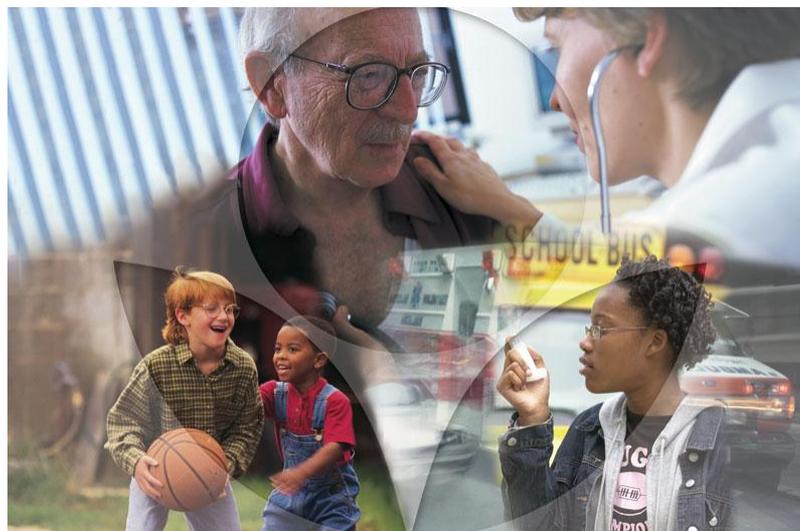


National Ambient Air Quality Standards Fall 2010 Update



**Regional Air Quality Meeting
October 26, 2010**

**Erika Sasser, Senior Policy Advisor
Health and Environmental Impacts Division**

Current Schedule for Ongoing NAAQS Reviews (Sept 2010)

| MILESTONE | POLLUTANT | | | | | | |
|-----------|-------------------------|-------------------------|-----------------------|---------------------|----------|--|-----------|
| | NO ₂ Primary | SO ₂ Primary | Ozone Reconsideration | CO | PM | NO ₂ /SO ₂ Secondary | Lead |
| NPR | <u>Jun 26, 2009</u> | <u>Nov 16, 2009</u> | Jan 6, 2010 | <u>Jan 28, 2011</u> | Feb 2011 | <u>July 12, 2011</u> | Nov 2013 |
| NFR | <u>Jan 22, 2010</u> | <u>Jun 2, 2010</u> | Oct 29, 2010 | <u>Aug 12, 2011</u> | Oct 2011 | <u>Mar 20, 2012</u> | Sept 2014 |

NOTES:

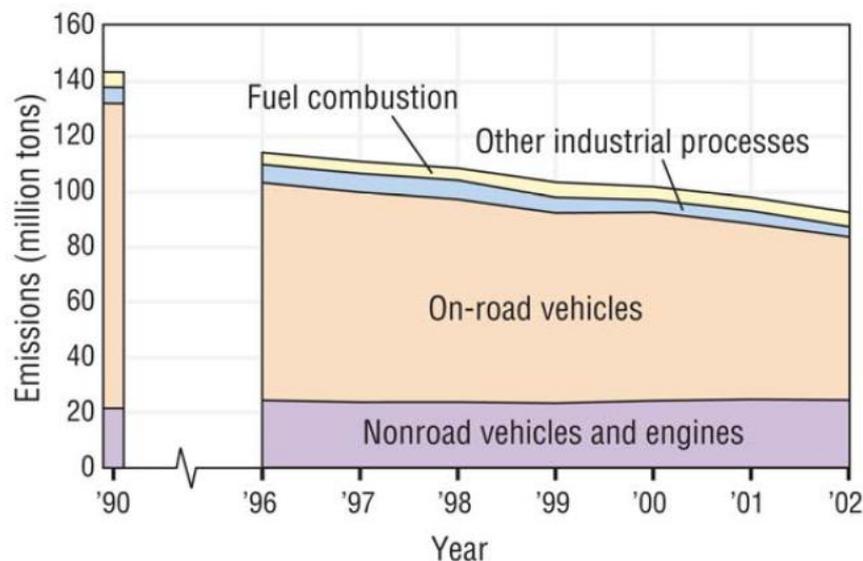
- Underlined dates indicate court-ordered or settlement agreement deadlines
- Next Ozone Review: Proposal in Jun 2013 and Final in Mar 2014
- More information about all ongoing reviews available at: <http://www.epa.gov/ttn/naaqs/>

January 2010 Ozone NAAQS Proposal: Overview

- On January 6, 2010, as part of its reconsideration of the Ozone NAAQS, EPA proposed to set different standards than those set in 2008
- Specifically, EPA proposed:
 - To set the level of the primary 8-hour ozone standard to a level within the range of 0.060-0.070 parts per million (ppm)
 - To establish a new cumulative, seasonal secondary standard within a range of 7-15 ppm-hours
- EPA plans to issue final standards around the end of October

CO NAAQS Review

- Current standards set in 1971: 9 ppm, 8-hour average and 35 ppm, 1-hour average (not to be exceeded more than once per year)
- Final Policy Assessment issued October 22, 2010 (<http://www.epa.gov/ttn/naaqs/standards/co/data/20101022copafinal.pdf>)
- Rulemaking schedule (court-ordered): Proposal January 28, 2011; Final August 12, 2011
- Nationally and in urban areas, generally, mobile sources dominate emissions; 35% reduction in national-scale anthropogenic CO emissions between 1990 and 2002



CO Policy Assessment & CASAC Comments

Note: first draft policy assessment reviewed by CASAC focused on 8-hour (controlling) standard with much less consideration of 1-hour standard

CASAC:

- Agreed with staff's initial conclusion that available evidence supports **retaining or revising** the current 8-hour standard
- Did not concur with option revoking the 1-hour standard
 - Stated 1-hour standard might provide protection independent of that provided by 8-hour standard
- Expressed “preference” for lower standards, but did not recommend specific levels

Final Policy Assessment:

- Focusing more on 1-hour standard, concludes it is appropriate to consider either:
 - Retaining current standards
 - Revising current 1-hour standard (15-5 ppm, 99th percentile daily maximum) and retaining/revising 8-hour form/level accordingly

PM NAAQS Review: Schedule

- Final Integrated Science Assessment – Dec 2009
- Risk and Exposure Assessments
 - Quantitative Health Risk Assessment finalized June 2010
 - Urban-Focused Visibility Assessment finalized July 2010
- Final Policy Assessment – Oct/Nov 2009
- Proposed rulemaking – February 2011
- Final rulemaking – October 2011

Major Issues in this Review: PM_{2.5} Primary

- **2006 Review:** revised primary 24-hour PM_{2.5} standard from 65 to 35 $\mu\text{g}/\text{m}^3$; retained primary annual PM_{2.5} standard at 15 $\mu\text{g}/\text{m}^3$
- **CASAC expressed serious concerns** with decision not to revise annual standard
- **D.C. Circuit Court remanded primary annual PM_{2.5} standard** (Feb 2009): EPA failed to adequately explain why the annual standard provided the required protection from effects associated with both *long-term* and *short-term exposures*, or from *effects in children and other susceptible populations*
- **Now: substantial new health evidence**, including extended analyses of seminal epidemiological studies of long- and short-term PM_{2.5} exposures
 - Evidence of associations is now stronger
 - Effects have been observed **at ambient concentrations allowed by current standards**, with **no discernible thresholds** below which effects would not occur
 - Important uncertainties remain including understanding the **relative toxicity** of the different components in the fine particle mixture

PM_{2.5} Primary Standards: Staff and CASAC Conclusions

- **Adequacy:** CASAC supports staff conclusion that currently available evidence clearly calls into question adequacy of protection afforded by current suite of PM_{2.5} standards
- **Indicator and Averaging time:** Staff concludes that it is appropriate to consider retaining PM_{2.5} mass-based indicator and annual and 24-hour averaging times
 - CASAC concurs with these staff conclusions and urges EPA to “reinvigorate” research on chemical components, sources, and ultrafine particles to inform future reviews
- **Levels:** CASAC supports range of levels identified by staff in draft Policy Assessment
 - Annual standard (generally controlling): Consider revising level within a range of 13-11 $\mu\text{g}/\text{m}^3$
 - 24-hour standard (supplemental protection): Consider retaining level at 35 $\mu\text{g}/\text{m}^3$, in conjunction with revising the level of the annual standard; alternatively, consider revising level to 30 $\mu\text{g}/\text{m}^3$
- **Form:** CASAC concurs with staff conclusion that consideration be given to revising form of annual standard to eliminate spatial averaging provisions

Major Issues in this Review: $PM_{10-2.5}$

- Protection against exposures to thoracic coarse particles ($PM_{10-2.5}$) is provided by current 24-hour PM_{10} standard, with its one-expected-exceedance form and a level of $150 \mu\text{g}/\text{m}^3$
- **2006 Review:** Retained the 24-hour PM_{10} standard and eliminated the annual standard
 - In subsequent litigation, D.C. Circuit Court upheld the Agency's decisions and supporting rationale
- **Current Review:** Major decision is whether to retain or revise the current standard
 - There are a number of new thoracic coarse particle health studies available since the last review, but considerable uncertainty remains
 - Compared to fine particles, the implications of the evidence and uncertainties for standard-setting are less clear

PM₁₀ Standard: Health Evidence in Current Review

- There is an expanded body of epidemiologic evidence (~50 new studies) available in this review
 - Associations with PM_{10-2.5} are generally positive, but frequently not statistically significant
 - Positive associations have been reported in a few locations likely to have met the current PM₁₀ standard during the study period
- Some limited support for the plausibility of associations is provided by a small number of controlled human exposure studies
- However, important uncertainties complicate our interpretation of the evidence

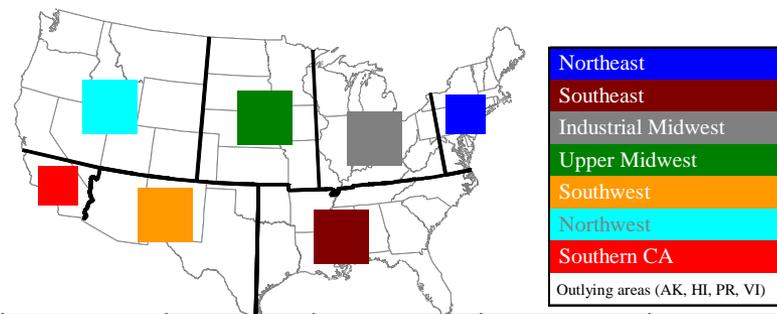
PM₁₀: CASAC and Staff Conclusions

- **Adequacy:**
 - Staff concluded that consideration could be given to retaining or revising the current PM₁₀ standard, depending on the weight placed on the evidence and uncertainties
 - CASAC concluded that the available evidence, while limited, is sufficient to call into question the level of protection provided by the current standard
 - CASAC recommended that consideration be given to revising the current 24-hour PM₁₀ standard in order to increase public health protection
 - CASAC did not support the option of retaining the current standard
- **Indicator:** CASAC agrees with staff conclusion that the available evidence supports retaining the current PM₁₀ indicator
 - CASAC also “vigorously” recommended deploying a network of PM_{10-2.5} monitors to allow future exploration of the appropriateness of PM_{10-2.5} as indicator
- **Averaging Time:** CASAC agrees with staff conclusion that available evidence supports consideration of retaining a 24-hour standard and not setting a long-term standard

PM₁₀: Potential Alternative Standards (cont.)

- **Form:** CASAC agrees with staff conclusion that it is appropriate to consider revising the form to the 98th percentile of the annual distribution of 24-hour PM₁₀ concentrations, averaged over 3 years
- **Level:**
 - Staff concluded that consideration could be given to PM₁₀ standard levels from **85 μg/m³ down to 65 μg/m³** (in conjunction with a 98th percentile form) with the upper part of the range supported by the strongest evidence
 - Range of levels supported in the draft Policy Assessment was based primarily on consideration of the 98th percentile PM₁₀ concentrations in U.S. study locations
 - Also considered what level (with a 98th percentile form) would be “generally equivalent” nationally to the current standard
 - CASAC agreed that it is appropriate to consider standard levels from 85 to 65 μg/m³; but **recommended** setting the level in the range of **75 to 65 μg/m³**

Estimates of Counties/Population Not Likely to Meet Current and Potential Alternative PM₁₀ Standards



| Region > | | All U.S. | Northeast | Southeast | Industrial Midwest | Upper Midwest | Southwest | Northwest | Southern California |
|---|------------------------|----------|-----------|-----------|--------------------|---------------|-----------|-----------|---------------------|
| Total # of counties > | | 307 | 37 | 57 | 50 | 40 | 25 | 77 | 18 |
| Total population > | | 120,090 | 15,397 | 27,181 | 21,352 | 5,917 | 11,112 | 15,270 | 22,695 |
| Current Standard | # counties | 42 | 0 | 3 | 0 | 2 | 11 | 14 | 11 |
| | Population (thousands) | 30,044 | 0 | 4,626 | 0 | 43 | 5,485 | 1,906 | 17,724 |
| 3-year average 98 th percentile > 87 µg/m ³ | # counties | 37 | 0 | 2 | 2 | 2 | 11 | 10 | 9 |
| | population | 20,515 | 0 | 4,063 | 507 | 552 | 5,924 | 1,789 | 7,421 |
| 3-year average 98 th percentile > 85 µg/m ³ | # counties | 39 | 0 | 2 | 3 | 2 | 12 | 10 | 9 |
| | population | 21,887 | 0 | 4,063 | 1,789 | 552 | 6,014 | 1,789 | 7,421 |
| 3-year average 98 th percentile > 80 µg/m ³ | # counties | 39 | 0 | 2 | 3 | 2 | 12 | 10 | 9 |
| | population | 21,887 | 0 | 4,063 | 1,789 | 552 | 6,014 | 1,789 | 7,421 |
| 3-year average 98 th percentile > 75 µg/m ³ | # counties | 55 | 0 | 3 | 6 | 5 | 13 | 15 | 12 |
| | population | 35,703 | 0 | 4,626 | 3,491 | 637 | 6,131 | 2,570 | 17,986 |
| 3-year average 98 th percentile > 70 µg/m ³ | # counties | 71 | 0 | 4 | 7 | 7 | 13 | 27 | 12 |
| | population | 43,823 | 0 | 4,644 | 8,868 | 881 | 6,131 | 5,052 | 17,986 |
| 3-year average 98 th percentile > 65 µg/m ³ | # counties | 87 | 2 | 4 | 9 | 10 | 14 | 33 | 13 |
| | population | 49,394 | 775 | 4,644 | 10,421 | 1,029 | 7,507 | 5,989 | 18,739 |

Major Issues in this Review: Secondary PM_{2.5} Standard (Visibility)

- **2006 Review:** Final rule set secondary PM standards identical to primary standards
- **CASAC expressed serious concern** that the final decision did not adopt a sub-daily standard consistent with CASAC recommendation
- **D.C. Circuit Court remanded secondary PM_{2.5} standard as unreasonable and contrary to law** due to failure to set a target level of protection for visibility effects and to consider the role of relative humidity in PM-related visibility impairment

Secondary PM_{2.5} Standard (Visibility)

- **PM_{2.5} impairs visibility by scattering and absorbing light, referred to as light extinction**
 - Light extinction depends upon particle composition and relative humidity
 - Light extinction can be directly measured, but no FRM is currently available
 - Light extinction can be calculated from data on PM_{2.5} mass and component concentrations and relative humidity (using existing monitoring network)
- **Urban-focused visibility assessment** estimated large percentage of days would exceed even highest target protection level in areas across the U.S. upon just meeting current standards

PM_{2.5} Secondary Standards: Staff and CASAC Conclusions

- **Adequacy:** CASAC agreed with staff conclusions that current information clearly calls into question the adequacy of the current standards; current standard levels too high, averaging times too long, and mass-based indicator does not fully reflect PM-related impairment of visibility
- **Approach to defining a distinct secondary standard:** Draft Policy Assessment focuses on a new speciated PM_{2.5} calculated light extinction indicator, with a 1-hour averaging time
 - Recognizes challenges in translating 24-hour speciation data into hourly values