

Guidance for Determining Boundaries of 24-hour Fine Particle Attainment and Nonattainment Areas

FACT SHEET

ACTION

- On June 8, 2007, the Environmental Protection Agency (EPA) issued guidance for states and tribes to use in identifying areas that meet or do not meet EPA's recently revised national air quality standards for fine particle (PM_{2.5}) concentrations over a 24-hour period. The designation process for the revised 24-hour PM_{2.5} standards that is outlined in this memo is the next step toward developing and implementing emission control programs for attaining and maintaining the revised standards.
- EPA will consider the state and tribal recommendations as it designates areas as "attainment" or "nonattainment" for the 24-hour fine particle standards. The term "nonattainment" means an area is violating the fine particle standards or contributing to violations of the standards. This guidance outlines how states should determine appropriate boundaries for the attainment and nonattainment areas.
- Under the process outlined in this guidance, states and tribes should submit their initial recommendations to EPA by December 18, 2007. States and tribes should make their recommendations using the data for the years 2004 – 2006, where possible.
- Areas should be identified as attaining, or not attaining, the revised 24-hour PM_{2.5} standards, or as not classifiable on the basis of available information. If, after careful consideration of the recommendations, EPA intends to make a final designation that is different from a state or tribal recommendation, EPA must notify the state or tribe at least 120 days prior to final designation and provide them an opportunity to comment on the potential modification.
- The Clean Air Act requires EPA to complete the designation process within two years of the effective date of a revised standard unless the Administrator finds that there is insufficient information to make these decisions. In such a case, EPA may take up to an additional year to make the designations, i.e., no later than three years after the effective date of the standard. EPA intends to base final designations on the most recent three years of data available at the time of final designations.
- When determining boundaries in urban areas for the annual PM_{2.5} standards, EPA applied a presumption that the boundaries for urban nonattainment areas should be based on metropolitan area boundaries as defined by the U.S. Office of Management and Budget. For the PM_{2.5} 24-hour standards, EPA is establishing

no such presumption.

- In developing boundary recommendations for nonattainment areas for the 24-hour $PM_{2.5}$ standards, this guidance encourages states and tribes to evaluate each area on a case-by-case basis. For each monitor or group of monitors that indicate violations of the standard, nonattainment area boundaries should cover a sufficiently large area to include both the area that violates the standard and the areas that contribute to the violations.
- EPA recommends that states and tribes base their boundary recommendations for violating areas on an evaluation of the following nine factors:
 1. Emission data
 2. Air quality data
 3. Population density and degree of urbanization (including commercial development)
 4. Traffic and commuting patterns
 5. Growth rates and patterns
 6. Meteorology (weather/transport patterns)
 7. Geography/topography (mountain ranges or other air basin boundaries)
 8. Jurisdictional boundaries (e.g., counties, air districts, Reservations, metropolitan planning organizations)
 9. Level of control of emission sources
- Today's guidance also notes that the same boundaries established for implementing the annual $PM_{2.5}$ standards may also be appropriate for implementing the 24-hour $PM_{2.5}$ standards in areas where both standards are violated. Adopting this approach may more easily facilitate overall air quality planning for attaining the suite of $PM_{2.5}$ standards.

WHAT A NONATTAINMENT DESIGNATION MEANS

- The Clean Air Act requires state and local governments to take steps to reduce fine particle pollution in nonattainment areas. State and local governments must detail these steps in plans demonstrating how they will meet the fine particle standards. Those plans are known as state implementation plans, or SIPs. States must submit their SIPs to EPA within three years after the Agency makes final designations.
- Nonattainment areas also are subject to a measure known as "transportation conformity," which requires local transportation and air quality officials to coordinate planning to ensure that transportation projects, such as road construction, do not affect an area's ability to reach its clean air goals. Transportation conformity requirements become effective one year after an area is designated as nonattainment.

- Once designated, nonattainment areas also are subject to new source review requirements. New Source Review is a permitting program for industrial facilities to ensure that new and modified sources of pollution do not impede progress toward cleaner air.

HOW THE DESIGNATIONS PROCESS WILL WORK

- States will have until December 18, 2007, to recommend to EPA areas that should be designated as attainment and nonattainment.
- EPA will review and consider those recommendations, and will notify states and tribes of any modifications EPA wishes to make to state or tribal recommendations. If new air quality data are available (e.g., for the year 2007), EPA will take these data into consideration when making final designations.
- EPA intends to complete final designations by December 18, 2008. In the event the Administrator has insufficient information to complete designations by December 18, 2008, the date of final designations may be extended up to one year, but no later than December 18, 2009.
- Tribes that have their own air quality programs may submit recommendations for designations; however, they are not required to do so. Because air quality data is lacking in some tribal areas, EPA will work with tribes to determine the appropriate designations. EPA will address all state and tribal lands during the designations process.

BACKGROUND

- EPA's revised National Ambient Air Quality Standards for PM_{2.5} became effective on December 18, 2006. EPA retained the annual PM_{2.5} standards of 15 µg/m³ and revised the 24-hour PM_{2.5} standards, changing them from 65 µg/m³ to 35 µg/m³.
- The 24-hour PM_{2.5} standards were revised based on a number of health studies showing that short-term exposure to PM_{2.5} is associated with increased mortality and a range of serious health effects, including aggravation of lung disease, asthma attacks, and heart problems.

Fine Particles

- Particulate matter is a complex mixture of extremely small particles and liquid droplets. Particles smaller than 2.5 microns in diameter are known as "fine particles."
- Fine particles can be emitted directly or formed secondarily in the atmosphere. Particles emitted directly (also known as primary emissions) come from sources

such as diesel engines, wood burning activities, and other industrial and commercial combustion processes.

- “Secondary” particles are those that are formed by reactions of gases in the atmosphere. For example, sulfur dioxide gas from combustion of coal in power plants and industrial boilers reacts with other gases in the atmosphere to form sulfate particles. Similarly, nitrogen oxide gas from combustion sources such as automobiles and industrial facilities forms nitrate particles in the atmosphere.
- Other secondary particles include organic carbon particles, which can be formed when certain volatile organic compounds react with other gases in the atmosphere. Sources of organic particles include burning activities, motor vehicle emissions, and other combustion activities.

PARTICLE POLLUTION AND PUBLIC HEALTH

- Health effects associated with short-term exposure to fine particles 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
 - Irregular heartbeat
- The nationwide benefits of meeting the revised 24-hour PM_{2.5} standards include an estimated reduction of:
 - 2,500 premature deaths in people with heart or lung disease;
 - 2,600 cases of chronic bronchitis;
 - 5,000 nonfatal heart attacks;
 - 1,630 hospital admissions for cardiovascular or respiratory symptoms;
 - 1,200 emergency room visits for asthma;
 - 7,300 cases of acute bronchitis;
 - 97,000 cases of upper and lower respiratory symptoms;
 - 51,000 cases of aggravated asthma;
 - 350,000 days when people miss work or school; and
 - 2 million days when people must restrict their activities because of particle pollution related symptoms.

FOR MORE INFORMATION

- Today's guidance can be obtained from EPA's Particulate Matter web site at: <http://www.epa.gov/pm>.
- For more information about today's guidance, call Amy Vasu (919-541-0107) or Rich Damberg (919-541-5592) at the Office of Air Quality Planning & Standards.