Air Trends
Air Quality Trends

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Air Quality Trends

EPA creates air quality trends using measurements from monitors located across the country. The table below shows that air quality based on concentrations of the common pollutants has improved nationally since 1980.

Percent Change in Air Quality

	1980 vs 2012	1990 vs 2012	2000 vs 2012
Carbon Monoxide (CO)	-83	-75	-57
Ozone (O_3) (8-hr)	-25	-14	-9
Lead (Pb)	-91	-87	-52
Nitrogen Dioxide (NO_2) (annual)	-56	-50	-38
Nitrogen Dioxide (NO_2) (1-hour)	-60	-46	-29
PM_{10} (24-hr)	---	-39	-27
$PM_{2.5}$ (annual)	---	---	-33
$PM_{2.5}$ (24-hr)	---	---	-37
Sulfur Dioxide (SO_2) (1-hour)	-78	-72	-54

Notes:
1. --- Trend data not available
2. Negative numbers indicate improvements in air quality
3. In 2010, EPA established new 1-hour average National Ambient Air Quality Standards for NO2 and SO2

National and local air quality trends graphs showing the nation's progress towards clean air are available for: carbon monoxide (CO), ozone (O_3), lead (Pb), nitrogen dioxide (NO_2), particulate matter (PM), and sulfur dioxide (SO_2).

Emission Trends

EPA estimates nationwide emissions of ambient air pollutants and the pollutants they are formed from (their precursors). These estimates are based on actual monitored readings or engineering calculations of the amounts and types of pollutants emitted by vehicles, factories, and other sources. Emission estimates are based on many factors, including levels of industrial activity, technological developments, fuel consumption, vehicle miles traveled, and other activities that cause air pollution.

Emissions information is developed with input from state and local air agencies, tribes, and industry. EPA tracks a range of emissions data, including how much of each pollutant is emitted from various pollution sources. To view national, state, and local emissions summary data, see EPA's Air Emission Sources site. The table below shows that emissions of the common air pollutants and their precursors have been reduced substantially since 1980.

Percent Change in Emissions

	1980 vs 2012	1990 vs 2012	2000 vs 2012
Carbon Monoxide (CO)	-72	-65	-51
Lead (Pb)	-99	-80	-50
Nitrogen Oxides (NO_x)	-59	-52	-50
Volatile Organic Compounds (VOC)	-57	-45	-24
Direct PM_{10}	-66	-35	-10
Direct $PM_{2.5}$	---	-57	-45
Sulfur Dioxide (SO_2)	-79	-76	-66

Notes:
1. --- Trend data not available
2. Direct PM10 emissions for 1980 are based on data since 1985
3. Negative numbers indicate reductions in emissions
4. Percent change in emissions based on thousand tons units

Emissions of air pollutants continue to play an important role in a number of air quality issues. In 2012, about 83 million tons of pollution were emitted into the atmosphere in the United States. These emissions mostly contribute to the formation of ozone and particles, the deposition of acids, and visibility impairment.

The table below shows changes in national estimates of emissions for the common air pollutants or, where appropriate, the precursor pollutants that form them.

To get detailed information about emissions estimates displayed below, please visit EPA's Clearinghouse for Inventories and Emissions Factors (CHIEF).

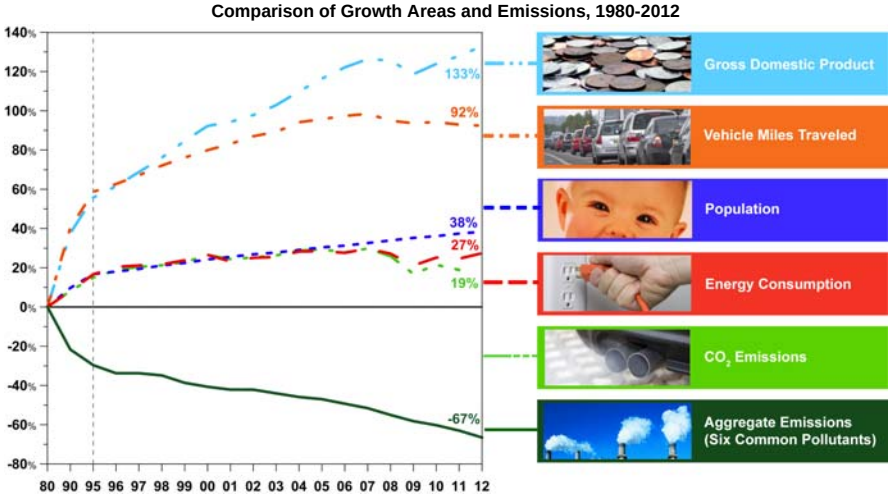
National Emissions Estimates
(fires and dust excluded)
For Common Pollutants and their Precursors

	Millions of Tons Per Year						
	1980	1985	1990	1995	2000	2005	2012
Carbon Monoxide (CO)	178	170	144	120	102	85	51
Lead	0.074	0.023	0.005	0.004	0.002	0.001	0.001
Nitrogen Oxides (NO_x)	27	26	25	25	22	19	11
Volatile Organic Compounds (VOC)	30	27	23	22	17	16	13
Particulate Matter (PM)							
PM_{10}	6	4	3	3	2	2	2
$PM_{2.5}$	NA	NA	2	2	2	1	1
Sulfur Dioxide (SO_2)	26	23	23	19	16	15	6
Totals	267	250	218	189	159	137	83

Notes:
1. For CO, NOx, SO2, and VOC emissions, fires are excluded because they are highly variable; for direct PM emissions, both fires and dust are excluded.
2. PM estimates do not include condensible PM.
3. The estimates for 2008 and beyond are based on the final version 3 of the 2008 NEI.
4. PM2.5 emissions are not included when calculating the emissions totals because they are included in the PM10 emissions number.
5. EPA did not estimate PM2.5 emissions prior to 1990.
6. The 1999 estimate for lead was used to represent 2000; the 2002 estimate for lead was used to represent 2005; and the 2008 estimate for lead was used to represent 2012.

Annual emissions estimates are used as one indicator of the effectiveness of our programs. The graph below shows that between 1980 and 2012, gross domestic product increased 133 percent, vehicle miles traveled increased 92 percent, energy consumption increased 27 percent, and U.S. population grew by 38 percent. During the same time period, total emissions of the six principal air pollutants dropped by 67 percent. The graph also shows that between 1980 and 2012, CO_2 emissions increased by 19 percent.

Comparison of Growth Areas and Emissions, 1980-2012



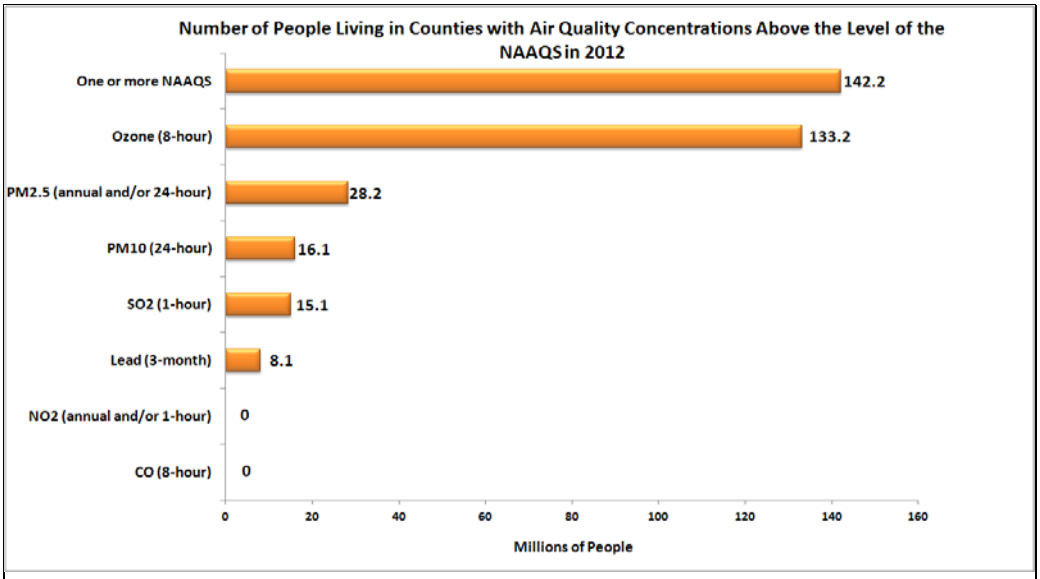
Note: CO2 emissions estimate through 2011 (Source: 2013 US Greenhouse Gas Inventory Report)
Gross Domestic Product: Bureau of Economic Analysis
Vehicle Miles Traveled: Federal Highway Administration
Population: Census Bureau

Energy Consumption: Dept. of Energy, Energy Information Administration

Aggregate Emissions: EPA Clearinghouse for Inventories and Emissions Factors

(see the graphic above for 1970-2012)

Despite great progress in air quality improvement, approximately 142 million people nationwide lived in counties with pollution levels above the primary NAAQS in 2012.



Multiple years of data are generally used to determine if an area attains the NAAQS. The chart above is for one year only.

Source: U.S. Census Bureau, Population Division http://www.census.gov/population/metro/data/def.html

In addition, from 1990 to 2008, emissions of air toxics declined by approximately 62 percent. These reductions are the result of implementing stationary and mobile source regulations. The majority of the air toxics emitted in 2008 are also precursors of ozone and/or particle pollution.

In recent years, EPA has acted to dramatically improve America's air quality by designing and developing national programs that, when fully implemented, will achieve significant reductions in air emissions. The associated air quality benefits will lead to improved health, longevity, and quality of life for all Americans.

Weather Influence

Weather conditions influence emissions and air quality. EPA has developed statistical approaches to account for weather's influence on ozone and fine particles. While these approaches do not change the quality of air we breathe, they do help us understand how well emission reduction programs are working. More information on trends in ozone adjusted for weather conditions can be found at http://www.epa.gov/airtrends/weather.html.

Last updated on Tuesday, September 03, 2013