

**Before the
United States Senate
Committee on Environment and Public Works**

Testimony of Robert T. Connery

on

**Reform of the Process for Adoption
of
National Ambient Air Quality Standards**

February 6, 2007

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My qualifications for being invited to talk with you today about reform of the process for adoption of the National Ambient Air Quality Standards (“NAAQS”) under the Clean Air Act have to do with my involvement in the birth of the concept and use of ambient air quality standards for air pollution control purposes in the Colorado Air Pollution Control Act of 1966, 1966 Colo. Sess. Laws at pp. 210, 212-213. My law firm was counsel to the Colorado General Assembly’s Legislative Study Committee that formulated that law. Senator Edmund S. Muskie held hearings on Colorado’s ambient standards approach in the late 1960s in Denver, and Congress adopted it in the Clean Air Act of 1970.

I also served as Chair of the Air Quality Committee of the American Bar Association’s Section on Environment, Energy and Resources for several years. I have authored the Air Quality Chapter of one of the few peer-reviewed legal treatises on the subject, have taught at United States Forest Service environmental impact courses, and most recently taught Advanced Environmental Policy at the University of Colorado Law School at Boulder.

I have also participated in the NAAQS process at the federal level for more than 35 years, representing individual companies and national trade associations, such as the National Cattlemen’s Beef Association and the National Mining Association, and have represented a host of private companies, public entities, including the Denver Regional Council of Governments, and environmental groups on air quality and other

environmental compliance, planning and enforcement issues. I am now retired, and emphasize that I am not here on behalf of any client or interest.

History and Purpose of the Ambient Standards. The genesis of the ambient standards was the need to delineate areas in which air pollution was a problem, and areas where it was not. There was a severe air pollution problem in Denver and a few other locales within the state, but not in most of the rural areas of the state. The inability to distinguish the areas where action was needed from those where it was not led to division between urban and rural areas, and repeated defeat of air pollution legislation year after year.

The ambient air quality standards were developed to set threshold levels to protect public health and welfare. The generally urban areas where they were exceeded were monitored and designated. In areas where the standards were exceeded, controls to meet them went into effect. They established a boundary between significant adverse effects to health and welfare, and insignificant effects.

Need for Reform of the NAAQS Process. The NAAQS are the cornerstone of the Clean Air Act, and the reason for the success it has had to date. For more than 25 years, the NAAQS Review Process functioned well, but in recent years it has, in the case of NAAQS I am most familiar with – that for Coarse Particulate Matter -- lost its direction and wandered in a wilderness of scientific “uncertainty,” “weakness,” “limitation” and inability to make judgments and to delineate the science in the useful terms the Clean Air Act requires, namely what is necessary to protect public health, with an adequate margin of safety, and welfare, neither more nor less.

I submit to you that the NAAQS Review Process is, in my experience, broken – seriously broken. It is no longer serving the purpose for which it was intended. As I

think almost any reasonable observer would agree, the EPA and its science advisers have clearly run amok in this process. The example of EPA's review of the coarse PM NAAQS speaks, I think, for itself, and points the way to what needs to be done.

An Example of NAAQS Review: Review of the NAAQS for Coarse PM.

The review of the NAAQS for coarse PM began shortly after the Court of Appeals for the District of Columbia vacated the coarse PM standard EPA had adopted in 1997. The 24-hour coarse PM standard vacated by the Court was 150 $\mu\text{g}/\text{m}^3$ of PM₁₀, a measure the Court found fundamentally flawed because it did not treat separately fine (combustion-derived) PM and coarse (mechanically-divided earthen and other materials) PM, but lumped them together in a fashion that contained indeterminate amounts of these two separate, independently varying components of PM.

On October 17, 2006, after several years and several drafts of thousands of pages of Criteria Documents and Staff Papers, and tens of meetings and a rulemaking, EPA has rushed back to the future and adopted the 1987 PM₁₀ standard of 150 $\mu\text{g}/\text{m}^3$, virtually the same as the 1997 coarse PM₁₀ standard the Court of Appeals vacated and remanded, but this time not as a fine and coarse standard but solely as a coarse standard. It did so based on a new rationale not considered or discussed in any of the thousands of pages of the draft Air Quality Criteria Documents, and years of hearings before CASAC on them, nor on the several drafts of the Staff paper, and years of hearings before CASAC on them, nor even in the proposed rule. It simply said it wasn't changing anything, but had merely gone back to the 1987 PM₁₀ standard.

What was the "science" on the 1987 PM₁₀ standard? Did it relate to coarse PM?, or as it is often called, "fugitive dust." Here's what the most eminent and qualified health

scientist to address that subject had to say, in a letter he wrote on his own to the then Administrator of EPA:

“[F]ugitive dust at the levels measured in ambient air in the western and other parts of the United States over the years has never been documented to have had adverse effects on human health.”

Benjamin G. Ferris, Jr., M.D., former member of CASAC, principal investigator in the Harvard Six-Cities Study, Professor at the Harvard School of Public Health, and nationally known expert in research on health effects of PM and other criteria pollutants (1984). Dr. Ferris was responding to health claims made in California with respect to dust from deserts, and their potential health effects as carriers of “biogens,” “pathogens” and “endotoxins,” as well as allegations of Valley Fever and assorted other respiratory ailments. Dr. Ferris had unique qualifications and experience for several decades, as a clinician, toxicologist, epidemiologist, clinician and nationally-respected researcher, whose Harvard Six Cities Study was one of the largest yet performed.

And what did EPA’s CASAC’s PM Review Panel scientists have to say about the just-completed coarse PM NAAQS review? Here’s a sampling:

1. “In this case, the apparent attempt is to provide the basis for a PM10-2.5 standard based on alleged associations with mortality and morbidity. In this case, the science does not exist.” CASAC letter to EPA Administrator Leavitt, August 16, 2004 at B-28 to B-29, Individual Views of Dr. Roger O. McClellan, former Chair of CASAC. (Emphasis added.) And with respect to the PM10-2.5 indicator EPA proposed, Dr. McClellan stated: “I have concluded that in the absence of a scientific basis specifically for a PM10-2.5 indication, the choice of such an indicator would be arbitrary and capricious.”

2. Dr. Petros Koutrakis of the Harvard School of Public Health: “**The chapter** [9 of EPA’s summary of the science on coarse PM] **tried to make a case for a coarse . . . standard, and the case was not there.** . . . FORMER CHAIR OF CASAC, DR. Philip K. Hopke: “Okay, but that comes across, and **that’s a fair representation of the current state of the science** . . . it’s going to be very difficult to build the case on the science alone for any particular coarse particle standard, . . .” Transcript of July 21, 2004 CASAC and PM Review Panel Meeting at 45-46. (Emphasis added.)

3. Dr. Koutrakis: “I just am not satisfied that the information put forward here is really supportive of [a coarse particle standard].” DR. HOPKE: “But, I think it’s a fair reflection of the literature. . . . Now its up to [EPA] OAQPS then to decide, based on other considerations besides the science, as to the need for and the nature of the standard.” *Id.* (Emphasis added.)

4. “It is my opinion that proposing a coarse PM standard is premature at this time.”
Dr. Sverre Vedal, CASAC Member, Written critique of EPA Staff Paper presented at CASAC Nov. 2003 meeting.

These candid statements by CASAC’s PM Review Panel may surprise some of you. When they became public, CASAC determined not to keep transcripts of its deliberations, and indeed resorted to non-public discussions of its reasoning and decisions.

EPA Staff itself concluded that the science was too weak to do a risk assessment that would support any particular level or concentration of particulate matter:

- “[EPA] staff has . . . considered the extent to which the PM10-2.5 risk assessment results . . . can help inform consideration of alternative 24-hour PM10-2.5 standards. . . . Staff has concluded that **the nature and magnitude of**

the uncertainties and concerns associated with this portion of the risk assessment weigh against use of these risk estimates as a basis for recommending specific standard levels.” (Emphasis added.)

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EPA Staff Paper at p. 5-69

EPA Staff and CASAC likewise acknowledged that there was not adequate science to support a coarse PM standard in rural areas, and recommended that the coarse PM standard should not be applicable to such areas, but should instead be an Urban Particulate Matter PM_{10-2.5} standard (“UPM_{10-2.5}”).

Where, then, did the 150 µg/m³ 24-hour concentration level come from? The answer is that it came from London, and from dominantly fine PM data, not coarse PM data. As EPA’s top science and policy staffer said in explaining where it came from:

“And this is the plot of the data from London that shows where the 150 came from. . . [T]he number originally, at the lower bound of the range, came from the lower bound of the data that existed in London. It was British Smoke [a measure of combustion, fine PM “blackness, estimated at PM 3.5-4.5]; it was not PM₁₀.”

Testimony of John Bachmann to CASAC, December 15, 1995, Tr. at p. 119.

The pictures below show London during that episode.

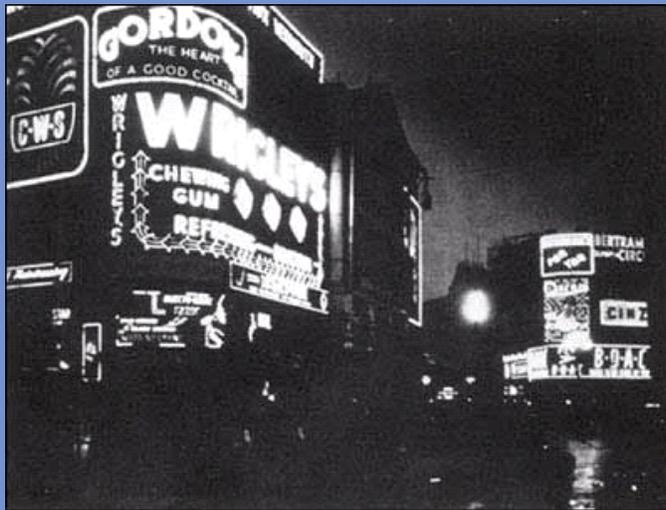
London Smog, December 1952



Public transport ground to halt
www.news.bbc.co.uk



London Smog, December 1952



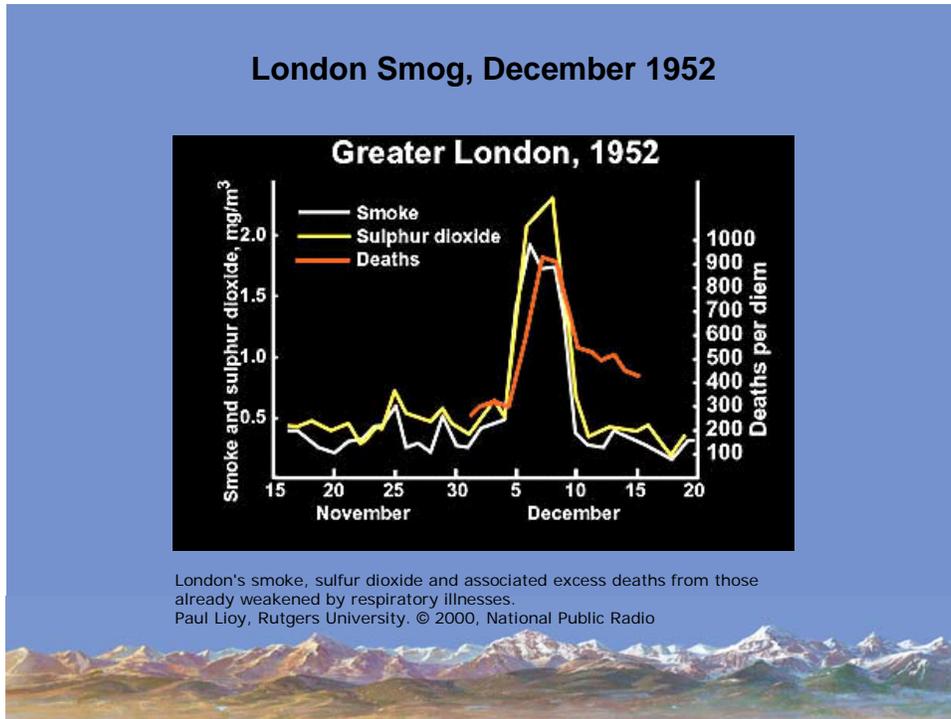
'When Smoke Ran Like Water,' Perseus Books
London's Piccadilly Circus at midday. ©2002



The PM was dominantly fine PM from combustion, not coarse PM. It was a multi-day stagnation event. The picture above is at midday. Here is a graphic showing

the levels at which these effects from high levels of fine PM and SO₂ were experienced.

The fine PM, British Smoke averaged above 1,500 µg/m³ for several days.



By contrast, here's what coarse PM looks like:

Coarse PM



Coarse PM, by definition, results from mechanical division of earthen and other materials. It falls out of the atmosphere over relatively short distances and periods of time. The London “150” data referred to occurred during an atmospheric stagnation event. Coarse PM levels typically reach high concentrations during high wind events.

What did CASAC conclude after all the thousands of pages of Criteria Documents and Staff Papers, tens of meetings and years of effort, as well as millions of dollars of EPA Staff time and effort? Here’s what CASAC’s May 2005 draft letter to the Administrator stated:

“... The [CASAC PM Review] Panel recommends that the setting of this [coarse PM] standard be set aside until further deliberations on the appropriate metric can be made.”

I was present for that meeting, and I believe this statement fairly reflects the consensus of that meeting. However, a few weeks later, in its Final Letter, CASAC stated:

“Regardless, most of the Panel members felt that the evidence that exists supports a causal role for health effects for PM10-2.5. Moreover, setting this NAAQS would allow continuation and expansion of the PM10-2.5 monitoring network that would facilitate collection of data for future exposure assessment and epidemiological studies.”

CASAC June 6, 2005 Letter.

Did the science change? Did CASAC explain what changed its mind?

Something extraordinary, and completely off the record, caused a complete reversal of the outcome of the public proceedings. I think that may be gleaned from the individual views expressed by several of CASAC’s members:

“Having a standard means that we’ll get a database, perhaps adequate in the next round but there’s hardly a basis for it being a very restrictive standard. **So you know, practical considerations and not strictly based on scientific merit.**”

Dr. Mort Lippman, CASAC Transcript at 374 (Nov. 2003). (Emphasis added.)

“Absent a standard for UPM 10-2.5, the Agency does not have a basis for implementing a national monitoring network and obtaining data on concentrations of UPM 10-2.5, that would . . . support the conduct of epidemiological research. Consequently, there is a need to either move forward on a relatively weak body of evidence or to overstate the strength of the evidence available. The Staff Paper appears to do both.”

Comments of Dr. Jonathan Samet, Attachment D to CASAC Review of Final Staff Paper, at D-26.

“I have never been convinced that EPA could find means other than setting a standard to get monitoring data. Setting a health-based NAAQS is a ‘heavy hammer’ to use to get monitoring data.”

Comments of Dr. Roger McClellan, Attachment D to CASAC Review of Final Staff Paper at D-14.

EPA's top science and policy Staffer has put forward the same consideration:

“ . . . the number one recommendation will be we need significant additional research no matter what, no matter whether we set a standard or we do not set a standard. . . .
“You be the judge of whether the folks who are likely to sponsor research . . . and EPA, remember, we are going to balance the budget in seven years, so remember how much we are going to have. You may be the judge of how much new research will be done with and without a new standard.
“But that is not a reason to do a standard, frankly.

Testimony of John Bachmann
December 15, 1995, Tr. pp. 127-128.

Conclusion of the Coarse PM NAAQS Review Process.

In the end, EPA proposed an “urban” PM_{10-2.5} [an indicator that excluded fine PM from the coarse PM measured] standard at 70 µg/m³, excluding agriculture and mining, based on the “weak,” “uncertain,” “limited” urban evidence of coarse PM health effects at these concentrations. However, in the final rule, EPA said it was simply reverting to the 1987 PM₁₀ standard, but adopted it as a coarse PM standard.

What conclusions can be drawn from this example, and what reforms suggested?

I submit that they are at least the following:

- EPA Staff and its CASAC Science Advisers Have Recommended, and EPA Has Promulgated, a Coarse PM₁₀ Standard for the purpose of obtaining data and funding further epidemiological studies.
- EPA Staff and its Science Advisers Have Recommended a Coarse PM Standard at Concentrations Not Supported by evidence that a coarse PM₁₀ 24-hour standard at 150 µg/m³ is necessary to protect public health, and neither more nor less stringent than necessary to accomplish that purpose.

- It is difficult to characterize the coarse PM standard as based on science demonstrating that it is necessary to lower coarse PM concentration to the level of the standard. As one member of the CASAC PM Review Panel characterized the “consensus” view of the majority of that panel:

“I think “the vast majority” of my colleagues have reverted to a pre-scientific “miasma theory” of disease causation, with UPM as the replacement for “foul and foetid odors.” If I raised my voice . . . And am lapsing into outrage here, it is because I want clearly to dissociate myself from what I consider a mistake of historic proportions. I don’t see how the indicators PM2.5 and UPM10-2,5 can both survive the inevitable legal challenges . . .”

Dr. Warren H. White, Individual Views, Sept. 15, 2005.

And, as Professor Frank Speizer of CASAC and the Harvard Medical School concluded at the end of the coarse PM NAAQS review process:

“Up front we need to admit that[UPM10-2.5] must be a relative term and set out some criteria for all of us to agree upon that make the measurement of interest first to go out and measure it and then to pay attention to the potential health related associations that might be found.”

Dr. Frank Speizer, Individual Views, Sept. 15, 2005.

I happen to agree with those views. The NAAQS review and adoption process needs to be reformed to provide clearly that health and welfare standards need to be adopted after specifying what needs to be measured, going out and measuring it and finding out whether there are effects, and then paying attention to the concentrations where there are effects. The process is very clearly not doing that at this point.

What should be done?

The NAAQS review process needs to be opened up to free and fair dialogue.

Transcripts need to be kept again. The process should be public and transparent.

EPA and CASAC should make their decisions based on the weight of the evidence, and explain them, rather than simply hiding behind general statements that even though the evidence is “highly uncertain,” “weak” and “limited” they nonetheless require the adoption of NAAQS that says they are “necessary” to protect public health.

Scientific review of proposed NAAQS should be by an independent scientific group, not one selected and connected to any group’s agenda, including any group within EPA, and surely not one whose members are directed and funded by EPA.

Non-Enforcement of Health Standards – a Consequence of Adopting NAAQS Not Necessary to Protect Public Health and Welfare.

In closing I should mention that one of the most insidious and untoward consequences of adopting coarse PM10 standards for research and data purposes that are required by law to define levels at which the exposed public’s health will be adversely affected, but evidently, on their face, are not necessary for that purpose, is that neither EPA nor the scientists involved have any confidence that those effects in fact occur, or that the standard needs to be enforced. The result is that EPA has assured those whose emissions will result in violation of the standards that they need not be concerned about enforcement, stating that:

“In response to comments regarding potential impacts of any coarse particle standard on agricultural and mining sources, EPA notes that the NAAQS do not create emissions control obligations for individual sources or groups of sources. In this particular case, **even if an individual source were shown to cause an exceedance of the 24-hour PM10 standard, this would not necessarily result in regulation of that source.**”

Final Coarse PM NAAQS Rule, 71 Fed. Reg. 61215 (October 17, 2006) (Emphasis added.)

EPA's Acting Administrator for Air wrote on October 17, 2006 to the state of Iowa's air control agency that "[t]he NAAQS themselves do not establish emission control obligations for individual sources or groups of sources." While true in an immediate technical sense, the central purpose of the primary, health NAAQS is the Clean Air Act's central requirement that states must adopt measures to meet them in order to protect public health. Every Administration from those of Presidents Carter and Reagan, to those of Bush and Clinton, have excluded rural fugitive dust from the PM NAAQS, because (1) that dust would exceed the PM NAAQS even after best management practices and controls were applied, (2) enforcement of the PM NAAQS against such sources would prohibit them due to their inability to comply, and (3) the lack of substantial public health or welfare effects from such dusts at ambient levels. This is the first Administration that has proposed to exclude rural fugitive dusts from the PM NAAQS and then decided not to do so, and instead included those dusts in a new coarse PM standard based on weak, uncertain, limited evidence in a few urban areas, and none in rural areas. Why did it reverse its proposal? Because it had no evidence that its weak urban evidence did not apply to rural areas. That kind of specious, "double negative" reasoning and "science" is where the NAAQS process has taken us in the case of coarse PM. I would hope that you would agree that the NAAQS process is in need of reform.

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