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September 14, 2009

Docket ID No. EPA-HQ-OAR-2006-0922
Environmental Protection Agency
Mail Code 6102T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Sir/Madam:

On behalf of the National Association of Clean Air Agencies (NACAA), thank you for this opportunity to comment on the proposed primary National Ambient Air Quality Standard for Nitrogen Dioxide, which was published in the *Federal Register* on July 15, 2009 (74 Federal Register 34404). NACAA is the national association of air pollution control agencies in 53 states and territories and over 165 metropolitan areas across the country.

I. NACAA Supports EPA's Recommended Range for the Primary National Ambient Quality Standard for Nitrogen Dioxide

EPA is proposing to strengthen the National Ambient Air Quality Standard (NAAQS) for nitrogen dioxide (NO₂) by establishing a new 1-hour standard at a level between 80-100 parts per billion (ppb). EPA is also proposing to retain the current annual average NO₂ standard of 53 ppb. As EPA's proposal follows the recommendations of the Clean Air Scientific Advisory Committee (CASAC), NACAA supports the agency's recommendations for a short-term and long-term NO₂ standard.

Exposure to NO₂ is linked to a wide variety of adverse health effects. There are numerous epidemiological studies demonstrating a relationship between NO₂ levels and hospital admissions, emergency department visits and mortality. Short-term exposure to NO₂ is linked to adverse effects on the respiratory system, particularly for people with lung disease (such as asthmatics), for the elderly and children, and for people on or near roadways. Field and panel studies have demonstrated relationships between NO₂ exposure and both respiratory symptoms and pulmonary function impairment. Current ambient NO₂ exposures are associated with adverse impacts to public health, thus showing a need for strengthening the standard.

CASAC is EPA's Congressionally-chartered body of independent scientific advisers and is specifically charged in section 109 of the Clean Air Act

with giving advice to the EPA Administrator on the setting and revising of NAAQS. In its comments on EPA's risk and exposure assessment (REA), CASAC noted that "[t]he evidence reviewed in the REA indicates that adverse health effects have been documented in clinical studies of persons with asthma at 100 ppb and the REA finds "...strong support for a level at or below 100 ppb."¹ Accordingly, CASAC recommended that the upper level of the range for the short-term standard not exceed 100 ppb and that EPA retain the current annual standard, "as evidence has not been cited that would lead to either an increase or decrease."²

Given the extensive scientific evidence of NO₂'s adverse health effects and CASAC's recommendations, NACAA supports setting a 1-hour standard for NO₂ between 80-100 ppb and retaining the annual average standard of 53 ppb.

II. EPA Needs To Address Extensive Technical and Fiscal Concerns before Deploying a Near-Roadway NO₂ Monitoring Network

EPA has proposed a two-tier monitoring network to support the revised NO₂ NAAQS: 165 near-roadway monitors would be located near major roads in urban areas; and approximately 52 area-wide monitors would be located in Core-Based Statistical Areas (CBSAs) having populations of 1,000,000 or more.³ The near-roadway monitoring network proposal, in particular, has raised serious and far-reaching technical and fiscal questions that EPA should address before deployment of the network.⁴

A. The Siting Criteria for Near-Roadway Monitors Must Be Scientifically Supportable and Nationally Consistent

As EPA points out, the objectives of an ambient monitoring network should include supporting compliance with ambient air quality standards and providing support for air quality research.⁵ NACAA believes that, while the current proposal will achieve research-related goals, the current proposal will not meet the objective of providing a national compliance-grade network without the development of scientific information on many aspects of monitor siting and

¹ Letter from Dr. Jonathan Samet, Chair, CASAC, to the Honorable Stephen L. Johnson, "Clean Air Scientific Advisory Committee's (CASAC) Review Comments on EPA's *Risk and Exposure Assessment to Support the Review of the NO₂ Primary National Ambient Air Quality Standard*," (Dec. 16, 2008), (EPA-CASAC-09-003) at p.2, quoting the EPA REA at p. 309.

² *Id*

³ 74 *Federal Register* 34442; 34445.

⁴ For example, some permitting authorities believe that this requirement is redundant, as the National Core (NCore) monitoring stations, which are required to be operational by January 1, 2011, will provide NO₂ data that meets EPA's objectives for area-wide monitoring in most large CBSAs.

⁵ 74 *Federal Register* 34440.

near-roadway emissions. Although it is not surprising that a proposal for a new network would include some areas of uncertainty, we are extremely troubled by the paucity of empirical support for various requirements relating to siting monitors for the proposed near-roadway network. The proposal itself acknowledges that there is a relative lack of near-road monitoring data nationwide.⁶ Moreover, limited historical research literature, rather than first-hand experience, supports such key proposed requirements as basing monitor locations on the annual average daily traffic (AADT) without regard to vehicle mix or dispersion characteristics, allowing upwind siting of monitors over a wide range of horizontal and vertical distances from the road, and requiring three-dimensional wind measurements.⁷

In addition, the Regulatory Impact Analysis (RIA) accompanying the proposal includes both a section titled “Caveats and Limitations,” discussing lack of data, limited information and uncertainties associated with the near-road monitoring network,⁸ and a whole chapter titled, “Discussion of Uncertainties and Limitations.”⁹ The RIA also gives a sense of EPA’s difficulties in developing the proposal under a court-ordered deadline, stating, “This analysis omits certain unquantified effects due to lack of data, time, and resources, [including] NO₂ health effects, ozone co-benefits, ecosystem effects, and visibility.”¹⁰ Therefore, both the proposal itself, and the RIA, acknowledge that the NO₂ near-roadway monitoring network is largely uninformed by first-hand, monitored near-road data. As we discuss further below, a major new network – particularly one that is inherently complicated and untried – should not be rolled out without the benefit of an effective near-road monitoring research program that can address many of the relevant data questions, and inform the specific siting requirements of the rule.

That EPA developed the proposal under time pressure is also evident from the procedural history of the proposal and, particularly, the role of CASAC. EPA had originally planned to issue an Advance Notice of Proposed Rulemaking (ANPR), but it did not do so, presumably due to the press of time. This meant, however, that CASAC did not have the opportunity to review the monitoring aspects of the proposal that it thought it would have. In a December 16, 2008, letter to then-Administrator Johnson, CASAC stated, “some issues critical to public health protection relating to monitoring and implementation will be addressed in the January 2009 ANPR prior to CASAC review...[including the] important issue concerning the siting of monitors in a manner that recognizes the spatial variability of NO₂ levels. (emphasis added)”¹¹

⁶ 74 *Federal Register* 34442.

⁷ “...AADT appears to be the most widely used traffic volume metric in the scientific literature...” (74 *Federal Register* 34442); “Research literature indicates that in certain cases, mobile source derived pollutant concentrations including NO₂ can be detected upwind of roads...” (*Id.* at 34443); and “Venkatram *et al.* (2007) note that [three-dimensional anemometry] is a key meteorological factor in governing the dispersion of on road pollutant emissions...” (*Id.* at 34444).

⁸ *Proposed NO₂ NAAQS Regulatory Impact Analysis (RIA)*; EPA/OAQPS/HEID/ABCG (July 2, 2009) at ES-14.

⁹ *Id.* at 8-16.

¹⁰ *Id.*

¹¹ Samet letter, *supra* note 1 at p.3.

No ANPR was ever published, however, and, therefore, no CASAC evaluation of EPA's criteria for siting monitors ever occurred. We strongly recommend that EPA remedy this situation in order to arrive at scientifically supportable, nationally consistent criteria for siting the monitors for a new near-road network.

B. CASAC's AAMM Should Be Convened; and Near-Road Research Monitors Should Be Sited in Order That Scientifically Defensible Data Can Be Gathered Expeditiously

Because the near-roadway network is not proposed to be operational until 2013, EPA has time to undertake additional fact-finding activities that will greatly enhance the credibility and scientific defensibility of this proposal, as well as the value of the resulting data. First, NACAA strongly recommends that EPA convene CASAC's Ambient Air Monitoring and Methods Subcommittee (AAMM) for the purpose of obtaining expert advice on the monitoring aspects of the proposal, and that the agency request AAMM review and recommendations on both near-road and area-wide NO₂ monitoring – just as the agency charged the AAMM to share its technical expertise regarding monitoring issues related to the PM_{2.5}, Ozone and the Lead NAAQS Revisions. Second, EPA should fund and deploy a focused, near-term research network of approximately ten near-roadway, special purpose monitors in order to answer a number of technical questions. We believe that EPA should also consult with the AAMM in identifying the desired data objectives for such a network.

NACAA recommends that the following questions be addressed (and supplemented as needed) by CASAC's AAMM Subcommittee. The AAMM can also make recommendations concerning the data objectives for the near-road research monitors.

- What combinations of traffic volume, vehicle mix, roadway type, surrounding terrain/structures and meteorological conditions result in highest roadway NO₂ impacts?
- What is the roadway-associated NO₂ exposure gradient for the population living within 50 meters of a roadway?
- Should the 50-meter distance range and/or the 2- to 7-meter probe height range be adjusted for purposes of determining NAAQS compliance? If so, how?
- How do annual average and peak hourly NO₂ concentrations from roadside monitors compare with annual and hourly concentrations from nearby area-wide monitors?
- Should three-dimensional anemometry, or other associated measurements, be required?
- Should monitors be located downwind of the roadway or, as in the proposal, should upwind locations be approvable?
- How should monitor siting be adjusted to account for above- and below-road terrain in order that the data are nationally consistent?

- How should monitor siting criteria take into account the mix of traffic on a given roadway, the extent of traffic congestion, and the representative population exposures to the measured concentrations?
- Should other pollutants, such as diesel particulates and toxics be considered by a near-road network?

With the help of CASAC and the research network, EPA can arrive at answers to these, and other, vitally important questions. NACCA also notes that such a small research network was supported by EPA in its “Ambient Air Monitoring Strategy for State, Local, and Tribal Air Agencies,” which states in part that:

“... EPA’s Strategy currently recognizes (1) the importance of near roadway exposures, and (2) the need for further exploration of the meaning of these exposures to both NAAQS-oriented monitoring networks and air toxics networks. Monitoring near roadways has, to date, been limited to research-level monitoring. As monitoring networks evolve, it is vital that monitoring near roadways be further investigated and eventually integrated into the monitoring networks....EPA intends to consult with SLTs and other stakeholders about the eventuality of developing the near-roadway component of ambient monitoring. The primary consideration would be to operate a small number of sites spaced in varying geographical areas of the country in an initial attempt to address near-roadway issues. Outcomes from EPA’s Office of Research and Development’s (ORD) near-roadway studies that began in 2006 and extend through 2009 or 2010 would heavily influence where, how, and when a near-roadway monitoring pilot would occur.”¹²

Thus, as recently as December 2008, EPA believed that it was vitally important to undertake further investigation of near-roadways through a pilot program before they were “eventually integrated into the monitoring networks.” NACAA urges EPA to implement this original plan.

C. A Near-Road NO₂ Network Should Not Be Deployed Unless It Is Fully Supported by New Federal Funding under the Authority of Section 103 of the Clean Air Act

NACAA urges EPA to provide adequate new federal funding for the two-tier near-road and area-wide monitoring network that will support the new hourly standard. EPA estimates that 165 monitors in 142 urban areas will be necessary for the near-road network. Each site will initially cost \$109,100, according to agency estimates, totaling approximately \$18 million. We appreciate the breakdown of the costs for a near-road monitor provided by EPA, which is a useful starting point for state and local air agencies. Our assessment, however, is that actual per-monitor costs are likely to be significantly higher than the estimate provided.

States and localities that have had experience with near-road monitors indicate that EPA’s cost estimate of \$109,000 will provide “minimal” funding for a monitor in optimal

¹² U. S. EPA, Ambient Air Monitoring Strategy for State, Local, and Tribal Air Agencies, 12/22/08, <http://www.epa.gov/ttnamti1/monstratdoc.html>

conditions. One monitoring expert notes that “the variability of costs cannot be overestimated.” In his view, shelter costs could run as high as \$500,000 in a large city due to the cost of land and the length of time needed to negotiate the purchase of the land and building. EPA’s estimate for shelter, however, is \$40,000. Similarly, several monitoring experts noted that costs to provide electric power to a near-road site could be far greater than the \$1,000 estimated by EPA. The same monitoring specialist, who operates monitors in large-city conditions, states that \$60,000 was required to provide power for one of his sites.

Another specialist experienced with near-road siting estimated that, while the total of \$109,000 was reasonable, there could be large variations depending on site conditions and other circumstances. For example, according to this specialist, new electric and phone lines could cost significantly more than the EPA estimate.

A third monitoring expert noted that there is less flexibility in siting near-road monitors because of the narrow, (proposed) 50-meter limit within which to locate the monitor. This person stated that “options will be limited” regarding, for example, shelter and power requirements. He said (as did others) that power costs could run far beyond the EPA estimate if trenching and burying the power lines are necessary, as might be the case with many of the near-road monitors. Security and fencing expenses, estimated by EPA to be \$5,000, could also run significantly higher, several experts stated.

Finally, two other monitoring specialists emphasized that the cost of operating and maintaining the network should be better taken into account and funded. A west coast expert estimates that it takes half of a full-time employee to operate, provide quality assurance, repair and maintain, and report data from a monitoring instrument. Another monitoring specialist believes that his agency (as well as others) would not be able to support the operation of the new NO₂ monitors without adding new staff. Whether the work is assumed by existing or new personnel, these costs are not reflected in EPA’s resource analysis.

In sum, NACAA believes that fully funding this new near-road network would require a level of funding that is roughly 50 percent higher than the amount estimated by EPA. It is likely that approximately \$25 million, rather than \$18 million, would provide adequate funding for a near-road startup network and ongoing operational costs.

Particularly in light of the recent and anticipated demands of funding other new and expanded monitoring networks, including the source and population lead network, the air toxics in schools monitors, and the proposed rural ozone network, it is imperative that the near-road network be federally funded with new appropriations at requisite levels. State and local air agency budgets have been generally flat for a number of years, with some agencies struggling to match funds to support core programs. Without additional funding for near-road monitoring, provided under Section 103 of the Clean Air Act so that matching funds are not required, many agencies will be unable to fulfill this new responsibility. NACAA urges EPA to adjust its estimate of what is adequate to fund the full – rather than minimum – cost of deploying and maintaining the near-road network, and to insure that new funding is authorized and appropriated under section 103 of the Clean Air Act.

III. The Proposed Air Quality Index Levels Need to Consider the Annual Standard and Near-Roadway Monitoring Network

NACAA commends EPA for proposing the new Air Quality Index (AQI) for NO₂ at the same time the agency is proposing a new one-hour standard. The AQI is an effective tool for informing the general public about their air quality and the associated health effects.

In proposing the new AQI, EPA has requested comment on the AQI values for 50 (an AQI between 0-50 indicates “good” air quality) and 150 (an AQI between 101-150 indicates “unhealthy for sensitive individuals” air quality). NACAA supports EPA’s proposed range of 0.040 to 0.053 ppm for the AQI value of 50 and 0.360 and 0.370 ppm for the AQI value of 150. EPA should be aware of the possibly confusing outreach message if the AQI level of 50 is set below the annual standard of 0.053 ppm – state and local air agencies would then be forecasting moderate air quality even though an area is meeting the annual standard.

In proposing revisions to the NO₂ standard, EPA has proposed to implement a near-roadway monitoring network. The air quality index is typically driven by the highest monitored value in an area and provides representative air quality data for that area. EPA needs to consider that near-roadway monitors may regularly record the highest pollutant value but that that information is not necessarily representative of air quality throughout the area.

IV. EPA Should Work Closely with NACAA Members in Addressing Nonattainment Designation Issues

In its proposal, EPA indicates that the near-roadway monitoring network will not be deployed in time to provide monitoring information for designations that will occur January 2012. According to the proposal, EPA expects that the new monitoring network will be completely deployed by January 1, 2013, and thus by January 2017 or January 2018 there will be sufficient information to inform any redesignations to nonattainment. NACAA encourages EPA to think creatively about a number of complicated implementation issues that are raised by the proposed NO₂ NAAQS revisions, the near-roadway monitoring network and nonattainment area designations, and urges EPA to collaborate with NACAA in addressing them. Most challenging, perhaps, is the general issue of how to address nonattainment based on a near-roadway monitor reading. The Clean Air Act requires states to address and reduce emissions in order to achieve attainment, and the focus of the emission control effort is within a nonattainment area, typically a consolidated metropolitan statistical area or a county. In a near-road, ultra-microscale environment, however, one issue that arises is what control measures – beyond federally required motor vehicle fleet standards that are beyond our control – are appropriate or effective for state and local air agencies to undertake. We also encourage EPA to consult with NACAA on implementation issues that arise when relevant regulatory nonattainment requirements are triggered by near-road monitors.

Thank you for this opportunity to comment on the proposal. Please free to contact us if we can provide additional information.

Sincerely,



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NACAA Monitoring Committee



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