

BRIEF ANALYSIS

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Breathe Easier on Asthma-Air Pollution Link

by Joel Schwartz

Some past studies have shown that air pollution can aggravate pre-existing lung ailments. But pollution-control advocates are mistakenly citing a study published in the February 2nd issue of *The Lancet*, a prestigious British medical journal, to justify ever more intrusive air pollution regulations. The study, which focused on children in southern California, reports that frequent, strenuous, outdoor exercise, combined with high levels of ozone air pollution, can more than triple children's risk of developing asthma. It is also the first work of its kind to conclude that air pollution might actually cause asthma, not just aggravate it.

Officials at the California Air Resources Board (CARB), which paid for the study, claim that the results apply not only to the 12 southern California communities where it was performed, but to many other cities across the country as well. CARB officials also maintain that the study shows additional air pollution regulations are necessary to protect children's health. State and local public health officials, along with other public health advocates, echoed these sentiments in the many newspapers that carried the story.

However, public health advocates who cite the *Lancet* study as evidence of the need for more stringent air pollution regulations ignore a fundamental point: though high ozone levels of the past might have caused asthma in some parts of southern California, children exposed to current levels of air pollution are at virtually no additional risk of developing asthma.

Asthma study findings. In the *Lancet* asthma study, researchers followed children in 12 southern California communities from 1993 to 1998. After controlling for factors besides air pollution that could account for differences in asthma rates (such as income, ethnicity, parental smoking, etc.), the study found that:

- In the four communities with the highest ozone levels (which were all in the greater San Bernardino area), children who participated in three or more team sports (about 8 percent of all children in the study) were 3.1

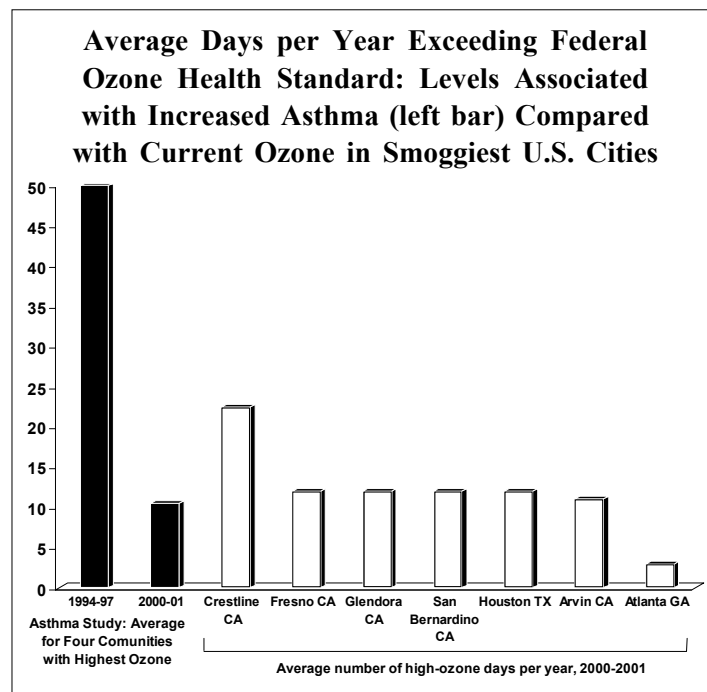
times as likely to become asthmatic when compared with less-active children. Asthma was unrelated to sports participation in the eight communities with lower ozone levels.

- Children who spent the most time outdoors were 1.4 times more likely to become asthmatic in the six communities with the highest ozone levels, but not in the other six communities.

- The study measured other pollutants, such as airborne particulates and nitrogen dioxide, but found no relationship between these pollutants and asthma.

- Despite the increased asthma rate found for very active children in polluted areas, overall asthma rates did not differ between the high- and low-pollution areas.

Ozone levels now too low to increase asthma risk. The asthma study estimated children's ozone exposure using pollution measurements from 1994 to 1997—a period during which the four “high-ozone” study areas exceeded the federal ozone health standard by an average of about 50 days per year. However, such high pollution levels no longer occur anywhere in the United States. For example:



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- Southern California has made great progress in lowering air pollution levels during the last decade. The four “high-ozone” communities in the asthma study now average 11 ozone exceedances per year — a reduction of almost 80 percent. Crestline, with the worst ozone in the nation, exceeds the standard an average of 23 days per year (see figure).
- Ozone levels in America’s next most polluted metro areas — Fresno, Houston, and Atlanta — are also much lower than the levels associated with increased asthma risk in southern California (see figure; Arvin is a rural area of Kern County, California).
- All other areas of the country have even less smog than the areas depicted in the figure.

Overall, no American community now experiences ozone at levels similar to those that occurred during the asthma study, and more than 97 percent of the population doesn’t experience even one-tenth as many high-ozone days. Indeed, no other region has *ever* exceeded the federal ozone health standard as often as southern California did up until recently.

Study Limitations. It’s worth remembering that the association between asthma and ozone in the study might be spurious due to unavoidable limitations of the study design. For example, among children in high-ozone areas playing three or more sports, one would have “expected” six children to develop asthma, but 20 actually did. The inference that ozone can cause asthma is based solely on this relatively small sample.

Because it would be unethical and impractical, children were also not randomly assigned to high- and low-ozone exposure groups, creating the potential for biased results. Without random assignment, there’s no way to be sure that ozone levels are the only factor accounting for observed differences in asthma rates between areas. The researchers attempted to control for such “confounding factors,” but the possibility of residual undetected bias remains.

Rising asthma/declining air pollution. Proponents of the pollution-causes-asthma hypothesis also err in claiming that air pollution is partly to blame for the doubling of asthma prevalence during the past 20 years. The Environmental Protection Agency reports ozone

levels dropped an average of 24 percent nationwide between 1980 and 1999, while other pollutants also declined substantially. The most polluted areas achieved the largest reductions. On the other hand, pediatric asthma prevalence rose from 3.7 percent of children to 6.9 percent between 1980 and 1996. It’s hard to see how decreasing pollution could be a cause of increasing asthma. Furthermore, the southern California study itself found no difference in overall asthma incidence when comparing high- and low-ozone communities.

Misleading the public. The asthma study findings seem irrelevant in light of current ozone levels and trends. Nevertheless, in media reports on the study, regulators and public health advocates insisted the study proves the need for stricter ozone regulations. For example:

- CARB officials claimed that many cities have ozone levels that would probably produce the same results as the southern California study, and that the study shows current standards “are not sufficiently protective of children’s health.”
- A consultant to the American Lung Association asserted, “this is not just a southern California problem. There are communities across the nation that have high ozone.”
- Texas health officials claimed the California findings apply to Houston as well, while Baltimore’s health commissioner implied that air pollution is the cause of rising asthma-related emergency-room visits.

Conclusion. Asthma is a serious disease and no one wants to take risks with the health of their children. But for children to be at risk, they would need to be frequently exposed to high ozone levels. Fortunately, they are not. Recent air-quality improvements mean that no one in America is now exposed to ozone at levels associated with greater asthma risk.

Asthma exacts a large health toll on our society, making it urgent that we learn what causes the disease and how to neutralize it. But regulators and activists do the public a disservice when, by publicizing non-existent health hazards, they divert attention and resources from real threats to people’s lives and welfare.

Joel Schwartz is a Senior Scientist at the Reason Public Policy Institute.

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