

HIGHLIGHTS

Improving air quality and taking action on climate change are priorities for the EPA. This summary report presents EPA's most recent evaluation of our nation's air quality status and takes a closer look at the relationship between air quality and climate change.

LEVELS OF SIX COMMON POLLUTANTS CONTINUE TO DECLINE

- Cleaner cars, industries, and consumer products have contributed to cleaner air for much of the U.S.
- Since 1990, nationwide air quality has improved significantly for the six common air pollutants. These six pollutants are ground-level ozone, particle pollution (PM_{2.5} and PM₁₀), lead, nitrogen dioxide (NO₂), carbon monoxide (CO), and sulfur dioxide (SO₂). Nationally, air pollution was lower in 2008 than in 1990 for:
 - 8-hour ozone, by 14 percent
 - annual PM_{2.5} (since 2000), by 19 percent
 - PM₁₀, by 31 percent
 - Lead, by 78 percent
 - NO₂, by 35 percent
 - 8-hour CO, by 68 percent
 - annual SO₂, by 59 percent
- Despite clean air progress, approximately 127 million people lived in counties that exceeded any national ambient air quality standard (NAAQS) in 2008, as shown in Figure 1. Ground-level ozone and

particle pollution still present challenges in many areas of the country.

- Nationally, for the period from 2001 to 2008, annual PM_{2.5} concentrations were 17 percent lower in 2008 compared to 2001. 24-hour PM_{2.5} concentrations were 19 percent lower in 2008 compared to 2001.
- Ozone levels did not improve in much of the East until 2002, after which there was a significant decline. 8-hour ozone concentrations were 10 percent lower in 2008 than in 2001. This decline is largely due to reductions in oxides of nitrogen (NO_x) emissions required by EPA's rule to reduce ozone in the East, the NO_x State Implementation Plan (SIP) Call. EPA tracks progress toward meeting these reductions through its NO_x Budget Trading Program.

LEVELS OF MANY TOXIC AIR POLLUTANTS HAVE DECLINED

- Toxic air pollutants such as benzene, 1,3-butadiene, styrene, xylenes, and toluene decreased by 5 percent or more per year between 2000 and 2005 at more than half of ambient monitoring sites. Other key contributors to cancer risk, such as carbon tetrachloride, tetrachloroethylene, and 1,4-dichlorobenzene, declined at most sites.
- Total emissions of toxic air pollutants have decreased by approximately 40 percent between 1990 and

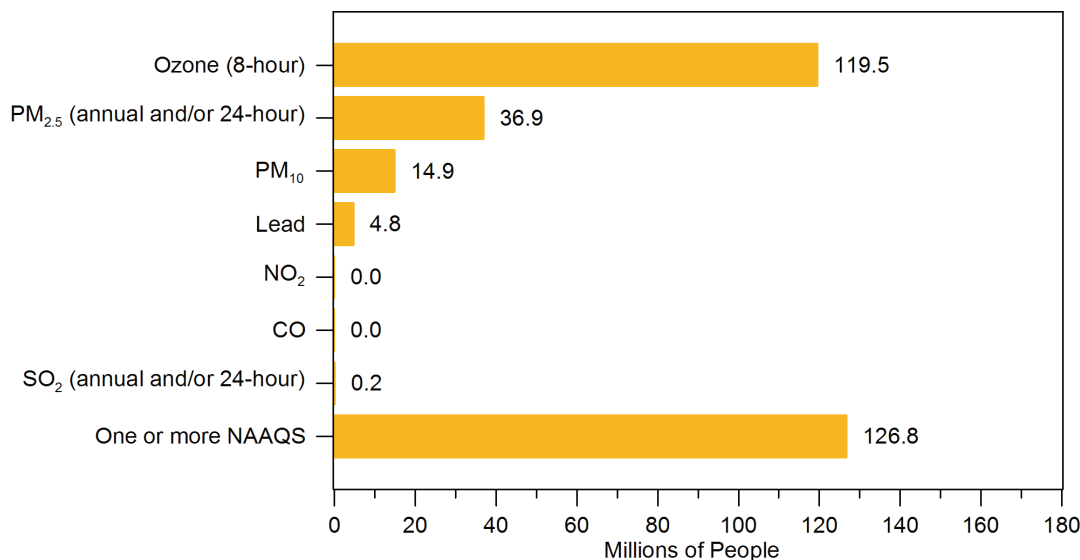


Figure 1. Number of people (in millions) living in counties with air quality concentrations above the level of the primary (health-based) National Ambient Air Quality Standards (NAAQS) in 2008.

Note: Projected population data for 2008 (U.S. Census Bureau, 2008).

2005. Control programs for mobile sources and facilities such as chemical plants, dry cleaners, coke ovens, and incinerators are primarily responsible for these reductions.

ACID RAIN AND HAZE ARE DECLINING

- EPA's NO_x SIP Call and Acid Rain Program have contributed to significant improvements in air quality and environmental health. The required reductions in SO₂ and NO_x have led to significant decreases in atmospheric deposition, which have contributed to improved water quality in lakes and streams. For example, between 1989-1991 and 2006-2008, wet sulfate deposition decreased more than 30 percent and wet nitrate deposition decreased more than 30 percent in parts of the East.
- Between 1998 and 2007, visibility in scenic areas improved throughout the country. Eight areas—Mt. Rainier National Park, WA; Great Gulf Wilderness, NH; Snoqualmie Pass, WA; Olympia, WA; Columbia Gorge, WA; Starkey, OR; Presque Isle, ME, and Bridgton, ME—showed notable improvement on days with the worst visibility.

CLIMATE CHANGE AND INTERNATIONAL TRANSPORT: IMPROVING OUR UNDERSTANDING

- In 2007, the U.N. Intergovernmental Panel on Climate Change (IPCC) concluded that climate

change is happening now, as evident from observations of increases in global average air and ocean temperatures, widespread snow melt, and rising average sea levels.

- Research is continuing to improve our understanding of the effects of air pollution on climate. For example, tropospheric ozone (a greenhouse gas) has a warming effect on climate. Black carbon particle pollution has warming effects, while aerosols containing sulfates and organic carbon tend to have cooling effects. Also, research is continuing to investigate the effects of climate change on future air pollution levels.
- Ongoing studies continue to improve our understanding about air pollution movement between countries and continents.

MORE IMPROVEMENTS ANTICIPATED

- EPA expects air quality to continue to improve as recent regulations are fully implemented and states work to meet current and recently revised national air quality standards. Key regulations include the Locomotive Engines and Marine Compression-Ignition Engines Rule, the Tier II Vehicle and Gasoline Sulfur Rule, the Heavy-Duty Highway Diesel Rule, the Clean Air Non-Road Diesel Rule, and the Mobile Source Air Toxics Rule.

SOURCES-TO-EFFECTS CONTINUUM



Because air pollution harms human health and damages the environment, EPA tracks pollutant emissions. Air pollutants are emitted from a variety of sources including stationary fuel combustion, industrial processes, highway vehicles, and non-road sources. These pollutants react in and are transported through the atmosphere. EPA; other federal agencies; and state, local, and tribal agencies monitor air quality at locations throughout the U.S. Data collected through ambient monitoring are used in models to estimate population and environmental exposures. Personal health monitoring is conducted via special studies to better understand actual dosage of pollutants. EPA uses monitoring data, population exposure estimates, and personal dosage data to better understand health effects of air pollutants. Ambient monitoring data and models are also used to estimate environmental exposures to air pollutants.