The National Ambient Air Quality Standards

OZONE AND CHILDREN'S HEALTH

On Oct. 1, 2015, the U.S. Environmental Protection Agency (EPA) strengthened the National Ambient Air Quality Standards (NAAQS) for ground-level ozone to 70 parts per billion (ppb), based on extensive scientific evidence about ozone's effects on public health and welfare. The updated standards will improve public health protection, particularly for at-risk groups including children, older adults, people of all ages who have lung diseases such as asthma, and people who are active outdoors, especially outdoor workers, among others.

Highlights

- EPA's updated ozone standards will improve public health protection for children, avoiding hundreds of thousands of asthma attacks beginning in 2025.
- Children are one of the groups considered most at risk from ozone exposures.
- The updated standards will improve air quality broadly across the country, substantially reducing the number of times children are exposed to ozone at levels shown to cause harm.
- Updates to the Air Quality Index (AQI) will help ensure parents have the most up-to-date information on their local air quality. Parents and teachers can use AQI forecasts and current conditions information to help plan children's outdoor activities.

Children Are At Increased Risk

- Ozone can harm the respiratory system by inflaming cells that line the upper airways and the lungs – much like a sunburn damages skin.
    - Short-term exposures to ozone can make it more difficult to take a full, deep breath and can cause respiratory symptoms, even in healthy people. These short-term exposures also can aggravate asthma and other lung diseases and can make people more susceptible to respiratory infections.
    - Long-term exposure to ozone is linked to aggravation of asthma and a variety of other effects on the respiratory system, and is likely to be one of many causes of asthma development.
- Repeated ozone damage to developing lungs can affect children into adulthood, contributing to permanent reductions in the lungs' ability to function.
- Children -- including teenagers -- are among the groups of people considered most at risk from exposure to ground-level ozone, a key component of smog. Children, including healthy children, fall into this group for several reasons:

- Their lungs are still developing (this occurs until adulthood);
- They breathe more air per pound of body weight than adults. That means if the air contains ozone, children get a higher "dose" of ozone for their weight than adults;
- Children are active outside more than adults; and
- They also are more likely to have asthma.

- An estimated 6.1 million children in the U.S. have asthma, according to CDC estimates for 2013. That's equal to one in every 12 children in the country.
- Asthma disproportionately affects children, families with lower incomes, and minorities, including Puerto Ricans, Native Americans/Alaska Natives and African-Americans.

How the Updated Standards Will Help

- The updated primary standard will improve air quality broadly across the country. Because of the way the standard is structured, areas that meet it will see ozone concentrations below 70 ppb on almost all days – and in many areas, on most days, concentrations will be well below 70.
- As a result, the primary standard will protect children by reducing the number of times they are exposed to ozone concentrations at 70 ppb and lower concentrations. Reducing these repeated exposures is important, because the likelihood of harm increases with repeated exposures
- The updated standards will yield significant health benefits nationwide, including benefits for children. EPA estimates that meeting the 70 ppb standards will yield health benefits valued at $2.9 to $5.9 billion annually in 2025 nationwide outside of California. These annual benefits include the value of avoiding a variety of harmful health effects, including:
  - 230,000 asthma attacks in children
  - 160,000 days when kids miss school
  - 340 cases of acute bronchitis in children
- EPA analyzed the benefits and costs for California separately, because a number of areas in California would have longer to meet the final standards, based on their ozone levels. Benefits of meeting the standards in California add to the nationwide benefits after 2025, with the value of the additional benefits estimated at $1.2 to $2.1 billion annually after 2025. These annual benefits include the value of avoiding a variety of harmful health effects, including:
  - 160,000 asthma attacks among children
  - 120,000 days when kids miss school
  - 64 cases of acute bronchitis among children.

Updated Standard Will Increase Protection for Children, Including Children with Asthma

- The Clean Air Act requires the EPA Administrator to set primary (health) standards to protect public health with "an adequate margin of safety" – including the health of at-risk groups. Children's health was a key consideration in EPA's review of the standards.
- Since the last review of the standards concluded in 2008, the science on the health effects from ozone exposure has significantly expanded. This includes new controlled human exposure studies, which provide the strongest evidence about health effects associated with ozone – including information about harmful effects occurring at levels below the 2008 standards of 75 ppb.
- Focusing on effects that meet accepted definitions of "adverse," EPA carefully examined how air quality at an improved level of 70 ppb would reduce risk for children, including children with asthma.
- In addition to reviewing the science on ozone and health, the EPA Administrator also examined the results of risk and exposure analyses, which provide information about how often children are exposed to ozone at levels that have been shown to cause adverse health effects.
- The revised primary standard of 70 ppb will substantially reduce the number of times children are exposed to these concentrations. It also will reduce the number of times children are exposed to ozone at even lower levels, which may be of concern for at-risk populations and which helps provide the margin of safety the law requires.

Tools for Parents: Updates to the Air Quality Index

- Ozone levels are improving in most areas of the country – in fact, ozone declined nationwide 33 percent from 1980 to 2014. But children are still at risk, and even in areas that meet the ozone standard, there may be days when ozone levels are unhealthy.
- Parents can help protect their children's health by using the Air Quality Index (AQI) to plan outdoor activities. The AQI is EPA's color-coded tool for communicating air quality to the public.
- EPA has updated the AQI as part of the rule updating the ozone standards, to ensure it is grounded in science and to provide the public the most up-to-date information on ozone and health.

For More Information:

- The final ozone standards and additional information are available at: http://www3.epa.gov/ozonepollution/actions.html.

- AQI forecasts, current air quality information and the free AirNow app for i-Phone and Android phones are available at www.airnow.gov.