

Current and proposed standards for PM and Ozone in the US

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Topics to be covered today

- Air Quality Management
- Health effects of PM
- The NAAQS review process
- PM NAAQS Proposal
- Ozone status

But *I'm* healthy!

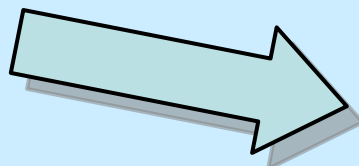


Why should I care about air pollution?

Air Quality Management Cycle

ESTABLISH GOALS

- Science
- NAAQS

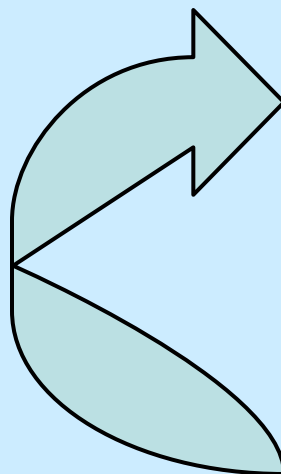


WHAT REDUCTIONS ARE NECESSARY?

- Monitoring
- Inventories
- Modeling

EVALUATE RESULTS

- Monitoring
- Modeling
- Benefits Analysis

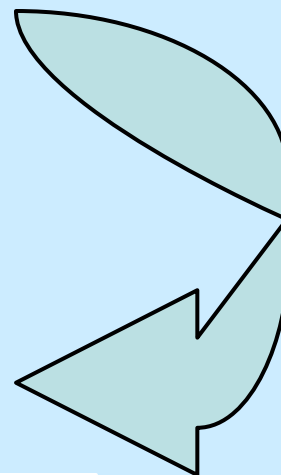


HOW TO ACHIEVE

- National Rules
- State Plans

IMPLEMENT

- State & Local rules
- Permits
- Compliance & Enforcement



Public Health Risks Are Significant

Particles are linked to:

- Premature death from heart and lung diseases
- Aggravation of heart and lung diseases
 - Hospital admissions
 - Doctor and ER visits
 - Medication use
 - School and work absences
- And possibly to:
 - Lung cancer deaths
 - Infant mortality
 - Developmental problems, such as low birth weight in babies or slower lung growth in children

The NAAQS Review Process

“NAAQS”

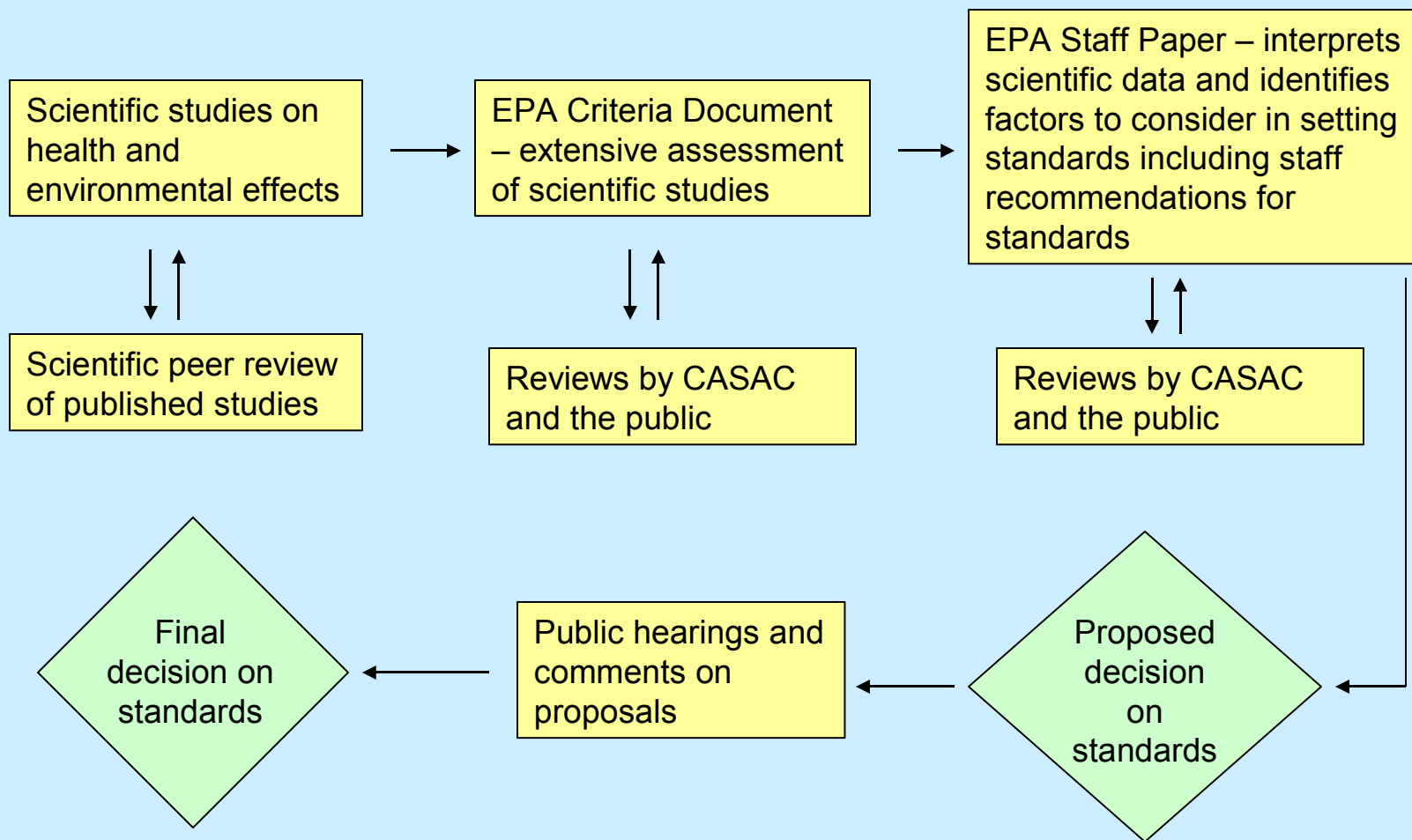
National Ambient Air Quality Standards

National Ambient Air Quality Standards

Sections 108 and 109 require the EPA Administrator to:

- list widespread air pollutants that reasonably may be expected to endanger public health or welfare
- issue air quality criteria for them that assess the latest available scientific information on nature and effects of ambient exposure to them
- set “primary” NAAQS to protect human health with adequate margin of safety
- set “secondary” NAAQS to protect against welfare effects (e.g., effects on vegetation, ecosystems, visibility, climate, etc.), and
- periodically (every 5 years) review and revise, as appropriate, the criteria and NAAQS for a given listed pollutant or class of pollutants.

Review Process for NAAQS



The Role of CASAC

- The Clean Air Scientific Advisory Committee (CASAC) is a review committee mandated by the Clean Air Act and part of the EPA's Science Advisory Board (SAB)
- Is charged with independent expert scientific review of EPA's draft Air Quality CDs and Staff Papers
- The CASAC process involves reviewing each document until the CASAC review panel agrees that the review is complete and provides advice in the form of a letter to the Administrator.

PM and Ozone Current Standards

Pollutant	Primary Stds.	Averaging Times	Secondary Stds.
Particulate Matter (PM₁₀)	50 µg/m³	Annual	Same as Primary
	150 ug/m³	24-hour	
Particulate Matter (PM_{2.5})	15.0 µg/m³	Annual	Same as Primary
	65 ug/m³	24-hour	
Ozone	0.08 ppm	8-hour	Same as Primary



U.S. Environmental Protection Agency

Particulate Matter

Proposal to Revise the National Ambient Air Quality Standards for Particulate Matter

December 20, 2005 ... EPA proposed revisions to its national ambient air quality standards (NAAQS) for fine particle pollution and for some coarse particles.



PM_{2.5}

PM_{2.5} Primary (Health-Related) 24-hour standard

- EPA proposal includes strengthening the 24-hour fine particle standard from the current level of 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 35 $\mu\text{g}/\text{m}^3$.
- EPA soliciting public comment on alternative levels for the 24-hour standard, between the range of 35 and 30 $\mu\text{g}/\text{m}^3$.
- Agency will take comment on: retaining the current level of the standard (of 65 $\mu\text{g}/\text{m}^3$), on levels as high as 65 $\mu\text{g}/\text{m}^3$ and as low as 25 $\mu\text{g}/\text{m}^3$; and on alternative approaches for selecting the level of the standard.



PM_{2.5} Primary (Health-Related) Annual Standard

- EPA proposing retention of standard at 15 $\mu\text{g}/\text{m}^3$.
- EPA considering and seeking public comment on the range of 15 $\mu\text{g}/\text{m}^3$ down to 13 $\mu\text{g}/\text{m}^3$.
- Also is soliciting public comment on an alternative level for the annual standard of 12 $\mu\text{g}/\text{m}^3$.



PM_{2.5} Secondary Standards

- EPA proposal sets secondary standards for both annual and 24-hour standards at levels identical to the primary standards.

- EPA taking comment ...
 - on need to set a separate PM_{2.5} standard, designed to address visibility (principally in urban areas),
 - on potential levels for that standard within a range of 20 to 30 $\mu\text{g}/\text{m}^3$, and
 - on averaging times for the standard within a range of 4 to 8 daylight hours.



Old EPA NAAQS...coarse particles

- EPA's current standards for coarse particles (PM10) were set in 1987.
- These standards – a 24-hour standard of 150 $\mu\text{g}/\text{m}^3$, and an annual standard of 50 $\mu\text{g}/\text{m}^3$ -- apply to particles 10 micrometers in diameter and smaller.

PM_{10-2.5}

Coarse particles

- EPA proposed definition change to cover only particles between 10 and 2.5 micrometers in diameter (PM_{10-2.5}), also known as “inhalable coarse particles.”
- Proposed new PM_{10-2.5} standard ... a 24-hour one, at 70 µg/m³.
- EPA not proposing an annual standard for PM_{10-2.5}.

PM 10-2.5

Coarse particles ... continued

- EPA would define PM10-2.5 to include only those coarse particles that come from sources such as high-density traffic on paved roads, industrial sources and construction activities – particles typically found in urban areas.
- Proposed standard would not cover situations where the coarse particles in the air come from sources such as windblown dust and soils, agricultural sources and mining sources.
- Under the proposal, the secondary 24-hour standard for PM10-2.5 would be identical to the primary standard.

PM Proposed Standards

Pollutant	Primary Stds.	Averaging Times	Secondary Stds.
Particulate Matter (PM_{10-2.5})	---	Annual	
	70 ug/m³	24-hour	Same as primary
Particulate Matter (PM_{2.5})	15.0 µg/m³	Annual	Same as Primary
	35 ug/m³	24-hour	

Status of Ozone Review

- CASAC meeting held Dec 6-8, 2005
 - Consultation on draft Staff Paper & health and environmental assessments
 - Review of 2nd draft CD
 - Written comments provided on CD
- Public comment period on Staff Paper & related analyses closed January 17, 2006
- CD has been revised by ORD/HQ and released on March 22
- Second draft Staff Paper and exposure, health risk, and environmental effects assessments being revised/updated
 - Targeting release in May 2006
 - Anticipate July 2006 CASAC meeting

Revised Ozone NAAQS

Current plans:

- 03/07 Proposal
- 12/07 Final

For your information.....

- <http://www.epa.gov/ttn/>
- <http://www.epa.gov/ttn/naaqs/>
- <http://www.epa.gov/ttn/naaqs/standards/pr>
- <http://www.epa.gov/ttn/naaqs/standards/oz>

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Current

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Proposed

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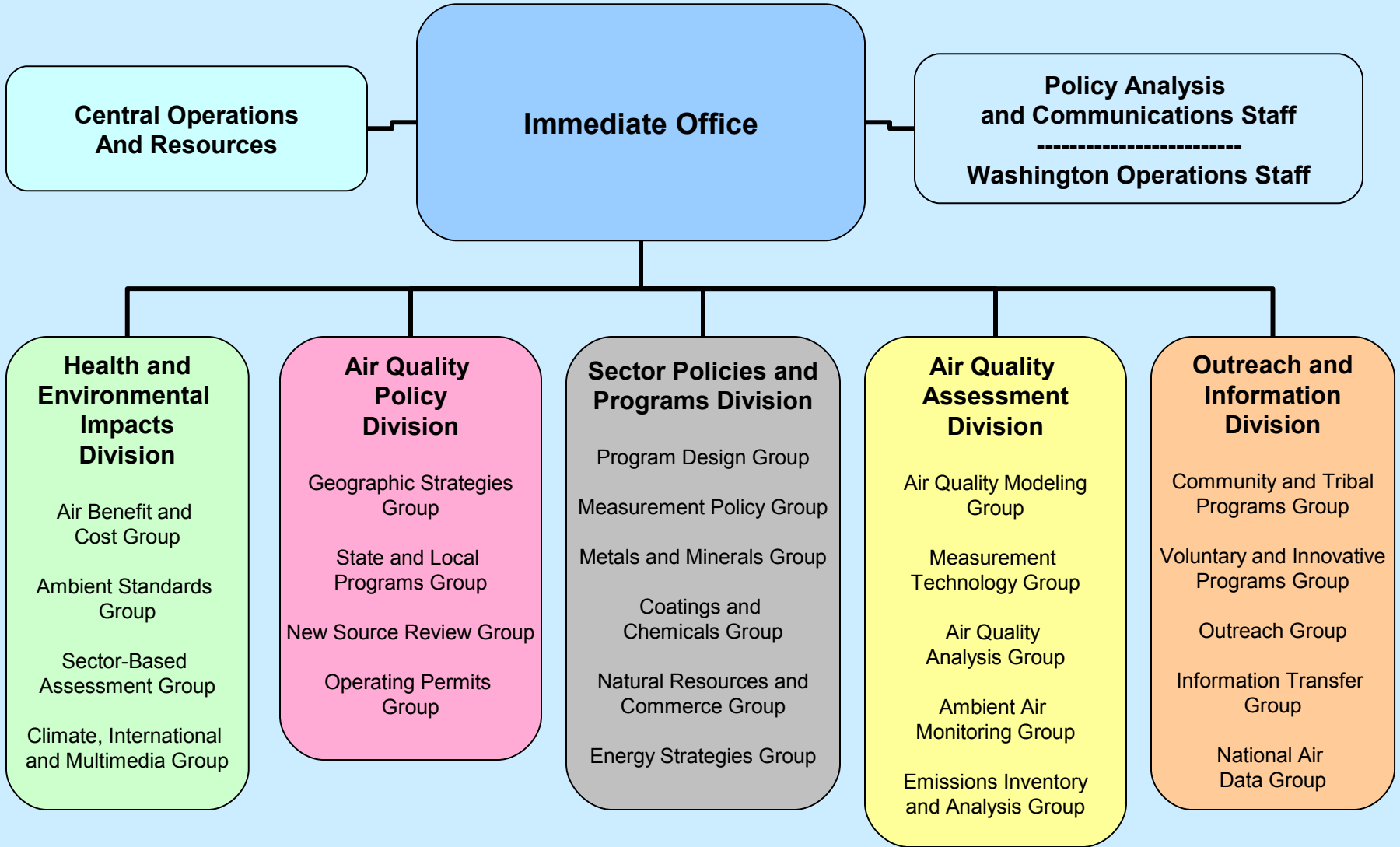
Rationale

fine particles

- for daily (24-hour) standard, administrator based his decision on large amount of evidence from new or updated studies of short-term health effects which show effects at levels below current standard (65 micrograms/m³)
- for annual, administrator focused on longer term health studies and increasing uncertainty in results (i.e. less certainty about negative long-term health effects) below levels of current standard (15 micrograms/m³)

Coarse particles

- absence of evidence on health effects from "rural" type particles (uncontaminated rural dusts and soils)
- overall limited number of health studies on coarse particles
- some evidence that short-term exposure to high concentrations of "contaminated" particles typical of urban areas may be associated with negative health impacts, leading to Administrator's decision to create a standard with a new indicator focusing on particles typical of urban areas



Ways to build health criteria in air quality regulations and enable health studies

- legislative mandate
- evaluate all relevant peer reviewed health and environmental effects studies
- conduct environmental, health, exposure, and risk assessments
- evaluate dosimetry, animal toxicology, human experimental, and epidemiology studies
- prepare the criteria document (CD), which is extensively and thoroughly reviewed by CASAC, other scientific experts, and members of public and industry interest groups
- the CD is finalized after considering these comments and recommendations by CASAC

How EPA uses science for regulatory decision making

Through the process of :

- evaluation of health and environmental effects studies in the CD
- extensive review before the CD is finalized
- conduct exposure and risk analyses for inclusion in the Staff Paper
- prepare staff paper to form the basis for staff recommendations for any action
- promulgate the standard or standards following extensive scientific and policy review and public involvement

**Fine Particles Can Be
Emitted Directly or Formed
in the Air from Gases**