

FACT SHEET
PROPOSAL TO REVISE THE NATIONAL AMBIENT AIR QUALITY STANDARDS
FOR PARTICULATE MATTER

ACTION

- To further improve public health across the country, the EPA Administrator signed on December 20, 2005 signed proposed revisions to its national air quality standards for fine particle pollution and for some coarse particles. Particle pollution also is known as particulate matter, or PM.
- The proposed revisions address two categories of particulate matter: *fine particles* (PM_{2.5}), which are 2.5 micrometers in diameter and smaller; and *inhalable coarse particles* (PM_{10-2.5}), which are smaller than 10 micrometers in diameter but larger than PM_{2.5}. EPA has had national air quality standards for fine particles since 1997 and for coarse particles 10 micrometers and smaller (PM₁₀) since 1987.
- EPA is proposing revisions and taking comment a range of standards concerning both PM 2.5 and PM 2.5-10. The proposal includes lowering the level of the 24-hour fine particle standard from the current level of 65 micrograms per cubic meter (µg/m³) to 35 µg/m³, retaining the level of the annual fine standard at 15µg/m³, and setting a new 24-hour standard for inhalable coarse particles at 70 µg/m³. The Agency also requests comment on other various other standards for fine and inhalable coarse PM including other levels for the fine particle standards, retaining the current annual and 24-hour standards for fine particulate matter and retaining the current or alternative PM₁₀ 24- hour standard.
- Many scientific studies have found an association between exposure to particulate matter and a series of significant health problems, including: aggravated asthma; chronic bronchitis; reduced lung function; irregular heartbeat; heart attack; and premature death in people with heart or lung disease. Particulate matter is also the main cause of visibility impairment in the nation's cities and national parks.
- For each category of particulate matter, the proposal includes two types of standards: primary standards, to protect public health; and secondary standards, to protect the public welfare such as crops, vegetation, wildlife, buildings and national monuments and visibility.
- In a separate but related action, EPA has proposed amendments to its national air quality monitoring requirements, including those for monitoring particulate matter. The changes will help EPA, states and local air quality agencies improve their measurement of air quality and will allow air quality regulators to take advantage of improvements in monitoring technology. The proposed changes include a design for a PM_{10-2.5} monitoring network.
- EPA must issue final standards by September 27, 2006. EPA has done an extensive review of thousands of scientific studies on the risks of fine and coarse particulate matter before making a final decision, the Agency will assess new peer-reviewed studies about particulate matter and health, including studies received during the public comment period.

- EPA will take public comment for 90 days following publication of the proposal in the Federal Register. The Agency also will hold three public hearings on this proposal in Chicago, Philadelphia and San Francisco. The dates and locations will be announced in a separate Federal Register notice.

THE PROPOSED STANDARDS

Fine particles

- EPA currently has two primary standards for fine particles: an annual standard, designed to protect against effects caused by short-term exposure (days or weeks) and longer-term exposure (seasons to years); and a 24-hour standard, designed to provide additional protection on days with high peak PM_{2.5} concentrations.

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

- EPA is proposing revisions and taking comment a range of options. The 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 is basing this proposal on an assessment of a significantly expanded body of scientific information. The assessment concluded that the standard should be strengthened to better protect the public from short-term fine particle exposures.
- EPA also is soliciting public comment on alternative levels for the 24-hour standard, between the range of 35 and 30 $\mu\text{g}/\text{m}^3$. In addition, the 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 is proposing to retain this standard at 15 $\mu\text{g}/\text{m}^3$ based on its assessment of several expanded, re-analyzed and new studies that have increased the Agency's confidence in associations between long-term PM_{2.5} exposure and serious health effects.
- EPA is considering and is seeking broad public comment on the range of 15 $\mu\text{g}/\text{m}^3$ down to 13 $\mu\text{g}/\text{m}^3$ which is the lower end of the range CASAC recommended. EPA 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

- The proposal would set the secondary standards for both the annual and 24-hour standards at levels identical to the primary standards.
- EPA also is taking comment on whether 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 four to eight daylight hours.

Coarse particles

- EPA's current standards for coarse particles (PM₁₀) were set in 1987. These standards – a 24-hour standard of 150 µg/m³, and an annual standard of 50 µg/m³ -- apply to particles 10 micrometers in diameter and smaller.
- The proposed revisions would change the definition of the standard so that it covers only particles between 10 and 2.5 micrometers in diameter (PM_{10-2.5}), also known as “inhalable coarse particles” in response to a 1999 U.S. Court of Appeals for the D.C. Circuit decision directing EPA to ensure that regulations for coarse particles did not duplicate regulation of fine particles.
- The proposed new PM_{10-2.5} standard would be a 24-hour standard set at 70 µg/m³. EPA is not proposing an annual standard for PM_{10-2.5}. Current scientific evidence does not show significant public health risks associated with long-term exposure to coarse particles.
 - EPA would further define PM_{10-2.5} to include only those coarse particles that come from sources such as high-density traffic on paved roads, industrial sources and construction activities – the kinds of coarse particles typically found in urban areas. Scientific studies indicate that PM_{10-2.5} health effects are associated with these kinds of coarse particles found in urban areas.
 - The 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. Evidence to date does not support a national air quality standard for these kinds of situations.
- Under the proposal, the secondary 24-hour standard for PM_{10-2.5} would be identical to the primary standard.

Status of current PM-10 standards

- EPA is proposing to revoke the current 24-hour PM₁₀ standards, except in areas that have 1) violating monitors; and 2) a population of 100,000 or more. These standards would remain in place in these areas until the Agency has completed attainment and nonattainment designations for PM_{10-2.5}.
 - EPA is taking comment on whether the 24-hour PM₁₀ standards should be retained in smaller areas (population less than 100,000) that are dominated by one or more large industrial sources.
- Current scientific evidence does not show significant public health risks associated with long-term exposure to coarse particles. In light of this lack of evidence, the Agency is proposing to immediately revoke the current annual PM₁₀ standards in all areas.
- EPA is also taking comment on whether it should: 1) retain the current PM₁₀ standard in place of the proposed PM_{10-2.5} standard or 2) not establish a coarse fraction PM standard at

this time pending the development of a coarse fraction monitoring network and further research on the health effects of coarse particles.

DETERMINING COMPLIANCE: THE FORM OF THE STANDARDS

- When EPA sets air quality standards, it also must specify the air quality statistics that the Agency will use to determine whether an area is meeting the standards. For each standard, these statistics are known as the “form of the standard.” EPA is proposing the following forms:

Fine particles - 24-hour standard

- An area would meet the 24-hour standard if the 98th percentile of 24-hour PM_{2.5} concentrations in a year, averaged over three years, is less than or equal to the level of the standard EPA sets in its final rule (35µg/m³ under this proposal). This is the same form as the current 24-hour standard.

Fine particles – annual standard

- An area would be in compliance with the annual PM_{2.5} standard when the three-year average of the annual average PM_{2.5} concentration is less than or equal to 15 µg/m³ (or whatever level of standard EPA sets in its final rule). This is the same form as the current annual standard.
- Current fine particle standards allow some areas to average measurements from multiple community-oriented monitors to determine compliance with the annual standard. The proposed revisions also would limit the conditions under which this averaging could take place. EPA also is seeking public comment on no longer allowing averaging measurements from multiple community monitors.

Inhalable coarse particles

- An area would meet the coarse particle standard if the 98th percentile of 24-hour PM_{10-2.5} concentrations in a year, averaged over three years, is less than or equal to the level set in the final rule (70µg/m³ in this proposal). This form will provide a more stable target for air pollution control programs by reducing the impact of unusual weather conditions, such as high wind events.

PARTICULATE MATTER AND PUBLIC HEALTH

Thousands of new studies on particulate matter have been published and peer-reviewed since EPA last reviewed the standards in 1997, and before the "cutoff date" for inclusion of new studies. (The cutoff date occurred when consideration of a new standard began in 2002). In addition, several studies used in the 1997 review have been extended and the data has been reanalyzed.

The majority of the studies assessed for the current review were published prior to 2003. EPA will review more recent studies that could be significant before the rule is finalized.

Effects associated with short-term exposure to high enough levels of fine PM_{2.5} include:

- Premature death in people with heart and lung disease
- Non-fatal heart attacks
- Increased hospital admissions, emergency room visits and doctor's visits for respiratory diseases
- Increased hospital admission and ER visits for cardiovascular diseases
- Increased respiratory symptoms such as coughing, wheezing and shortness of breath
- Lung function changes, especially in children and people with lung diseases such as asthma
- Changes in heart rate variability
- Arrhythmia (irregular heartbeat)
- Changes in subtle indicators of cardiovascular health, including levels of C-reactive protein and fibrinogen

Health effects associated with long-term exposure to high enough levels of fine PM include:

- Premature death in people with heart and lung diseases, including death from lung cancer
- Reduced lung function
- Development of chronic respiratory disease in children

Health effects associated with short-term exposure to high enough levels of coarse PM include:

- Increased hospital admissions for respiratory symptoms
- Decreased lung function
- Hospital admissions for heart disease
- Possibly premature death

Health effects associated with long-term exposure to high enough levels of coarse PM include:

Most available studies find no adverse health effects of long-term exposure to coarse PM.

TIMELINE FOR IMPLEMENTING THE STANDARDS

Two implementation schedules (one for PM_{2.5} and another for PM_{10-2.5}) would apply if EPA finalizes the proposed revisions in September 2006:

Fine particles (PM_{2.5})

- States would make recommendations by Nov. 2007 for areas to be designated attainment and nonattainment.
- EPA would make final designations by November 2009; those designations would become effective in April 2010.

- State Implementation Plans, outlining how states will reduce pollution to meet the standards, would be due three years after designations, in April 2013.
- States would have to meet the standards by April 2015.
- In some cases, a state could receive additional time to meet the standard (up to April 2020).

Inhalable coarse particles (PM_{10-2.5})

- EPA would not designate attainment and nonattainment areas until it has three consecutive years of monitoring data showing PM_{10-2.5} levels. The Agency anticipates that data will be available in 2012 (2009-2011 data).
- States would make recommendations in July 2012 for areas to be designated attainment and nonattainment.
- EPA would make final designations in May 2013; those designations would become effective in July 2013.
- State Implementation Plans would be due three years after designations, in July 2016.
- States would have to meet the standards by July 2018.
- In some cases, a state could receive additional time to meet the standard (up to July 2023).

BACKGROUND ON THE STANDARDS REVIEW

- The Clean Air Act directs EPA to set National Ambient Air Quality Standards for pollutants that the Agency has listed as “criteria pollutants,” based on their likelihood of causing adverse effects to public health and welfare. EPA sets national air quality standards for six common air pollutants: ground-level ozone (smog), carbon monoxide, lead, nitrogen dioxide, sulfur dioxide, and particulate matter.
- For each of these six pollutants, EPA has set health-based or "primary" standards to protect public health, and welfare-based or "secondary" standards to protect the public welfare from harm to crops, vegetation, wildlife, buildings and national monuments, and visibility.
- The Clean Air Act requires EPA to review the health and welfare-based standards once every five years to determine whether revisions to the standards are necessary to provide the appropriate levels of protection.
- EPA last revised the particulate matter standards in 1997. Under terms of a consent decree, EPA agreed to propose whether to revise the particulate matter standards by December 20, 2005; and committed to finalizing any revisions to the standards by September 27, 2006.
- The review of a standard begins with an assessment of science. EPA’s National Center for Environmental Assessment undertakes an extensive scientific and technical assessment process during the standard review for any pollutant. The first step in the process is the preparation of the Agency's "Air Quality Criteria Document," an extensive assessment of scientific data pertaining to the health and environmental effects associated with the pollutant under review.

- EPA's Office of Air Quality Planning and Standards then prepares a document (known as a "staff paper") that interprets the most relevant information in the "criteria document" and identifies: 1) factors EPA staff believes should be considered in the standard review; 2) uncertainties in the scientific data; and 3) ranges of alternative standards the staff believes should be considered. The "staff paper" is compiled by technical staff to assess the policy implications of the science. It represents the views of the staff and, in final form, is ultimately used as the basis for staff recommendations to the EPA Administrator.
- Drafts of both the "criteria document" and the "staff paper," which are based on thousands of peer-reviewed scientific studies, receive extensive review by representatives of the scientific community, industry, public interest groups and the public, as well as the Clean Air Scientific Advisory Committee (CASAC) -- a congressionally mandated group of independent scientific and technical experts.
- As part of its mandate, CASAC also makes recommendations to EPA on the adequacy of the existing standards and revisions it believes would be appropriate. Based on the scientific assessments and taking into account the recommendations of CASAC and public comments, the EPA Administrator must judge whether it is appropriate to propose revisions to the standards.
- EPA undertakes an extensive public review and comment process, considering and analyzing issues raised in public comments before announcing a final decision. As with every proposed and final rule, all other relevant federal agencies are given the opportunity to participate in the process.
- In setting the standards, the EPA Administrator must set the primary standards at levels "requisite to protect the public health with an adequate margin of safety" and establish secondary standards that "protect public welfare," which the Clean Air Act defines as including environmental effects such as visibility impairment, damage to crops and ecosystems, deterioration of manmade materials, among others. The Clean Air Act bars the Administrator from considering costs when setting the standards. The U.S. Supreme Court upheld this requirement in a 2001 decision.

FOR MORE INFORMATION

- Interested parties can download the notice from EPA's web site on the Internet at: <http://epa.gov/particles/actions.html>
- Today's proposed action and other background information are also available either electronically at www.regulations.gov, the federal government's docket management system, or in hard copy at EPA West, U.S. EPA (6102T), 1301 Constitution Avenue, NW, Washington, DC 20460. (Docket ID No. OAR-2001-0017). The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Air and Radiation Docket and Information Center is (202) 566-1742.

- **HOW TO COMMENT:** Comments will be accepted for 90 days beginning when this proposal is published in the Federal Register. All comments should be identified by Docket ID No. OAR-2001-0017 and submitted by one of the following methods:
 - Federal e-rulemaking portal;
 - www.regulations.gov;
 - E-mail (a-and-r-docket@epa.gov);
 - Facsimile (202) 566-1741;
 - Mail (Air and Radiation Docket and Information Center, Environmental Protection Agency, Mailcode: 6102T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460); or
 - Hand delivery (Air and Radiation Docket and Information Center, Environmental Protection Agency, Room B102, 1301 Constitution Avenue, NW, Washington, DC).