

SUMMARY OF PROPOSED IMPROVEMENTS TO THE AIR QUALITY STANDARDS FOR PARTICLE POLLUTION AND UPDATES TO THE AIR QUALITY INDEX (AQI)

On June 14, 2012, U.S. Environmental Protection Agency (EPA) [proposed to strengthen](#) the nation's air quality standards for fine particle pollution to improve public health and visibility. Exposure to particle pollution causes premature death and is linked to a variety of significant health problems. Particle pollution also harms public welfare, including causing haze in cities and some of our nation's most treasured national parks.

EPA has issued a number of rules that will help states meet the proposed revised standards by making significant strides toward reducing fine particle pollution.

THE PROPOSED STANDARDS

- The Clean Air Act requires EPA to set two types of outdoor air quality standards: *primary standards*, to protect public health, and *secondary standards*, to protect the public against adverse environmental effects. The law requires that primary standards be “requisite to protect public health with an adequate margin of safety,” including the health of sensitive groups of people, such as people with heart or lung disease, children and older adults. Secondary standards must be “requisite to protect the public welfare” from both known and anticipated adverse effects.
- When EPA sets air quality standards, it also must specify the air quality statistics the agency will use to determine whether an area meets the standards. These statistics are known as the “form” of the standard.

Primary (Health) Standards for Fine Particles:

- EPA sets both an annual and a 24-hour standard for PM_{2.5}. These standards work together to protect public health from [harmful health effects](#) from both long- and short-term fine particle exposures.
- **Annual standard:** The annual fine particle standard is designed to protect against health effects associated with both long- and short- term exposure to PM_{2.5}. The current annual standard has been in place since 1997.
 - **EPA is proposing that the current fine particle standards are not adequate** to protect public health as required by law.
 - **The agency is proposing to strengthen the annual fine particle standard** by lowering the level – from the current level of 15.0 µg/m³ to a level within the

range of 12.0 $\mu\text{g}/\text{m}^3$ to 13.0 $\mu\text{g}/\text{m}^3$. An area would meet the standard if the three-year average of its annual average $\text{PM}_{2.5}$ concentration is less than or equal to the level of the final standard.

- In proposing a range, as part of EPA's commitment to transparent, open government, the agency will seek and encourage public input in setting this standard that provides critical health protection to millions of Americans.
 - EPA also is seeking comment on alternative levels of the annual standard, down to 11.0 $\mu\text{g}/\text{m}^3$.
- **24-hour standard:** The 24-hour primary standard is designed to provide supplemental health protection against short-term fine particle exposures, particularly in areas with high peak $\text{PM}_{2.5}$ concentrations. The current 24-hour standard was issued in 2006.
 - **EPA is proposing to retain the existing level of the 24-hour standard, at 35 $\mu\text{g}/\text{m}^3$** , along with the current form of the standard. An area would meet the 24-hour standard if the 98th percentile of 24-hour $\text{PM}_{2.5}$ concentrations in one year, averaged over three years, is less than or equal to 35 $\mu\text{g}/\text{m}^3$.

Primary (Health) Standard for Coarse Particles

- EPA is proposing to retain the existing 24-hour primary standard for coarse particles (PM_{10}), which is 150 $\mu\text{g}/\text{m}^3$. An area meets the 24-hour PM_{10} standards if it does not exceed the 150 $\mu\text{g}/\text{m}^3$ level more than once per year on average over a three-year period.
- The existing coarse particle standard has been in place since 1987.

Secondary Standards for Particle Pollution:

- Particle pollution causes haze in cities and some of the country's most treasured national parks. In addition, particles such as nitrates and sulfates contribute to acid rain formation which makes lakes, rivers, and streams unsuitable for many fish. Acid rain also erodes buildings, historical monuments, and paint on cars. Particle pollution also can affect the climate by absorbing or reflecting sunlight, contributing to cloud formation and influencing rainfall patterns.
- EPA's current secondary standards for particle pollution are identical to the primary standards for $\text{PM}_{2.5}$ and PM_{10} . After reviewing the science on particle pollution and haze, analysis by EPA experts and advice from the agency's independent science advisors, the Clean Air Scientific Advisory Committee (CASAC), EPA is proposing that the current secondary standards are not adequate for visibility protection.

- ***EPA is proposing to add a separate 24-hour secondary standard for fine particles*** to protect visibility in urban areas. This standard would be measured in “deciviews,” similar to what is used in the agency’s Regional Haze Program. A deciview is a yardstick for measuring visibility: the higher the deciview level, the hazier the air appears.
- EPA is proposing two alternative levels for the visibility standard: 30 deciviews and 28 deciviews. To determine whether an area meets this standard, EPA would calculate a “visibility index” value, using data from fine particles samples that have been analyzed to determine their chemical composition, along with information on relative humidity. An area would meet the visibility standard if the 90th percentile of 24-hour visibility index values in one year, averaged over three years, is less than or equal to the level of the standard.
 - The agency also is seeking comment on alternative levels for a visibility index to address haze, down to 25 deciviews, along with comment on alternative averaging times (such as four hours).
- ***EPA also is proposing to retain the existing secondary standards*** for PM_{2.5} and PM₁₀ to provide protection against other effects, such as ecological effects, effects on materials, and climate impacts.
- EPA reviewed thousands of studies as part of this review of the standards, including hundreds of new studies published since EPA completed the last review in 2006. The new evidence includes more than 300 new epidemiological studies, many of which report adverse health effects even in areas that meet the current PM_{2.5} standards. EPA also considered analyses by agency experts and input from CASAC.

PROPOSED REVISIONS TO THE AIR QUALITY INDEX

- EPA is proposing updates to the Air Quality Index (AQI) for fine particle pollution (PM_{2.5}). The AQI is EPA’s color-coded tool for telling the public how clean or polluted the air is, and steps they can take to reduce their daily exposure to pollution.
- The AQI converts concentrations for fine particles to a number on a scale from 0 to 500. EPA is proposing to change the upper end of the range for the “Good” AQI category (an index value of 50) by setting it at the level of the annual PM_{2.5} standard.
- EPA also is proposing to set the 100 value of the index at the level of the current 24-hour PM_{2.5} standard, which is 35 µg/m³. An AQI of 100 is the upper end of the “Moderate” range, and the level above which EPA begins cautioning at-risk groups. The proposal would set the

upper end of the “Unhealthy for Sensitive Groups” range (AQI of 150) at 55 ug/m³, based on scientific evidence on PM2.5 exposures and health.

- EPA is proposing to retain the existing level of 500 ug/m³ for the upper end of the “Hazardous” category (AQI of 500). The agency also is proposing to retain the existing levels of 150 ug/m³ and 250 ug/m³ for the upper ends of the “Unhealthy” (AQI of 200) and “Very Unhealthy” (AQI of 300) categories.
- The proposed AQI breakpoints are outlined in the table below:

AQI Category	Index Values	Existing Breakpoints (1999 AQI) (µg/m ³ , 24-hour average)	Proposed Breakpoints (µg/m ³ , 24-hour average) <i>Note: Parentheses indicate a range</i>
Good	0 - 50	0.0 - 15.0	0.0 – (12.0 - 13.0)
Moderate	51 - 100	>15.0 - 40	(12.1 - 13.1) – 35.4
Unhealthy for Sensitive Groups	101 – 150	>40 – 65	35.5 – 55.4
Unhealthy	151 – 200	> 65 – 150	55.5 – 150.4
Very Unhealthy	201 – 300	> 150 – 250	150.5 – 250.4
Hazardous	301 – 400	> 250 – 350	250.5 – 350.4
	401 – 500	> 350 – 500	350.5 – 500

BACKGROUND

- EPA has regulated particle pollution since 1971. The agency has revised the standards three times -- in 1987, 1997 and 2006 – to ensure they continue to protect public health and welfare. A [table of historical PM standards](http://www.epa.gov/ttn/naqs/standards/pm/s_pm_history.html) is available at http://www.epa.gov/ttn/naqs/standards/pm/s_pm_history.html)
- The Clean Air Act requires EPA to review national air quality standards every five years to determine whether they should be retained or revised.
- The proposed revisions to the PM standards are a result of that regularly scheduled review. EPA proposed the standards June 14, 2012 under a court-ordered deadline.

- In February 2012, the American Lung Association and the National Parks Conservation Association sued EPA for not completing the review of the standards within five years -- by October 2011. The states of California, Connecticut, Delaware, Maryland, Massachusetts, New Mexico, New York, Oregon, Rhode Island, Vermont and Washington filed a separate suit.
- In June 2012, a federal judge issued a preliminary injunction ordering EPA to issue a proposal by June 14, 2012.
- EPA and the litigants in the deadline lawsuit have agreed to a proposed consent decree that would require EPA to issue final standards by Dec. 14, 2012.
- The proposed revisions to the PM standards also respond to a court remand of a portion of the existing PM_{2.5} standards, which were issued in 2006.
 - In February 2009, the U.S. Court of Appeals for the D.C. Circuit remanded the primary annual PM_{2.5} standard and the secondary PM_{2.5} standards to the Agency.
 - For the primary annual standard, the Court concluded that EPA had failed to adequately explain how the standard was sufficient to protect the public health with an adequate margin of safety, as the Clean Air Act requires.
 - For the secondary standard, the Court said EPA had failed to adequately explain why the secondary standards provided the required protection from visibility impairment. The Court also said EPA had failed to identify a target level of visibility impairment that would be requisite to protect public welfare
 - The Court upheld EPA's decisions on the PM₁₀ standards.
 - EPA's decisions on the 24-hour primary PM_{2.5} standards were not challenged.

FOR MORE INFORMATION:

- To read the proposal, visit <http://www.epa.gov/airquality/particlepollution/actions.html>
- For technical documents related to this review of the standards, visit http://www.epa.gov/ttn/naqs/standards/pm/s_pm_index.html