Ozone Air Quality Standards....
An Update On Attainment/Nonattainment

*Integrating Transportation and Air Quality Planning
NARC’s 35th Annual Conference and Exhibition*

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Office of Air Quality Planning and Standards
U. S. Environmental Protection Agency

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What we'll cover today...

• Health effects and EPA’s national standards … Ozone
• Litigation update on new 8-hr standards
• Background .... planning for healthy Ozone air quality
• 1- and 8-hour standard update … problems/issues

But remember …
LIKE CHOLESTEROL...
WITH IT'S GOOD AND BAD COMPONENTS..
THERE'S GOOD AND BAD OZONE.

STRATOSPHERIC OZONE
10 to 25K
Good here!

GROUND LEVEL OZONE
Bad here!!
Ozone formation at ground level is a complex process ……

THE OZONE FORMATION CYCLE

VOC + NOx = Ozone
And ozone air pollution can be transported ....
Now, let’s look at ....

Health effects and EPA’s process to set a National Ambient Air Quality Standard (NAAQS) for Ozone ...
Breathing difficulty, shortness of breath
Aggravated/prolonged coughing and chest pain
Increased aggravation of asthma, susceptibility to respiratory infection resulting in increased hospital admissions and emergency room visits
Chronic inflammation and irreversible structural changes in the lungs from repeated exposures ... can lead to premature aging of lungs and illness such as bronchitis and emphysema
Growing evidence suggests association with premature death
Children active outdoors at greatest risk

Outdoor workers (e.g., construction)

Individuals with respiratory diseases (asthma, emphysema, chronic obstructive pulmonary disease)

Highly sensitive healthy individuals who are more responsive to ozone exposures (5 to 20% of population)
Process for setting a national air quality standard ...

**Review Process for NAAQS**

1. **Scientific studies on health and environmental effects**
   - Scientific peer review of published studies

2. **EPA "Criteria Document" - extensive assessment of scientific studies**
   - Reviews by CASAC and the public

3. **EPA "Staff Paper" - interprets scientific data and identifies factors to consider in setting standards including staff recommendations for standards**
   - Reviews by CASAC and the public

4. **Proposed Decisions on Standards**
   - Public Hearings and Comment on Proposals

5. **Final Decisions on Standards**
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Process for setting a national air quality standard …
History of EPA's Ozone National Ambient Air Quality Standards

**Photochemical oxidants**
April 1971
0.08 ppm - not to be exceeded more than 1-hour per year

**Ozone**
February 1979
0.12 ppm ... 1-Hr ....expected exceedances ≤ 1/year in a 3-year period

**Ozone**
July 1997
0.08 ppm ... 8-Hr avg. of 4th max., 3-year period
What Are The EPA Air Quality Standards For Ozone?

► New 8-hour NAAQS:
  ● EPA revised the ozone NAAQS in July of 1997
  ● Primary standard set at 0.08 parts per million (ppm)
  ● 8-hour readings ... 4th highest average in 3 yrs
  ● Secondary standard same as the primary standard

► Old 0.12 ppm, 1-hr NAAQS:
  ● Based on 3 consecutive years of air quality data
What about all the Court challenges to the 8-hour Ozone NAAQS …
What Did the Courts Say About 8-Hour NAAQS ....

LITIGATION ON NAAQS

• EPA NAAQS challenged by the American Trucking Assoc & others

• U.S. Court of Appeals for DC remanded new NAAQS ... 5/99

• Court denied EPA's petition for rehearing but did responded to EPA's petition on 10/99 .... addressing three elements:
  – Constitutionality of authority to review and revise NAAQS
  – Authority to implement standard under subpart 1 of the CAA
  – Consideration of beneficial effects of ozone

• In May 2000, U.S. Supreme Court agreed to hear:
  – Question of constitutionality
  – EPA's authority to implement new standards.. Subpart 1 or 2
  -- Cost issues

• Supreme Court agreed to hear Industry's position on consideration of cost benefits. Court decision .... February 2001
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Supreme Court decision … the NAAQS litigation...

SUPREME COURT OF THE UNITED STATES

Nos. 99–1257 and 99–1426

CHRISTINE TODD WHITMAN, ADMINISTRATOR
OF ENVIRONMENTAL PROTECTION
AGENCY, ET AL., PETITIONERS

99–1257

v.

AMERICAN TRUCKING ASSOCIATIONS,
INC., ET AL.

AMERICAN TRUCKING ASSOCIATIONS,
INC., ET AL., PETITIONERS

99–1426

v.

CHRISTINE TODD WHITMAN, ADMINISTRATOR
OF ENVIRONMENTAL PROTECTION
AGENCY, ET AL.

ON WRITS OF CERTIORARI TO THE UNITED STATES COURT OF
APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT
[February 27, 2001]

February 27, 2001 decision
What did the Court say?

• Court upheld constitutionality of Clean Air Act (CAA) and affirmed EPA’s authority to set revised ozone and particulate matter standards.

• Court reaffirmed EPA’s long-standing position that the CAA requires EPA to set NAAQS at levels necessary to protect the public health and welfare without considering the economic costs of implementing the standards.
Court noted that the CAA calls for EPA and States to take costs into account in implementing air quality standards.

Court determined that EPA has authority to implement a revised ozone standard, but said EPA must reconsider its approach for moving from 1-hr standard to revised standard.

EPA will need to develop plan to implement the standard consistent with the Court’s opinion.
Let’s step back for a minute… what “nonattainment areas” are at issue....
What is a “Nonattainment” Area?

- The Clean Air Act specifically provides that an area must be designated nonattainment if the area does not meet (or contributes to ambient air quality in a nearby area that does not meet) the NAAQS.

- EPA designated 1-Hour nonattainment areas in the early 1990’s. They were also classified.

- EPA has NOT yet designated any 8-Hour nonattainment areas.
States
Required control measures and attainment dates are “tied” to an area’s classification....

CAA mandated classifications of 1-hour Ozone Nonattainment Areas....

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<thead>
<tr>
<th>CLASS</th>
<th>LEVEL (ppm)</th>
<th>ATTAIN. DATE</th>
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<tbody>
<tr>
<td>MARGINAL</td>
<td>.121 up to .138</td>
<td>3 years</td>
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<td>6 years</td>
</tr>
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<td>SERIOUS</td>
<td>.160 up to .180</td>
<td>9 years</td>
</tr>
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</tr>
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</tr>
<tr>
<td>EXTREME</td>
<td>.280 and above</td>
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Let's review......

"Nonattainment" Area classifications ...

Required control measures and attainment dates are "tied" to an area’s classification....
States Required control measures and attainment dates are “tied” to an area’s classification....

CAA mandated classifications of 1-hour Ozone Nonattainment Areas....

<table>
<thead>
<tr>
<th>OZONE CLASSIFICATIONS</th>
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Let’s review......

Required control measures and attainment dates are “tied” to an area’s classification....
San Francisco is Classified Other / Sec 185A & Incomplete Data Areas Not Included
Counties violating the 8-hr NAAQS … 1997-1999 data

Developed by James Hemby
(hemby.james@epa.gov; 919.541.5459)
April 16, 2001
Now, let’s focus on planning to achieve the Ozone NAAQS …
If you’re nonattainment then ..... 

Purpose and Impact of Designations

• Designations serve to....
  - Inform the public of Ozone public health problems
  - Begin the air quality planning process for NA area

• Requirements that result in....
  - a State Implementation Plan (SIP), Conformity, New Source Review, and other planning requirements result from nonattainment designations

Designations lead to a SIP .... What is a SIP?
**WHAT IS CONFORMITY?**

- Clean Air Act requires Federal supported activities to “conform” to requirements of State Implementation Plan ....

- Conformity to the purpose of the SIP means:
  - No new violations
  - No worsening of existing violations
  - No delay in timely attainment of NAAQS

- Conform to the specifics of the SIP by...
  - Funding transportation control measures
  - Staying within emissions budgets
SIP Emissions Budgets

• The SIP:
  ➢ Is built on an emissions inventory and control strategy
  ➢ Allocates emission reductions among highway and non-highway sources.
  ➢ This creates an “emissions budget” for highway sources.

• Conformity enforces the SIP budget as a ceiling.
With litigation in mind, what are the plans for implementing the 1- and 8-hr NAAQS ...
1st ... address the 1-hr problem areas....

1-hr areas ... “hot spots” of activity

• Western Mass (Springfield)
• New York City Metro area
• Philadelphia Metro area
• Baltimore
• Washington, DC
• Atlanta
• Chicago Metro Area
• Milwaukee
• Houston
• Dallas
• St. Louis
Possible next steps for new ozone standard …

Current thoughts on 8-hr Implementation

• **Ozone NAAQS:** Respond to remand of ozone NAAQS to consider potential beneficial effects of *ground-level* ozone (as distinct from *stratospheric* ozone, which provides a natural protective shield from the sun’s ultraviolet (UV-B) radiation)

• **Implementation strategy:** Develop a new implementation framework for the 8-hour NAAQS. Plan to work closely with our state/locals partners and consult with stakeholders … will develop the framework through notice-and-comment rulemaking.

• **Designations:** Continue working with States to identify areas not meeting the 8-hour ozone standard. Could publish a tentative list of areas shortly after we propose an implementation framework. Will not issue final designations of nonattainment areas until we issue a final implementation framework for the standard.
Issues that must be resolved in 8-hr implementation guidance …

• Reconciling Clean Air Act Subparts 1 and 2

• Geographic coverage (existing 1-hr NA areas vs. larger 8-hr NA areas that encompass the preexisting 1-hr NA or maintenance areas)

• Classifications—whether and how to classify

• Role of mandatory measures (under Subpart 2)

• Timing –
  ➢ Designations
  ➢ Attainment Dates (under subpart 1 or subpart 2?)
  ➢ SIP submission

• Attainment demonstrations & relation to transport
Issues that must be resolved in 8-hr implementation guidance …
(continued)

• Reasonable further progress
• Conformity requirements
• New source review requirements, especially in transport cases
• Early reductions
• Relation to PM2.5 & RH activity
• Comprehensive designation policy .. Coverage, transport, etc.
Closing points …

• EPA’s has established 1- and 8-hr NAAQS to protect public health

• Court challenges have delayed efforts related to the new 8-hr NAAQS

• State Implementation plan (SIP) efforts are underway to attain the 1-hr NAAQS

• Soon, EPA is planning on addressing implementation issues … before designating any 8-hr NA areas.
Where Can You Find information Relating to Nonattainment Designations ...

Go to EPA’s Web Site ..... Specificallly .....
OZONE TECHNICAL RESOURCES

This page is intended for a technical audience and provides links to documents and other information on EPA's website related to ground-level ozone. This page is not necessarily a comprehensive list of all ozone information available, but provides links to the documents most frequently requested by our technical community.

INDEX:
A. Ozone Standards
B. Nonattainment Areas
C. EPA Revokes 1-hour Ozone Standard for Many Counties
D. Air Quality Data Resources
E. Emissions Data Resources
F. Regional Transport of Ozone
G. Additional Resources
H. Contacts
Air Quality Monitoring, Modeling and Related Data

Corrections, Caveats, Explanations, Known Problems and FAQ  (Please read this before proceeding)

- **1997-99 Air Quality Data**
  - 8-hour ozone design values by state and county
  - 8-hour ozone design values by state, county and monitoring site

- **1996-98 Air Quality Data**
  - 8-hour ozone design values by state, county and monitoring site

- **Ozone Monitoring Sites**
  - List and maps of monitoring site locations

- **Maps of Modeled 4th Maximum Ozone Concentrations**
  - UAM-V results - episodes in June, July and August 1995

- **Wind Roses**
  - By airport for ozone season

- **Spatial Clustering of Ambient Ozone in Eastern U.S.**
  - An analysis of the spatial correlation structure of ozone levels

- **List of Nonattainment Areas (Green Book)**

Return to Emission Home Page
Questions or Comments
For NA data ....”Green Book”
THE END
How does the SIP process work?

- CAA or court case mandates plan submittal, or State/Local decides to revise its own SIP
- State/Local prepares and adopts plan after public hearing
- State submits SIP to EPA Regional office
- EPA reviews SIP for completeness — if complete — propose in CFR
- EPA approves/disapproves plan after considering public comments
- After SIP approval, the plan becomes Federally enforceable
- If SIP Federally mandated and disapproved — then FIP promulgated