

FINAL STAFF PAPER FOR PARTICULATE MATTER

FACT SHEET

OVERVIEW

- On June 30, 2005, the Environmental Protection Agency (EPA) released its staff's assessment of the policy implications of the latest scientific and technical information about particulate matter, also called "PM" or "particle pollution." The final staff paper for particulate matter is posted at http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_cr_sp.html
- The document, known as a "staff paper," is part of EPA's regular review of its National Ambient Air Quality Standards for particulate matter. The assessment, conclusions, and recommendations are staff judgments and they do not represent Agency decisions on the PM standards.
- The staff paper concludes that the latest scientific, health and technical information about particle pollution supports improving EPA's current health-based standards for fine particles. It also recommends two approaches for establishing more protective fine particle standards.
- The staff paper also recommends that EPA replace the current PM₁₀ standards with a new health-based standard for particles known as "thoracic coarse" particles – particles between 2.5 and 10 micrometers in diameter that can reach deep parts of people's lungs. Staff also recommends such a standard focus on coarse particles generally present in urban environments, which are more toxic. This recommendation reflects the latest science about particle pollution.
- In addition to health protective standards, the Agency sets "secondary" standards to protect against ecological and other "welfare" effects of air pollution. The staff paper recommends revising the secondary standards for PM_{2.5} to provide increased and more targeted protection primarily in urban areas from visibility impairment related to fine particles.
- The staff paper is based on the Agency's "criteria document" for particulate matter which was issued in final form in October 2004. The criteria document, prepared by EPA's Office of Research and Development, is a compilation and evaluation of the latest scientific knowledge useful in assessing the health and welfare effects of particulate matter pollution.
- Previous draft versions of the staff paper have been reviewed by the scientific community, industry, public interest groups, the general public, and the Clean Air Scientific Advisory Committee (CASAC). The most recent draft, completed in January 2005, was reviewed and discussed in public meetings of the CASAC in April and May.
- Earlier this month, the Clean Air Scientific Advisory Committee (CASAC) issued a letter to the administrator providing comments on the staff paper, as well as independent recommendations about improving EPA's particle pollution standards. Those recommendations were similar to those in the final staff paper. The CASAC's letter is

available at <http://www.epa.gov/sab/pdf/casac-05-007.pdf>

- The staff paper will be transmitted to EPA's Administrator, who is charged by law with deciding whether the particulate matter standards should be changed. The Administrator will consider the information in the Staff Paper, the CASAC letter, as well as public comments in reaching decisions regarding this standard review.
- Under a consent agreement with nine environmental groups, the Administrator must issue a proposal regarding the particulate matter standards by December 20, 2005, and a final rule by September 27, 2006. That rule may, or may not, include revisions to the standards.

KEY ELEMENTS OF THE PM STAFF PAPER

- The staff paper addresses both fine particles (those 2.5 micrometers in diameter and smaller) and thoracic or the "inhalable" portion of coarse particles (those between 2.5 and 10 micrometers in diameter). Particle standards are expressed in "micrograms per cubic meter air," which is a measure of particles found in the air.
- The staff paper also addresses both primary and secondary standards. *Primary standards* are designed to protect public health with an adequate margin of safety; *secondary standards* are designed to protect against "welfare effects" including ecological damage, visibility impairment (haze), and damage to materials.
- The staff paper includes the following staff judgments and conclusions about the existing particulate matter standards for fine and coarse particles:

Fine particles – primary standards

- ▶ PM_{2.5} should continue to be used as the indicator for fine particles.
- ▶ Consideration should be given to revising the current PM_{2.5} primary standards to provide increased public health protection from the effects of both long- and short-term exposures to fine particles in the ambient air. Staff provides two alternative approaches to establishing more protective suites of daily and annual PM_{2.5} standards.
 - Retain annual standard at 15 $\mu\text{g}/\text{m}^3$, together with a revised 24-hour PM_{2.5} standard in the range of 35 to 25 $\mu\text{g}/\text{m}^3$ (based a 98th percentile form for a standard set at the middle to lower end of this range, or a 99th percentile form for a standard set at the middle to upper end of this range)
 - OR
 - Revise annual PM_{2.5} standard, within the range of 14 to 12 $\mu\text{g}/\text{m}^3$, together with a revised 24-hour PM_{2.5} standard in the range of 30 to 40 $\mu\text{g}/\text{m}^3$, with either the annual or the 24-hour standard, or both, at the middle to lower end of these ranges

Coarse particles – primary standards

- ▶ The current primary PM₁₀ standards should be revised by replacing the PM₁₀ indicator with an indicator of thoracic coarse particles generally found in urban areas that does not generally include fine particles. The recommended indicator includes particles larger than 2.5 micrometers but smaller than 10 micrometers, (PM_{10-2.5}), with a focus on coarse particles that are generally present in urban environments, expressed as UPM_{10-2.5}.
- ▶ Staff recommends consideration of a 24-hour UPM_{10-2.5} standard with a level in the range of approximately 50 to 70 $\mu\text{g}/\text{m}^3$, 98th percentile form, or approximately 60 to 85 $\mu\text{g}/\text{m}^3$, 99th percentile form. The lower end reflects a more precautionary interpretation of the health effects information, while the upper end would provide protection that is approximately equivalent to that provided by the current PM₁₀ standards.

Secondary standards

- ▶ For secondary standards, staff recommends that consideration be given to revising the current suite of secondary PM_{2.5} standards to provide increased and more targeted protection primarily in urban areas from visibility impairment related to fine particles.
- ▶ Staff recommends consideration of a 4- to 8-hour PM_{2.5} standard within the range of 30 to 20 $\mu\text{g}/\text{m}^3$, depending on the form of the standard. Staff also recommends consideration of a percentile-based form for such a standard, focusing on a range from the 92th to the 98th percentile of the annual distribution of daily short-term PM_{2.5} concentrations, averaged over 3 years.

NEXT STEPS

- The Clean Air Scientific Advisory Committee intends to provide further advice to the EPA Administrator on a potential standard for inhalable coarse particles in another letter to be sent later this summer following their consideration of this issue in the final staff paper.
- Under terms of a consent decree, EPA will issue a proposal regarding the particulate matter standards review by December 20, 2005; and a final notice by September 27, 2006.

ABOUT AIR QUALITY STANDARD REVIEWS

- The Clean Air Act requires EPA to set national air quality standards for particulate matter and five other pollutants considered harmful to public health and the environment (the other pollutants are ozone, nitrogen oxides, carbon monoxide, sulfur dioxide and lead).
- The law also requires EPA to periodically review the standards to ensure that they provide adequate health and environmental protection, and to update those standards as necessary.

- Such a review is a lengthy undertaking. First, EPA's Office of Research and Development develops a "criteria document" a compilation and evaluation of the latest scientific knowledge useful in assessing the health and welfare effects of the air pollutant. In developing this document, EPA must consider the advice of the Clean Air Scientific Advisory Committee (CASAC).
- Based on the criteria document, EPA also develops a "staff paper" that helps translate the science into terms that can be used for making policy decisions. The staff paper, prepared by staff in EPA's Office of Air Quality Planning & Standards, includes recommendations to the EPA Administrator about any revisions to the standards needed to ensure that they protect public health with an adequate margin of safety, and that they protect the environment and the public welfare.
- Before either the criteria document or staff paper can be used as the basis for any policy decisions, they undergo rigorous review by the scientific community, industry, public interest groups, the general public and CASAC.
- Based on the scientific assessments in the criteria document and on the information and recommendations in the staff paper, the EPA Administrator determines whether it is appropriate to propose revisions to the standards.

BACKGROUND -- 1997 REVISIONS TO PARTICULATE MATTER STANDARDS

- The nation's air quality standards for particulate matter were first established in 1971 and were not significantly revised until 1987, when EPA changed the indicator of the standards to regulate inhalable particles smaller than, or equal to, 10 micrometers in diameter (that's about 1/4 the size of a single grain of table salt).
- Ten years later, after a lengthy review, EPA revised the PM standards, setting separate standards for fine particles (PM_{2.5}) based on their link to serious health problems ranging from increased symptoms, hospital admissions and emergency room visits for people with heart and lung disease, to premature death in people with heart or lung disease.
- The 1997 standards also retained but slightly revised standards for PM₁₀ which were intended to regulate "inhalable coarse particles" that ranged from 2.5 to 10 micrometers in diameter. PM₁₀ measurements, however, contain both fine and coarse particles.
- A number of groups, including the American Trucking Association, sued EPA over the revised standards for particulate matter and the Agency's revised ozone standards. In May 1999, a panel of the U.S. Court of Appeals for the D.C. Circuit, in a split decision, held that the Clean Air Act – as applied in setting the new public health air quality standards for ozone and particulate matter – was unconstitutional as an improper delegation of legislative

authority to EPA.

- The Court of Appeals left the ozone and fine particle standards in place but ruled that EPA could not enforce them. However, the Court vacated the revisions to the PM₁₀ standards, concluding that PM₁₀ is not a good way to measure coarse particles because it includes fine particles.
- EPA appealed the Court's decision on the constitutional issues to the U.S. Supreme Court. In a landmark decision February 2001, the Supreme Court upheld EPA's authority to set national air quality standards that protect millions of people from the harmful effects of air pollution.
- The Supreme Court also affirmed that the Clean Air Act does not allow EPA to consider cost when setting national ambient air quality standards, but requires EPA to set those air quality standards at levels necessary to protect the public health with an adequate margin of safety and to protect public welfare from adverse effects.
- EPA did not appeal the Court of Appeals decision on the coarse particle standards. The Agency is addressing those standards as part of its current PM standards review.
- In March 2002, following the Supreme Court decision on the constitutional issues, the Court of Appeals rejected all remaining challenges to the 1997 standards. Thus, EPA is now moving forward to implement those standards to protect public health and welfare in a timely manner.