

Chapter 4: Air Quality

According to the U.S. Environmental Protection Agency (EPA) nearly half of all Americans live in areas with air that is unhealthful.¹³ Vehicle emissions are the greatest single source of development-induced air pollution. A recent study showed that air pollution accounted for 6% of all European deaths and half of these were attributable to pollution from vehicles.¹⁴ But some development projects, such as power plants and asphalt plants, can release significant air pollution from sources that are not related to transportation.

For most development projects, vehicle emissions will be the greatest source of air pollution. *Trip Generation Rates*, published by the Institute for Transportation Engineers¹⁵, shows that each new home adds an average of ten vehicle trips a day to local roads. As traffic volume increases regional air quality may decline. For example, traffic-generated air pollution has raised the cancer risk in the Los Angeles area to 1:650.¹⁶ Traditionally, a cancer risk greater than one in a million has been cause for concern.

Several studies have shown that those living near high-volume highways are particularly at risk. Denver researchers studied households located near a highway carrying 20,000 vehicles per day (vpd) and high-current carrying capacity power lines. The researchers found that children living in homes near high-volume highways and high-current powerlines were eight times more likely to develop leukemia when compared with the general population.¹⁷ In San Francisco researchers examined the relationship between the respiratory health of children attending ten schools, air pollution levels at each school, and proximity to major highways.¹⁸ The researchers found attending schools within 500 feet of a major highway were significantly more likely to suffer from respiratory disorders. Researchers in the Netherlands found reduced lung function and increased respiratory

¹³ For further detail visit <http://www.epa.gov/air/aqtrnd01/>

¹⁴ Kunzli, N., R. Kaiser, S. Medina, M. Studnicka, O. Chanel, P. Filliger, M. Herry, F. Horak Jr., V. Puybonnieux-Textler, P. Qwuenel, J. Schneider, R. Seethaler, J-C Vergnaud and H. Sommer, 2000. Public-health impact of outdoor and traffic-related air pollution: a European assessment. *The Lancet* 356:795-801.

¹⁵ For further information visit <http://www.ite.org/>

¹⁶ See the Multiple Air Toxics Exposure Study (MATES-II) conducted for the South Coast Air Basin (Basin), which is available for download at: <http://www.aqmd.gov/matesiidf/matestoc.htm>

¹⁷ Pearson et al. (2000). "Distance-weighted traffic density in proximity to a home is a risk factor for leukemia and other childhood cancers." *Journal of Air and Waste Management Association* 50:175-180.

¹⁸ Kim, J.J., S. Smorodinsky, M. Lipsett, B.C. Singer, A.T. Hodgson, and B. Ostro, 2004. Traffic-related air pollution near busy roads. *Am J Respir Crit Care Med* Vol 170, pp. 520-526. Available for download at: <http://eetd.lbl.gov/ied/pdf/LBNL-55586.pdf>

symptoms among children living within 900 feet of high-volume highways.¹⁹ It appears that the emissions from trucks and other diesel-powered vehicles are particularly damaging to health, especially for respiratory conditions.²⁰

Determine if your area meets federal air quality standards.²¹ Two federal laws impose restrictions upon highway improvements and growth in nonattainment areas - the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Clean Air Act Amendments (CAAA) of 1990. ISTEA restricts the use of federal funds for new single-occupancy vehicle highway lanes unless the improvements are needed to relieve traffic congestion. The CAAA also require local governments in nonattainment areas to consider the impact of zoning and other land use decisions upon air quality.

Before a new highway is built or an existing road is expanded, a thorough analysis should be made of potential air quality impacts. If the project will significantly increase health risk then all reasonable alternatives should be considered. Examples of these alternatives include improving mass transit, encouraging car-pooling, and reducing highway speed limit from 65- to 55-mph (which cuts air pollution by 15%). Unfortunately, it is rare that I've read an environmental impact statement (EIS) for a highway project which fully addresses health effects and alternatives to building more roads. Fortunately, the environmental community has won some recent court cases which may reverse this pattern.

Poor air quality also reduces visibility. In the east visibility is a third (15-30 miles) of what it was 400 years ago. In the west one can see half as far today (60-90 miles) as in pre-colonial times.²² Scientists say its mostly sulfur which obscures visibility. The sulfur is emitted from coal-burning power plants, smelters, refineries and other sources. The particulates from our cars also contribute to haze.

Environmentalists have succeeded in constraining or defeating proposed power plants and other major emission sources based upon the effect on visibility, particularly when the view of or from national parks, monuments, and other vistas would be harmed. However, in 2002 efforts to reduce sulfur emissions and other forms of air pollution suffered a major setback when the Bush

¹⁹ Brunekreef B; Janssen NA; de Hartog J; Harssema H; Knape M; van Vliet P. (1997). "Air pollution from truck traffic and lung function in children living near motorways." *Epidemiology*. 8(3):298-303.

²⁰ Lin S., Munsie J.P., Hwang S.-A., Fitzgerald E., and Cayo M.R. (2002). Childhood Asthma Hospitalization and Residential Exposure to State Route Traffic. *Environmental Research*, Section A, Vol. 88, pp. 73-81.

²¹ Information on nonattainment areas may be viewed at: <http://www.epa.gov/oar/oaqps/greenbk/> To learn of pollution sources in your area visit the Environmental Defense Fund Scorecard site: <http://www.scorecard.org/>

²² For further detail on the effect of haze visit <http://www.hazecam.net/default.htm>

administration announced that it was allowing power plants and related sources to dump more pollution into the air by weakening a part of the Clean Air Act called *New Source Review*.²³

The result of this weakening will be increases in the air pollution that has been linked to asthma, heart disease and premature death, as well as reduced visibility. Nevertheless, New Source Review still provides environmental advocates with one of the best opportunities to ensure that proposed emission sources take all reasonable steps to preserve air quality.

Air pollution can become water pollution. In fact a substantial portion of the pollution washed by stormwater from impervious surfaces (*see Aquatic Resources section*) and settling upon the surface of lakes and tidal waters originates as material released into the atmosphere. One study found a correlation between traffic volume in the vicinity of lakes and the concentration in lake sediments of a group of suspected carcinogens known as polycyclic aromatic hydrocarbons (PAH).²⁴

Further detail on vehicle emissions and corrective measures will be found in the chapter on traffic.

²³ For further information on New Source Review visit <http://www.epa.gov/ttn/nsr/>

²⁴ Van Metre, P., B. Mahler and E. Furlong. 2000. Urban sprawl leaves its PAH signature. *Environmental Science Technology*. 34(19): 4064-4070.