OAQPS Update

Lewis Weinstock
EPA/OAQPS
Weinstock.lewis@epa.gov
919-541-3661
## Current National Ambient Air Quality Standards

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Primary Standard(s)</th>
<th>Secondary Standard(s)</th>
<th>Status of Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM$_{2.5}$</td>
<td>15 µg/m$^3$ (annual) 35 µg/m$^3$ (daily)</td>
<td>Same as Primary</td>
<td>Review completed 2006 • daily PM$<em>{2.5}$ standard strengthened  • annual PM$</em>{10}$ standard revoked Next review initiated 2007</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>150 µg/m$^3$ (daily)</td>
<td>Same as Primary</td>
<td></td>
</tr>
<tr>
<td>O$_3$</td>
<td>0.08 ppm (8-hour)</td>
<td>Same as Primary</td>
<td>Proposed tightening primary and secondary standards July 2007; final decision March 2008</td>
</tr>
<tr>
<td>Pb</td>
<td>1.5 µg/m$^3$ (quarterly)</td>
<td>Same as Primary</td>
<td>Proposed rule by May 1, 2008 Final rule by September 1, 2008</td>
</tr>
<tr>
<td>NO$_2$</td>
<td>0.053 ppm (annual)</td>
<td>Same as Primary</td>
<td>To be completed 2010</td>
</tr>
<tr>
<td>SO$_2$</td>
<td>0.03 ppm (annual) 0.14 ppm (daily)</td>
<td>0.5 ppm (3-hour)</td>
<td>To be completed 2010</td>
</tr>
<tr>
<td>CO</td>
<td>9 ppm (8-hour) 35 ppm (1-hour)</td>
<td>None</td>
<td>Schedule under development</td>
</tr>
</tbody>
</table>

Units of measure are parts per million (ppm) or micrograms per cubic meter of air (µg/m$^3$). For more information about the standards, visit [http://www.epa.gov/tnn/naaqs/](http://www.epa.gov/tnn/naaqs/).
EPA’s New NAAQS Review Process

- December 15, 2005: EPA initiated “top-to-bottom” review of NAAQS process

- Internal EPA workgroup focused on key issues:
  - **Timeliness** (i.e., how to complete NAAQS reviews on a 5-year cycle as required by Clean Air Act)
  - Consideration of the most up-to-date scientific information
  - Differences between scientific and policy judgments
  - Defining and expressing uncertainties in scientific and technical information

- See [http://www.epa.gov/ttn/naaqs/](http://www.epa.gov/ttn/naaqs/) for more information

- PM is first NAAQS review to completely follow new process
Based on workgroup review and input from CASAC and others, EPA initiated changes in the process:

- **Planning**: At outset, EPA will develop one integrated plan to guide the entire review, an initial workshop will solicit input from experts to inform the development of this integrated plan.

- **Science Assessment**: Criteria Document replaced by a more concise evaluation and synthesis of the most policy-relevant science (Integrated Science Assessment, or ISA), and supported by a database of key studies.

- **Risk/Exposure Assessment**: EPA will develop a more concise document, informed by the ISA, that focuses on key results, observations and uncertainties.

- **Policy Assessment/Rulemaking**: Staff Paper replaced with an advance notice of proposed rulemaking (ANPR) containing a policy assessment that will outline a range of options and rationales that reflects Agency views, rather than staff views.
New NAAQS Review Process
# MARAMA Monitoring Committee Meeting

## NAAQS Review Schedules (as of Sept. 2007)

### OZONE REVIEW
- **Task Name**: Science Assessment
- **Task Name**: Risk/Exposure Assessment
- **Task Name**: CASAC Meetings
- **Task Name**: Staff Paper
- **Task Name**: Policy Assessment/ANPR
- **Task Name**: Proposed rulemaking
- **Task Name**: Final rulemaking

### LEAD REVIEW
- **Task Name**: Planning
- **Task Name**: Science Assessment
- **Task Name**: Risk/Exposure Assessment
- **Task Name**: Staff Paper
- **Task Name**: CASAC Meetings
- **Task Name**: Policy Assessment/ANPR
- **Task Name**: Proposed Rulemaking
- **Task Name**: Final Rulemaking

### NO2 REVIEW: Health
- **Task Name**: Planning
- **Task Name**: Science Assessment
- **Task Name**: Risk/Exposure Assessment
- **Task Name**: CASAC Meetings
- **Task Name**: Policy Assessment/ANPR
- **Task Name**: Proposed Rulemaking
- **Task Name**: Final Rulemaking

### SO2 REVIEW: Welfare
- **Task Name**: Planning
- **Task Name**: Science Assessment
- **Task Name**: Risk/Exposure Assessment
- **Task Name**: CASAC Meetings
- **Task Name**: Policy Assessment/ANPR
- **Task Name**: Proposed Rulemaking
- **Task Name**: Final Rulemaking

### PM REVIEW
- **Task Name**: Planning
- **Task Name**: Science Assessment
- **Task Name**: Risk/Exposure Assessment
- **Task Name**: CASAC Meetings
- **Task Name**: Policy Assessment/ANPR
- **Task Name**: Proposed Rulemaking
- **Task Name**: Final Rulemaking

### CO REVIEW
- **Task Name**: Planning
- **Task Name**: Science Assessment
- **Task Name**: Risk/Exposure Assessment
- **Task Name**: CASAC Meetings
- **Task Name**: Policy Assessment/ANPR
- **Task Name**: Proposed Rulemaking
- **Task Name**: Final Rulemaking

---

**Legend:**
- **Planning**
- **Science Assessment**
- **Risk and Policy Assessment, ANPR and Rulemaking**
- **CASAC Review**
# Ongoing NAAQS Reviews: Schedules

<table>
<thead>
<tr>
<th>MILESTONE</th>
<th>POLLUTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ozone</td>
</tr>
</tbody>
</table>
Overview of Ozone NAAQS Review

• On June 20, 2007, EPA proposed revisions to the National Ambient Air Quality Standards (NAAQS) for ground-level ozone (published on July 11, 2007—72 Federal Register 37818-37919). Comment period ends October 9, 2007.

• The proposed revisions reflect new scientific evidence about ozone and its effects on people and the public welfare.

• The proposed revisions would affect two types of ozone standards:
  – Primary standards to protect public health, including the health of "sensitive" populations such as people with asthma, children, and older adults.
  – Secondary standards to protect public welfare and the environment, including sensitive vegetation and ecosystems.

• EPA held five public hearings in Los Angeles and Philadelphia on August 30, and Atlanta, Houston and Chicago on September 5.

• Agency will issue final rule by March 12, 2008.

• For more information go to http://www.epa.gov/groundlevelozone.
CASAC conclusions and recommendations on Ozone NAAQS

**Primary Standard**
- Unanimously concluded: “no scientific justification for retaining” the current primary O₃ standard and that standard “needs to be substantially reduced to protect human health, particularly in sensitive subpopulations”
- “New evidence supports and builds upon key, health-related conclusions” drawn in 1997 review and shows that current primary standard is not sufficiently health protective
- CASAC “unanimously recommends that the current primary O₃ NAAQS be revised and that the level that should be considered … be from 0.060 to 0.070 ppm”
- Unanimously concluded “there is no longer significant scientific uncertainty regarding CASAC’s conclusion that the current 8-hr primary NAAQS must be lowered”
- Recommended specifying standard level in terms of O₃ parts per billion

**Secondary Standard**
- “There is a clear need for a secondary standard which is distinctly different from the primary standard in averaging time, level and form.”
  - “A secondary standard of cumulative form and extending over an entire growing season will be far more effective than a secondary standard that is not cumulative in form and does not include the whole growing season.”
  - CASAC prefers the W126 form as potentially more biologically relevant, and recommended a range for 12-hour W126 of 7.5-15 ppm-hrs
Understanding the W126 Secondary Standard Alternative

Steps in calculating W126 value for a particular site:
1. Measure hourly ozone (O₃) concentrations for each hour within the 12 hour daylight period (8am-8pm).
2. Assign a weight to each hourly value based on concentration: lower concentrations receive less weight than higher concentrations.
3. Sum the 12 weighted hourly values to calculate a daily W126 value.
4. Repeat steps 1-3 for each day within the ozone season and then sum the daily values to calculate the monthly W126 value.
5. Identify the consecutive 3-month period whose monthly W126 values produce the highest total.
6. This total becomes the seasonal W126 for this site.

<table>
<thead>
<tr>
<th>Hourly O₃ (ppm)</th>
<th>Weight</th>
<th>W126 (ppm-hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.03</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>0.05</td>
<td>0.11</td>
<td>0.01</td>
</tr>
<tr>
<td>0.06</td>
<td>0.30</td>
<td>0.02</td>
</tr>
<tr>
<td>0.08</td>
<td>0.84</td>
<td>0.07</td>
</tr>
<tr>
<td>0.10</td>
<td>1.0</td>
<td>0.10</td>
</tr>
</tbody>
</table>

**SUM:** 0.20

Daily value = Sum of values over 12 daylight hours
Counties With Monitors Violating Alternate 8-hour Ozone Standards of 0.070 and 0.075 parts per million (2003-2005 data)

Estimates are based on the most recent data (2003 – 2005). EPA will not designate areas as nonattainment on these data, but likely on 2006 - 2008 data which we expect to show improved air quality.

Notes:

1 398 of 639 monitored counties violate 0.075, 533 of 639 monitored counties violate 0.070.

2 No monitored counties outside the continental U.S. violate.

3 Monitored data can be obtained from the AQS system at http://www.epa.gov/ttn/airs/airsaqs/
Potential Monitoring Impacts if Ozone NAAQS is Changed

• Additional urban monitors due to lower NAAQS (triggered by existing regulations)
  – Not a big deal, most areas are in excess of requirements already
• Consideration of new requirements for unmonitored MSA’s between 50k and 350k population
  – About 100 MSA’s in this category (next slide)
• Additional rural monitors in support of new secondary NAAQS (most current monitors in urban areas)
• Changes (lengthening) to ozone season if NAAQS is tightened
Official Ozone Monitoring Seasons
Where is the year round monitoring?

Monitoring Data in AQS

Official seasons in AQS

Year round monitoring
80% of year monitored
Less than 80% of year monitored

Good spatial representation

Prepared by Louise Camalier (OAQPS/AQAD/AQAG)
## Example Timeline if Ozone NAAQS are Revised

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature—Final Rule</td>
<td>March 2008</td>
</tr>
<tr>
<td>Effective Day of Rule (60 days following publication in Federal Register)</td>
<td>Approximately June 2008</td>
</tr>
<tr>
<td>State Designation Recommendations to EPA</td>
<td>June 2009 (based on 2006-2008 monitoring data)</td>
</tr>
<tr>
<td>Final Designations Signature</td>
<td>Approximately June 2010</td>
</tr>
<tr>
<td>Effective Date of Designations</td>
<td>Approximately 2010</td>
</tr>
<tr>
<td>SIPs Due</td>
<td>Approximately 2013</td>
</tr>
<tr>
<td>Attainment Dates</td>
<td>2013-2030 depending on severity of problem</td>
</tr>
</tbody>
</table>
Pb NAAQS Revision

• Considering
  – Dramatically lowering Pb NAAQS (range of 0.2 ug/m³ or lower)
  – Changing monthly average rather than quarterly average

• Implications for monitoring –
  – Will need many new Pb sites (see next slide)
  – May need to increase sampling frequency
  – May want to go to low-volume TSP sampler to reduce measurement uncertainty
Map Of Lead TSP Sites and Estimated Design Values

2003-2005 Design Value (ug/m³)
- 0 - 0.15
- 0.15 - 0.25
- 0.25 - 0.50
- 0.50 - 1.0
- 1.0 - 1.5
- > 1.5
**Pb Network Design – Potential Changes**

- **Existing requirements**
  - 2 FRM/FEM sites in any area where Pb concentrations exceed or have exceeded the NAAQS in the most recent 2 years
  - +10 sites in NCore network for trends (not source oriented, not yet operating, and some may not be FRM/FEM)

- **Ideas for new network requirements**
  - Change requirements to be similar to those for ozone/PM2.5
    - Tied to MSA population and design values
  - Add requirement for 1 monitor at large sources (e.g. > 5 tpy)
  - Allow administrator to require a monitor in areas of concern
  - Combination of above
Shifting gears......
AQS Enhancement in the Queue

FY 2007 projects:
• combining PM$_{2.5}$ data values at collocated POCs to determine design values when data is missing at the primary POC
• develop a site level design value report for PM$_{2.5}$, ozone, and PM$_{10}$
• develop a non-criteria QA report

FY 2008 projects (funding dependent):
• reporting exceptional event flags and other information to support the exclusion from attainment analysis
• modifying/enhancing the system software to implement the new ozone National Ambient Air Quality Standards (if required)
• computing the AQI for the new PM$_{2.5}$ standard
• calculate the PM$_{10}$ sample values at standard conditions from values reported at local conditions
• automate the Exchange Network node submission process

Contact: Jake Summers, summers.jake@epa.gov
Key Projects from AQAG
(Air Quality Analysis Group)

• We are hoping to publish soon a pamphlet "Latest Findings on National Air Quality, Status and Trends Through 2006". This will be an annual document from here on, resources permitting.

• Other Projects:
  – Ozone monitoring seasons in light of a possible tighter NAAQS (Louise Camalier)
  – Example analyses of Exceptional Events (Neil Frank)
  – Analytical support to all the on-going NAAQS revisions

• Design values and other statistics posted at:
  – http://www.epa.gov/air/airtrends/values.html

Contact: Phil Lorang, lorang.phil@epa.gov
**AQI Maps (Updates planned for AIRNOW)**

- **Current AIRNow Map Limitations**
  - Non-georeferenced static images
  - No associated metadata
  - Poor cartographic detail (roads, rivers, etc.)
  - No sharing mechanism

- **AQI Maps will**:
  - Produce standard format, geospatial maps
  - Produce output files that GIS can display.
  - Allow for new AQI mapping techniques to be implemented

- **Status: Completing Pilot Phase**
  - October 2007
  - Examples available on: [www.airnowmaps.wordpress.com](http://www.airnowmaps.wordpress.com)

- **Project lead**
  - [Jackson.scott@epa.gov](mailto:Jackson.scott@epa.gov)
AQI Maps
AQI Maps

- Other Examples: State map with terrain
A Q I Maps

- Other Examples: Tribal Maps
What we know about PM2.5 monitoring funding for 2008

- Presidents budget request
  - Section 105
  - $25.5M (assumes States match at 40%)

- Congress
  - Restored funding to historical level - $42.5M
  - Presumption is that it would stay Section 103

  - Funding available at last years level – which was $41.875M – prorated for period of CR.
  - Practice is usually to provide funds at lowest proposed rate (President's proposal, Congressionally enacted, or prior FY enacted); however, no effect expected since current direct award funds run through 3/31/2008.
Possible Funding Scenarios for 2008

(one of the first two scenarios is most likely)

• CR for whole year
  – Section 103
  – Funding at $41.875M – although EPA moved funds among STAG categories last year.

• President signs Congressionally marked up budget.
  – Section 103
  – Funding at $42.5M, but some modest rescission likely

• Congress passes Presidents budget request and President signs.
  – Section 105
  – Funding at $25.5 M

Contact: Tim Hanley, hanley.tim@epa.gov