

**FACT SHEET**  
**PROPOSAL TO REVISE THE NATIONAL AMBIENT AIR QUALITY STANDARDS**  
**FOR OZONE**

**SUMMARY OF ACTION**

*Proposed ozone standards*

- On January 6, 2010, EPA proposed to strengthen the national ambient air quality standards (NAAQS) for ground-level ozone, the main component of smog. The proposed revisions are based on scientific evidence about ozone and its effects on people and the environment.
- EPA is proposing to strengthen the 8-hour “primary” ozone standard, designed to protect public health, to a level within the range of 0.060-0.070 parts per million (ppm).
- EPA is also proposing to establish a distinct cumulative, seasonal “secondary” standard, designed to protect sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. EPA is proposing to set the level of the secondary standard within the range of 7-15 ppm-hours.
- The proposed revisions result from a reconsideration of the identical primary and secondary ozone standards set at 0.075 ppm in 2008.
- EPA is reconsidering the ozone standards to ensure that two of the nation’s most important air quality standards are clearly grounded in science, protect public health with an adequate margin of safety, and protect the environment. The ozone standards set in 2008 were not as protective as recommended by EPA’s panel of science advisors, the Clean Air Scientific Advisory Committee (CASAC). The proposed standards are consistent with CASAC’s recommendations.
- The proposal to strengthen the primary standard places more weight on key scientific and technical information, including epidemiological studies, human clinical studies showing effects in healthy adults at 0.060 ppm, and results of EPA’s exposure and risk assessment.
- The proposal to set a distinct secondary standard places more weight on the importance of a biologically relevant standard by recognizing that cumulative, seasonal exposure to ozone harms sensitive vegetation.
- EPA will take public comment for 60 days following publication of the proposal in the Federal Register. The agency also will hold public hearings on the proposal in the following three locations:
  - February 2, 2010
    - Arlington, Va.
    - Houston, Texas
  - February 4, 2010
    - Sacramento, Calif.
- EPA will issue final standards by August 31, 2010.

### *Review of Science: Public Health*

- Scientific evidence indicates that adverse public health effects occur following exposure to ozone, particularly in children and adults with lung disease.
- Breathing air containing ozone can reduce lung function and inflame airways, which can increase respiratory symptoms and aggravate asthma or other lung diseases. Ozone exposure also has been associated with increased susceptibility to respiratory infections, medication use, doctor visits, and emergency department visits and hospital admissions for individuals with lung disease.
- Ozone exposure also increases the risk of premature death from heart or lung disease.
- Children are at increased risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors, which increases their exposure.

### *Review of Science: Public Welfare*

- Scientific evidence shows that repeated exposure to ozone during the growing season damages sensitive vegetation. Cumulative ozone exposure can lead to reduced tree growth; visibly injured leaves; and increased susceptibility to disease, damage from insects and harsh weather.
- Sensitive plant species that are potentially at increased risk from ozone exposure include trees such as black cherry, quaking aspen, ponderosa pine and cottonwood. These trees are found across the United States, including in protected parks and wilderness areas.

### *Review of Science: Technical Record*

- The reconsideration is based on the scientific and technical record used in the March 2008 review, which included more than 1,700 scientific studies.
- In this reconsideration, EPA is not relying on studies about the health and ecological effects of ozone that have been published since the science assessment to support the 2008 review was completed. However, EPA conducted a provisional assessment of these newer studies and found they do not materially change the conclusions of the Agency's earlier science assessment. More information on the provisional assessment is available at: <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=214003>

## **DETERMINING COMPLIANCE: THE FORM OF THE STANDARDS**

- When EPA sets air quality standards, it also must specify the measurement unit, or “form” of each standard, which is used to determine whether an area is meeting the standards.
- For the primary standard, ozone concentrations are averaged over 8-hour periods. The fourth-highest 8-hour value at a particular monitor in the most recent year is averaged with the fourth-highest 8-hour values from the previous two years. This produces a three-year average. To meet the standard, the three-year average must be less than or equal to the level of the standard. EPA did not reconsider the form of the primary standard.

- The proposed secondary standard is designed to protect sensitive vegetation from adverse effects associated with cumulative ozone exposures during the three months when daytime ozone concentrations are the highest. Specifically, the form of this new proposed secondary standard is a “cumulative peak-weighted index,” called W126. The W126 index is calculated by:
  - “Weighting” each hourly ozone measurement occurring during the 12 daylight hours (8:00 am to 8:00 pm) each day, with more weight given to higher concentrations. This “peak weighting” emphasizes higher concentrations more than lower concentrations, because higher concentrations are disproportionately more damaging to sensitive trees and plants;
  - Adding these 12 weighted hourly ozone measurements for each day, to get a cumulative daily value;
  - Summing the daily values for each month, to get a cumulative monthly value;
  - Identifying the three consecutive months during the ozone season with the highest index value, to get the cumulative seasonal index value, and;
  - Averaging these maximum seasonal index values over three years.
- An area would meet the proposed secondary standard if the three-year average of the cumulative seasonal index values is less than or equal to the level of the standard (i.e., 7-15 ppm-hours).

### **ESTIMATED TIMELINE FOR IMPLEMENTING THE PROPOSED STANDARDS**

- EPA, states and tribes will work together to implement the ozone standards that result from the reconsideration.
- EPA is proposing an accelerated schedule for designating areas for the primary ozone standard. Also, EPA is taking comment on whether to designate areas for a seasonal secondary standard on an accelerated schedule or a 2-year schedule.
- The accelerated schedule would be:
  - **By January 2011:** States make recommendations for areas to be designated attainment, nonattainment or unclassifiable.
  - **By July 2011:** EPA makes final area designations.
  - **August 2011** Designations become effective.
  - **December 2013:** State Implementation Plans, outlining how states will reduce pollution to meet the standards, are due to EPA.
  - **2014 to 2031:** States are required to meet the primary standard, with deadlines depending on the severity of the problem.

## MONITORING FOR OZONE

- In a separate rule, EPA proposed in July 2009 to modify the ozone air quality monitoring network design requirements. The proposed modifications would better support alternative ozone standards, including the 2008 ozone standards and the ozone standards proposed in this reconsideration.
- EPA is not proposing in this reconsideration to further modify the minimum monitoring requirements for ozone.
- The already proposed monitoring revisions would change minimum monitoring requirements in urban areas, add new minimum monitoring requirements in non-urban areas, and extend the length of the required ozone monitoring season in many states.
  - EPA proposed that urban areas with populations between 50,000 and 350,000 people operate at least one ozone monitor.
  - EPA proposed that states be required to operate at least three ozone monitors in non-urban areas.
- There are approximately 1,200 ozone monitors operating in the United States, with about 1,000 sited to represent urban areas and 200 to represent non-urban areas.
  - EPA estimates that about 270 new ozone monitors could be required to satisfy the proposed monitoring requirement. We expect the number of new monitors to be considerably less because of the flexibility including in the proposal.
- EPA is considering comments received on the proposed monitoring requirements and plans to issue a final rule in coordination with the final ozone standards in August 2010.

## BACKGROUND

### *What is Ozone?*

- Ozone is found in two regions of the Earth's atmosphere – at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O<sub>3</sub>). While upper atmospheric ozone forms a protective layer from the sun's harmful rays, ground level ozone is the main component of smog.
- Ground-level ozone is not emitted directly into the air, but forms through a reaction of nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), carbon monoxide (CO) and methane (CH<sub>4</sub>) in the presence of sunlight.
- Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are the major man-made sources of NO<sub>x</sub> and VOCs.
- Because sunlight and hot weather accelerate its formation, ozone is mainly a summertime air pollutant. Both urban and rural areas can have high ozone levels, often due to transport of ozone or its precursors from hundreds of miles away.

### *Ozone and Public Health*

- Exposures to ozone can:
  - Reduce lung function, making it more difficult for people to breathe as deeply and vigorously as normal,
  - Irritate the airways, causing coughing, sore or scratchy throat, pain when taking a deep breath and shortness of breath,
  - Inflammate and damage the airways,
  - Increase frequency of asthma attacks,
  - Increase susceptibility to respiratory infection, and
  - Aggravate chronic lung diseases such as asthma, emphysema and bronchitis.
- In some people, these effects can lead to:
  - Increased medication use among asthmatics,
  - More frequent doctors visits,
  - School absences,
  - Increased emergency room visits and hospital admissions, and
  - Increased risk of premature death in people with heart and lung disease.
- Groups that are at greater risk from ozone include:
  - People with lung disease, especially children with asthma.
  - Children and older adults.
  - People who are active outside, especially children and people who work outdoors.

### *Ozone and the Environment*

- Ground-level ozone can have harmful effects on sensitive vegetation and ecosystems. When sufficient ozone enters the leaves of a plant, it can:
  - Interfere with the ability of sensitive plants to produce and store food, leading to reduced growth, making them more susceptible to certain diseases, insects, other pollutants, competition and harsh weather.
  - Visibly damage the leaves of trees and other plants, harming the appearance of vegetation in urban areas, national parks, and recreation areas.
- These effects can have adverse impacts on ecosystems, including loss of species and changes to habitat quality, and water and nutrient cycles.

### *About the NAAQS Process*

- The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. National standards exist for six pollutants: ozone, particulate matter, nitrogen oxides, carbon monoxide, sulfur dioxide, and lead.
- For each of these pollutants, the Clean Air Act requires EPA to set the health-based or “primary” standards at a level judged to be “requisite to protect the public health with an adequate margin of safety” and establish secondary standards that are “requisite” to protect

public welfare from “any known or anticipated adverse effects associated with the pollutant in the ambient air” including effects on vegetation, soils, water, wildlife, buildings and national monuments, and visibility.

- The law also requires EPA to review the standards and their scientific basis every five years to determine whether revisions are appropriate.
- The Clean Air Scientific Advisory Committee (CASAC) provides independent advice to the EPA Administrator on the relevant scientific and technical information and on the standards.

## **HOW TO COMMENT**

- EPA will accept public comments for 60 days after the proposed revisions to the ozone standards are published in the Federal Register.
- Comments should be identified by Docket ID No. EPA-HQ-OAR-2005 -0172 and submitted by one of the following methods:
  - Federal eRulemaking Portal (<http://www.regulations.gov>),
  - e-mail ([a-and-r-docket@epa.gov](mailto:a-and-r-docket@epa.gov)),
  - Mail (EPA Docket Center, Environmental Protection Agency, Mail code 6102T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460), or
  - Hand delivery (EPA Docket Center, Environmental Protection Agency, Room 3334, 1301 Constitution Avenue, NW, Washington, DC).

## **FOR MORE INFORMATION**

- To download the Federal Register notice about the proposed revisions to the ozone standards, visit [www.epa.gov/ozonepollution](http://www.epa.gov/ozonepollution).
- Today’s proposal and other background information are also available either electronically at <http://www.regulations.gov>, EPA’s electronic public docket and comment system, or in hardcopy at the EPA Docket Center’s Public Reading Room.
  - The Public Reading Room is located in the EPA Headquarters Library, Room Number 3334 in the EPA West Building, located at 1301 Constitution Ave., NW, Washington, DC. Hours of operation are 8:30 a.m. to 4:30 p.m. eastern standard time, Monday through Friday, excluding federal holidays.
  - Visitors are required to show photographic identification, pass through a metal detector, and sign the EPA visitor log. All visitor materials will be processed through an X-ray machine as well. Visitors will be provided a badge that must be visible at all times.
  - Materials for this action can be accessed using Docket ID No. EPA-HQ-OAR- 2005-0172.