

Public Health and High Traffic Roadways

California Air Resources Board Recommended Policy:

Sensitive land uses such as residences, schools, day care centers, playgrounds, and medical facilities should not be sited within 500 feet of:

- A freeway
- Urban roads with 100,000 or more vehicles/day
- Rural roads with 50,000 or more vehicles/day

(Ref. *"Air Quality and Land Use: A Community Health Perspective."* California Air Resources Board. April 2005)

Reason for the Policy:

Many studies show that living in proximity to freeways and other high traffic roadways leads to adverse health effects beyond those associated with regional air pollution. A number of studies that focused on children have found slower lung development and significant increases in the incidence of lung disease, such as asthma, bronchitis, and decreased lung function, in children who live or attend school near heavily travelled roadways. In addition to children, seniors, and people with heart and lung conditions are considered particularly sensitive to effects of air pollution. Residence in high-traffic areas has been shown to increase the risk of mortality within a cohort of male veterans.

Health Studies:

The results of health studies suggests that it is important to avoid exposing children and other sensitive populations to the elevated air pollution levels near freeways and other high traffic roads. While particulate pollution is suspected as contributing the most to the adverse health effects, studies have not yet determined which specific pollutants and sources (cf. diesel particulate, re-entrained roadway dust particulate, NO₂ vehicle exhaust, diesel trucks vs. gasoline cars, &c.) are responsible. Additional studies are underway. While significant adverse health effects were observed in children who lived within 1,500 feet of a freeway (Gauderman, 2007), the studies indicate a substantial benefit to a 500 foot separation (McConnell, 2006).

Key Findings:

- Reduced lung function in children is associated with traffic density within 1,000 feet and the strongest association is within 300 feet of the roadway. (Brunekreef, 1997)
- Children living within 550 feet of heavy traffic have more medical visits than children who live further away from traffic. (English, 1999)
- Increased asthma hospitalizations are associated with living within 650 feet of heavy traffic. (Lin, 2000)
- Asthma symptoms increase with proximity to roadways and the risk is greatest within 300 feet. (Venn, 2001)
- Asthma and bronchitis symptoms in children are associated with proximity to high traffic in a community with good overall regional air quality. (Kim, 2004)
- Children living within 150 – 200 meters (~450 feet – 600 feet) of heavy traffic have higher rates of asthma than children living further away from traffic. (McConnell, 2006)
- Children living within 500 meters (~1,500 feet) of heavy traffic have significantly slower lung development than children living further away from traffic. (Gauderman, 2007)
- Survival of members of the Washington University-EPRI Veterans Cohort is strongly and robustly associated with county-average levels of traffic related air pollution and mortality relationships are stronger in the counties with higher levels of traffic density. (Lipfert et al, 2009)

Applicability to Santa Barbara County:

The studies covered children in a variety of urban environments living in proximity to roadways covering a wide spectrum of traffic volumes. The adverse health effects were measured at traffic volumes as low as 41,000 vehicles per day (English) and between 80,000 and 150,000 vehicles per day (Brunekreef). Highway 101, through Santa Barbara County, experiences traffic volumes within the range where health effects have been observed. Also, some parts of Highway 101 see over 7000 diesel trucks per day (SBCAG). Furthermore, running parallel to Highway 101 through the southern portion of Santa Barbara County is a rail corridor that contributes significantly to the pollution levels near the highway (cf., rail contributes an additional 10% or 0.07 tons per day to mobile source generated PM10 emissions in Santa Barbara County).

2006 Average Daily Traffic (ADT) Volumes for Highway 101 (SBCAG):

US 101 at Glenn Annie = 65,800 ADT
US 101 at Highway 150 = 68,000 ADT
US 101 at Las Positas = 140,000 ADT
US 101 at Highway 166, Santa Maria = 55,000 ADT

Conclusion:

In order to protect the public health, especially the health of children, from the adverse effects of air pollutants generated by traffic on Highway 101, land use policies should prohibit the construction of new residences, schools, day care centers, playgrounds, and medical facilities within 500 feet of Highway 101. No other roadways in Santa Barbara County currently have estimated traffic volumes at the magnitude for which the proximity studies have identified adverse health effects.

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