



## Final Rule to Strengthen the National Air Quality Health Standard for Particulate Matter

### Fact Sheet

- On February 7, 2024, the U.S. Environmental Protection Agency (EPA) announced a final rule to strengthen the nation's National Ambient Air Quality Standards (NAAQS) for fine particle pollution, also known as fine particulate matter (PM<sub>2.5</sub>) or soot.
  - EPA is setting the level of the primary (health-based) annual PM<sub>2.5</sub> standard at 9.0 micrograms per cubic meter (µg/m<sup>3</sup>) to reflect new science on harms caused by particle pollution.

### Key Information:

- **Critical for public health:** Strengthened standards will result in significant public health net benefits that could be as high as \$46 billion in 2032. Health benefits will include up to 4,500 avoided premature deaths, 800,000 avoided cases of asthma symptoms, and 290,000 avoided lost workdays (in 2032).
- **Clean air and economic growth go hand in hand:** America needs healthy workers and families to continue growing a more productive, innovative economy. This action will further the nation's trajectory of reducing air pollution while advancing the economy and improving quality of life.
- **EPA will support states and Tribes in implementing the new clean air standard,** building on successful implementation of prior rules to strengthen standards for this pollution.
- **Existing national clean air rules will help states meet this stronger standard.** Federal clean air rules and investments will help states meet this stronger standard. Funding from President Biden's Bipartisan Infrastructure Law and

### EPA's Commitment to Environmental Justice

- PM<sub>2.5</sub> is a pollutant of great concern to those with asthma or lung disease and already overburdened and vulnerable communities, including many communities of color, and low-income communities throughout the United States.
- Many communities with environmental justice concerns face cumulative impacts from an array of environmental and other threats to their health.
- EPA conducted an at-risk analysis showing that in general, more stringent PM standards are expected to strengthen health protection for all exposed communities and to mitigate both PM<sub>2.5</sub> exposure and mortality risk disparities across various demographic groups, including those in vulnerable and overburdened communities.
- Along with strengthening the primary annual PM<sub>2.5</sub> standard, EPA is modifying the PM<sub>2.5</sub> monitoring network design criteria to include a factor that accounts for proximity of populations at increased risk of PM<sub>2.5</sub>-related health effects to sources of air pollution. This will advance environmental justice by ensuring localized data collection in overburdened areas to inform future NAAQS reviews.

Inflation Reduction Act, as well as implementation of EPA rules aimed at major pollution sources, will help states reduce particle pollution in areas in need of air quality improvements.

Action:

- Scientific evidence shows that long- and short-term exposures to PM<sub>2.5</sub> can harm people's health, leading to heart attacks, asthma attacks, and premature death. Large segments of the U.S. population, including children and older adults, people with heart or lung conditions, communities of color, and low socioeconomic status populations, are at elevated risk of adverse health effects from PM<sub>2.5</sub>.
- EPA sets two types of NAAQS: health-based standards, called "primary standards," and standards to protect public welfare, called "secondary standards."
- In this action:
  - **EPA is revising the level of the primary (health-based) annual PM<sub>2.5</sub> standard from 12.0 micrograms per cubic meter (µg/m<sup>3</sup>) to 9.0 µg/m<sup>3</sup>**, based on scientific evidence that shows the current standard does not protect public health with an adequate margin of safety, as required by the Clean Air Act (CAA).
  - **EPA is retaining the primary 24-hour PM<sub>2.5</sub> standard at the level of 35 µg/m<sup>3</sup>**. The EPA Administrator concluded that the revised annual standard together with the current 24-hour standard will protect public health with an adequate margin of safety.
  - **EPA is retaining the primary (health-based) 24-hour PM<sub>10</sub> standard**, which provides public health protection against exposures to coarse particles. The EPA Administrator concluded that the current evidence does not call into question the adequacy of that standard.
- **EPA is not changing the current secondary (welfare-based) standards for both PM<sub>2.5</sub> and PM<sub>10</sub> at this time.** The EPA Administrator concluded that the available scientific evidence and information do not call into question the adequacy of protection provided by the current secondary PM standards for non-ecological effects (i.e., visibility, climate, and material effects) at this time. EPA is reviewing the ecological effects of PM in a separate action.
- The Clean Air Act directs EPA to set the primary NAAQS at a level that protects public health, including the health of sensitive or at-risk groups, with an adequate margin of

safety. EPA reviewed the available information regarding health effects among at-risk populations, which included information available for how particle pollution impacts various communities particularly affected by this pollution, such as children, older adults, people with asthma, people with heart and other respiratory problems, and communities of color and low socioeconomic status populations.

- In developing this final rule, EPA considered the thousands of studies in the 2019 PM Integrated Science Assessment (ISA) and the Supplement to the 2019 PM ISA, both of which were made available for public comment and expert review. The studies support a causal relationship between long- and short-term exposures to PM<sub>2.5</sub> and cardiovascular effects, respiratory effects, nervous system effects, and cancer. Recent epidemiologic studies assessed in the 2019 ISA and 2022 ISA Supplement support associations between exposure and adverse health effects at levels below the current primary annual PM<sub>2.5</sub> standard level.
- EPA also considered the recommendations of the Clean Air Scientific Advisory Committee (CASAC), who provided consensus advice in their review of the 2021 draft Policy Assessment on the need to revise the level of the primary annual PM<sub>2.5</sub> standard to a level below the current standard to provide additional protection from PM<sub>2.5</sub>-related health effects.
- EPA also considered public comments on the proposal. We received nearly 700,000 written public comments on the proposal and heard from more than 300 members of the public during a multi-day virtual public hearing.
- By law, EPA cannot consider costs in setting or revising NAAQS. However, to inform the public, EPA analyzes the benefits and costs of implementing the standards as required by Executive Orders 14094, 12866 and 13563 and guidance from the White House Office of Management and Budget.
  - The revised primary annual PM<sub>2.5</sub> standard will result in significant public health net benefits that could be as high as \$46 billion in 2032 for standard levels of 9.0/35 µg/m<sup>3</sup>.
  - The revised primary annual PM<sub>2.5</sub> standard could result in as many as 4,500 avoided premature deaths and 290,000 avoided lost workdays in 2032.
  - The costs of controls applied toward this standard were estimated to be \$590 million in 2032.

- EPA is also finalizing revisions to other key aspects related to the PM NAAQS, including revisions to the ambient monitoring requirements for PM to focus on at-risk communities—to include communities with environmental justice concerns—and the Air Quality Index (AQI).
  - To enhance monitoring and protection of air quality in communities at increased risk of adverse health effects from PM<sub>2.5</sub> exposures, EPA is modifying the PM<sub>2.5</sub> monitoring network design criteria to direct state and Tribal monitoring agencies to consider the proximity of populations at increased risk of PM<sub>2.5</sub>-related health effects to air pollution sources of concern when siting monitors. This new design criteria will result in improved data collection in overburdened areas to inform future NAAQS reviews.
  - EPA is also finalizing revisions to data calculations and other ambient air monitoring requirements for PM to improve the quality of data used in regulatory decision-making and better characterize air quality in communities that are at increased risk of adverse health effects from PM<sub>2.5</sub> exposure.
  - EPA is changing some breakpoints in the PM<sub>2.5</sub> Air Quality Index (AQI) to reflect the revised level of the primary annual PM<sub>2.5</sub> standard and reflect recent health science on PM<sub>2.5</sub>. This update means that the public will be notified of the need to consider behavioral changes at lower levels of PM<sub>2.5</sub>, consistent with current scientific evidence.

#### Implementation:

- Improving air quality and implementing the revised primary annual PM<sub>2.5</sub> NAAQS is a partnership between the federal government, states, and Tribes.
- EPA will support states and Tribes in implementing the new clean air standard. EPA expects that 99% of U.S. counties will be able to meet the revised PM<sub>2.5</sub> annual standard with actions already in place as of 2032 – likely the earliest possible year that states would need to demonstrate attainment of the standards, because the planning process occurs over multiple years -- and other federal actions coming soon will drive further progress. EPA is providing new tools to help air agencies evaluate and exclude data associated with exceptional events related to smoke from wildfires.
- EPA and the states have multiple existing and planned pollution control programs that are expected to continue driving down PM levels across the country and make meeting the strengthened standard easier to achieve and maintain. Building on this trajectory, recent

and forthcoming EPA rules across the power sector, industrial sources, and transportation will drive additional PM reductions, as will continued deployment of funding from the Bipartisan Infrastructure Law and Inflation Reduction Act.

- The effective date of this final action is 60 days following publication of the notice of final rulemaking in the Federal Register, and the earliest that states would likely need to come into attainment is 2032. In accordance with the CAA, the Agency will determine which areas of the country meet the standards, i.e., make initial attainment/nonattainment designations. EPA generally makes designations within 2 years after new standards are issued. EPA will work closely with states throughout the designations process and there will be opportunity for public comment.
- States must develop and submit attainment plans for areas designated nonattainment for the revised primary annual PM<sub>2.5</sub> NAAQS no later than 18 months after EPA finalizes designations. For areas in moderate nonattainment, these plans must provide for attainment as expeditiously as practicable but no later than the end of the 6th calendar year after nonattainment designations. Areas with more severe levels of nonattainment have longer periods to achieve attainment of the new standards.

#### Background:

- Particle pollution includes fine particles (PM<sub>2.5</sub>), which are 2.5 micrometers in diameter and smaller, and coarse particles (PM<sub>10</sub>), which have diameters between 2.5 and 10 micrometers. Fine particles can be emitted directly from a variety of sources, including vehicles, smokestacks, and fires. They also form when gases emitted by power plants, industrial processes, and gasoline and diesel engines react in the atmosphere. Coarse particles include road dust that is kicked up by traffic, some agricultural operations, construction and demolition operations, industrial processes, and biomass burning.
- The Clean Air Act requires EPA to set two types of National Ambient Air Quality Standards (NAAQS) for particle pollution: *primary standards* to protect public health, and *secondary standards* to protect public welfare.
  - 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. For PM, the annual and 24-hour PM<sub>2.5</sub> standards work together to protect the public from harmful health effects from both long- and short-term fine particle exposures.

Scientific evidence suggests that people with heart or lung disease, children and older adults, and communities of color and low socioeconomic status populations are at particular risk of PM-related adverse health effects.

- Secondary standards must be “requisite to protect the public welfare” from both known and anticipated effects. For this reconsideration, EPA considered adverse PM-related visibility, climate, and materials impacts. 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 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 is considering other welfare effects of PM – such as ecological effects related to the deposition of nitrogen- and sulfur-containing compounds in vulnerable ecosystems – in the separate, ongoing review of the secondary NAAQS for oxides of nitrogen, oxides of sulfur and PM.
- The Clean Air Act requires EPA to review the NAAQS every five years to determine whether they should be retained or revised. The PM NAAQS were last revised in 2012.
- The final primary (health-based) and secondary (welfare-based) standards for PM<sub>2.5</sub> and PM<sub>10</sub> are as follows:

New Standards				
Indicator	Averaging Time	Primary/Secondary	Level	Form
PM <sub>2.5</sub>	Annual	Primary	9.0 µg/m <sup>3</sup>	Annual arithmetic mean, averaged over 3 years
		Secondary	15.0 µg/m <sup>3</sup>	
	24-hour	Primary and Secondary	35 µg/m <sup>3</sup>	98th percentile, averaged over 3 years
PM <sub>10</sub>	24-hour	Primary and Secondary	150 µg/m <sup>3</sup>	Not to be exceeded more than once per year on average over a 3-year period

For More Information:

- For more information on particle pollution and to read the final action, visit [PM Pollution](#).
- For technical documents related to this review of the standards, visit [Reviewing NAAQS: Particulate Matter Air Quality Standards](#).
- EPA has regulated particle pollution since 1971. The agency has revised the standards four times -- in 1987, 1997, 2006 and 2012 – to ensure they continue to protect public health and welfare. A table of historical PM standards is available at [Timeline of Particulate Matter National Ambient Air Quality Standards](#).
- For more information on implementation, read the [Implementation Fact Sheet](#).