

The National Ambient Air Quality Standards

TOOLS FOR ADDRESSING BACKGROUND OZONE

On Oct. 1, 2015, the U.S. Environmental Protection Agency (EPA) strengthened the National Ambient Air Quality Standards (NAAQS) for ground-level ozone, based on extensive scientific evidence about ozone's effects on public health and welfare. EPA will work closely with state, local and tribal air agencies to implement the ozone standards, beginning immediately. The agency's projections show the vast majority of U.S. counties will meet the standards by 2025 with the rules and programs now in place or underway.

Highlights

- "Background ozone" is ozone that results from natural events, such as wildfires or stratospheric intrusions, or from man-made pollution from sources outside the U.S., including Canada and Mexico.
- Under the Clean Air Act, states are not responsible for reducing emissions from background sources.
- EPA will work closely with state, local and tribal air agencies to help them make appropriate use Clean Air Act provisions for addressing exceedances of the ozone standard that are potentially caused by background ozone.
- The agency has already begun this work, providing state, tribal and local air agencies an outline of the agency's plans for helping them to implement the updated standards in a way that maximizes common sense, flexibility and cost-effectiveness, while following the requirements of the Clean Air Act.

How the Clean Air Act Addresses Background Ozone

- Under the Clean Air Act, states develop plans to achieve National Ambient Air Quality Standards by reducing emissions from sources within their borders. The law does not require states to reduce emissions from background sources that are not in their control.
- These sources include natural events, such as wildfires or stratospheric intrusions, or man-made pollution from sources outside the U.S., including Canada and Mexico. Ozone that forms from man-made pollution generated within the U.S. is not part of background ozone.
- The Clean Air Act and EPA policies provide tools for air agencies to address exceedances of an ozone standard potentially caused by background ozone. EPA will work closely with states that may have background ozone-related exceedances of the standard to ensure they are able to use these tools where warranted.

Exceptional events exclusions

- The term “exceptional event” refers to either a natural event (such as stratospheric intrusions or wildfires) or an event caused by human activity that is unlikely to recur at a particular location. Exceptional events must affect air quality and cannot be reasonably controllable or preventable.
- Under section 319 of the Clean Air Act, EPA may exclude air monitoring data influenced by exceptional events in establishing area designations, provided states meet certain criteria. States request these exclusions through a technical document known as an “exceptional events demonstration” to show that an exceedance of the standard was caused by an exceptional event.
- EPA’s 2007 Exceptional Events Rule outlines the requirements for submitting exceptional events demonstrations and the criteria for excluding data from regulatory decisions. EPA is in the process of updating that rule to simplify and expedite the process for air agency development and EPA review of these demonstrations.
- The agency anticipates proposing revisions to the rule this fall, and taking final action in 2016, well in advance of final area designations expected to be completed in late 2017.
- EPA also is developing guidance to address Exceptional Events Rule criteria for wildfires that could affect ozone concentrations. The agency anticipates an increase in the number of fire-related exceptional events for a number of reasons, including an anticipated increased incidence of wildfires as a result of climate change.
- EPA expects to issue this guidance in the same timeframe as the Exceptional Events Rule revisions. Air agencies may continue to flag air quality data and submit exceptional events demonstrations for EPA consideration while this guidance is being finalized. Air agencies that anticipate submitting an ozone-related exceptional events demonstration should

Addressing Background Ozone

“Background ozone” refers to ozone that forms from pollution from natural sources, such as wildfires or stratospheric intrusions, and ozone that forms from man-made pollution from sources outside the U.S.

On high ozone days, most ozone is produced locally or regionally from man-made domestic sources. Reducing emissions of the pollutants that form ozone will reduce ozone broadly across the country and improve public health protection.

EPA analyses do not indicate that background ozone will prevent areas from meeting the updated ozone standards of 70 ppb. The Clean Air Act and EPA policies provide a number of tools to help states in the limited number of areas where background ozone may contribute to high ozone concentrations on a few days. These tools may help areas avoid a nonattainment designation, or minimize attainment control requirements where appreciable levels of background ozone influence air quality.

coordinate with their EPA regional office prior to preparing and submitting a demonstration.

International Transport

- Section 179B of the Clean Air Act allows EPA to approve an ozone attainment plan for a nonattainment area, if the state demonstrates that it has taken appropriate local measures and international transport of pollution is a significant impediment to meeting the standard on time.
- When EPA approves this type of plan, a nonattainment area is no longer subject to being reclassified to a higher nonattainment classification (which comes with additional requirements) if the area does not meet the standard by its attainment date.
- EPA is working on a number of fronts to better understand potential international sources of ozone and identify opportunities for reducing long-range transport of this harmful pollutant and its precursors. The agency is working with the European Commission under the Convention on Long-Range Transboundary Air Pollution to lead an international scientific effort to improve the databases and modeling tools for characterizing the international transport of ozone and to assess potential control strategies. EPA also is working with air quality officials in China and other countries to improve their air quality management capabilities. EPA also works with its counterparts in Canada and Mexico to understand and mitigate the transport of ozone and its precursors from our nearest neighbors. In addition, global efforts to reduce methane, such as the Climate and Clean Air Coalition and the Global Methane Initiative, are likely to reduce ozone as a co-benefit.

Rural Transport Areas

- Section 182(h) of the Clean Air Act allows EPA to determine that a designated nonattainment area can be treated as a rural transport area if:
 - The area does not contain emission sources that make significant contribution to monitored ozone concentration in the area or other areas; and
 - The area does not include, and is not adjacent to a Metropolitan Statistical Area.
- States with an approved rural transport area would need to meet Clean Air Act requirements for nonattainment areas classified as “Marginal.” States would not be required to develop an attainment demonstration for these areas, but the areas would be subject to New Source Review permitting, conformity, and emission inventory and source emission statement requirements.

Need for Additional Discussion

- To ensure that all interested stakeholders have a common understanding of the nature of background ozone and how it could be accounted for in implementing the ozone

standards, EPA is developing a white paper on background ozone that the agency will make available soon for stakeholder review.

- EPA intends to hold a workshop in the next few months to discuss the information in the white paper and to further advance the collective understanding of the technical and policy issues that may be involved with background ozone.
- The agency will evaluate the need for further guidance or regulatory tools to address background ozone after receiving stakeholder input and after conducting the workshop.

Sources of Ozone in the U.S.

- Ground-level ozone in the U.S. results from emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOCs), which form ozone when they react in the presence of sunlight. Emissions from sources such as cars, trucks, buses, factories, power plants and consumer products such as solvents and paints, all contribute to ground-level ozone formation.
- On high ozone days, most ozone in the U.S. is produced locally or regionally from these domestic sources, and reducing these emissions will reduce ozone and improve public health protection across the country. Sometimes, however, ozone can come from other sources, including natural events, such as stratospheric intrusions or wildfires, or emissions transported from other countries.
- While most exceedances of the ozone standards in the U.S. are driven by U.S. man-made emissions, in some locations, there may be days when background ozone is an appreciable contributor to an exceedance. These relatively infrequent events can occur at high-elevation sites, especially in the western U.S., and areas with periodic wildfires.
- Examples of *background ozone* sources include:
 - *Stratospheric intrusions*: Ozone is produced naturally and abundantly in the stratosphere – six to 30 miles above the Earth’s surface, where it protects life on Earth from the sun’s harmful rays. But in certain weather conditions, this ozone can be transported down to ground level, where it is harmful to breathe. These stratospheric intrusions are more likely to occur at high altitudes in late winter and spring, when local formation of ozone tends to be low, particularly in the mountainous regions of the West.
 - *Wildfires*: Wildfires produce significant emissions of several air pollutants, including NO_x and VOCs, both of which are ozone precursors. Emissions from wildfires can either suppress or add to ozone formation at a specific location, depending on a variety of factors, including weather conditions, what’s burning in the fire, the characteristics of the smoke plume, and other pollutants in the air.

- *International transport:* Ozone and some ozone precursors, such as NO_x and methane can be carried long distances by the wind, affecting ozone concentrations in some areas of the country. EPA's review of the science indicates the influence of international transport is likely to be largest in locations near the borders with Canada or Mexico; however, other locations may be affected periodically.
- *Other natural emissions:* Ozone-forming pollutants also can be emitted from natural sources such as vegetation (VOCs and methane), animals (methane) and lightning (NO_x).

FOR MORE INFORMATION

- To read the final rule and additional fact sheets, visit <http://www3.epa.gov/ozonepollution/actions.html>
- Technical analyses states could use in demonstrating that an area should qualify as a rural transport area are outlined in EPA draft guidance available at: http://www.epa.gov/scram001/guidance/guide/owt_guidance_07-13-05.pdf
- Background ozone also is discussed in the Integrated Science Assessment and staff Policy Assessment prepared during this review of the ozone standards. Both documents are available at http://www3.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html