

The evidence is overwhelming:

EPA Must Set a Much Stronger Ozone Air Quality Standard



Overview

By June 20, U.S. Environmental Protection Agency (EPA) must propose revisions to the official “limit” on outdoor ozone pollution—called the National Ambient Air Quality Standard—at a level that adequately protects public health. The standard drives all the action to get rid of ozone pollution at the national, state and local levels. Overwhelming evidence shows that the standard must be much stronger to protect public health from serious harm. So, what will EPA decide?

What is ozone?

Ozone (O₃), commonly known as smog, forms when hydrocarbon vapors and nitrogen oxides react in the presence of sunlight and heat.¹ Nitrogen oxides are emitted from combustion sources such as power plants, industrial boilers, motor vehicles, locomotives, and ships. Hydrocarbon vapors are emitted from motor vehicles, small engines, chemical plants, refineries, factories, gas stations, paint and other sources.

Why is ozone harmful?

Ozone reacts chemically (“oxidizes”) with internal body tissues, such as those in the lung. Some have described it as a strong “sunburn” on the lungs. It acts as a powerful respiratory irritant at the levels frequently found across the nation during the summer months. Ozone exposure may lead to:

- premature death²
- shortness of breath, chest pain
- inflammation of the lung lining, wheezing and coughing³
- increased risk of asthma attacks, need for medical treatment and for hospitalization for people with lung diseases, such as asthma or chronic obstructive pulmonary disease (COPD).

Long-term, repeated exposure to high levels of ozone may also lead to reduced lung capacity.⁴

Who are most at risk?

People at greatest risk include:

- people with lung disease, especially chronic lung diseases such as asthma, COPD⁵
- senior citizens⁶
- people who work or exercise outdoors⁷
- children, because their airways are smaller, their respiratory defenses are not fully developed, and their higher breathing rates increase their exposure⁸
- “responders”—otherwise healthy individuals who experience health effects at lower levels of exposure than the average person.

Why is EPA proposing revisions to the ozone standard?

The Clean Air Act requires that EPA review the standards every five years to be sure the standards reflect the latest scientific and medical knowledge. The last time the EPA revised the standard for ozone air pollution was 1997, when the Agency set an 8-hour average standard of 0.08 parts per million. The American Lung Association took legal action in 2003 to get EPA to comply with the law and complete the review.

Why does the current standard need strengthening?

- New epidemiological and clinical studies have shown that breathing ozone can cause adverse health effects at concentrations lower than the current standard. This has prompted the World Health Organization, the American Academy of Pediatrics, the State of California, EPA’s Children’s Health Protection Advisory Committee, the American Medical Association and others to recommend stricter ozone standards.

- EPA’s own scientific advisors unanimously concluded that the current standard “needs to be tighter.” They cited clinical studies of healthy adults showing decreased lung function, increased respiratory symptoms, inflammation, and increased susceptibility to respiratory infection at the current standard of 0.08 ppm. Importantly, adverse lung function effects and symptoms were also observed in some individuals at 0.06 ppm.”⁹
- Breathing ozone can kill. Short-term increases in ozone were found to increase deaths from cardiovascular and respiratory causes in a large 14-year study in 95 U.S. cities. The relationship between mortality and ozone was evident even on days when pollution levels were below the EPA 8-hour standard of 0.08 ppm.¹⁰
- The Clean Air Act requires that the EPA set the standard based on the need to protect public health “with an adequate margin of safety.” In 2002, the Supreme Court unanimously ruled that protecting health was the *only* basis for the standard. The existing standard fails to protect public health with a margin of safety so EPA must strengthen it.
- Due to an old loophole, communities can round down their measurements and still meet the ozone standard. This means that some large metropolitan areas don’t have to clean up their air. Newer monitoring technology has eliminated the original reason for this practice.

What did EPA’s independent science advisors recommend?

The Clean Air Scientific Advisory Committee (CASAC) is chartered under the Clean Air Act to advise the EPA Administrator on the review of the official limits on six widespread air pollutants, formally known as the National Ambient Air Quality Standards. After reviewing the 2,000 page summary of the scientific research on the health effects of ozone and an extensive separate analysis by the EPA staff, the 23-member CASAC panel **unanimously** concluded: ⁹

- There is no scientific jurisdiction for retention of the current primary standard;
- The rounding loophole must be eliminated; and
- The ozone standard must explicitly account for the “margin of safety” required by the Clean Air Act.
- Therefore, 8-hour ozone standard should be set in the range of **0.060 to 0.070** ppm.

Below are quotes from their comments on each point.

“...on the basis of the large amount of recent data evaluating adverse health effects at levels at and below the current NAAQS for ozone, it is the unanimous opinion of the CASAC that the current primary ozone NAAQS is not adequate to protect human health.”

“The CASAC further recommends that the ozone NAAQS should reflect the capability of current monitoring technology, which allows accurate measurement of ozone concentrations with a precision of parts per *billion*, or equivalently to the third decimal place on the parts per million scale.”

“Therefore, the CASAC unanimously recommends a range of 0.060 to 0.070 ppm for the primary ozone NAAQS.”

What is the timetable for EPA action?

- By June 20, 2007—Propose standards for public comment
- On or about August 27 and Sept. 4—Hold public hearings in Philadelphia, Los Angeles, Chicago, Houston.
- By March 12, 2008—Announce the final, official ozone air quality standards.

What questions should be asked when evaluating the proposal?

- Does EPA propose a standard within the range CASAC recommended: 0.060 to 0.070 ppm?
- If not, why did the Administrator ignore their advice?
- Does EPA get rid of the rounding loophole? Are there three places (thousandths) after the decimal?
- Does the proposal propose to consider retaining the existing (and inadequate) standard? If so, why did the Administrator ignore the advice of the CASAC to include that?

- Does the proposal change any other aspects of the standard, such as number of days allowed over the standard?
- Did EPA make any changes in the proposal in response to OMB review?

¹ <http://www.epa.gov/air/ozonepollution/>

² Bell ML, Dominici F, and Samet JM. A Meta-Analysis of Time-Series Studies of Ozone and Mortality with Comparison to the National Morbidity, Mortality, and Air Pollution Study. *Epidemiology* 2005; 16:436-445. Levy JI, Chermerynski SM, Sarnat JA. Ozone Exposure and Mortality: an empiric Bayes metaregression analysis. *Epidemiology* 2005; 16:458-468. Ito K, De Leon SF, Lippmann M. Associations Between Ozone and Daily Mortality: analysis and meta-analysis. *Epidemiology* 2005; 16:446-429.

³ U.S. Environmental Protection Agency, Smog—Who Does It Hurt? What You Need to Know About Ozone and Your Health, EPA-425/K-99-001, July 1999.

⁴ Kunzli N, Lurmann F, Segal M, Ngo L, Balmes J, Tager IB. Association Between Lifetime Ambient Ozone Exposure and Pulmonary Function in College Freshmen-Results of a Pilot Study. *Environmental Research* 1997; 72: .8-23.

⁵ Desqueyroux H, Pujet JC, Prosper M, Le Moullec Y, Momas I. Effects of Air Pollution on Adults with Chronic Obstructive Pulmonary Disease. *Arch Environ Health* 2002; 57:554-560. Höppe P, Peters A, Rabe G, Praml G, Lindner J, Jakobi G, Fruhmann G, Nowak D. Environmental Ozone Effects in Different Population Subgroups. *Int J Hyg Environ Health* 2003; 206:505-516.

⁶ Delfino RJ, Murphy-Moulton AM, Becklake MR. Emergency Room Visits for Respiratory Illnesses among the Elderly in Montreal: Association with Low Level Ozone Exposure. *Environ Res* 1998; 76 (Section A): 67-77.

⁷ Kinney PL, Lippmann M. Respiratory Effects of Seasonal Exposures to Ozone and Particles. *Arch Environ Health* 2000; 55: 210-216.

⁸ Peters JM, Avol E, Gauderman WJ, Linn WS, Navidi W, London SJ, Margolis H, Rappaport E, Vora H, Gong H, Thomas DC. A Study of Twelve Southern California Communities with Differing Levels and Types of Air Pollution II. Effects on Pulmonary Function., *Am J Respir Crit Care Med* 1999; 159: 768-775; and Thurston GD, Lippmann M, Scott MB, Fine JM. Summertime Haze Air Pollution and Children with Asthma. *Am J Respir Crit Care Med* 1997; .155: 654-660.

⁹ Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee to Stephen L. Johnson, Administrator, U.S. Environmental Protection Agency, re Clean Air Scientific Advisory Committee's (CASAC) Peer Review of the Agency's 2nd Draft Ozone Staff Paper, EPA-CASAC-07-001, October 24, 2006; and Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee to Stephen L. Johnson, Administrator, U.S. Environmental Protection Agency, re Clean Air Scientific Advisory Committee's (CASAC) Review of the Agency's Final Ozone Staff Paper, EPA-CASAC-07-002, March 26, 2007.

¹⁰ Bell ML, McDermott A, Zeger SL, Samet JM, Dominici F. Ozone and short-term mortality in 95 US urban communities , 1987-2000. *JAMA* 2004; 292:2372-2378.