

Sprawl Report 2001

Sprawl Harms Our Health

Poorly planned development is threatening our health, our environment and our quality of life. Land-use decisions-where we build offices, homes, shops, schools and other buildings-influence the building of roads, transit and other transportation modes, and vice-versa. It is a relationship that can lead either to safe, walkable, diverse, vibrant communities-or out of control, poorly planned suburban sprawl. Unfortunately, sprawl has been winning out.

As we sprawl farther from community and city centers, Americans are forced to drive more often and greater distances. As we sprawl more, we drive more. And as we drive more, we pollute more. Vehicle smog is one of the main pollutants increased by sprawl.

Smog. Even the Name Sounds Bad.

Smog. It looks bad. It smells bad. In the short term, living with smog-filled air causes burning eyes, throat irritation and difficulty breathing. Over the long term it can lead to chronic lung disease, asthma attacks, debilitation, even death. Smog is a public health problem plaguing America's largest cities. To address smog, Congress passed the Clean Air Act in 1970. While progress has been made, many cities continue to have significant air pollution problems. In 1990 the Act was updated, but of 207 cities analyzed between 1990 and 1999, only 10 to 14 have seen a reduction in smog, while 17 to 25 have seen an increase.(10) The remaining 170+ have seen no significant change. In 1999, 62 million people (more than 20 percent of the population) lived in areas where the air was not deemed safe to breathe.

Of the 21 metro areas with air pollution exceeding U.S. Environmental Protection Agency standards for smog, nine cities, home to 57 million people, are considered "severely" polluted, experiencing peak smog levels that exceed the health standard by 50 percent or more.(11)

Smog Is a Significant Public Health Threat

Every day researchers learn more about the health impacts of smog. Exposure to smog has been implicated in a range of illnesses and conditions, including asthma, bronchitis, heart disease, emphysema and pneumonia.(12) It may also worsen sinusitis and hay fever, and may trigger or aggravate cancer and emphysema. For people who live in the most polluted cities, smog levels can be life-threatening.

Cities With Unsafe Air

Atlanta, Ga.^c
Baltimore, Md.^b
Boston-Worcester-Lawrence, Mass.^c
Buffalo-Niagara Falls, N.Y.^e
Chicago-Gary-Kenosha, Ill.^b
Cincinnati, Ohio^d
Dallas-Fort Worth, Texas^c
Hartford (Greater Connecticut)^c
Houston-Galveston-Brazoria, Texas^b
Los Angeles-Riverside-Orange County, Calif.^a
Louisville, Ky.^d
Milwaukee-Racine, Wis.^b
New York-N. New Jersey, N.Y.-N.J.^b
Philadelphia-Atlantic City-Trenton, Pa.-N.J.^b
Phoenix, Ariz.^c
Pittsburgh-Beaver Valley, Pa^d
Providence (All Rhode Island)^c
Sacramento Metro, Calif.^b
San Diego, Calif.^c
San Francisco Bay Area, Calif.^f
St Louis, Mo.^d
Washington, D.C., Metro^c

Designation for ozone by U.S. EPA:

- a** "Extreme Nonattainment"
- b** "Severe Nonattainment"
- c** "Serious Nonattainment"
- d** "Moderate"
- e** "Marginal"
- f** "Other"

Asthma, a chronic inflammation of lung tissues making breathing difficult, is one of the main health concerns associated with increased levels of smog. According to the American Lung Association, more than 26.8 million Americans suffer from asthma, and 14 of them die every day, a rate three times greater than 20 years ago. (13) Smog acts as an irritant to the lung tissue of both humans and animals, causing shortness of breath, wheezing, coughing and chest pain. In fact, the U.S. EPA found that between April and October 1997, approximately 450,000 people in 37 eastern states and the District of Columbia suffered substantial shortness of breath and 6 million asthma attacks were reported. (14)

Certain groups, such as children, the elderly and people who work or exercise outside, (15) are especially vulnerable. Children, whose respiratory systems are still developing, breathe more air relative to their body weight and have greater lung surfaces than adults. This, combined with the fact that children spend more time outdoors than adults, means that smog levels have a much more profound effect on their respiratory health. Perhaps this explains why more than one third of the people diagnosed with asthma (at least 8.6 million) are children under 18 years of age. (16) Asthma is also the number one reason kids miss school, according to the American Lung Association.

The American Lung Association has also found that minority populations are disproportionately represented in areas with high levels of smog. Approximately 61.3 percent of African American children, 69.2 percent of Hispanic children and 67.7 percent of Asian-American children live in areas that exceed the new smog standard, (17) while only 50.8 percent of white children live in such areas. (18) As a result, these same populations have been disproportionately impacted by asthma, both in terms of occurrence of the disease, as well as hospitalization and mortality rates.

What is Ozone?

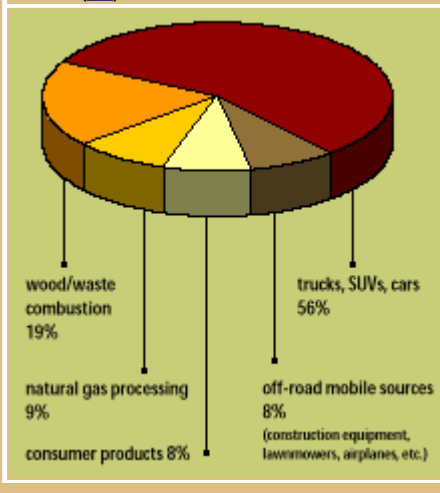
Ground-level ozone or smog is created when two types of gases - nitrogen oxides (NOx) and volatile organic compounds (VOCs) - are exposed to heat and sunlight. NOx are created through the burning of coal, gasoline and other fuels. Some VOCs are fuel components themselves (such as gasoline fumes), others are created by burning. These gases generally come from either "mobile" sources, such as cars, trucks, construction equipment, other motor vehicles, gas lawnmowers and leafblowers; or "non-mobile" sources, such as oil and chemical processing plants, dry cleaners, off-gases from painted surfaces and household products like hair-sprays and barbecue lighter fluid.

Between 1900 and 1970, NOx and VOCs increased 690 percent and 260 percent respectively. (9)

Toxic Air Pollution and Public Health

Smog is not the only air pollutant impacting public health. Air pollution from cars, trucks, SUVs and other vehicles that are regulated under the Clean Air Act includes soot, benzene, arsenic compounds, formaldehyde and lead. These toxic substances are known or probable cancer-causing chemicals to people. In the 1996 National Toxics Inventory, EPA estimates that cars, trucks, SUVs and buses (mobile sources) release about 3 billion pounds of cancer-causing hazardous air pollutants per year. This equates to 11 pounds of pollutants per person per year. (19)

According to the EPA, about one-half of all cancers that are attributed to outdoor air toxics can be traced to the toxics released by mobile sources, such as cars, trucks and SUVs. (20) Highways and roads create a cancer corridor for children. A new study from the Denver metro area shows that children living near streets or highways with just 20,000 cars and trucks per day are more than eight times more likely to develop childhood leukemia. (21) In fact, 56 percent of cancer-causing and hazardous air pollutants come from trucks, SUVs and cars, as the chart below shows. (22)



Environmental Impacts of Smog

In addition to the public health threats, smog causes a variety of environmental problems. Smog compromises the ability of plants to produce and store food, making them more susceptible to disease, pests and weather. More than \$500 million in reduced U.S. crop production can be traced to excessive levels of smog. Damage to trees, grass and other plant life, if extended over long periods of time, can hurt entire ecosystems.

Sprawl Forces People to Drive Farther, Creating More Smog

Given the severe health and environmental problems related to smog, why aren't we reducing smog? One of the main reasons pollution levels are not decreasing (and in some cases are actually increasing) is because more people are driving more miles. Although the Clean Air Act has somewhat reduced the pollution from individual cars for each mile driven, smog remains high because the number of miles people drive has more than doubled. (23)

Why are people driving more? Sprawl. Sprawl and a lack of transportation choices force people to own and drive cars in order to reach most destinations. In communities across America, sprawl-scattered development that increases traffic, saps local resources and destroys open space-is taking a serious toll on our health, our environment and our quality of life.

Sprawl lengthens trips and forces us to drive more often. The average American driver spends 443 hours per year-the equivalent of 55 eight-hour workdays-behind the wheel. Residents of sprawling communities drive three to four times as much as those living in compact, well-planned areas. Adding new lanes and building new roads just makes the problem worse. Studies show that increasing road capacity only leads to more traffic and more sprawl. (28)

As sprawl increases our reliance on cars and driving, it makes our air dirtier and less healthy. In fact, the transportation sector is responsible for the majority of the gases that cause smog-56 percent of the total U.S. emissions of nitrogen oxides (NOx) and 47 percent of the volatile organic compounds (VOCs). (29)

Sprawling areas can consume up to three times as much energy from driving than better planned, more compact cities that offer transportation choices. Between 1980 and 1997, the number of miles people drove in cars, trucks and buses increased an astounding 68 percent (30) while population only increased by 18.7 percent. (31)

Smart Growth Provides Solutions

Smart growth provides a range of solutions to the problem of sprawl. Smart growth means planning our communities so that our streets will be safer, our neighborhoods will be nicer places to live, our air and water will be less polluted, and our parks, farms and open space will be protected.

Smart-growth efforts to better connect land use and transportation planning in our nation's communities reduce the amount and distance people drive, thereby reducing pollution. These strategies include planning that revitalizes existing communities, and incentives and investments that improve transit, walking, bicycling, ridesharing and telecommuting. In fact, according to Environmental Defense, together these strategies can provide reductions of 15 to 25 percent in the number of miles people drive, hours of vehicle travel and projected pollution from a sprawl development forecast over the next 20 years. (33)

Population Growth and Sprawl? What's the Connection?

A number of factors cause sprawl, and the exact mix of reasons varies in every city and region. Poor planning and population growth, however, are two of the more common issues driving sprawl.

In many parts of the Midwest and Northeast, sprawl is largely driven by poor land-use planning, irresponsible development and the movement of people out of the cities and into the suburbs.

Some notable examples of this problem include Detroit, Pittsburgh and Chicago. From 1970 to 1990, Detroit's population shrank by 7 percent, but the amount of land it consumed increased by 28 percent. Pittsburgh's population shrank by 9 percent in the same period while its area increased by 30 percent. Chicago's population increased between 1970 and 1990 by 1 percent; meanwhile, its developed land area grew by 24 percent. (24) In these communities, sprawl is not a function of adding new people in an inefficient manner so much as a redistribution of the existing population to the detriment of both the vanishing countryside and the abandoned city. This problem is fueled by government spending on new roads and infrastructure - such as water and sewer lines and schools - on the city edge while simultaneously failing to invest in the maintenance and upgrade of roads and infrastructure in the existing city center. Poor planning and lack of regional cooperation are at fault.

Metro areas in the South and West are also sprawling for some of the same reasons, but in many of these areas, population growth adds to the other pressures that create sprawl and makes the problem worse. (25) Several prime examples include Nashville, Charlotte and Phoenix. Between 1970 and 1990, Nashville's population grew by 28 percent while its urbanized area grew by 41 percent. Charlotte's population grew by a significant 63 percent during this period while its urbanized area grew by a staggering 129 percent. (26)

By contrast, the population in San Jose, Calif., grew by 40 percent during this period, while its developed land area grew by 22 percent. (27) It turns out that San Jose has been adding population to its downtown. It should be noted that San Jose is investing in the transit system that serves its downtown.

The connection between sprawl and population growth is complex and can vary from community to community. That's why it is critical we plan for development wisely and at the same time promote [global population stabilization](#). The world's population is increasing by approximately 1 billion people every 12 years and the United States is now the world's third most populous country. The Sierra Club is committed to [supporting comprehensive family planning education and resources](#). We must address unsustainable population levels. Otherwise, our best efforts to curb sprawl will fall short.

How Land-Use Activities Influence Air Quality

A number of factors contribute to the connection between land use and transportation. The U.S. EPA, in its recent report, "Improving Air Quality Through Land Use Activities," (32) identified five characteristics of urban development that influence transportation and hence air quality, as follows:

Efficiency, which refers to how condensed or compact a particular area might be. Compactness decreases pollution from cars and trucks by making it less necessary to drive everywhere, and by making transportation options, such as walking, biking and public transportation, like trains and clean buses, more feasible.

Land Use Mix, which refers to the mix between housing, jobs, schools and amenities like stores. People who live in convenient neighborhoods, with a good mix of opportunities, tend to drive less and walk more.

Transportation Choice, which refers to frequent, nearby public transit. Focusing development in areas with transit accessibility and revitalizing existing communities around transit stations dramatically reduce the need for automobiles, especially for work-related commutes.

Pedestrian Environment /Urban Design Features, which refers to features of a community that make it pedestrian or bicycle-friendly. Communities that incorporate sidewalks, crosswalks, bike lanes and other desirable features increase walking and decrease car and truck use.

Regional Patterns of Development, which refers to planning for development and the necessary infrastructure between regional areas and focusing development in transit corridors while preserving open spaces elsewhere. Areas that work together to plan for development beyond and between local jurisdictions tend to see lower incidences of urban sprawl.

By focusing development and redevelopment efforts on creating compact, mixed-use, transit-accessible, pedestrian-friendly, and regionally-compatible neighborhoods, communities can see a reduction in air pollution.

TO LEARN MORE:

- Sierra Club, www.sierraclub.org/sprawl
- The Surface Transportation Policy Project, www.transact.org
- 1000 Friends of Oregon, www.friends.org
- The EPA's Guidance on Improving Air Quality Through Land Use Activities, www.epa.gov/otaq/transp/traqsusd.htm

Where Can I Learn More About Ozone and Toxic Air Pollution?

The American Lung Association

- www.lungusa.org/air/envozone.html
(fact sheet on ozone)
- www.lungusa.org/asthma/ascpedfac99.html
(fact sheet on asthma)
- www.lungusa.org/air/children_factsheet99.html
(fact sheet on children and asthma)

The Environmental Protection Agency

- www.epa.gov/oar/oagps/gooduphigh/
(overview of ozone issues)
- www.epa.gov/airnow/
(information on national air quality)
- www.epa.gov/airnow/health/smog1.html#1
(overview of smog and health issues)
- www.epa.gov/otaq/O4-ozone.htm
(fact sheet on ozone from the Office of Transportation and Air Quality)
- www.epa.gov/children/asthma.htm
(children and asthma)
- www.epa.gov/otaq/toxics.htm
(air toxics)