

## GOOD SPIN, BAD SCIENCE

### *American Lung Association Report Deserves Scorn*

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Summary: The American Lung Association's annual "State of the Air" reports are treated as scientific and informative by the state news media. They are neither. They use outdated information that reflect changing weather patterns rather than real pollution and are biased against jurisdictions like North Carolina with high numbers of ozone monitors. As a result, the reports supply propaganda for lobbyists for heavier regulation but do a great disservice to science and the general public.

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**T**oday the American Lung Association releases its annual study entitled "The State of the Air: 2002" in which the organization reports on ground-level ozone in North Carolina and the rest of the U.S. over a three-year period.<sup>1</sup> As part of this study, each county is given a grade (A to F) based on the number of days that it exceeds the pending EPA guidelines on ozone, referred to as "ozone exceedence days." In addition, the study calculates the number of people that are allegedly put at risk for respiratory problems as a result of these exceedences.

The importance of the report lies not in its scientific validity, which is virtually nil, but in its propensity to attract major media coverage and thus affect public policy debates. For example, over the past year the 2001 ALA study has been repeatedly invoked in advocating the "Clean Smokestacks" bill now pending before the N.C. General Assembly. Local media outlets throughout the state are quick to report on the study because it issues grades on a county-by-county basis and uses its results to rank states and counties based on air quality. This gives rise to an easy comparison between localities in North Carolina and those in other states.

From a scientific perspective, every aspect of the ALA report is methodologically flawed. Its reporting of ozone data, the extent of detrimental health effects in communities, and its grading system and rankings by state and county are meaningless.

#### *The Data Are Outdated*

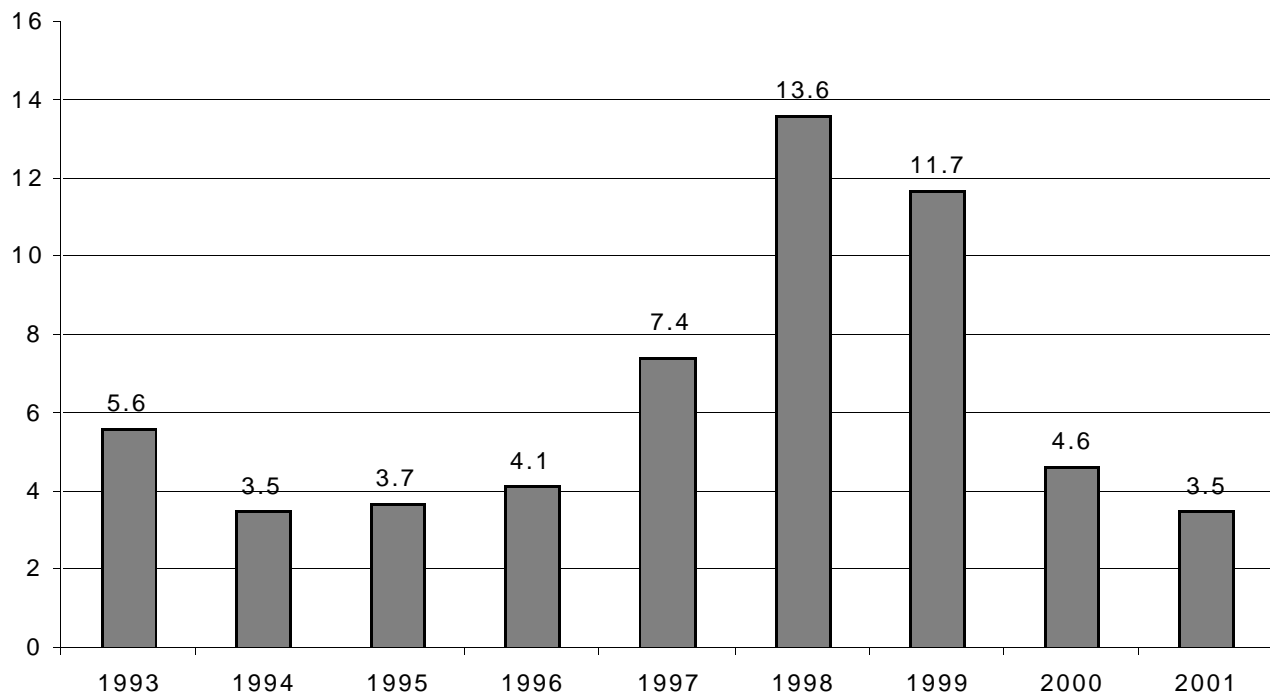
First, it should be noted that the ALA report is based on "old" data which say nothing about current or expected future conditions. While last year's report was titled *The State of the Air 2001* and this year's report is titled *The State of the Air 2002*, the focus is

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## Average Number of Ozone Exceedence Days Per Monitor in North Carolina from 1993 to 2001



SOURCE: North Carolina Dept. of Environment and Natural Resources

on data for three-year periods between 1997 and 1999 for the former and 1998 and 2000 for the latter. This is particularly important because for many states, including North Carolina, 1997, 1998, and 1999 had unusually hot humid summers due to the El Nino weather patterns throughout North America. Because of this, ozone readings during those years were not typical.<sup>2</sup> The average number of ozone days per monitor in 1998 and 1999 were more than 2.5 times the average for all other years between 1993 and 2001. In 2001, ozone monitors in the state averaged only 3.5 exceedence days for the entire year, a 66 percent decline over 1999 readings. In spite of this, 1998 and 1999 make up two-thirds of the data in this year's ALA report.

### *ALA's Grading System and Inter-County Rankings*

The ALA's A-to-F grading system is useless in conveying meaningful information regarding either the extent of the health-related problems that might be due to ozone levels or relative air quality. A county is given a grade of F if there are three monitor readings greater than or equal to 85 parts per billion (ppb) of ambient air averaged over eight-hours during the three years of analysis. (The 85 ppb, 8 hour threshold is central to the currently pending EPA standard, proposed in 1997.)

This raises several problems. Imagine two counties, A and B. County A registers 3 mild exceedence days of 85 ppb each over a period of three summers, with no other days registering above 65 ppb. This county would be given an "F" by the ALA. Now imagine county B where there are 40 days measuring 83 ppb with no day registering below 75 ppb. The ALA grading system would give county B a grade of "A" because it had no exceedences over the three-year period. According to reports issued by the EPA's Clean Air Scientific Advisory Committee (CASAC) these two grades would tell us nothing about the relative healthiness of the air in these two counties. The conclusion of CASAC is that when considering the 70 to 90 ppb range that was looked at by the EPA when setting the their proposed standard, "there is no 'bright line' which distinguishes any of the proposed standards...as being significantly more protective of public health."<sup>3</sup>In other words, in the example above where one county receives an A and the other receives an F neither county would be considered "significantly more protective of public health." In this case the difference between an A and an F, while appearing quite dramatic, turns out to be, in terms of public health, no difference at all. The ALA report ignores CASAC's conclusions regarding ozone's health effects and writes as if the "bright line" that CASAC emphatically states does not exist somehow does.

Compounding the deception of the ALA grading system is the fact that the ALA study uses its conclusions to rank counties and metropolitan areas according to relative levels of ozone pollution. The problem is that different counties, cities, and states have different numbers of ozone monitors. The more monitors in a city or county, the more likely it is that it will show

an exceedence on any given day — the more monitors the more exceedences. This biases any comparisons or rankings among localities against areas with more monitors. For example, North Carolina has the sixth-largest number of monitors in the country; consequently the state tends to show more ozone exceedence days than other states, like New York, with fewer monitors. The ALA study makes no attempt to adjust their rankings for numbers of monitors and makes no reference to this problem. Because of this, inter-county and inter-MSA rankings in the ALA study are worthless.

### ***Countywide Measurements of Ozone and the “At Risk” Population***

The way in which ozone statistics are officially reported for any geographic area is misleading and because of this any analyst must be careful in how these data are used and what implications are drawn from them. In reporting data from a county, a region, or a state, both the federal EPA and the N.C. Department of Environment and Natural Resources will count an ozone exceedence from any one monitor against the entire geographical area. For example, assume that a county has 4 ozone monitors located at different locations. If only one of those monitors shows an exceedence for a given day while the other three record ozone below exceedence levels, the entire county will be reported as being out of compliance. Thus the county will always be reported as having considerably more ozone exceedence days in a given year than any location in the county actually experiences. The same is true for the state as a whole. For example, during the summer of 2001 DENR lists North Carolina as having 33 high-ozone days, but no single location had anything like this number. As was noted above, on average monitors in the state showed only 3.5 days. This means that a typical North Carolinian living in an area where there is a monitor was exposed not to 33 ozone exceedence days but 3.5. Furthermore, 31 percent of all monitors in the state registered no exceedences last year. The ALA study adopts this misleading methodology in its annual report and consequently presents a distorted and inherently hyperbolic picture of the true number of ozone exceedence days for any locality.<sup>4</sup>

As a result of this the ALA study ends up exaggerating the number of people who are at risk from ozone pollution. First, the study defines the ozone “sensitive” group as being all people, regardless of age, with asthma, bronchitis, or emphysema; all children under the age of 14; and all adults over the age of 65. Furthermore they assume that all of these groups are put at risk whenever the 85 ppb standard is exceeded. These assumptions are problematic and were noted as such by the EPA’s CASAC.<sup>5</sup> Furthermore, whenever the study cites a county as having an ozone exceedence day, even if only one monitor in one location in the county is out of compliance, the entire population of the county deemed “sensitive” is reported as being at risk.

Wake County presents an excellent example. In 1998 a monitor located in Fuquay-Varina, one of the most rural and least-populated communities in the county, registered four exceedence days that were not registered on monitors in any other location. In spite of this, the entire “sensitive” population of the county — including the population of the city of Raleigh, which showed no exceedences on those days — was listed as “at risk” in the ALA study. So when the ALA stated in its 2001 report that “More than 30 million children under the age of 14...are living in counties that received an “F” in air quality”<sup>6</sup> the implication, that 30 million children are being exposed to dangerous levels of ozone, was false.

It should also be noted that the ALA study misleads in that it reports the same people as being at risk in several different categories. For example, it gives a total for both all children under 14 and children with asthma, even though the later is a subset of the former. In stating the conclusion that “as many as 27.1 million children 13 and under, and over 1.9 million children with asthma are potentially exposed to unhealthful levels of ozone”<sup>7</sup> the ALA actually refers to many of the same children twice. Technically they avoid double-counting only because they do not aggregate.

### ***Conclusion***

Each spring, when the ALA releases the results of its *State of the Air* report, the news media uncritically report the horror stories it purports to uncover. Unfortunately reporters rarely ask how the studies are done or what they mean. ALA’s *State of the Air* reports amount to propaganda and are not the product of a legitimate scientific process. Policy makers and the media should view them in this light.

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### ***NOTES***

<sup>1</sup> Found at [www.lungusa.org](http://www.lungusa.org).

<sup>2</sup> Roy Cordato, “Clearing the Air: ALA’s Misleading Attack on NC Air Quality,” Spotlight No. 193 (Raleigh, NC: The John Locke Foundation) May 23, 2001.

<sup>3</sup> “CASAC Closure on the Primary Standard Portion of the Staff Paper for Ozone,” Clean Air Scientific Advisory Committee, U.S. Environmental Protection Agency, EPA-SAB-CASAC-LTR-96-002, November 30, 1995.

<sup>4</sup> Op. cit. at note 29, p. 3.

<sup>5</sup> Op. cit. at note 5.

<sup>6</sup> Found at [www.lungusa.org/air2001/intro.html#executive](http://www.lungusa.org/air2001/intro.html#executive).

<sup>7</sup> [www.lungusa.org/air/children\\_factsheet99.html](http://www.lungusa.org/air/children_factsheet99.html)