

NO₂ Primary NAAQS – Final Rulemaking



NO₂ Briefing – February 10, 2011

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Schedule

Action	Date
Revised NO ₂ NAAQS signed	January 22, 2010
State/Tribe submits its recommendations to EPA	January 25, 2011
EPA notifies State/Tribe of any revisions to its recommendations ("120-day letter")	September 27, 2011
EPA promulgates initial NO ₂ designations	January 25, 2012

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Anticipated Implementation Schedule for the Recommended Approach

Milestone	Date
New NO ₂ Monitoring Network	January 1, 2013: Monitoring sites operational
Next NO ₂ NAAQS Review Completed	January 2015: Anticipated time frame
Nonattainment Re-Designations	January 2016/2017 (depending on date that sites become operational)
Attainment Date	January 2022/2023 (5 year after date of designations)

ISSUE: Once EPA has three years of data from the expanded monitoring network, should EPA complete a second round of designations for the 2010 NAAQS, or should the Agency base new designations on the results of the 2015 NAAQS review?

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Background – Why strengthen?

- NO₂ NAAQS was an annual standard with a level of 53 ppb and all areas of U.S. are in attainment
- Existing NO₂ monitors measure area-wide concentrations
- An NO₂ concentration gradient exists around roads with high concentrations near roads and lower concentrations away from the road
- Individuals who spend time on or near major roadways (residence, schools, commuting) can experience short-term NO₂ exposures considerably higher than measured by current network
- Epidemiologic, human clinical, and animal toxicological studies provide evidence for a link between short-term NO₂ exposure and adverse respiratory effects

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NO₂

- On January 22, 2010 EPA strengthened the primary national ambient air quality standard (NAAQS)
 - adding a **1-hour** NO₂ standard at 100 parts per billion (ppb); and
 - retaining the **annual** average NO₂ standard at a level of 53 ppb
 - Retain annual standard because not enough scientific evidence that 1-hr will provide adequate protection against long-term NO conc.
- EPA determined that the previous primary annual average NO₂ standard of 53 ppb alone was not sufficient to protect public health with an adequate margin of safety
- The new standard will:
 - Limit short-term exposures to peak NO₂ concentrations, which often occur near major roads and could worsen asthma symptoms
 - Maintain community-wide NO₂ concentrations below levels associated with respiratory related emergency department visits and hospital admissions

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New Health Evidence

- Current scientific evidence links short-term NO₂ exposures, ranging from 30 minutes to 24 hours, with an array of adverse respiratory effects including increased asthma symptoms, worsened control of asthma, and an increase in respiratory illnesses and symptoms.
- Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics.
 - These health effects have been associated with exposure to the range of NO₂ levels across an area, which includes both the higher short-term exposures than can occur on or near major roadways, and the lower concentrations that can occur away from such roadways.

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Nitrogen Oxides Also Contribute to the Formation of Fine Particle Pollution and Ozone

- NO_x react with ammonia, moisture, and other compounds to form small particles, exposure to which results in health effects including:
 - Premature death
 - Effects on breathing and the respiratory system,
 - Damage to lung tissue,
 - Emphysema and bronchitis, and aggravate existing heart disease
- NO_x is also a precursor of ground-level ozone
 - Children, the elderly, people with lung diseases such as asthma, and people who work or exercise outside are susceptible to adverse effects of ozone such as damage to lung tissue and reduction in lung function

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Near and On Roadway NO₂ Exposures

- NO₂ concentrations in vehicles and on or near major roads are appreciably higher than those measured at monitors in the current network
 - In-vehicle concentrations can be 2-3 times higher than measured at nearby community-wide monitors
 - Near-roadway concentrations have been measured to be approximately 30 to 100% higher than away from major roads
- Individuals who spend time on or near major roads can experience short-term NO₂ exposures considerably higher than measured by the current network, which are of particular concern for at-risk populations, including people with asthma, children, and the elderly.

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Monitors

2-tiered network

1. Near-road
 - 1 monitor req'd in CBSA pop. > 350,000 (143 sites)
 - 2 monitors req'd in CBSA pop. $\geq$ 2,500,000 (24 add't sites)
2. Area-wide
 - monitor req'd in CBSA pop. $\geq$ 1,000,000 (52 sites)

Implementation

1. Plan for deploying monitors by July 1, 2012
2. Physically established by January 1, 2013

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Delaware

NO2 Concentration (ppb)			
Year	1st max 1-hour Concentration	2nd1 max 1-hour Concentration	98 th Percentile max 1- hour Concentration
2007	75	73	64
2008	149	75	68
2009	68	62	54

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Minimum NO₂ Monitor Requirements for DE

Urban Area with Population over 500,000	Population (2008 Census)	Required Near Road Monitors	Required Community Wide Monitors
Philadelphia-Camden- Wilmington, PA-NJ-DE- MD	2,351,192	2	1

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Designations

- Use current monitoring data years (2008-2010) for January 2012 designations
- Since monitors won't be established until 2013 – data won't be available until 2016 (in 2016 agency will redesignate based on new data)

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Classifications

- EPA believes that classifications are unnecessary because of short deadlines

*Sec 191 and 192: 18 months from nonattainment designations for submittal of attainment plans/no later than 5 years from nonattainment designations for areas to attain standard.

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Region 3

- All areas are in attainment as of the current monitoring network

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