How the American Lung Association's "State of the Air 2002" Report Misleads the Public about Air Pollution and Health

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According to "State of the Air 2002," a report to be released on May 1 by the American Lung Association (ALA), "more than 142 million Americans live in areas where the air they breathe puts them at risk." If that were true, air pollution would be one of the most serious health challenges in the United States. However, the ALA report greatly exaggerates Americans' exposure to and risk from unhealthful air, and misleads the public into believing that air pollution is getting worse, when in fact it has been improving.

How did ALA get the numbers so wrong? The ALA report is seriously misleading because:

- Ozone levels are artificially inflated in dozens of counties when compared with actual ozone monitoring data.
- Clean areas of many counties are counted as having dirty air.
- The ALA grading system is more stringent than the Environmental Protection Agency's (EPA) proposed new "8-hour" ozone standard, which is specifically designed to protect those most at risk from air pollution.
- ALA assumes 40 percent of people are "sensitive" to and harmed by moderately elevated ozone levels, while health effects research shows that only a few percent of people fall into this category.
- The study implies that air pollution is bad and getting worse, when in fact air pollution levels have been dropping for at least 20 years in most areas, and only a few metropolitan areas still have a serious ozone air pollution problem.

As a result, ALA may be needlessly scaring tens of millions of Americans into believing their air is unsafe, and encouraging society to waste scarce resources on non-existent or minimal risks.

I. ALA Greatly Overstates Actual Exposure to Elevated Ozone Levels

"State of the Air 2002" artificially inflates ozone levels, reporting more high-ozone days per county than ever actually occur. Here's how: ALA tallied a countywide ozone violation for each day that at least one monitor in a county registered ozone greater than 0.084 parts per million (ppm). As a result, ALA counts more ozone violations for a county as whole than occurred at any single location in the county. This overstates ozone exposure for everyone, because ozone can affect your health only if it's high where you're located, rather than in some other part of your county.

Figure 1a shows this for Los Angeles County. Using the ALA method, Los Angeles County averaged 36 elevated ozone days per year from 1998 to 2000.[1] But no single location

had more than 22 days of elevated ozone, and most had far less. This means that even for the people with the maximum ozone exposure in the county, ALA overestimates real exposure by more than 60 percent, and by much more than that for most people. One can also see this is true by asking the following question: "Where can I find the people in Los Angeles County who are exposed to 36 days per year of elevated ozone?" The answer is "nowhere," because no single location has this many annual days of elevated ozone. Figure 1b shows similar data for Maricopa County, Arizona, where the ALA method results in an even more exaggerated ozone exposure value.[2]

"State of the Air" artificially inflates ozone levels for dozens of other U.S. counties, including populous ones such as Cook (Chicago), Harris (Houston), and San Diego, in effect telling tens of millions of Americans that they are often exposed to elevated ozone, when in fact they are rarely or never exposed.

Figure 1a

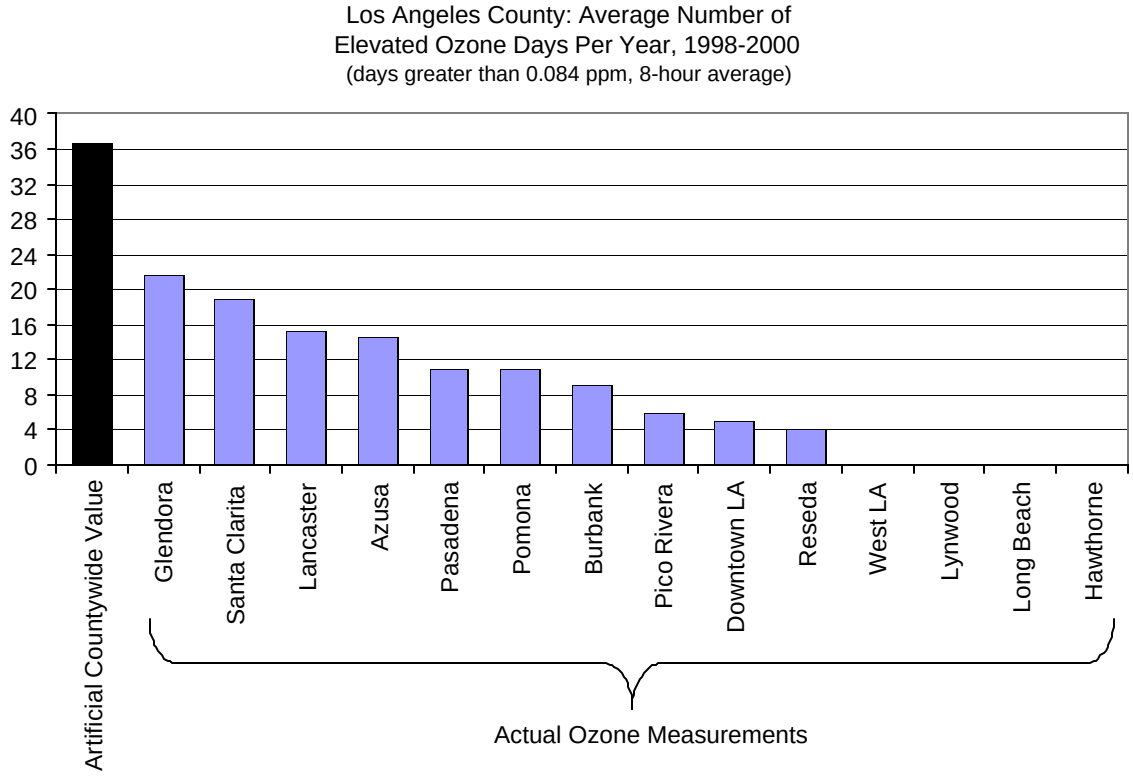
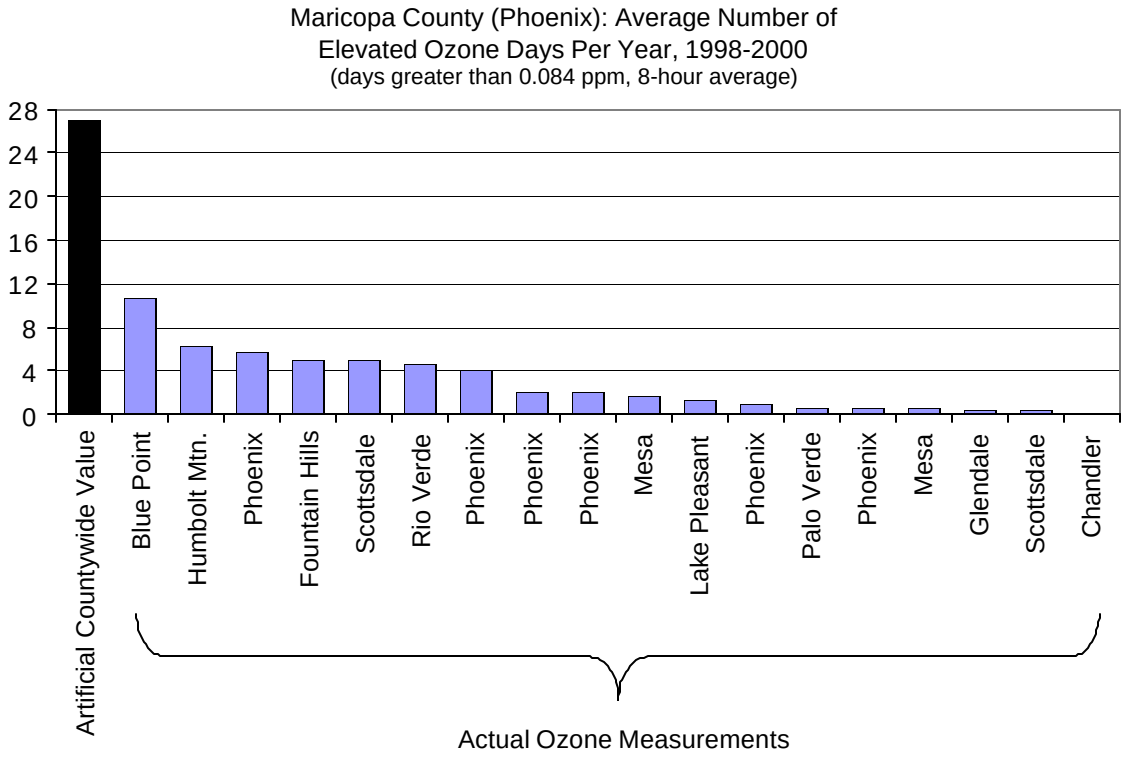


Figure 1b



II. ALA Counts Many Areas with Clean Air as Having Dirty Air

There are several reasons for this:

- ALA used an artificially stringent standard for determining when ozone levels are high enough to be harmful.
- "State of the Air" isn't based on peoples' actual exposure to ozone, but rather on an artificially inflated exposure (see previous section).
- Ozone levels have been declining in many places, but the ALA report is based on data from 1998 to 2000, when ozone levels were higher in many areas than they were in 2001.
- ALA gives the same failing air quality grade to regions with both severe and mild air pollution problems, blurring the distinction between minor and significant health risks.

Most counties monitor ozone levels at several locations, because ozone levels usually vary from place to place. Table 1 shows the percent of ozone monitoring locations in a number of populous counties that comply with the current EPA ozone health standard (usually referred to as the "1-hour standard"), and with a new, much more stringent standard that EPA hopes to implement soon (usually referred to as the "8-hour standard"). Though large areas of most of these counties have clean air based on even the 8-hour

standard, ALA assigned all of these counties a failing grade.[3] Dozens of other counties also received misleading grades from ALA.

Table 1. Actual Ozone Pollution Status of Selected U.S. Counties (as of January 2002) Compared with "State of the Air" Grade

		Percent of monitoring locations that comply with:		
County	**Major City**	**EPA 8-hour ozone standard**	**EPA 1-hour ozone standard**	**ALA Air Quality Grade for Entire County**
Manhattan[4]	**New York**	100%	100%	F
Orange, CA	**Irvine**	100%	100%	F
Cook	**Chicago**	94%	100%	F
San Diego	**San Diego**	90%	100%	F
Maricopa	**Phoenix**	77%	100%	F
Philadelphia	**Philadelphia**	50%	75%	F
Los Angeles	**Los Angeles**	50%	62%	F
Sacramento	**Sacramento**	43%	71%	F
Dallas	**Dallas**	33%	33%	F
San Bernardino	**San Bernardino**	8%	33%	F
Harris	**Houston**	7%	0%	F
Wake	**Raleigh**	0%	100%	F
Washington, DC	**Washington, DC**	0%	66%	F
Fresno	**Fresno**	0%	17%	F

III. ALA Greatly Exaggerates the Number of People Affected by Current Ozone Levels

ALA exaggerates the percentage of the population that is sensitive to relatively low levels of ozone. Researchers measure the effects of ozone on people via both quantitative tests of lung function and subjective ratings of symptoms. Lung function studies of children, adults, and the elderly have shown, not surprisingly, that factors such as ozone level, duration of exposure, presence of respiratory diseases, and physical activity level can affect people's responses to ozone.

These studies show that high ozone levels—0.12 ppm and above—especially combined with exposures longer than three hours, pre-existing respiratory disease, and exercise, can cause both substantial decreases in measured lung function and increases in subjective

symptoms, such as coughing and pain during deep breathing. However, at ozone levels in the range of 0.08 ppm to 0.09 ppm, studies have found that most people don't experience measurable reductions in lung function and even fewer experience subjective respiratory symptoms, though some experience adverse effects, especially under conditions of multi-hour exposure combined with exercise. These low-exposure effects do appear to be temporary, however.[5]

Despite these research results, ALA assumes 40 percent of the population—including all children under 14, all adults over age 65, and all people with a respiratory disease—are "sensitive" to ozone, and suffer serious and permanent harm even when ozone levels are around 0.09 ppm on more than 3 days per year. ALA has thus greatly exaggerated the percent of the population affected by moderately elevated ozone levels.

IV. "State of the Air" Claims Air Pollution Is Bad and Getting Worse, when in Fact it is Generally Mild and Improving

The fight against smog is a great success story in environmental protection. According to EPA, ozone levels decreased by an average of 24 percent nationwide, between 1980 and 1999.[6] Southern California, the region with the worst air in the country, reduced its annual violations of EPA's one-hour ozone standard by about 80 percent between 1980 and 2001. Houston, the second most polluted area in the country, reduced ozone violations by about 60 percent over the same period. Most, though not all, metropolitan areas have also achieved significant improvements in ozone levels. These gains occurred at the same time that Americans increased their driving by 75 percent.[7] Pollution measurements also show that emissions from cars and trucks—the major sources of ozone-forming pollution, are declining by about 10 percent per year as older vehicles are supplanted by more recent models that start out cleaner and stay cleaner throughout their lives.[8] This means that air quality will continue to improve. Readers of the ALA report would never know these facts. Instead, ALA misleads readers into believing that air pollution is getting worse and that the Clean Air Act is in danger of being rolled back.

Air pollution is also much less pervasive a problem than "State of the Air" claims. As of January 2002, 88 percent of ozone monitoring locations in the United States comply with the EPA's 1-hour ozone standard, while 59 percent comply with the 8-hour ozone standard. Furthermore, half of the locations that exceed the 8-hour standard do so by less than about
6 percent. Only a few metropolitan areas—San Bernardino, Houston, and Fresno—still have serious air pollution problems. The vast majority of other areas either have clean air, or have air pollution at a level harmful to only a few percent of the population. Nevertheless, ALA incorrectly claims "75% of Americans who live in areas with monitors are breathing in unhealthy amounts of ozone." While no one should be subjected to health-damaging levels of air pollution, the real state of the air is far more favorable than ALA would have Americans believe.

V. The Perils of Exaggerating Environmental Risks

ALA's inaccurate and misleading air quality ratings could scare tens of millions of people who breathe clean air into incorrectly believing that their air is unsafe. Tens of millions more might believe that their air poses a major health threat, when in fact their real risk is minimal.

Ironically, ALA's efforts could actually reduce Americans' overall health and safety. The ALA report will encourage the public to demand unnecessary additional expenditures to clean up air that is already clean. But in a world of limited resources, society can address only some of the many risks people face. When society wastes effort on small or non-existent risks, fewer real problems get the attention they deserve, reducing our health and safety.

Everyone deserves to breathe clean air, and nobody wants to see people suffering from pollution. A few areas of the country have serious air pollution problems that do threaten the health of people who live there. But exaggerating the public's risk from air pollution is no better than ignoring real air quality problems. If society misspends scarce resources based on inaccurate information, more people will suffer not fewer.

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[1] Ozone data were downloaded from EPA's AIRdata web site, www.epa.gov/aqspubl1/annual_summary.html

[2] Phoenix has ozone monitoring locations in several areas of the city, and each one is marked by its own bar in Figure 1b.

[3] EPA's current health standard for ozone states that a region will be considered to be in "non-attainment" if ozone levels during any one-hour period exceed 0.124 parts per million (ppm) on more than three days during the most recent three-year period. This standard is usually referred to as the "1-hour standard."

Believing that this standard was not sufficiently protective of public health, EPA in 1997 proposed a new, far more stringent, ozone standard. Under this standard, an area is deemed in non-attainment if the average of the fourth-highest ozone level from each of the last three years is greater than 0.084 ppm. In this case, the daily ozone levels are averaged over an 8-hour period, and this standard is therefore usually referred to as the "8-hour standard." EPA intended this standard to provide adequate health protection even for those most sensitive to ozone, such as some people with respiratory diseases.

The ALA standard is much more stringent than even the EPA's 8-hour standard. Under the EPA 8-hour standard, a region would have to average roughly 12 days in a three-year period with ozone greater than 0.084 ppm before being out of compliance with the health standard. In contrast, the ALA won't give a region a clean bill of health unless it never has any days with ozone greater than 0.084 ppm. Even though ALA chose a *more stringent* standard than the EPA 8-hour standard, EPA's Clean Air Science Advisory Committee, an independent panel of scientists and health experts, concluded that EPA could have chosen an even *less stringent* standard than the 8-hour standard and still be equally protective of public health.

[4] Manhattan has two ozone monitoring locations. One is at ground level on the East Side, and one was at the top of the former Twin Towers. The ground-level ozone monitor never registers ozone levels in excess of EPA health standards or even in excess of the more stringent standard used by ALA*. However, the ozone monitor at the top of the Twin Towers measured ozone levels in excess of EPA health standards. ALA's failing grade for Manhattan is based on the latter monitor, even though nobody in Manhattan spends much time up at 1,300 feet.

[5] On ozone's health effects, see for example, EPA, *Air Quality Criteria for Ozone and Related Photochemical Oxidants* (Washington, D.C., July 1996), vol. II, Ch. 7; M. Berry et al., "Accumulated Exposure to Ozone and Measurement of Health Effects in Children and Counselors at Two Summer Camps," *Environmental Research*, vol. 54 (1991), pp. 135-150; D. M. Spektor, "Effects of Single- and Multiday Ozone Expsures on Respiratory Function in Active Normal Children," *Environmental Research*, vol. 55 (1991), pp. 107-122; and D. H. Horstman, "Ozone Concentration and Pulmonary Response Relationships for 6.6-Hour Exposures with Five Hours of Moderate Exercise to 0.08, 0.10, and 0.12 ppm," *American Review of Respiratory Diseases*, vol. 142 (1990), pp. 1158-1163.

[6] EPA, *Air Quality Trends 1999* (Washington, D.C, 2000).

[7] Vehicle use trends come from the U.S. Bureau of Transportation Statistics (www.bts.gov/btsprod/nts/ch1_web/1-29.htm) and the Federal Highway Administration (www.fhwa.dot.gov/ohim/hs99/tables/vm1.pdf).