

**List of science questions in EPA's proposed *Primary National Ambient Air Quality Standard for Nitrogen Dioxide; Proposed Rule, 74 FR 34404-34466***  
**<http://www.epa.gov/fedrgstr/EPA-AIR/2009/July/Day-15/a15944.pdf>**

**I. PROPOSED REVISIONS to Standard and Related Monitoring Requirements**

**Proposed new short-term standard and retention of annual standard:**

1. Appropriateness of the proposed approach to setting a new short-term NO<sub>2</sub> primary standard with an averaging time of 1-hour (pp. 34430-34438). Specifically, under the proposed approach the standard would reflect the maximum allowable NO<sub>2</sub> concentration anywhere in an area, including locations in close proximity to major roads.
2. Appropriateness of the proposed range of standard levels ( $\geq 80$  ppb and  $\leq 100$  ppb) and the rationale supporting that range (pp. 34430-34438), including:
  - The weight placed on the epidemiologic evidence, the controlled human exposure evidence, the exposure/risk information, and the uncertainties associated with each of these.
  - The use of available information on the NO<sub>2</sub> concentration gradient around roadways (i.e., that concentrations near roadways can be 30 to 100% higher than concentrations in the same area but not near the road) to inform an appropriate range of standard levels.
  - The most appropriate part of the proposed range in which to set the standard level given the available scientific evidence, exposure/risk information, NO<sub>2</sub> air quality information, and the uncertainties associated with each.
3. With regard to the standard level, EPA also solicited comment on:
  - Appropriateness of setting a standard level above 100 ppb and up to 150 ppb, recognizing the uncertainties of the scientific evidence. (p. 34438)
  - Appropriateness of setting a standard level as low as 65 ppb (30% higher than an area-wide concentration of 50 ppb), based on considerations that near-road concentrations may be determined to be closer to 30% higher than area-wide concentrations or to the extent that additional emphasis is placed on the possibility that exposures to NO<sub>2</sub> concentrations below 100 ppb could increase airway responsiveness in some asthmatics. (p. 34438)
4. Appropriateness of the proposed forms for a 1-hour daily maximum standard (pp. 34429-34430), which are (i) a three-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations and (ii) a three-year average of the annual 4<sup>th</sup>-highest daily maximum 1-hour average concentrations. EPA also solicited comment on both a three-year average of the 98th percentile or a three-year average of the 7<sup>th</sup>- or 8<sup>th</sup>-highest forms., noting that "a 98th percentile form could be appropriate, particularly for standard levels at the low end of the range considered in the REA".

5. Appropriateness of retaining the current annual standard to provide protection against health effects potentially associated with long-term exposures to NO<sub>2</sub>. (p. 34439)

### **Proposed Monitoring Network Requirements:**

1. Appropriateness of the proposed two-tier monitoring network design to provide data for comparison with both a new 1-hour standard and the existing annual standard. As proposed, the first tier would be comprised of monitoring in areas of expected maximum 1-hour concentrations, such as near major roads (where no significant monitoring is currently being done), and the second tier would be comprised of area-wide monitoring, such as is currently being done. (pp. 34441-34442)
2. Appropriateness of proposed minimum monitoring requirements for monitoring near major roads in larger urban areas, with minimum requirements triggered for metropolitan areas based on population thresholds and the traffic-related metric annual average daily traffic (AADT). Appropriateness of proposal that Regional Administrator would have discretion to require additional monitoring as necessary to address situations where the required near-road monitors do not represent a location where the expected maximum hourly NO<sub>2</sub> concentrations exist in an urban area (such as a location downwind of a stationary source). (pp. 34442-34445)
3. Appropriateness of proposed minimum monitoring requirements for monitoring at area-wide spatial scales, with minimum requirements triggered for metropolitan areas based on a population threshold, and the proposal that a Regional Administrator would have discretion to require additional monitoring on a case-by-case basis. (p. 34445).
4. Appropriateness of proposed data quality objectives for the proposed NO<sub>2</sub> network, which are meant to identify acceptable measurement uncertainty. (p. 34446, second column, first full paragraph)

## **II. ALTERNATIVE APPROACH (not proposed)**

### **Alternative Approach to setting level of new short-term standard:**

1. EPA solicited comment on, but did not propose, an alternative approach to setting a new 1-hour NO<sub>2</sub> primary standard. Under this approach, the standard level would reflect the maximum allowable NO<sub>2</sub> concentration measured at an area-wide monitoring site (such a site would not be located in close proximity to major roads and, for a given area, would not be the location of the maximum NO<sub>2</sub> concentration anywhere in that area) (pp. 34438-34439).
2. In conjunction with this alternative approach, EPA solicited comment on a lower range of levels ( $\geq 50$  to  $\leq 75$  ppb) to provide a similar degree of public health protection to that intended by the proposed approach and proposed range of levels (in conjunction with the same forms as those proposed). (pp. 34438-34439).

**Monitoring network requirements associated with alternative approach to setting standard:**

1. EPA solicited comment on, but did not propose, an alternative monitoring network design to complement the alternative approach to setting a new 1-hour standard, in which only monitors sited at area-wide spatial scales (not near-road monitors) are required, which is identical to the second tier of the proposed monitoring network except for having a different population threshold for minimum required monitoring. (pp. 34445-34446).
2. In conjunction with this alternative approach network design, EPA solicited comment on the appropriate definition of area-wide NO<sub>2</sub> concentrations and how best to use data representing these concentrations to determine compliance with a 1-hour standard reflecting the alternative approach of selecting a level for maximum area-wide concentrations on which EPA is seeking comment. (pp. 34445-34446).

**III. MONITORING METHOD for NO<sub>2</sub>**

1. No revision was proposed for the NO<sub>2</sub> monitoring method, but comment was solicited on the advantages and disadvantages of advancing technology, such as the photolytic-chemiluminescence method or the use of existing open-path or remote sensing FRM and FEM technology as alternative methods to supplement the approved chemiluminescence FRMs already deployed across the US at NO<sub>2</sub> monitoring sites (pp. 34439-34440)