CALIFORNIA Small Business Alliance

Dedicated to Environmental Progress and Economic Growth

August 26, 2016

Jo Kay Ghosh, PhD
Health Effects Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: Comments on Appendix I Draft 2016 A3ir Quality Management Plan

Dear Dr. Ghosh:

I appreciate the opportunity to represent the Home Rule Advisory Group (HRAG) on the Advisory Council and submitting comments on the draft Health Effects Appendix. My comments are focused primarily on Ozone (O_3, and $PM_{2.5}$, as they are set forth in Appendix I of the 2016 Draft Air Quality Management Plan (AQMP). Speaking on behalf of the HRAG, we understand that the AQMP promises to have significant impacts on all who are participating in the process applaud the time and effort required to produce a science-based and economically feasible plan.

Following are my comments:

Notwithstanding Staff's admonition for the Council to focus our review and comments solely on health effects, as reported in Appendix I, I found it too much of a challenge to ignore such important elements as the cost and practicality of basing the likelihood of meeting the emission reduction commitments in the AQMP based solely on the findings in the draft Appendix. Recognizing that the total implementation costs of the Draft 2016 AQMP are projected to be:

SCAQMD Stationary Source	$ 8.0	(billions of 2015 dollars)
SCAQMD Mobile Sources	$ 1.5	(billions of 2015 dollars)
CARB Mobile Source	$28.7	(billions of 2015 dollars)
Total:		$38.2 (billions of 2015 dollars)

and accepting the fact that the District and the sources it regulates will be held accountable for achieving the emission reductions commitments associated with these costs, I strongly urge Staff to seriously consider these constructive remarks and recommendations:

- **HEALTH EFFECTS OF AIR POLLUTION**

  - In the recent three AQMPs (2007, 2012, 2016), as well as the 1997 AQMP, Staff has asserted that ambient air pollution is a major cause of public health concern. And most would agree. It is confusing - to me at least - that while Staff has added

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Table I-1 in the current Appendix I, to support the addition of a few more recent review articles discussing the health impacts of Ozone, $PM_{2.5}$, NO_2, and SO_2, on the Southern California population, that the weight of evidence descriptors for causal determination of [adverse] health effects seems to call in to question the reliability of the findings and conclusions reported in these research papers. For example, most of the determinations made by U.S. EPA regarding the causality of air pollution health effects, is that there is "**likely** to be a causal relationship," "**suggestive** of a causal relationship," "**not likely** to be a causal relationship" or "**inadequate to infer** a causal relationship." On its face, the degree to which important uncertainties seem to permeate the research cited in Appendix I, strongly suggests that **more definitive research is urgently needed, especially in an AQMP that is projected to cost regulated sources $38.2 billion dollars, reduce health impacts, and improve air quality.**

- **OZONE**

  - In the process of updating Appendix I, I commend the Staff for including EPA's lowering the 8-hour ozone standard to 0.070 ppm.
  - In reviewing Table I-2, Summary of Causal Determinations for Short-Term Exposures to Ozone, I observed similar uncertainty in the assignment of causal determinations for the following health categories:

    - ✓ Cardiovascular Effects – **Likely** to be a causal relationship
    - ✓ Central Nervous System Effects – **Suggestive** of a causal relationship
    - ✓ Effects on Liver and Xenobiotic Metabolism – **Inadequate** to infer a causal relationship
    - ✓ Effects on Cutaneous and Ocular Tissues – **Inadequate** to infer a causal relationship, and most important……
    - ✓ Mortality – **Likely** to be a causal relationship

    Again, it strongly suggests that **more research is urgently needed,** especially in an AQMP that is projected to cost regulated sources $38.2 billion dollars, reduce health impacts, and improve air quality.

  - In reviewing Table I-3, Summary of Causal Determinations for Long-Term Exposures to Ozone, I observed even more **uncertainty in the assignment of causal determinations** for the following health categories:

    - ✓ Respiratory Effects – **Likely** to be a causal relationship
    - ✓ Cardiovascular Effects – **Suggestive** of a causal relationship
    - ✓ Reproductive and Developmental Effects – **Suggestive** of a causal relationship
    - ✓ Central Nervous System Effects – **Suggestive** of a causal relationship

Once again, it strongly suggests that **more research is urgently needed**, especially in an AQMP that is projected to cost regulated sources $38.2 billion dollars, reduce health impacts, and improve air quality.

- Finally, among the **scientific studies** cited in the paragraph entitled: Long-Term Effects of Ozone; many of which or all were **conducted at locations other than California/Southern California**, we were glad to see an almost imperceptible reference to smoking as one of a number of behavioral and demographic factors accounting for increased risk of all-cause, cardiovascular, and respiratory mortality. Curiously, **the causal relationship between smoking and morbidity and mortality are far more conclusive than the causal relationship between ozone and the health categories mentioned previously**.

  According to the CENTER FOR DISEASE CONTROL:

  - ✓ 16 million Americans are living with a disease caused by smoking.
  - ✓ For every person who dies because of smoking, at least 30 people live with a serious smoking-related illness.
  - ✓ Smoking causes cancer, heart disease, stroke, lung diseases, diabetes, and chronic obstructive pulmonary disease.
  - ✓ **Cigarettes are responsible for more than 480,000 deaths per year in the U.S.**
  - ✓ **42,000 people die annually from second-hand smoke.**
  - ✓ Smokers die, on average, 10 years earlier than non-smokers.

  (CDC Statistics as of 2015)

- **PARTICULATE MATTER**

  - I commend Staff for acknowledging that in spite of U.S. EPA setting standards for $PM_{2.5}$ in 1997, lowering them in 2006 to 35 ug/m_3 for a 24-hour average and reaffirming 15 ug/m_3 for annual average standard, and again revising the average annual standard in 2012 to 12.0 ug/m_3, **there continues to be considerable controversy and debate surrounding the review of particulate matter health effects and the consideration of ambient air quality standards**. Staff also mentions that: "*numerous studies have been published and some of the key studies were closely scrutinized and the data reanalyzed by additional investigators.*" Staff goes on to write: "*The reanalyses confirmed the original findings, and there are now additional data confirming and extending the range of the adverse health effects of* $PM_{2.5}$ *exposures.*"

- **SHORT-TERM EXPOSURE EFFECTS OF PM**

  - While we commend Staff for citing some recent epidemiological studies on morbidity and mortality, on Page I-19 of the Appendix, they appear to be on PM10, and involve populations in Europe, Asia, and South America. Apparently

there was also a study "*.... involving communities across the U.S.*," but **it isn't clear that any of these communities were located in Southern California, and that the findings are applicable to our local population**.

- On Pages I-20 – I-21 of the Appendix, Staff cites a National Morbidity, Mortality, and Air Pollution study of 20 of the largest U.S. cities. It is reported that the findings determined a combined risk estimate of about a 0.5% increase in total mortality for a 10 ug/m3 increase in PM10 (Samet et al 2000a). A further reading of the conclusions reached by Samet reveals that there were a number of confounding findings with regard to the extent by which PM10 contributes to mortality rates. Samet attributes some of the confusion to a software package with inappropriate default settings. Curiously, in a reanalysis of the 90 city study (Dominici et al 2002L Health Effects Institute 2003), where the estimates were recalculated, **the estimate changed from 0.41% increase in mortality for a 10 ug/m3 increase in PM10 to a 0.27% increase.**
- On Page I-23 of the Appendix, Staff writes that: "*The relative importance of both $PM_{2.5}$ and PM10-2.5 may vary in different regions depending on the relative concentrations and components, which can also vary by season.*" "*A major knowledge gap is the relative paucity of direct measurements of PM2.5-10.*" To their credit, Staff goes on to write: "***More research is needed better access the relative effects of coarse (PM10-2.5) fractions of particulate matter.***" This is exactly what we are advocating throughout these comments.

- Finally, on Page I-25 of the Appendix, Staff writes: "*Some studies have examined the health effects of short-term exposures to specific PM constituents and sources (Lippman 2014; Basagana et al 2015; Atkinson et al 2016). While there is some evidence suggesting possible links with specific constituents or sources, such as diesel exhaust, sulfates (related to coal combustion), and certain metals,* ***the U.S. EPA determined there were not enough studies evaluating the short-term constituents of source-specific exposures at the time of previous Integrated Science Assessment to be able to make a causal determination*** **(U.S. EPA 2009)."**

LONG-TERM PARTICULATE MATTER EXPOSURES AND MORTALITY

- Our review of this part of Appendix I revealed more controversy and debate over the association of and exposures to $PM_{2.5}$ (Page I-26). **While a number of studies are cited, and a few claim to include some Southern California cities, most studies seem to involve cohorts in other regions of the U.S, like the Harvard Six Cities Study, and there seems to be an abundance of strong scientific opinions that contradict each other.**

SUMMARY - PARTICULATE MATTER HEALTH EFFECTS

- Our reading of this segment of Appendix I (Page I-41), suggests that **Staff may be experiencing some of the frustration that those in the business community have long felt**. While **Staff seems to favor the body of epidemiological studies that point to PM as causing thousands of deaths per year, and thousands more hospitalizations for a variety of diseases, they do concede that**

coexisting pollutants contribute to increases in cases of morbidity and mortality in the community. This should be another clarion call for more and balanced research before the business community is presented with a bill for $38.2 billion dollars.which

At the meeting of the Advisory Council, Staff presented us with some materials from **Dr. James E. Enstrom, a renowned and respected epidemiologist. We also had the opportunity to hear some of his theories and conclusions about the health effects of PM which contradict those made by Staff.** And while his remarks were made in haste, due to time constraints imposed by the Staff, it was clear to me at least that **his research has been acknowledged by scores of reputable scientists across the U.S.** In view of the controversy that exists over the health effects of PM, and the **highly suspicious methodology that Staff insists on using to factor the value of a human life and the price that society is willing to pay to avoid cancer, I strongly recommend that an opportunity be given for all stakeholders to actually hear and evaluate the scientific findings by Dr. Enstrom and some other scientists before the 2016 AQMP is adopted.**

To add emphasis to this request, **I have attached a comment letter by Jonathan M. Samet, MD, MS - Professor and Flora L. Thornton Chair, Dept. of Preventive Medicine, Keck School of Medicine of USC, and Director, USC Institute for Global Health**. The letter was written in response to a request by Dr. Jean Ospital, former AQMD Health Effects Officer, wherein Dr. Samet was invited to critique Appendix I of the 2012 AQMP. To avoid any confusion, I have attached only the letter and transmittal form. Originally, Dr. Samet attached his comments on a complete copy of the Appendix. I have assumed that Staff has a copy of the complete document on file. If not, I will be happy to transmit it to you.

You will note that while **Dr. Samet agrees that coverage of criteria pollutants, ultrafine particulates, and toxic air contaminants are appropriate to the development of the AQMP, he questions the degree to which the District is able to act impartially when presenting ALL scientific conclusions.**

In closing, I want to express my sincere appreciation for inviting me to serve once again on the AQMP Advisory Council, and comment on this important Appendix to the 2016 AQMP

Sincerely,

Bill La Marr
Executive Director
California Small Business Alliance

Keck School of Medicine of USC

Department of Preventive Medicine
Jonathan M. Samet, MD, MS
Professor and Flora L. Thornton Chair
Director, USC Institute of Global Health

September 25, 2012

Jean Ospital, MPH, PhD
Health Effects Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Dear Jean,

As you requested, I attach comments concerning the Health Effects Appendix of the District's draft Air Quality Management Plan. Please do not hesitate to contact me if you have questions with regard to these comments.

Yours sincerely,

Jonathan M. Samet, MD, MS
Professor and Flora L. Thornton Chair
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Director, USC Institute for Global Health

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Review: Health Effects Appendix
South Coast Air Quality Management District
Jonathan M. Samet, MD, MS

General Comments:

This relatively brief document provides an overview of the health effects of various air pollutants, giving emphasis to pollution by airborne particulate matter. The document also covers other "criteria pollutants" as well as ultrafine particulate matter and toxic air contaminants. This range of topics is appropriate to the development of an Air Quality Management Plan.

As presented, the document represents a summary, and an apparent updating of an earlier report. It is necessarily selective in its coverage and relies to an extent on the review documents prepared by the US Environmental Protection Agency for the "criteria" pollutants. I have the following general comments:

- Preparation of reviews of the health effects of air pollution is a daunting task, given the extensive data available and its continuing and rapid accrual. The South Coast Air Quality Management District is not well positioned to prepare a comprehensive and up-to-date review. Consequently, there are deficiencies of this review related to its scope and timeliness. The basis for the document's development is provided in the last paragraph on page I-2. While the statement is clear, the methods are not fully transparent. In particular, several older reviews are mentioned, along with more recent documents from the US Environmental Protection Agency and several prepared by the California EPA. I suggest that more careful attention be given to describing the basis for this review and to consideration of its methodology. For example, given the complexity and scope of the literature, the developers of the review might rely solely on summary documents or to also summarize documents and research published based on studies in California. In the present version, I could not readily identify why particular studies were included.

- I understand that the South Coast Air Quality Management District is required to provide a review in support of its air quality management plan. As stated, the California Health and Safety Code Section 40471(b) requires the preparation of report on "the health impacts of particulate matter in the South Coast Air Basin (SCAB) in conjunction with the preparation of the Air Quality Management Plan revisions." This document does not directly address the health impacts, if some quantification of burden is implicit in the requirement. The identification of health effects and selected of examples of risks from the literature represents a starting point in estimating the health impact. As noted in my next comment, the review might have establishing the relevance of the broad body of evidence to the South Coast Air Quality Management District as one objective.

- There is an extensive literature on airborne particulate matter and health, as well as on the risks of various other air pollutants. One question that might be reasonably addressed in this report is the generalizability of findings from this broad literature to California. Here, a careful review of studies in California might be of benefit. Additionally, considerations might be given to the mixture of pollutants in the South Coast Air Basin to support conclusions about the generalizability of findings.

- The document needs further editing in part to improve clarity and in part to bring in some of the most recent and relevant references. Additionally, if the most recent US EPA documents are to be used as the basis of the report, some updating is needed.

Specific comments:

See attached.