COARSE PARTICULATE MATTER COALITION

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Dr. Jonathan M. Samet
Chairman
Clean Air Scientific Advisory Committee
EPA Science Advisory Board (1400F)
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW.
Washington, DC 20460

Re: Draft Integrated Science Assessment for Particulate Matter

Dear Dr. Samet:

The Coarse Particulate Matter Coalition, an organization of industries dedicated to scientifically sound regulation of coarse particulate matter (PM) in air, invites the Committee's attention to the following aspects of the September 2009 Preliminary Draft "Policy Assessment" for the review of the ambient air quality standards for particulate matter (PM).[1] Our comments are pertinent to the corresponding discussions in the Second Draft of the PM Integrated Science Assessment as well.

Coarse PM composition. The Committee's Letter to Administrator Jackson concerning the first draft of the PM Integrated Science Assessment (ISA) advised that "the ISA should more fully integrate the body of evidence related to PM size and composition for both health and welfare outcomes . . . The document should more fully address implications of particle size and composition for risk to health. At the least, the major gaps in the evidence should be identified" (pp. 2-3). The Coalition believes these issues are reflected in the Draft Policy Paper as well.

The Policy Paper notes that in the last review, "the CASAC PM Panel was also in general agreement 'that coarse particles in urban or industrial areas are likely to be enriched by anthropogenic pollutants that tend to be inherently more toxic than the windblown crustal material which typically dominates coarse particle mass in arid rural

[1] "Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards" (Preliminary Draft September 2009). Current members of the Coalition include the National Cotton Council, National Oilseed Processors Association, National Stone, Sand & Gravel Association and Kennecott Utah Copper.

areas'" (p. 1-11). With respect to this issue, the Policy Paper now proposes to draw the following conclusions:

> In this review, EPA has considered approximately 40 new studies evaluating the health effects associated with chemical components and sources of PM, including factors for PM from crustal and soil, traffic, secondary sulfates, power plants, and oil combustion sources (US EPA, 2009a, section 6.6; Table 6-17). There is some evidence for trends and patterns that link particular ambient PM constituents or sources with specific health outcomes, but there is insufficient evidence to determine whether these patterns are consistent or robust (p. 3-55).

A closer look at the discussions of the studies in the draft Policy Paper indicates that virtually no new findings have been made with respect to coarse crustal material. All but one of the cited studies involve road dust, combustion sources or other external sources of potential contamination (see discussion pp. 3-59-61). The only reference to potential harm from exposure to crustal material is a PM10 study described as follows: "Crustal material from a dust storm in the Gobi desert that was largely coarse PM (generally indicated using PM10) was associated with hospitalizations for cardiovascular diseases including IHD and CHF in most studies (US2009a, section 6.2.10.1)"(p. 3-66).

The Coalition urges the Committee to take a hard look at the conclusion of the draft Policy Paper that new studies available since the last review provide evidence of harm from exposure to crustal material under the current PM10 standard. It appears to us that the studies discussed in both the Policy Paper and the Draft ISA involve road dust or other dusts that either contain fine PM or are otherwise contaminated by external pollutants.

We also urge the Committee to look closely at the conclusion that coarse crustal particles are capable of such contamination. As discussed in our prior comments and correspondence, our experts have advised us that the physical and chemical properties of coarse crustal particles render such contamination unlikely in most cases. As we have also noted previously, the draft ISA offers very little evidence in this regard.

Coarse PM Health Studies. The Committee's Letter to EPA on the Draft ISA, cited above, concludes that "there needs to be greater balance in the presentation and discussion of study results, without undue weight being given to positive findings or characterization of estimates with confidence intervals that include the null as 'positive'. This lack of balance is most evident for intermediate outcomes related to cardiovascular disease (CVD)" (p. 8).

Again, the Coalition believes that the lack of balance noted by the Committee in the Draft ISA is reflected in the Draft Policy Paper. Specifically, both the ISA and the Policy Paper should provide more detailed discussions of the limitations of the

epidemiological studies for the purpose of the "suggestive" findings for coarse PM health effects.

Attached is a table of the coarse PM mortality studies cited in the Draft Policy Paper as available since the last review, showing observations noted in the study reports that tend to limit the suitability of the studies for this purpose. We believe the observed limitations are substantial and call into question the "suggestive" finding for coarse PM mortality and other effects. Many of these studies are the basis for similar findings with respect to cardiovascular and respiratory effects. We urge the Committee to look closely at these studies, to advise EPA staff to make their limitations clear in both the Policy Paper and the ISA, and to consider carefully whether they support the "suggestive" findings for coarse PM and adverse effects as presented in the EPA documents.

Coarse PM Measurement. The Committee's Letter on the Draft ISA finds: "The section on measurement methods needs to be improved. There needs to be a more complete discussion of PM mass measurements and the serious limitations of the current Federal Reference Method (FRM) for PM. The current FRM does not provide complete and adequately time-resolved concentration data, nor does it provide an accurate indicator of mass concentration, given known losses of semivolatile constituents and retention of particle-bound water. There needs to be discussion of the quantification of PM10-2.5, and a justification of the use of PM10 as an indicator of coarse thoracic particle exposure" (p.5).

Despite this clear recommendation, the Draft Policy Paper includes only a brief discussion of PM measurement issues and essentially dismisses them as follows: "Despite these issues, the precision of the FRMs are quite high, and the method bias based on the performance audit program is well within the goal" (p. 2-20).

Two coarse PM measurement issues are of primary concern to the Coalition. The first is the substantial oversampling bias in the presence of large masses of coarse particles consistently demonstrated in the Texas A&M agricultural studies. We have previously submitted the study reports to the Committee and EPA staff, and they were again submitted and discussed in the presentation of Dr. Michael Buser at the Committee's April 2009 meeting to review the first draft ISA.

The second is the apparent assumption of the Draft ISA and Policy Paper that the so-called "difference method" for measurement of PM10-2.5 may be an adequate FRM for a coarse PM standard. This issue was debated at length in the last review, with the Committee eventually drawing the following conclusion:

A majority of the Subcommittee members expressed the opinion that the

> demonstrated data quality of the PM10-2.5 difference method and its documented value in correlations with health effects data support its being proposed as the PM Coarse FRM. However, it is recommended that, in addition to the proposed PM10-2.5 difference method, an FRM that actually provides a coarse particle sample should be proposed as a second FRM. The only such sampler currently available is the dichotomous sampler. In both cases, this should be done with the clear understanding that these manual filter-based samplers are not intended for extensive field deployment as the basic component of the compliance network and would be employed primarily as a benchmark for evaluating performance of continuous or dichotomous FEM instruments. The dichotomous sampler would have the additional benefit of providing coarse particle samples for chemical speciation. There is clearly a need for the Agency to develop more direct coarse-particle-only sampling methods and an associated need to devote more resources to support the necessary research and development in this important area.[2]

Accordingly, the Committee has recognized the limitations of the difference method and recommended against using it for compliance purposes. This conclusion, as well as those contained in the Texas A&M papers on the oversampling bias, should be reflected in both the ISA and the Policy Paper.

In conclusion, we thank the Committee for its service on these issues of vital importance to our industries and the people who rely on them. As you know, current law prohibits consideration of economic effects in the establishment of national ambient air quality standards. That makes balanced scientific decisions all the more important, particularly in these economic times. We look to you to ensure that the agency's interpretations of the scientific evidence are reasonably balanced and necessary to protect public health, without causing the unnecessary economic dislocation that will surely result if the scientific interpretations are stretched.

Sincerely,

Kurt E. Blase

Counsel for the Coarse PM Coalition

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[2] Letter from Dr. Rogene Henderson, Chair Clean Air Scientific Advisory Committee, to EPA Administrator Johnson, p. 2 (November 30, 2005)(emphasis added).

Table I. *Limitations of the New Coarse PM Mortality Studies Cited in PM Draft Policy Paper (EPA, 2009)*

Cited new study	Observed limitations:
Burnett *et al.,* (2004)	– Mortality associated only with NO_2 and $PM_{2.5}$ – Authors target health benefits from reduced combustion
Chen *et al.,* (2005)	– PMc findings inconsistent with other studies – $PM_{2.5}$ accounted for half of PM_{10} – First respiratory admission not associated with PMc – No mortality finding
Klemm *et al.,* (2004)	– Mortality associated only with $PM_{2.5}$ – Effects of $PM_{2.5}$ vary by constituent
Lipfert *et al.,* (2006)	– Mortality associated only with traffic density and $PM_{2.5}$ – Health benefits may be tied to $PM_{2.5}$ constituents
Mar *et al.,* (2003)	– Association also found with PM_{10} and $PM_{2.5}$ – Association also found with motor vehicles, vegetative burning and regional sulfates – Association also found with CO_2, NO_2 and SO_2 – PMc association marginal and similar to PM_{10}
Ostro *et al.,* (2003)	– Association found only with PM_{10} – $PM_{2.5}$ accounted for 40% of PM_{10} – Inconsistent with other studies – Large intermodal fraction similar to $PM_{2.5}$ – Possibly due to endotoxins or other constituents
Villeneuve *et al.,* (2003)	– Cardiovascular mortality associated with PMc (but not PM2.5) is inconsistent with other studies – PMc not associated with respiratory mortality – NO_2 and SO_2 associations also found – Potential exposure measurement error, especially for PMc
Wilson *et al.,* (2007)	– Study under consideration[1]
Zanobetti and Schwartz (2009)	– $PM_{2.5}$ effects also reported – Association smaller for PMc – PMc exposure estimated from PM_{10} data – Large regional variability in PMc effects – Potential exposure measurement error for PMc – Analysis of health benefits incorrectly states that PMc is not regulated

[1] We have been unable to obtain a copy of this report to date.

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