



Smog Hits a Record Low

By Joel Schwartz

Ozone smog levels have declined in the last couple of years due, in part, to emissions reductions and weather conditions, yet activists continue to present misleading accounts of air quality issues.

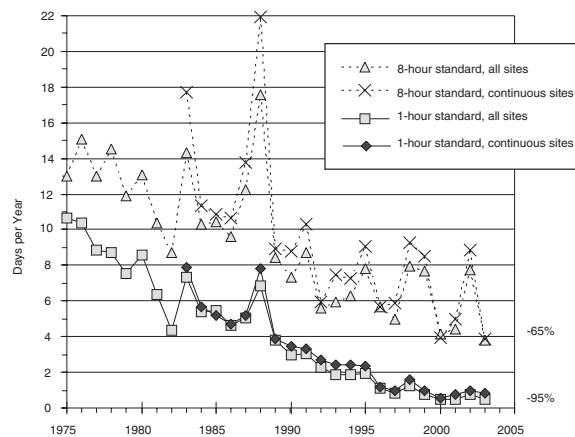
This year has seen the lowest ozone smog levels since states began measuring back in the 1970s. Preliminary data from around the country indicate that the number of days exceeding the Environmental Protection Agency's tough new eight-hour ozone standard declined an average of about 50 percent below 2003, which was itself a record year.¹

A combination of continuing emission reductions and favorable weather explains the improvements. Weather is the single largest factor affecting year-to-year variations in smog levels. All else equal, cool, wet, and windy years will have less ozone than warm, dry, and calm ones. But weather is only part of the story. During the last thirty years, most of the country has had several years that were cooler and/or wetter than 2004, but never have smog levels been anywhere near this low.

The graphs below provide the background for appreciating how extraordinary 2004 has been. Figure 1 shows the average number of days per year exceeding the EPA's one-hour and eight-hour ozone standards at the nation's ozone monitoring sites from 1975 to 2003. For each standard, the chart includes the exceedance rate for all sites operating in any given year (generally about 700 to 1,200), and also for the 261 sites that operated continuously from 1983–2003. The percentages to the right of the graph give the decline in the

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FIGURE 1
NATIONAL TREND IN DAYS PER YEAR EXCEEDING
EPA'S OZONE STANDARDS, 1975–2003²



number of eight-hour and one-hour exceedances since 1975.

Note that 2003 was the best year on record, barely edging out 2000, and that the average number of eight-hour ozone exceedances varies greatly from year to year. Annual variations in weather create the large short-term variability in smog levels, but superimposed on this is a long-term decline in ozone exceedances driven by emission reductions.

Figure 1 cannot be extended through 2004 until all states have reported their 2004 ozone data. However, preliminary data for 2004 are available on the web for several metropolitan

areas and states. Figure 2 compares eight-hour ozone exceedances in 2003 and 2004 for several of these areas. For each area, the chart gives the average number of eight-hour ozone exceedances for all monitoring locations that had data for both years. Figure 3 provides data for the worst location in each of the areas in figure 2.

Note the large declines almost across the board. I have not included data for the Midwest, but EPA's website reports that there was not a single "ozone action day" in 2004 in all of Illinois, Michigan, Minnesota, Ohio, and Wisconsin, while southern Indiana (the portion in the Louisville, Kentucky, metropolitan area) had just one.³

Overall, eight-hour ozone exceedance days declined an average of about 50 percent between 2003 and 2004, meaning that 2004 is not only the best year on record, but the best by a large margin.

Environmental Activists Respond

You would not know this from reading activists' reports on air quality, which continue to tell a deceitfully gloomy story. *Dangerous Days of Summer* from Environmental Defense (ED) and *Danger in the Air* from the Public Interest Research Group (PIRG) are the two latest entries. Neither report mentions that 2003 and 2004 were the best years in history for ozone. PIRG does mention that 2003 and 2004 were better than 2002, but attributes all of the improvement to weather.

Nevertheless, as you might expect, activists are always ready with a press release in years when air pollution rises. When ozone levels spiked upward during the hot, dry summer of 2002, a Clean Air Trust press release proclaimed "New Survey Finds Massive Smog Problem in 2002." But no activist press releases highlighted the spectacular decline in ozone levels the next year, or the record-low ozone levels of the last two years.

Other potential—but unmentioned—contributors to the recent ozone improvements are a 60-percent reduction in coal-fired power plant NO_x emissions during

FIGURE 2
AVERAGE NUMBER OF DAYS PER YEAR EXCEEDING THE EIGHT-HOUR OZONE STANDARD DURING 2003 AND 2004⁴

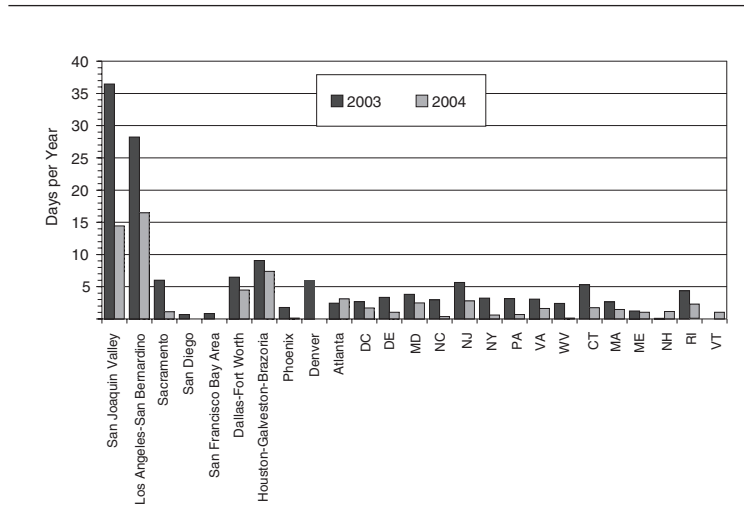
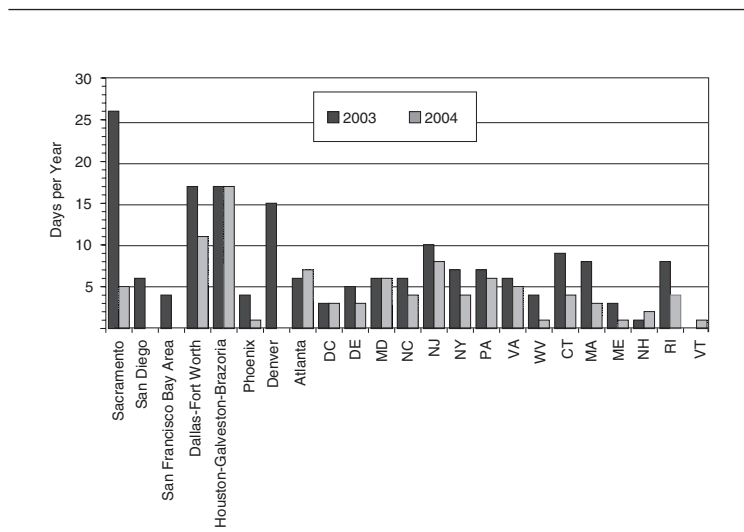


FIGURE 3
NUMBER OF DAYS PER YEAR EXCEEDING THE EIGHT-HOUR OZONE STANDARD AT THE WORST SITE IN EACH STATE OR METROPOLITAN AREA DURING 2003 AND 2004⁵



NOTE: Los Angeles-San Bernardino (LA-SB) and the San Joaquin Valley (SJV) are excluded in order to keep the vertical scale from being too compressed for the other areas. For the record, the 2003 and 2004 values at the worst sites in these areas are as follows: LA-SB, 72 and 62; SJV, 116 and 94. Arvin, the worst area in the SJV, might end up with a few additional ozone exceedances in October.

the May–September "ozone season" implemented in May 2004 under EPA's NO_x SIP Call regulation, and an ongoing reduction of about 8 percent per year in total automobile emissions due to fleet turnover to cleaner vehicles. Activists avoid mentioning these

reductions because they undermine their claims that urban “sprawl” increases air pollution and that power-plant emissions are increasing.

Dangerous Days commits the full range of deceptions pioneered by the American Lung Association (ALA) in its annual *State of the Air* series, such as inflating pollution levels, exaggerating the harm from current air-pollution levels and the number of people living in areas that exceed EPA standards, downplaying positive trends, and creating the impression that there will be little or no future improvement without stringent new regulations.

For example, *Dangerous Days* claims the New York metro area exceeded the eight-hour ozone standard on 22 percent of summer days during 2001–2003. But the average site in the New York area exceeded the eight-hour standard on 10 percent of summer days—less than half of ED’s claim. Environmental Defense’s number is higher than even the worst site in the New York area (Jackson Township, New Jersey), which exceeded the eight-hour standard 20 percent of the summer,⁶ and it likewise inflated ozone levels in all of the country’s metro areas.

But Environmental Defense’s ozone inflation is even worse than this because most people in the New York area live in places with the lowest ozone levels. Monitoring sites in the five boroughs of New York City averaged 3.7 percent of summer days exceeding the eight-hour standard, or one-sixth of ED’s claim. Likewise, ED claimed Los Angeles exceeded the eight-hour standard on 50 percent of summer days. But about half of Angelenos live in areas that never exceed the eight-hour standard. Environmental Defense also fails to distinguish between moderate and high ozone. Most ozone exceedances involved relatively low ozone levels. The average site in the New York metro area exceeded the higher one-hour ozone standard on only 2 percent of summer days, compared with 10 percent for the eight-hour standard.

Dangerous Days also exaggerates the number of people who live in areas that violate EPA’s air standards. According to the report, “Nearly 160 million Americans live in areas where ozone smog levels exceed national standards. . . . Some 99 million Americans live in areas that exceed annual fine particle standards.”⁷

Both of these numbers are based on the populations of counties designated as “non-attainment” areas by EPA. But this has little to do with actual pollution levels, because EPA designates whole regions as non-attainment areas even if only a single monitoring

location violates a federal standard. This makes sense for air quality planning, but not for determining air pollution exposure. Thus, 94 to 99 percent of people in San Diego, Chicago, Las Vegas, and Phoenix live in areas that meet all EPA ozone standards, but EPA counts everyone in those areas as breathing dirty air.

The claim for fine particulate matter (PM_{2.5}) is misleadingly high for an additional reason: EPA designated some counties as PM_{2.5} non-attainment areas not because they exceed the PM_{2.5} standard, but because they are believed to contribute to violations elsewhere. All told, ED overestimates by more than a factor of two the number of people living in areas that violate EPA standards.

Dangerous Days also implies that air pollution is responsible for rising asthma rates: “Asthma has increasingly gained attention as a nationwide epidemic and a symbol of the manifold health impacts of air pollution. It is the nation’s fastest growing chronic disease. . . .”⁸ Yet air pollution cannot be a cause of rising asthma because air pollution of all kinds has been falling nationwide at the same time that asthma has been rising.

Air pollution can aggravate pre-existing respiratory disease, but its impact is nothing close to what groups like ED claim. For example, when the Clinton-era EPA developed the eight-hour ozone standard, it predicted that going from full national attainment of the one-hour standard to full national attainment of the eight-hour standard would reduce hospital admissions for asthma by 0.6 percent, despite the eight-hour standard’s much greater stringency.⁹ Data from around the United States show that asthma hospitalizations are lowest in July and August—when ozone and, in many areas PM, are highest.¹⁰ Air pollution has gained the “national attention” referred to by ED not because of its overall importance as a cause of disease and disability, but because of its rhetorical power to generate eye-catching headlines, donations, and research funding.

Public Interest Research Group’s *Danger in the Air* makes ED’s *Dangerous Days* look like a model of reliable analysis. To arrive at its claims about ozone exceedances, PIRG simply adds up the ozone exceedances at each monitoring location in a city or state and calls that the number of exceedances for the area. Thus, PIRG claims Colorado exceeded the eight-hour ozone standard sixty times in 2003 even though the worst location in the state had fifteen exceedances, and the average location had less than four. Despite a national average of about four eight-hour ozone exceedances per year in 2003 (see

figure 1), PIRG managed to cook up 4,583 exceedances—a particularly masterful feat when you consider that there are only 365 days in a year. PIRG’s method is meaningless for determining health risks or anything else about actual air pollution, but it succeeds in generating big, scary numbers.

I have often criticized the media for their mostly gloomy and misleading accounts of air quality issues. For example, despite the substantial decline in ozone exceedances since the 1970s (see figure 1), in a story on ALA’s *State of the Air 2004* the *Washington Post* asserted: “Ozone pollution has declined *slightly* over the past 30 years” (emphasis added).¹¹ But many reporters around the country have noticed this year’s unusually low pollution levels and have let the public know about it. Even here, however, most stories gave the impression that mild weather was the sole cause and failed to discuss the long-term decline in smog-forming emissions or to compare smog levels in 2004 with much higher smog levels in previous years that had favorable weather.

Will air pollution remain just as low next year? That depends largely on the weather. Either way, emissions will continue to decline and the long-term trend will continue downward. Regardless, environmental activists are sure to tell us the sky is falling.

Notes

1. Note that is a statement about nationwide average ozone levels. It does not mean that 2004 has been the best year everywhere or even that ozone has declined everywhere in 2004 (it has not).

2. Results are based on analysis of hourly ozone data for 1975 through 2003 downloaded from EPA at <http://www.epa.gov/ttn/airs/airsaqs/detaildata/downloadaqdata.htm>.

3. For a list of ozone action days in EPA’s Region 5, see <http://www.epa.gov/region5/air/ozoneday/pastoad.html>. Days highlighted in red are ozone action days (OAD), and clicking on the date gives a map showing where the alert occurred. The only OAD occurred in Southern Indiana on August 3, 2004.

According to EPA Region 5 staff, the OAD listed for May 1, 2004, is a system test and not an actual OAD.

4. Data sources include <http://www.epa.gov/region1/airquality/o3exceed-04.html>; http://www.tnrcc.state.tx.us/cgi-bin/monops/8hr_monthly; <http://www.marama.org/ozone/2004/index.html>; <http://www.marama.org/ozone/2003/index.html>, http://www.arb.ca.gov/adam/cgi-bin/db2www/ozonereport_annual.d2w/start; <http://www.air.dnr.state.ga.us/tmp/exceedances/>; <http://www.cdphe.state.co.us/release/2004/092204b.html>; <http://www.epa.gov/air/data/geosel.html>; and M. J. Pitzl, “Summer’s Ozone Bad Only Once,” *Arizona Republic*, October 2, 2004. Data for 2004 go through September 30, except for California, which goes through October 5. Houston sometimes has a few eight-hour ozone exceedances in October. To eliminate the chance for bias, I used data only for April through September in both 2003 and 2004 when comparing ozone levels in Texas.

5. Ibid.

6. Even this may be an overestimate. ED counted only ozone exceedances that occurred between Memorial Day and Labor Day and then divided by ninety-nine days to get their percentage. Because of time constraints, I have counted ozone exceedances occurring at any time of the year, but I still divide by ninety-nine days. Thus, my numbers represent an upper limit on the percentage of summer days with ozone violations. The actual percentage will be lower in some cases.

7. John Balbus, M.D., and Yewlin Chee, *Dangerous Days of Summer* (New York: Environmental Defense, 2004), 1.

8. Ibid.

9. Environmental Protection Agency, “National Ambient Air Quality Standards for Ozone: Proposed Decision,” *Federal Register*, December 13, 1996, 65715-65750, <http://www.epa.gov/fedrgstr/EPA-AIR/1996/December/Day-13/pr-23901.txt.html>.

10. Elevated ozone occurs mainly during the summer because ozone formation increases with increasing sunlight and temperature. Elevated PM occurs mainly in the summer in the east and in the rural west and in the winter in urban areas of the west. For additional references, see online version of “Smog Hits a Record Low” at www.aei.org/publication21435.

11. D. V. Cohn, “Particles As Well As Ozone Foul Region’s Air; Lung Association Report Ranks Areas among Worst in U.S.,” *Washington Post*, April 29, 2004.