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US Environmental Protection Agency  
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Washington, DC 20460

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**Oral Comments of John Bachmann on the Draft EPA Policy Assessment of Particulate Matter (PM) on Behalf of the Environmental Protection Network**

**To:** EPA Administrator Andrew Wheeler and the Clean Air Scientific Advisory Committee (CASAC):

This is John Bachmann, and I thank CASAC and EPA for this opportunity. I am representing the Environmental Protection Network (EPN), a volunteer organization of former EPA employees and others concerned about public health and the environment. I worked for EPA's Air Office for 33 years in Science/Policy, and had a lead role in all reviews of the PM National Ambient Air Quality Standards (NAAQS) through 2006.

I am here to restate what the Clean Air Act requires of EPA and CASAC in reviewing air standards, the problems with the process followed in this review, to highlight some issues raised at this stage of the review process, and to note some accountability studies you may have overlooked.

Stop me if you've heard this – the Act requires standards for common pollutants that cause or contribute to air pollution, which may reasonably be anticipated to endanger public health. It states that the scientific criteria for such air pollutants accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare. The standards must be requisite to protect public health with an adequate margin of safety, and yes, they are supposed to be reviewed every five years. In general, EPA has worked harder to ensure the requirements for a quality scientific review take precedence over meeting the time limit, even when under a deadline suit.

Unfortunately, the last two Administrators have flipped the script and placed meeting what appears to be a political deadline over the quality of the reviews. The current Administrator refused to respond to CASAC's recommendations for interactive access to the kind of breadth of expertise in PM science and perspectives, found in the PM panel he dismissed. Today that panel published their own letter reviewing the draft Policy Assessment (PA) and the standards. The Administrator also refused to honor CASAC and the Independent Panel's recommendations that CASAC and the public review a second draft science assessment before reviewing a final draft of the Policy Assessment.

The Policy Assessment itself is intended to assist you and the Administrator in developing a sound basis for recommendations and decisions in this PM review. The extensive review of the draft Assessment by the 20-member Independent Panel should be of significant benefit to your efforts here. This panel is particularly strong in PM epidemiology researchers and has taken issue with the doubts expressed by some on CASAC

with respect to the continued use of EPA's weight of evidence approach to determining causality, as well as the idea that a very limited number of causal inference studies somehow invalidates the large body of epidemiology and supporting studies, which has only increased since the last review.

By contrast, the consultants selected by the Administrator are limited to a constrained interaction, and only two of the 12 have significant experience in PM epidemiology research. Dr. Duncan Thomas, in general, found "both the draft PA and the draft ISA to be well written, authoritative, and comprehensive reviews of the literature and thoughtful discussion of the policy implications, including limitations thereof" and rejected the suggestion that EPA's approach should now be scrapped while waiting for additional work using causal inference. His responses to questions merit your attention. Dr. Fred Lipfert takes a very different view in suggesting no long-term effects of PM. In part, his response highlights results from his Veterans Cohort Study work. His sponsor and coauthor for some of that work, Dr. Ron Wyzga, formerly of Electric Power Research Institute (EPRI), is a member of the Independent Panel and cosigned today's letter.

Finally, I want to remind CASAC of some air pollution "accountability" studies. Older examples include the Utah Steel Mill strike work showing before and after higher mortality and morbidity, the multi-plant smelter strike study in the Southwest US that found reduced mortality linked to lower PM using sulfates as an indicator, and the prospective cohort six city study finding of reduced mortality after fine particle reductions. More recent are ACS follow-up results that found estimated life-shortening decreased with reduced fine particle levels; the Southern California Children's Health study, which found long-term improvements in air quality were associated with clinically significant improvements in lung development; and a 2018 EPA study finding a reduction in cardiovascular (CV) mortality with reductions in fine particles. Also, designed interventions in a Canadian community with high woodsmoke and in Taipei found use of indoor filters reduced markers of inflammation and other indices. Most notable among new studies using causal inference methods is Zigler et al, 2018, which showed designated nonattainment areas that reduced PM<sub>2.5</sub> beyond those achieved by regional measures had reduced mortality, chronic obstructive pulmonary disease (COPD), heart failure and more. The study won this year's Rothman Epidemiology Prize for best paper. These findings deserve your consideration.

Note: My final written comments on the draft Policy Assessment to CASAC and EPA in November will contain references for these and additional studies.