August 15, 2016

Jo Kay Chan Ghosh, Ph.D.
Health Effects Officer
South Coast Air Quality Management District
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Dear Dr. Ghosh,

I am writing to express serious concern that my July 26, 2016 public comments below regarding the health effects/impacts of particulate matter in the South Coast Air Basin (SCAB) are not being addressed. In particular, the August 16, 2016 PPT by Dr. Elaine Shen Update on the Preliminary Draft Socioeconomic Report claims that there will be 2,111 premature deaths due to PM2.5 in 2023. This is the same number of deaths shown in the attached July 28, 2016 PPT slide by Dr. Anthony Oliver Preliminary Public Health Benefits of the Draft 2016 AQMP . This scientifically invalid claim does not provide valid public health justification for a 2016 AQMP that will impose an estimated $38.2 billion in compliance costs on the SCAB economy.

Since 2006 I have repeatedly presented to CARB and SCAQMD strong epidemiologic evidence that there is no relationship between PM2.5 and total mortality in California. The latest version of this evidence is the attached table with 16 null results and 1 essentially null result from six different California cohorts (http://scientificintegrityinstitute.org/NoPMDeaths081516.pdf). Seven of the null results come from studies that were partially funded by SCAQMD. In addition, a very strong case has recently been made by nine accomplished experts, including myself, that "Particulate Matter Does Not *Cause* Premature Deaths" (https://www.nas.org/articles/nas_letter). Furthermore, I have now submitted for publication a manuscript with null findings that invalidate the positive nationwide relationship between PM2.5 and total mortality published in the seminal Pope 1995 paper, which is based on the American Cancer Society Cancer Prevention Study II (CPS II) cohort. My null CPS II cohort findings raise serious doubts about validity of the positive CPS II cohort findings in Jerrett 2005, Jerrett 2009, and Jerrett 2013, which have been used as the basis for the PM2.5 premature death claims in the PPTs of Drs. Oliver and Shen.

All epidemiologic evidence relevant to the SCAB must be properly presented and summarized in the revised Draft 2016 AQMP Appendix I Health Effects (http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/DRAFT2016AQMP/appi.pdf?sfvrsn=2). Indeed, Appendix I must be finalized in strict compliance with all provisions of California Health and Safety Code (CHSC) Section 40471 (b): "On or before December 31, 2001, and every three years thereafter, as part of the preparation of the air quality management plan revisions, the south coast district board, in conjunction with a public health organization or agency, shall prepare a report on the health impacts of particulate matter air pollution in the South Coast Air Basin. The south coast district board shall submit its report to the advisory council appointed pursuant to Section 40428 for review and comment. The advisory council shall undertake peer review concerning the report prior to its finalization and public release. The south coast district board shall hold public hearings concerning the report and the peer review, and shall append to the report any additional material or information that results from the peer review and public hearings." (http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471).

As I have previously requested, the 2016 AQMP must present current data on the average human exposure levels for PM2.5, ozone, and NOx in the SCAB. My evidence dating back decades indicates that the actual human exposure levels are far below the EPA National Ambient Air Quality Standards (NAAQS) and well below the levels for which there are proven adverse health effects. Furthermore, the tiny health effects of air pollution must be put into perspective with all the factors that influence human health, such as, employment, and with the fact that the SCAB has 2014 age-adjusted death rates for all causes, all cancer, and all respiratory diseases that are among the lowest in the entire US. These low death rates are summarized the attached table.

The ultimate scientific and regulatory fate of the 2016 depends upon the scientists who have conducted air pollution epidemiology research and upon the SCAQMD scientists who summarize these research findings in Appendix I Health Effects. We will soon find out if the SCAQMD scientists have the honesty and integrity to state that air pollution *does not cause* premature deaths in the SCAB, that the average daily human exposures to PM2.5, ozone, and NOx in the SCAB are well below the levels that *cause* adverse health effects, and that tougher air pollution regulations in the already healthy SCAB are not justified on a public health or socioeconomic basis.

In closing, please read my attached July 19, 2016 statement to the BizFed Southern California Business Coalition "AQMD Must Reassess Its Air Quality Regulations" and the attached page summarizing my scientific credentials and academic career.

Thank you very much for your consideration.

Sincerely yours,

James E. Enstrom, Ph.D., M.P.H.
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    Shah Dabirian <sdabirian@aqmd.gov>
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July 26, 2016

Anthony Oliver, Ph.D.
SCAQMD Air Quality Specialist
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Dear Dr. Oliver,

I am an environmental epidemiologist and physicist who has had a long career at UCLA and I am an expert in the health effects of air pollution in California. I am writing regarding your planned presentation "Item #3: Preliminary Public Health Benefits of the Draft 2016 AQMP" at the July 28, 2016 SCAQMD Scientific, Technical & Modeling Peer Review Advisory Group (STMPR) Socioeconomic Meeting (http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=STMPRSocio_072816). I challenge the validity of your "Preliminary Health Impacts – Mortality" and your selective use of Jerrett 2005, Jerrett 2009, and Jerrett 2013.

Key aspects of my prior criticism of SCAQMD STMPR claims regarding the health impacts of PM2.5 and ozone in the South Coast Air Basin (SCAB) are contained in these three documents:

November 16, 2015 Enstrom Email to Cassmassi and SMTPR Staff re Ozone and PM in SCAB (http://www.scientificintegrityinstitute.org/Cassmassi111615.pdf)
November 22, 2015 Enstrom Table with 2000-2015 Results Showing NO PM2.5 Premature Deaths in CA (http://www.scientificintegrityinstitute.org/NoPMDeaths112215.pdf)
December 15, 2015 Enstrom Email to Roman Requesting NO IEc PM2.5 and Ozone Deaths for 2016 AQMP (http://www.scientificintegrityinstitute.org/Roman121515.pdf)

I strongly recommend that you carefully read all three documents, as well as all the weblinks that they contain. Then I strongly recommend that you discuss these documents with me, as well as with SCAQMD Health Effects Officer Jo Kay Chan Ghosh and IEc Principal Henry A. Roman. Finally, I strongly recommend that you announce during your presentation that several highly qualified doctoral-level scientists, including myself, are challenging the validity of your presentation, particularly your claims of "Premature Mortalities" in the SCAB.

Thank you very much for your attention to this important matter.

Sincerely yours,

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Preliminary Health Impacts - Mortality

- Health impacts for mortality are based on the previous data and:
  - Ozone: Pooling of L.A.-specific NMMAPS and meta-analysis estimates from Bell et al. (2005).
  - $PM_{2.5}$: Pooling of Jerrett et al. (2005), Jerrett et al. (2013), and Kriging and LUR estimates from Krewski et al. (2009).

- No threshold effects assumed for either pollutant
  - IEc recommendation based on latest scientific evidence
  - U.S. EPA's practice

> In the absence of substantial information in the scientific literature on alternative forms of C-R functions at low O3 concentrations, the best estimate of the C-R function is a linear, no-threshold function.
>
> U.S. EPA, 2014 Health Risk and Exposure Assessment for Ozone

Note: Confidence intervals provided on supplementary handout.

Preliminary Health Impacts – Mortality (cont'd)

Premature Mortalities Avoided		
	2023	2031
Mortality, All Cause	2193	2563
Short-term Ozone Exposure	51	87
Los Angeles	22	40
Orange	10	14
Riverside	11	16
San Bernardino	9	15
Long-term $PM_{2.5}$ Exposure	2111	2425
Los Angeles	1481	1707
Orange	321	356
Riverside	141	166
San Bernardino	169	197

Note: Confidence intervals provided on supplementary handout.

Summary Table. Epidemiologic cohort studies of PM2.5 and total mortality in California, 2000-2016
<u>Relative risk of death from all causes (RR and 95% CI) associated with increase of 10 µg/m³ in PM2.5</u>
(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 PM2.5; 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 PM2.5; 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 PM2.5)   RR = 0.997 (0.978-1.016) 1983-2002

Enstrom 2006   CA CPS I Cohort   N=35,783   RR = 1.061 (1.017-1.106) 1973-1982
(11 counties; 1979-1983 & 1999-2001 PM2.5)   RR = 0.995 (0.968-1.024) 1983-2002

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 PM2.5)

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 PM2.5; KRG ZIP; 20 ind cov+7 eco var; Slide 12)

Krewski 2010 (2009) CA CPS II Cohort
(4 MSAs; 1979-1983 PM2.5; 44 cov)   N=40,408   RR = 0.960 (0.920-1.002) 1982-2000
(7 MSAs; 1999-2000 PM2.5; 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 PM2.5; 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 PM2.5; 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 PM2.5)

Ostro 2011   CA Teachers Cohort   N=43,220   RR = 1.06 (0.96 – 1.16)   2002-2007
(N=[43,220 F]; 2002-2007 PM2.5)

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 PM2.5; 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 NO2 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 PM2.5) (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: PM2.5 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 PM2.5 by county)

2014 Age-Adjusted Death Rates by State and County

Deaths per 1,000 persons (age-adjusted using 2000 U.S. Standard Population)
with 95% Confidence Interval shown in parentheses
(http://wonder.cdc.gov/ucd-icd10.html)

August 6, 2016

Location	2014 Age-Adjusted Death Rate (95% Confidence Interval)		
	All Causes	All Cancer	All Respiratory
	ICD-10=All Codes	ICD-10=C00-D48	ICD-10=J00-J98
United States (50 States + DC)	7.25 (7.24-7.26)	1.66 (1.65-1.66)	0.71 (0.71-0.71)
California (2nd lowest State)	6.06 (6.03-6.08)	1.48 (1.46-1.49)	0.57 (0.56-0.57)
South Coast Air Basin (Los Angeles, Orange, Riverside, and San Bernardino Counties)	5.93	1.46	0.55
Hawaii (Lowest State)	5.89 (5.77-6.00)	1.44 (1.38-1.49)	0.53 (0.50-0.56)
Los Angeles County	5.71 (5.66-5.75)	1.42 (1.40-1.44)	0.53 (0.52-0.55)
Orange County	5.48 (5.40-5.56)	1.38 (1.34-1.42)	0.47 (0.45-0.49)

Presentation to Southern California Business Coalition on SCAQMD and 2016 AQMP

"**AQMD Must Reassess Its Air Quality Regulations**"

James E. Enstrom, Ph.D., M.P.H.
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July 19, 2016

The South Coast Air Quality Management District (AQMD), one of the most powerful regulatory agencies in the United States, has just proposed tightening its regulations. During the past 40 years it has implemented strong air quality regulations in the 11,000 square-mile South Coast Air Basin (SCAB), which includes the 17 million people who live in the populated areas of Los Angeles, Orange, Riverside, and San Bernardino counties. These increasingly aggressive and costly regulations have impacted all sectors of the economy, from utility power plants, oil refineries, the ports, and all manufacturers to restaurants, dry cleaners, printers, and auto repair shops. While these regulations have improved air quality substantially, they have been excessive and have contributed to the loss of more than half of the manufacturing jobs in Southern California.

The regulation of fine particulate matter ($PM_{2.5}$), ozone (O_3), and nitrogen oxides (NO_x) has been largely justified on a cost-benefit basis by the claim that air pollution causes 5,000 premature deaths per year in the SCAB. This claim relies on the implausible and unproven hypothesis that inhalation over a lifetime of about one teaspoon of $PM_{2.5}$ (particles less than 2.5 microns in diameter) causes premature death. For perspective, inhaling this amount of $PM_{2.5}$ is roughly equivalent to smoking two cigarettes a year, certainly not a lethal dose. Moreover, there is overwhelming epidemiological evidence, including two large 2011 AQMD-funded epidemiological studies, that air pollution does not cause any premature deaths in California. Furthermore, the SCAB has an age-adjusted total death rate that is lower than the death rate in every state except Hawaii. It has a similarly low total cancer death rate.

Regarding exposures, the average ambient levels of 8-hour ozone and 24-hour $PM_{2.5}$ in the SCAB, as measured by AQMD monitors, are below the current Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) for ozone and $PM_{2.5}$. Furthermore, the average personal exposures to ozone and $PM_{2.5}$ among SCAB residents are much lower than the ambient levels measured by AQMD monitors. These average personal exposure levels are far below the levels associated with adverse health effects. Air pollutants are now at record low levels and close to natural background levels. The last Stage 3 smog alert was in 1974 and the last Stage 2 smog alert was in 1988. Much of the remaining SCAB pollution comes across the Pacific Ocean from China, which ignores air pollution regulations and which does much of the manufacturing that used to be done here.

Unfortunately, the AQMD staff, led since 1997 by Executive Officer Barry R. Wallerstein, has ignored the extremely positive air quality evidence above. Instead of acting in the best public health and socioeconomic interest of the SCAB residents, AQMD staff has implemented scientifically unjustified regulations in conjunction with the EPA, the California Air Resources Board, and powerful environmental activist groups (like Coalition for Clean Air, American Lung Association, Natural Resources Defense Council, and Sierra Club). The AQMD Board justifiably fired Wallerstein on March 4. There is now an opportunity for the remaining AQMD staff to work with numerous qualified experts like myself in order to reassess the scientific validity of all their regulations. The REgional CLean Air Incentives Market (RECLAIM), the Multiple Air Toxics Exposure Study (MATES), and the 2012 Air Quality Management Plan (AQMP) all need to be reassessed. These reassessments must be made before the 2016 AQMP is finalized and, if they are not made, the AQMD Board should not approve the 2016 AQMP. It is time to stop unjustified regulations in Southern California and to bring manufacturing jobs back.

Guest Speaker: James E. Enstrom, Ph.D., M.P.H.
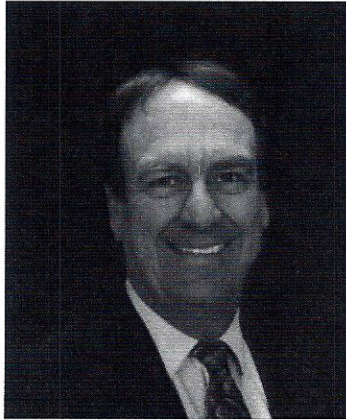
Dr. Enstrom is a native Californian who has lived most of his life in Los Angeles County. In 1965 He graduated co-valedictorian of his class at Harvey Mudd College in Claremont, CA, where he obtained a B.S. in physics. In 1970 Dr. Enstrom obtained his Ph.D. in experimental elementary particle physics at Stanford University from Nobel Laureate Melvin Schwartz. During 1971-1973 he worked as a physicist at the Lawrence Berkeley Laboratory in research group of Nobel Laureate Luis Alvarez. He then came to the UCLA School of Public Health as a postdoctoral fellow in cancer epidemiology and received an M.P.H. and postdoctoral certificate in 1976 from renowned public health epidemiologist Dr. Lester Breslow.

He then joined the UCLA School of Public Health faculty as a Research Professor / Researcher and he held that position for 36 years until June 2012. He currently retains a similar affiliation with UCLA, although he is now drawing retirement. He has been a Fellow of the American College of Epidemiology since 1981, he has been listed in Who's Who in America since 1990, and he has been President of the Scientific Integrity Institute in Los Angeles since 2005.

During his long career, he has explored many important epidemiological issues, particularly focusing on California. A major theme of his research has been identifying healthy lifestyles. He has shown that it is possible to reduce mortality risk from cancer and heart disease by 70% in the middle age range and to increase longevity by as much as 10 years. Examples of healthy populations that he has examined include religiously active California Mormons, California Cancer Prevention Study subjects, California PREVENTION Magazine Readers, and California and national samples of adults adhering to good health practices.

He has also examined the influence of environmental factors on mortality. In December 2005 he published a major paper on fine particulate matter and mortality in California and he has numerous other fm. Since then he has conclusively documented that fine particulate matter does not cause premature death in California. Since 2013, following the lead of the US House Science Committee, he has been involved with efforts to obtain the access to the "secret science" data that EPA has used to justify its fine particulate and ozone air pollution regulations in California and the United States. These efforts include the August 1, 2013 House subpoena of EPA, as well as the Secret Science Reform Acts of 2014 and 2015.

He is currently conducting important new air pollution epidemiology research that is relevant to the EPA, CARB, and SCAQMD regulations. More information can be found at his Scientific Integrity Institute website (http://www.scientificintegrityinstitute.org/).