Ozone and Ozone Standards: The Basics

About Ozone

Ozone is good up high, bad nearby

- Ozone is found in two regions of the Earth's atmosphere – at ground level and in the upper regions of the atmosphere. In both regions, ozone has the same chemical composition (O3).
- In the stratosphere -- six to 30 miles above the Earth – ozone protects us from the sun's harmful rays.
- But in the troposphere – where we live – ozone is harmful to breathe and is a key component of smog. It also damages trees and plants.

Ozone isn't emitted – it forms in the atmosphere

- Ozone forms from nitrogen oxides (NOx) and volatile organic compounds (VOCs) as they "cook" in the sun. Cars, trucks, buses, engines, industries, power plants and products such as solvents and paints are among the major manmade sources of ozone-forming emissions.

Ozone usually is a warm weather pollutant. But not always

- Ozone is most commonly be elevated in the warm summer months, when hot sunny days make it more likely that ozone will form. But this isn't always the case. In parts of the western United States with high levels of local VOC and NOx emissions and unique meteorological conditions, ozone has been high when snow is on the ground.

Ozone isn't just a city pollutant

- Ozone, and the pollutants that form it, can travel long distances on the wind. For this reason, even rural areas or areas such as national parks that are far from pollution sources can have high ozone levels.

Even healthy people can be affected

- Ozone can inflame the airways, causing symptoms such as chest pain, coughing, wheezing and shortness of breath – even in healthy people. These effects can be more serious in people with lung diseases, such as asthma.
- The groups considered most at risk from ozone are children, people with asthma and other lung diseases, older adults, and adults who are active or work outside.

Background ozone can be natural or international

- Background ozone refers to ozone that forms from pollution from natural events, such as wildfires or stratospheric intrusions, and from man-made pollution from sources outside the United States.
- States are not responsible for reducing background ozone. The Clean Air Act and EPA policies provide a number of tools that may help areas avoid a nonattainment designation, or minimize planning and control requirements in nonattainment areas where background ozone significantly influences air quality.

About the Ozone Standards

Ozone standards set a limit on the amount of ozone allowed in the outside air

- EPA issues two standards, as required by the Clean Air Act: a primary standard, to protect public health; and a secondary standard, to protect the public welfare (in this case, trees, plants and ecosystems.

Ozone levels are declining – but there is more to do

- Even though national average ozone levels have gone down by a third since 1980, over 40 million Americans live in counties with air quality above the 2008 standard of 75 ppb. The science on ozone and health shows that the 2008 standard isn't strong enough to protect public health as the Clean Air Act requires. That's why EPA strengthened the standard to 70 ppb, which will further improve air quality and public health protection.

The updated health standard of 70 parts per billion (ppb) will protect health – especially for children

- Children are a key group at risk from ozone exposure, because their lungs are still developing, they're likely to be active outdoors when ozone is high, and they are more likely than adults to have asthma.
- The updated health standard will essentially eliminate children's exposure to ozone at 70 ppb, and will protect 98 percent of children from repeated exposures to ozone concentrations as low as 60 ppb – a 60 percent improvement over the current standard.

EPA uses three years of data to determine if an area meets the standards

- An area will meet the standards if the 4th highest maximum daily 8-hour ozone concentration each year, averaged over three years, is 70 ppb or below.
- Areas that don't meet the standard today may not get designated as nonattainment if their air quality improves enough in the next year: EPA will designate areas in late 2017, likely based on data from 2014 to 2016.

Areas don't lose highway funds if they are designated nonattainment. **They also don't lose highway funds if they don't meet the standard on time**

- Under the Clean Air Act, highway funds can only be withheld if states don't turn in approvable plans for meeting the ozone standard – or they don't turn in plans at all. EPA works with states to help them develop plans that meet the requirements of the law – and as a result, highway fund sanctions have rarely been imposed.
- Some types of projects are exempt from highway sanctions, such as projects for safety.
- Sanctions generally are short term and are lifted as soon as possible. Since 1980, highway sanctions have been imposed 11 times. All but one of these sanctions have been lifted.

States will have time to meet the standards – and EPA will work closely with them to help

- EPA anticipates designating areas in late 2017, likely based on 2014-2016 data.
- Nonattainment areas will have from 2020 to 2037 to meet the standards (areas with more work to do get more time). Federal rules will help the vast majority of counties meet the standards by 2025 without additional action.
- EPA will work closely with states to help transition to the updated standards.