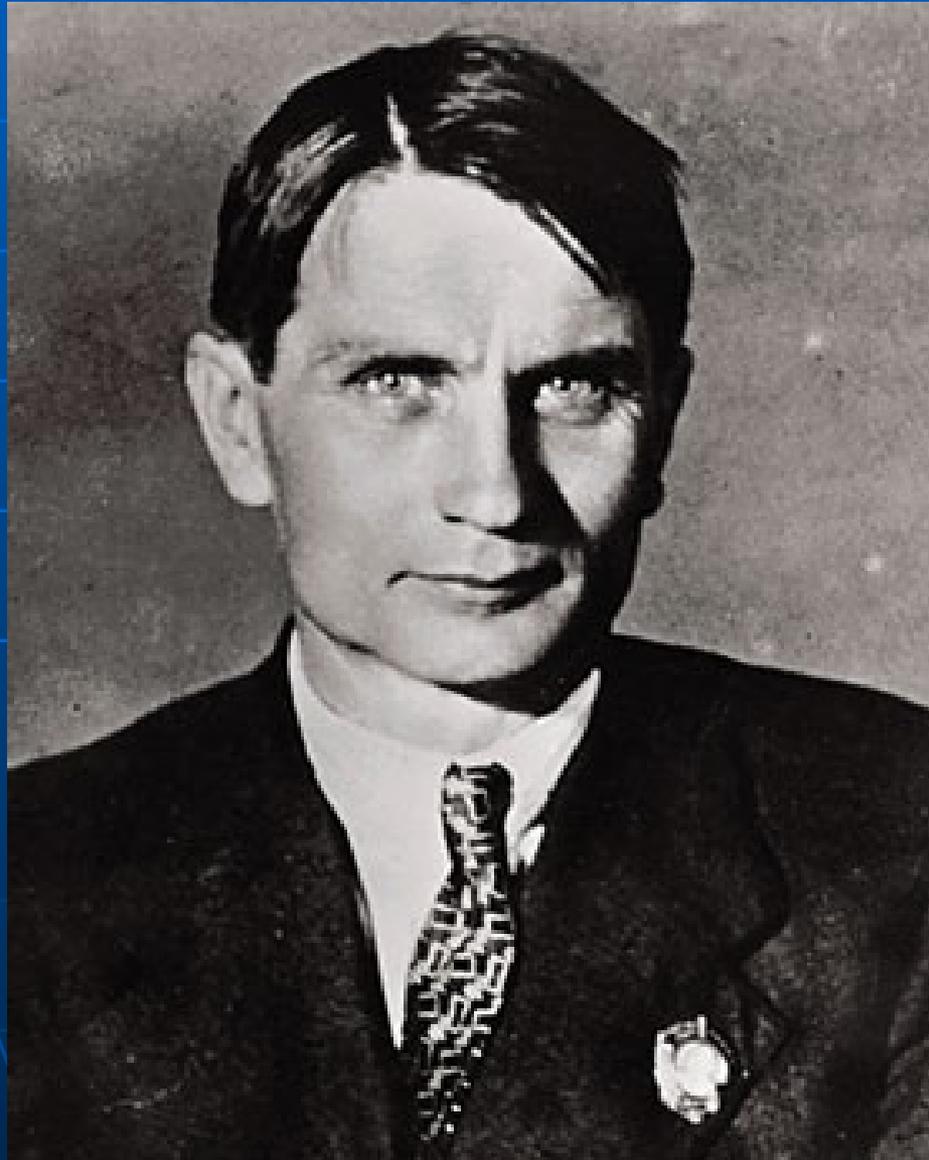
Bad Science: No Scientific Disagreement



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 crop claims & used phony plant genetics
Ignored genuine Mendelian plant genetics
Purged dissenting scientists, like Vavilov
Famines resulted and Soviet citizens starved
Soviet agriculture was set back decades

Nichols Pseudoscience

Nichols, activist lawyer, backed by major politicians
Consistently exaggerates diesel health effects
Draconian diesel regulations adopted only in CA
Dissenting scientists ignored & never funded
CA truckers, contractors & economy hurt badly

2. CARB Diesel Science 1998-2009

**AB 1807 (Tanner, Davis, Hayden, . . .) 1983
→ California Health and Safety Code 39670**

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

AB 3792 (La Follette) 1986

→ California Health and Safety Code 39671

“Existing law establishes the *Scientific Review Panel on Toxic Air Contaminants* composed of 9 members effective January 1, 1984.”

“This bill would revise the terms of the panel members by extending the terms of 3 members until January 1, 1988, and 3 until January 1, 1989, as specified, so that the terms of members will be staggered with 3 terms expiring each year.”

California Proposition 140 1990 Legislative Term Limits

**Members of the California State Assembly
are limited to three two-year terms**

**Members of the California State Senate
are limited to two four-year terms**

**Lifelong ban on seeking the same office
once these limits have been reached**

**Approved 52% to 48% although
supporters were outspent 31 to 1**

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

**March 11, 1998 Scientific Review Panel Meeting
(www.arb.ca.gov/srp/mt031198.pdf, Page 240)**

**“DR. WITSCHI: I HAVE A QUESTION AND IT'S TO ERIC
THERE IS YOUR LETTER WHEN YOU CAME DOWN IN
WRITING THAT YOU OBJECT TO USING YOUR STUDIES
FOR A QUANTITATIVE RISK ASSESSMENT, AND I'M NOT
QUITE CLEAR TODAY WHERE WE STAND ON THAT ONE.
COULD YOU CLARIFY THIS FOR ME?”**

**DR. GARSHICK: WELL, I THINK THE ISSUE WAS THAT
TRYING TO HAVE ONE SLOPE DESCRIBE ALL THE DATA
AT THIS POINT . . . HAS MANY UNCERTAINTIES, AND THAT
REALLY IS THE MAJOR OBJECTION. . . . THERE
SHOULDN'T BE UNDUE EMPHASIS PUT ON THE SLOPE,
PARTICULARLY GIVEN THE DISCUSSIONS WE'RE HAVING
RIGHT NOW.”**

April 22, 1998 Scientific Review Panel Meeting (www.arb.ca.gov/srp/mt042298.htm, page 97)

“ACTING CHAIRMAN FROINES: I'm calling the meeting to order. The tension level in this room is much too low. We expected about 500 truckers here. That didn't materialize, and now everybody is so relaxed we can't move anything forward. So for better or for worse, whatever way we're headed, let's move it along.”

Questions:

- 1) What was the meeting notice and who received it?
- 2) Did 500 truckers even know about the meeting?

April 22, 1998 Scientific Review Panel Meeting

(www.arb.ca.gov/srp/mt042298.htm, page 193)

Discussion of unit risk factor relating diesel exhaust to lung cancer:

“DR. GLANTZ: If it comes out 5 times 10 to the minus 4 [5×10^{-4}], I'm happy. I just --

ACTING CHAIRMAN FROINES: None of it's correct anyway.

DR. GLANTZ: Well, don't say that.

ACTING CHAIRMAN FROINES: It's a risk assessment.

DR. GLANTZ: I know, but, thanks, you just got yourself sued.

ACTING CHAIRMAN FROINES: None of this is real.”

April 22, 1998 Scientific Review Panel Meeting

(www.arb.ca.gov/srp/mt042298.htm)

Summary of Identification of Diesel Exhaust as Toxic Air Contaminant (TAC)

Portion of Transcript by Key SRP Members

Toxicologist Froines (38.0%)

Biostatistician Glantz (18.9%)

Epidemiologist Friedman (3.2%)

**Epidemiologist never discussed major limitations
of occupational studies of workers exposed to
diesel: assessment of diesel exposure and
smoking status, relevance to general California
population, and criteria for a causal relationship**

May 27, 1998 Letter by SRP Chair Froines to CARB identifying diesel exhaust as a toxic air contaminant using a single unit risk factor [3×10^{-4} per g/m³] to relate diesel exhaust to lung cancer

**No mention of serious limitations:
national occupational cohort studies of railroad workers and truckers did not have accurate assessment of diesel exposure and smoking history;
no California-specific results were presented;
uncertain relevance to general Californians**

July 29, 1998 CARB meeting was highly contentious and a delay in declaring diesel exhaust to be a TAC was supported by 66 legislators, California Trucking Association, and other industry groups.

- 1) Questioned effects of diesel on the general public**
- 2) Noted that diesel engines since 1988 emit only 10% of the PM of unregulated diesel engines**
- 3) Concerned about potential financial liability regarding diesel-related diseases like lung cancer**
- 4) Concerned about the economic impact of future regulations on diesel-related businesses**

July 29, 1998 CARB Meeting Transcript

(<http://www.arb.ca.gov/board/mt/mt073098.txt>, page 224)

“DR. FROINES: Then let me tell you about the Garshick papers. What we have heard now is that Garshick is repudiating his work, and he doesn't want it used for risk assessment.

Fair. He can go travel around the country trying to get the \$10- or \$15-million that is currently being offered to do an ongoing study, and I won't raise the issue of whether that affects his point of view, but it is at least out there.”

June 22, 1999: UCLA Researchers Will Lead \$11 Million, Five-Year Study of Particulate Air Pollution in South Coast Air Basin

“Researchers from the UCLA Institute of the Environment and the School of Public Health have received \$11.2 million in state [CARB] and federal [US EPA] grants to create a multi-university center for studying air pollution caused by tiny particulate matter in the Los Angeles area. . . . ‘This study will not only have major implications for the South Coast Air Basin, but for air pollution policy on the national and international level as well,’ said center director John Froines, a UCLA School of Public Health toxicologist”

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. Diesel PM was something more specific to control than all diesel exhaust.

The primary health concern in 1998 was the SRP conclusion that diesel exhaust could be causing 14,000 cases of lung cancer in California, a highly controversial estimate that was not based on general population samples.

Engine clean up was rapid and 1998 trucks had only 10% of the diesel emissions of 1988 trucks²⁴

Legal Actions Against Diesel PM as TAC

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

Californian Health and Safety Code 39662 (e):

“Any person may petition the state board to review a [TAC] determination made pursuant to this section.”

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

**December 23, 1999 lawsuit challenging diesel PM
as TAC dismissed August 22, 2000**

Legal Actions Against Diesel PM as TAC

Apadoco et al. v. CARB et al.

October 10, 2000 lawsuit in Fresno County Superior Court to set aside CARB designation of diesel PM as TAC; after hearing and review of 45 volumes of Administrative Record Judge Franklin Jones ruled in favor of CARB, et al. on February 17, 2006

Ruling based on *limited review* “determining whether the agency acted within the scope of its delegated authority, whether it employed fair procedures, and whether its action is reasonable or is ‘arbitrary, capricious, or lacking in evidentiary support.’”

June 26, 2006 Scientific Review Panel Meeting Discussion of Apadoco et al. v. CARB et al.

ARB SENIOR STAFF COUNSEL KIRK OLIVER:

“Interestingly, when the decision came out and we were in contact with the plaintiffs . . . they approached us and offered to forego their opportunity to appeal this decision. Now, one can only speculate about their motivations for doing that. But that was an offer that we accepted, and that puts an end to this lawsuit forever. It will not be appealed. There will not be a chance for this judge's determinations to be overturned in any way.”

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, 2008 Enstrom testimony Re Nichols confirmation before Senate Rules Committee

July 11, 2008 Tran Teleconference with Enstrom and epidemiologists Pope, Jerrett, Burnett, and others

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

Initial Attempts by Enstrom to Obtain Key Information from Other Epidemiologists

Pope (BYU) Ignored July 11, 2008, August 20, 2008, September 10, 2008, and June 25, 2009 Requests for CA-specific CPS II Results as Required by Federal Data Quality Act/Data Access Act

Garshick (Harvard) Ignored August 22, 2008 and September 3, 2008 Requests for a Copy of His 1998 Letter to SRP Regarding Limits of His Findings

Other Attempts to Locate 1998 Garshick Letter Have Been Unsuccessful

Additional Attempts by Enstrom to Obtain Key Information from Other Epidemiologists

Thomas Smith (Harvard) Ignored August 25, 2008 Request Regarding Confirmation of his March 11, 1998 SRP Comments Regarding Limits of Findings by Him and Garshick

Michael Thun (ACS) Ignored December 1, 2008 Request for CA-specific Results from ACS CPS II

Michael Jerrett (UCBerkeley) Has Not Responded to July 27, 2009 Request for CA-specific Results

**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 in spite of
warnings to CARB re Tran Ph.D. and Tran Report**

**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 lawsuit₂
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



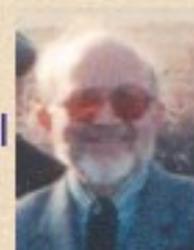
Tracey Woodruff



Joel Kaufman



Bert Brunekreef



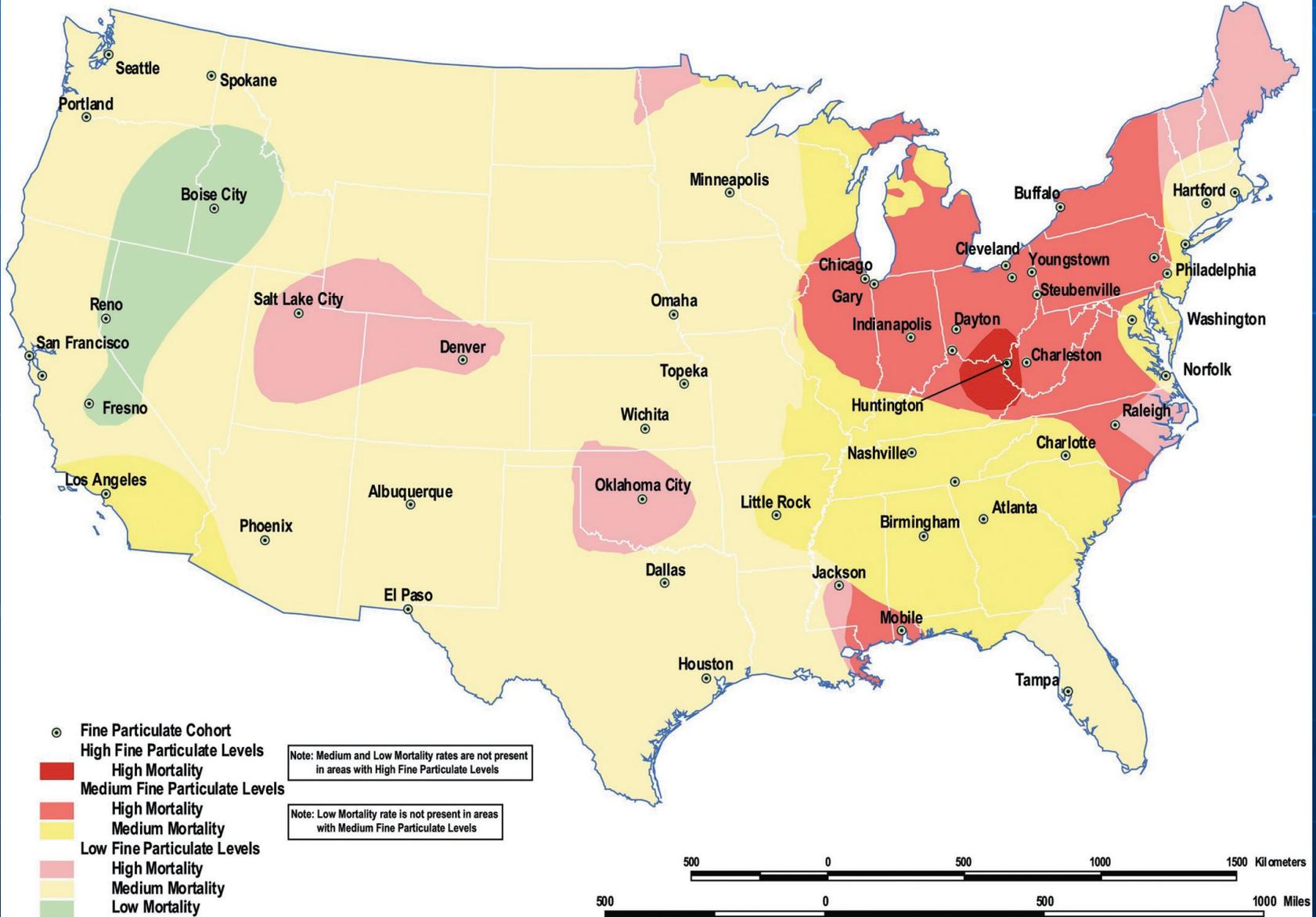
Frederick Lipfert



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.”³⁹**

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)

2009 Statement

“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 . . . but it can also backfire with respect to improving public health.”

October 2004 Paper

“The Particulate Air Pollution Controversy”

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

“Today, we are at an important crossroad with respect to the future of air-pollutant regulation. One road involves performing the needed research and making decisions on the basis of the science, with full consideration of the many trade-offs associated with new regulations. The other road involves adopting regulations driven by public fear, politics, and pressure groups. The first road is obviously the more beneficial one for protecting human health. . . . The second approach promises uncontrolled, chaotic, and rapidly changing rules. A great deal is at stake. Will science and reason, or expediency, fear, and ignorance, be the determinants of public health decisions?”

4. Exaggerations by CARB

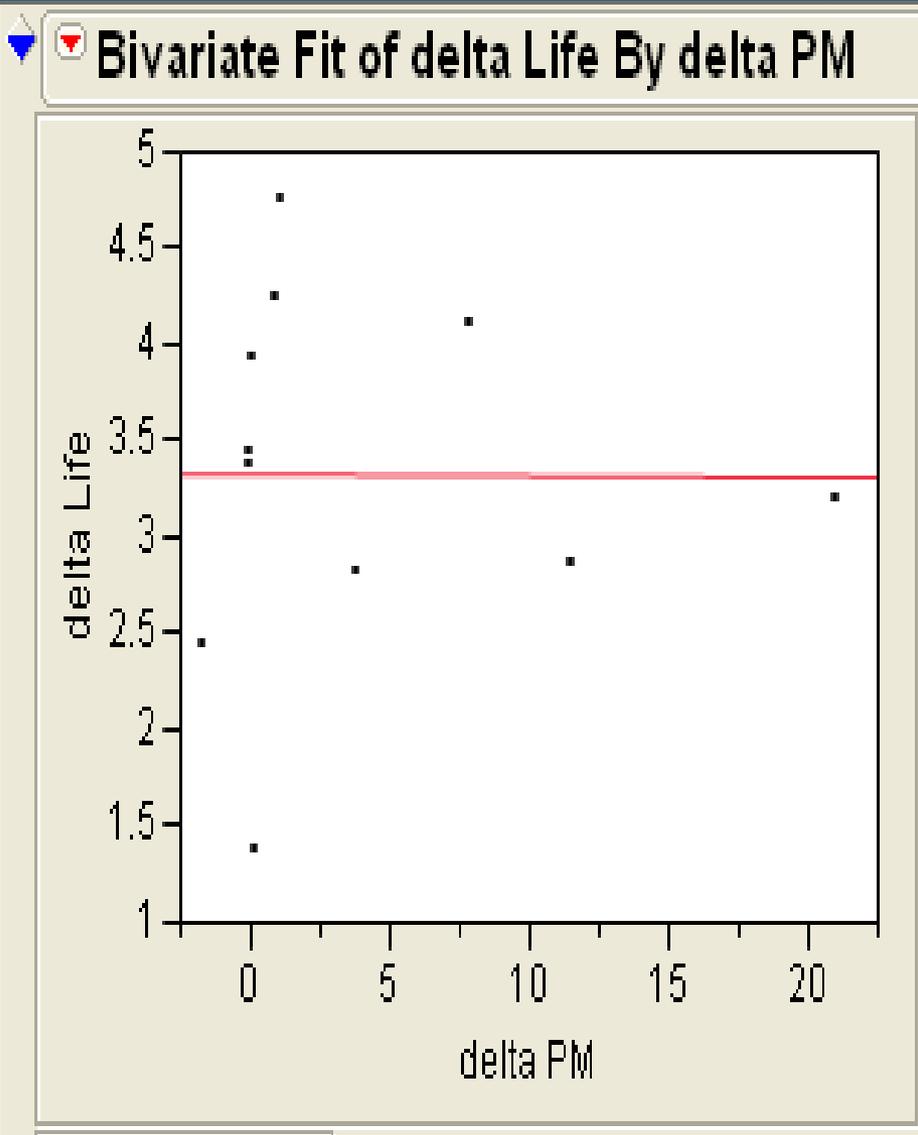
Example 1. CARB posted December 16, 2008 ten-page summary of “Health Effects of Diesel Exhaust Particulate Matter” that contains no contrary evidence and no criticism of CARB

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 state³

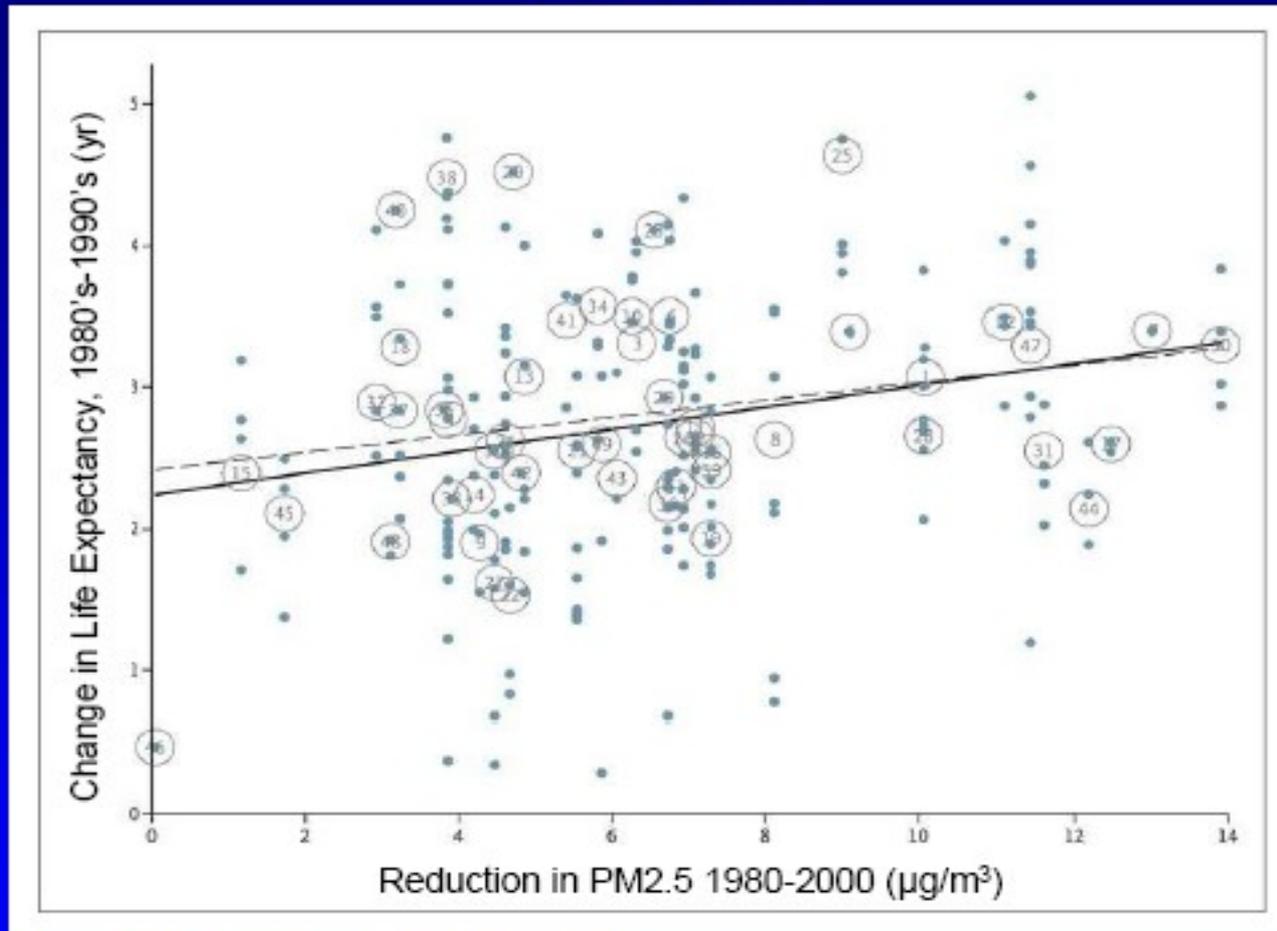
May 27, 2009 CARB public comments by Enstrom: PM2.5 and life expectancy changes not related in CA

	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 & 2005 Age-Adjusted Total Death Rate annual deaths per 100,000 (www.wonder.cdc.gov)

<u>State, County</u>	<u>2000-2005</u>	<u>2005</u>
CA & US Hispanics	~630 (0.76)	~590 (0.74)
Hawaii	653	628
Minnesota	725	691
Los Angeles County	739 (0.887)	703 (0.880)
North Dakota	746	714
California	753 (0.904)	718 (0.899)
United States	833 (1.000)	799 (1.000) ⁴⁶

5. Actions to Combat CARB

Prepare Understandable Critique of CARB Diesel Science & Regulations

Science Issues

**(PM2.5 not related to deaths in CA &
Particulate Mass Fallacy & PM exposure)**

Legal Issues

**(Flawed CARB Scientific Review Panel
appointments/procedures
& limits of CARB regulatory authority)**

Economic Issues

(Adverse impact of CARB regulations)

Distribute Critique of CARB Widely

California Legislators

University of California

Impacted Businesses

Newspapers & Trade Magazines

Talk Radio

**(Dr. Bill Wattenburg, Andy Caldwell &
other hosts)**

THE REGENTS OF

Thornhill University

UPON THE NOMINATION OF THE COUNCIL OF THE POSTGRADUATE DIVISION
OF THE SCHOOL OF BUSINESS AND ADMINISTRATION
HEREBY CONFER UPON

Hien Thanh Tran

HAVING DEMONSTRATED ABILITY BY GENERAL SCHOLARSHIP

Magna cum Laude

THE DEGREE

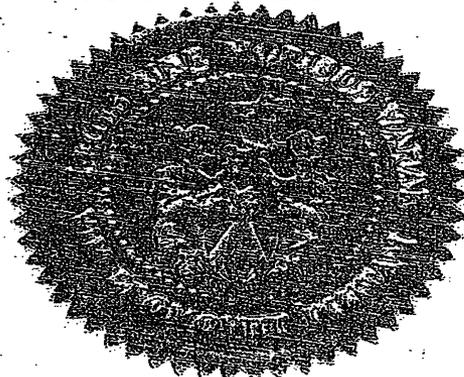
Philosophiae Doctor in Applied Statistics

WITH ALL THE RIGHTS AND PRIVILEGES THERETO PERTAINING
GIVEN THIS TWENTY-EIGHTH DAY OF JUNE IN THE YEAR

TWO THOUSAND SEVEN

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