Six Common Pollutants

The Clean Air Act requires EPA to set national air quality standards for specific pollutants to safeguard human health and the environment. These standards define the levels of air quality that EPA determines are necessary to protect against the adverse impacts of air pollution based on scientific evidence. EPA has established standards for six common air pollutants, which are referred to as "criteria" pollutants: ozone (O_3), particle pollution (PM), lead (Pb), nitrogen dioxide (NO_2), carbon monoxide (CO), and sulfur dioxide (SO_2).

Trends in National Air Quality Concentrations

Air quality has improved continuously across the U.S. since the Clean Air Act was amended more than two decades ago. The downward trend in air pollution has been especially evident over the past several years as shown in Figure 4. The record-low air pollution levels observed in 2009 were primarily the result of numerous national and local regulations that have sharply reduced emissions. Also, meteorological conditions favorable to lower air pollution levels and the economic slowdown likely also contributed to the relatively clean conditions in 2009. This downward trend in air quality concentrations is expected to have had profound health benefits for the American people.

Figure 4 shows the national trend in lead and the national trends in the other five criteria pollutants between 1990 and 2010, relative to their respective

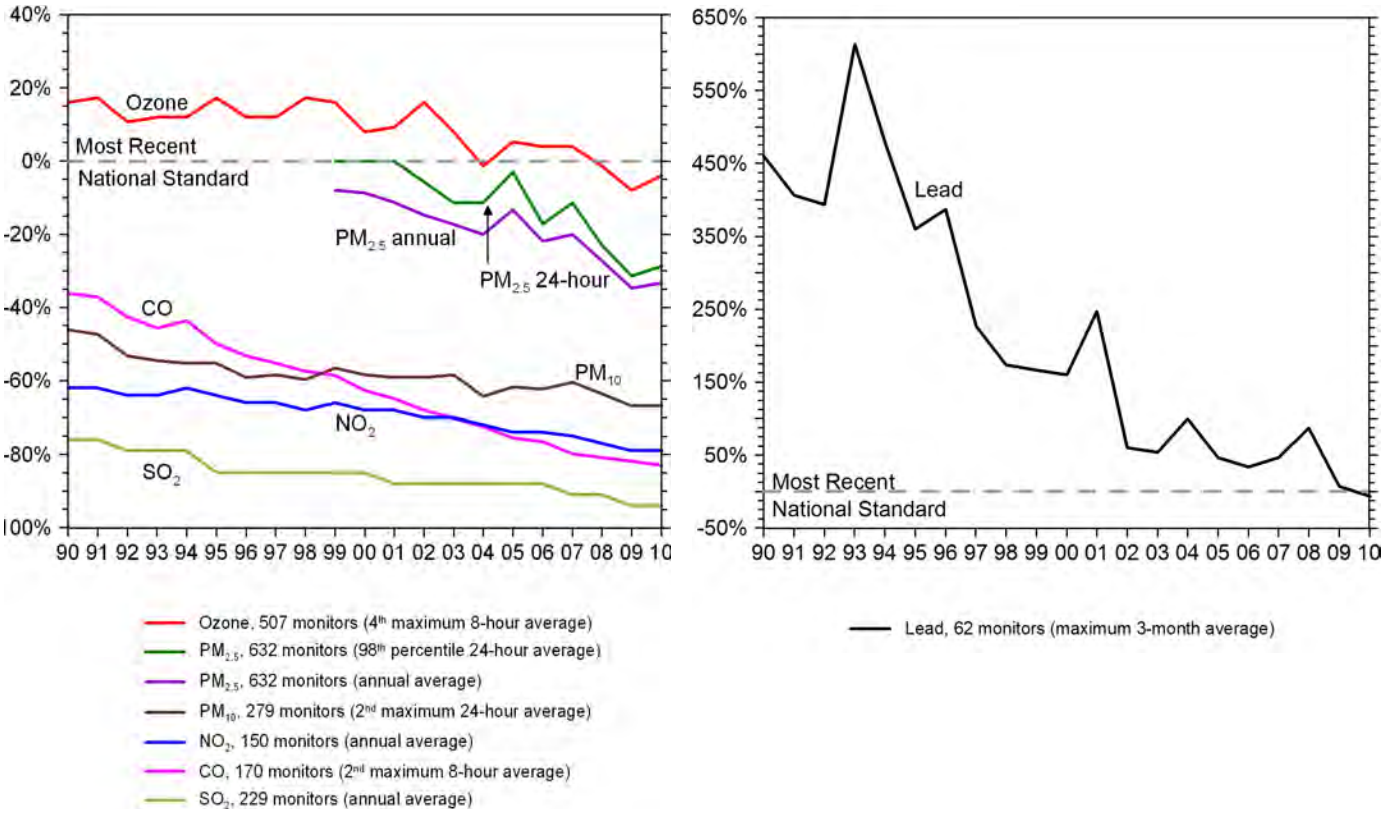


Figure 4. Comparison of national levels of the six common pollutants to the most recent national ambient air quality standards, 1990-2010. National levels are averages across all monitors with complete data for the time period. Note: Air quality data for PM2.5 start in 1999.

national ambient air quality standards. As noted above, most pollutants show a steady decline throughout that time period. For lead, there are significant year-to-year changes in lead concentrations largely driven by changes in lead concentrations at monitoring sites near stationary sources. These year-to-year changes reflect changes in operating schedules and plant closings. For ozone and particle pollution shown in Figure 4, the trends exhibit an even sharper decline over the past three to five years although meteorological conditions favorable to higher levels of ozone and particle pollution likely contributed to higher levels in 2010 compared to 2009.

Air Quality in Nonattainment Areas

EPA works collaboratively with state, local, and tribal agencies to identify areas of the U.S. that do not meet the national ambient air quality standards (NAAQS). These areas, known as nonattainment areas, must develop plans to reduce air pollution and attain the NAAQS. EPA tracks the progress these areas make to assure air quality continues to improve in places where improvements are most needed.

Consistent with national averages, air quality in nonattainment areas has also improved. As of 2010, there were no violations of the annual standards for CO, NO_2, and SO_2 . Figure 5 shows trends in average concentrations of ozone and particle pollution only in existing nonattainment areas with air quality exceeding one or more of these standards in 2010. Although many areas exceeded the level of the standard in 2010, there have been improvements in the levels of these pollutants in nonattainment areas since 2001. For example, between 2001 and 2010, ozone nonattainment areas showed a 9 percent improvement in ozone concentration levels. Figure 5 does not include all areas that are designated nonattainment for the pollutant shown. For more information on areas designated as nonattainment visit www.epa.gov/airquality/greenbook.

Despite these improvements, further reductions in air pollution are needed over parts of the country. EPA expects air quality to continue to improve as recent regulations are fully implemented and new measures are finalized. EPA periodically reviews and revises the national air quality standards as needed to protect public health and the environment. This means that although there is clear progress in reducing air pollution, and we expect that trend to continue, there may be a need to implement further control measures to meet new more protective air quality standards.

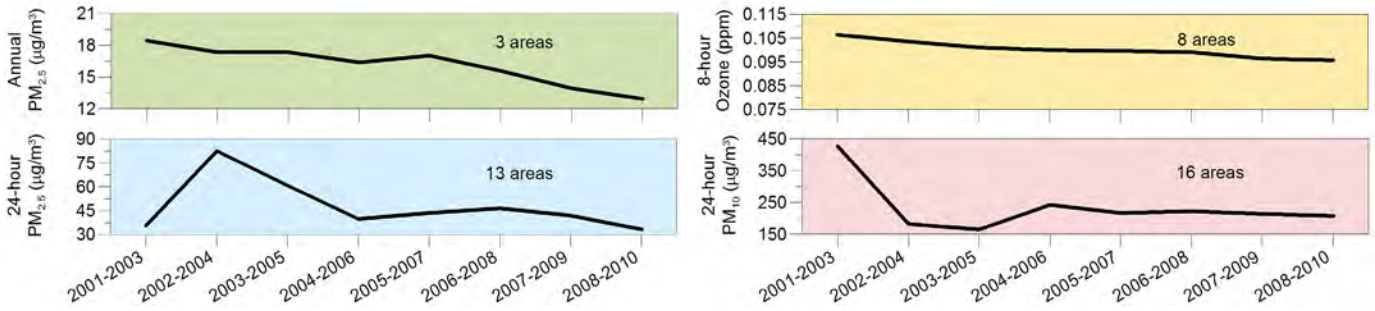
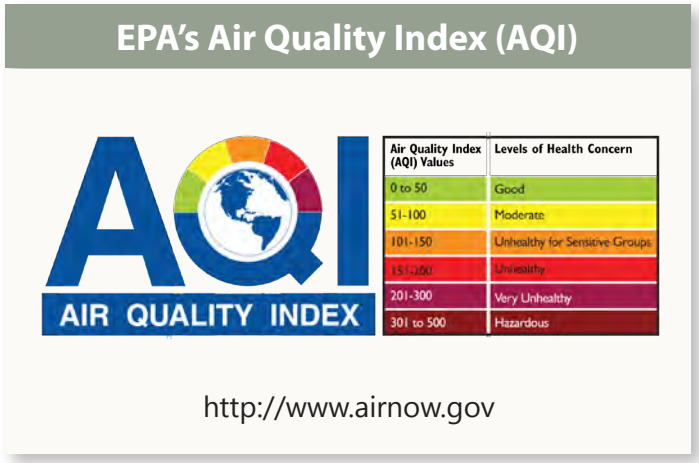


Figure 5. Air quality trends in nonattainment areas exceeding the ozone and particle pollution standards in 2010.

Trends in Unhealthy Air Quality Days

The Air Quality Index (AQI) relates daily air pollution concentrations for ozone particle pollution, NO2, CO, and SO2 to health concerns for sensitive groups and for the general public. A value of 100 generally corresponds to the national air quality standard for each pollutant. Values below 100 are considered satisfactory. Values above 100 are considered unhealthy – first for certain sensitive groups of people, then for everyone as the AQI values increase.

Figure 6 shows the number of days on which the AQI exceeded 100 for each of the past nine years at 35 select metropolitan areas. All areas experienced fewer unhealthy days in 2010 compared to 2002. Ozone and particle pollution are the primary contributors to unhealthy AQI days. Weather conditions, as well as emissions, contribute to ozone and particle pollution formation. Some areas in the eastern U.S. experienced more unhealthy days in 2010 compared to 2009, mostly due to weather conditions being more conducive to ozone formation in these areas in 2010.



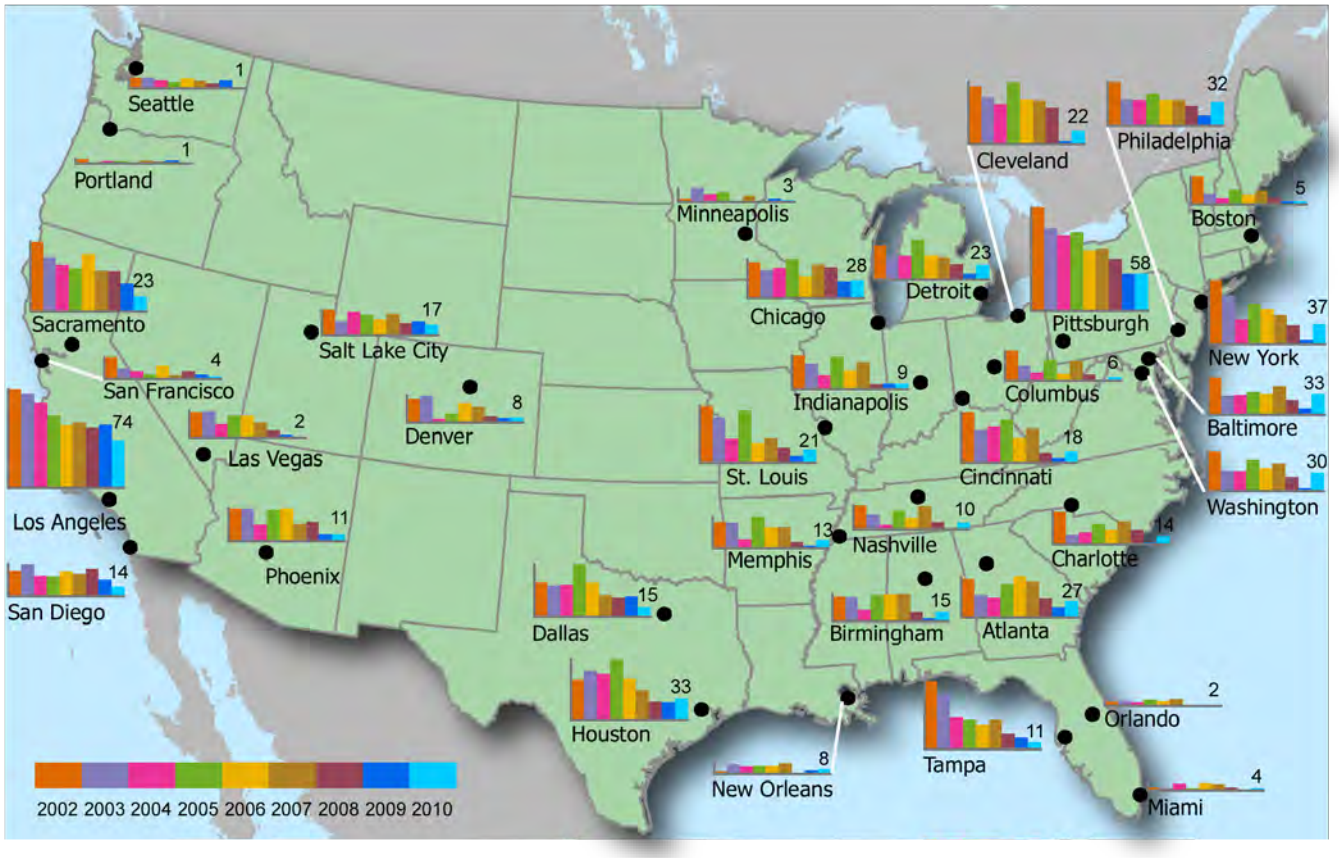


Figure 6. Number of days on which AQI values were greater than 100 during 2002-2010 in selected cities.