Children's Health and Environment Fact Sheet

Outdoor Air Quality

National Conference of State Legislatures

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Summary

Most regions of the United States have seen air quality improve over the past 30 years. Nonetheless, nearly 38 million children under age 18 live in areas that do not meet national air quality standards,[1] and some areas, such as Atlanta and Houston, have severe air pollution problems and often violate national air quality standards. A large body of research demonstrates that air pollution can have harmful effects on children's lungs and respiratory systems and can increase the likelihood and severity of asthma attacks.[2] Although air quality policy is often complex and controversial, policymakers in many states are finding creative ways to reduce the effects of air pollution on children's health.

A study of pregnant women in New York city found a significant relationship between exposure to air pollution and low birth weight babies, who are more likely to have serious health problems than babies born near average weight.[3]

Key Issues

Children are undergoing developmental processes that may make them more sensitive than adults to air pollution. Also, children spend more time outdoors in vigorous physical activity and breathe more air relative to their body weight than adults do, which increases pollutant exposure.

Air pollution levels commonly seen in the United States have been linked to school absences; susceptibility to respiratory illnesses, such as pneumonia and bronchitis; restricted activity; and reduced lung capacity in children. [4]

Evidence also suggests that air quality may account for 16 percent of sudden infant death syndrome and 24 percent of the infant mortality caused by respiratory disease.[5]

Air Pollution and Asthma

A growing number of children have asthma (rates have nearly doubled in the past two decades), and costs related to asthma have increased as well—asthma-related costs totaled an estimated $14 billion in 2000 and are expected to increase.[6]

Studies have shown that children with asthma are much more likely to have asthma attacks and visit the emergency room on days with elevated air pollution.[7] Even on days when pollution meets Environmental Protection Agency (EPA) standards, research has found that childhood asthma still can be exacerbated by increases in air pollution.[8]

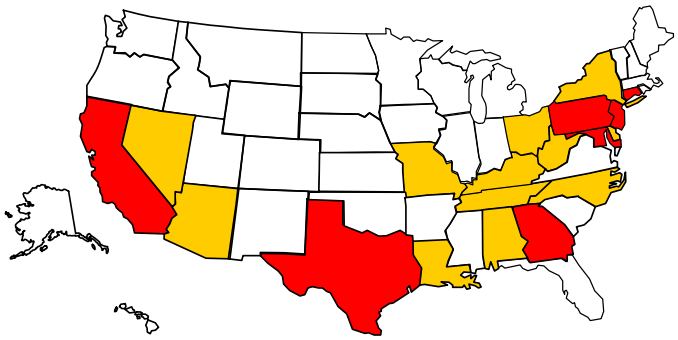
One now-famous study on asthma and air quality used data gathered during the 1996 Olympics in Atlanta. During this time, many local residents reduced their driving emissions dramatically by leaving the city, working from home or avoiding driving. As a result, air quality improved during this period and visits to the emergency room for asthma decreased.[9]

Air pollution, already known to exacerbate asthma, also may cause the disease. A University of Southern California study of children in Los Angeles found that, in areas with high ozone, children who played multiple sports were much more likely to develop asthma than those who did not. Children who spent more time outside also were more likely to get asthma if they lived in areas where ozone levels were high.[10]

A Legislator's View

Delegate James Hubbard of Maryland, who has been working on air quality legislation in his state, feels there are problems with the current efforts to improve air quality. "The U.S. is failing to control air pollution that is emitted in one state and travels to another," he says. "Maryland sees the ozone and particulates that come in from other states as hurting its ability to meet federal air quality mandates." Hubbard, who feels that the current administration's changes to the Clean Air Act will hurt states, is introducing legislation that will allow Maryland to continue with technologically based standards of air quality improvements while avoiding the federal "cap and trade" program.

Figure 1. Air Quality and Ozone in the States



States with counties that had more than 30 orange air quality days.
States with counties that also had more than 10 red air days.

Source: American Lung Association: *State of the Air: 2003.*

State Concerns

Many states are struggling to maintain healthy air quality for their residents. Some regions often find themselves in the unhealthy range of the air quality index, which EPA designates as orange or red (figure 1). On an orange day, EPA advises sensitive groups (depending on the pollutant, this group may include those with heart or lung disease, asthma, older adults and children) against performing strenuous or prolonged activity outdoors. In 2003, 18 states had counties that saw more than 30 orange ozone days each. Houston and the Los Angeles region topped the list with 80 and 179, respectively. Many cities also experienced red air quality days, when the air is considered unhealthy for everybody.

State Action

In California, the Legislature required the State Air Resources Board to review all existing health-based ambient air quality standards to determine whether the standards adequately protect the health of the public, including infants and children. The board is also required to revise air quality standards that are determined to be inadequate. (Senate Bill 25, CAL. HEALTH & SAF. CODE §39669.5, *enacted* 1999).

California Senate Bill 352 (*enacted 2003*) attempts to reduce childhood exposure to air pollutants by prohibiting a school from being sited within 500 feet of a highway, traffic lane or other source of hazardous air pollution, unless air quality analysis and modeling can prove that schoolchildren will not be placed at risk from nearby pollution sources.

Hawaii Senate Bill 572 (*2003; not enacted*) sought to establish a children's environmental health council to monitor, assess and evaluate air pollution.

Some states have worked to decrease children's exposure to air pollution by reducing idling times of diesel school buses, which emit hazardous air pollutants. Exhaust from idling buses can pollute zones where children gather when departing or waiting to get on a bus and can enter schools through open windows or air intake vents. Connecticut's school bus anti-idling law (CONN. GEN. STAT. §14-277, *enacted* 2002) requires drivers to turn off buses after reaching their destinations and to turn them on just long enough to reach operating temperatures before departing. Minnesota enacted a similar anti-idling bill, and California's air board adopted school bus anti-idling regulations in 2002.

On the Horizon

States that wish to surpass EPA's implementation of the Clean Air Act will, like Maryland, work to improve air quality through legislation and regulation. Some of the approaches that states are likely to consider include: retrofitting of school buses to make their diesel engines burn cleaner; creating no-idle policies for trucks and other commercial vehicles; developing more efficient transportation systems; implementing low-emission vehicle programs; and promoting renewable energy.

Resources

For more information about air quality issues and children's health, visit NCSL online. Resources include a new video and book on children's health and the environment as well as many other publications on the topic. Visit www.ncsl.org/programs/esnr/toxics.htm, call (303) 364-7700 ext. 1341, or visit U.S. EPA at www.epa.gov/air. Fact Sheet by Glen Andersen.

Notes

1. U.S. EPA, *National Air Quality and Emissions Trends Report, 2003 Special Studies Edition,* (Research Triangle Park, NC: U.S. EPA, September 2003).
2. B. Walker et al., "Environmental factors associated with asthma," *Journal of the National Medical Association* (February 2003): 152-66.
3. Frederica P. Perera et al., "Effects of Transplacental Exposure to Environmental Pollutants on Birth Outcomes in a Multiethnic Population," *Environmental Health Perspectives* 111, 2, (February 2003): 201-5.
4. David V. Bates, "The Effects of Air Pollution on Children" *Environmental Health Perspectives* 103, Supplement 6 (September 1995).
5. R. Kaiser et al., "Air pollution attributable postneonatal infant mortality in U.S. metropolitan areas: a risk assessment study." *Environmental Health: A Global Access Science Source,* (May 5, 2004): 4.
6. National Heart, Lung, and Blood Institute. *Morbidity and Mortality: 2002 Chart Book on Cardiovascular, Lung, and Blood Diseases*, (May 2002).
7. Joel Schwartz, "Air Pollution and Children's Health," *Pediatrics* 113, 4 (April 2004): 1037-1043.
8. Ralph J. Delfino et al., "Association of Asthma Symptoms with Peak Particulate Air Pollution and Effect Modification by Anti-inflammatory Medication Use," *Environmental Health Perspectives* 110, 10, (October 2002): 607-616.
9. M.S. Friedman et al., "Impact of changes in transportation and commuting behaviors during the 1996 Summer Olympic games...," *Journal of the American Medical Association* (February 21, 2001): 897-905.
10. Rob McConnell et al., "Asthma in Exercising Children Exposed to Ozone," *The Lancet* 359, 9304 (February 2, 2002).

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