

Asthma and Diesel

What Exactly Is in Diesel Exhaust?

- Diesel exhaust generates diesel exhaust particulates (DEP). DEP is emitted by trucks, school buses, older cars and off-road construction and industrial equipment with engines running on diesel fuel.¹⁻²
- DEP is a mixture of hundreds of compounds, some of which are gases while others form parts of tiny particles suspended in the air called particulate matter.
- Diesel exhaust also contributes to the formation of ozone.

Why Should We Be Concerned about Diesel Exhaust and How Is It Linked to Asthma?

The health risks of diesel exhaust are recognized by the State of California.

- California has formally recognized diesel exhaust particulate (DEP) as a toxic air contaminant which is subject to regulation reduce emissions and human exposure.
- In 2001, the Office of Environmental Health Hazard Assessment, under the Children's Environmental Health Protection Act of 1999 (SB 25, M. Escutia), determined one of the "top 5" outdoor air pollutants of concern to children's health is diesel exhaust particulate.³

Many of the compounds in diesel exhaust are known to cause cancer and are increasingly implicated in asthma as well.^{2, 4-8} Studies of diesel exhaust have uncovered a variety of disturbing biological effects directly related to asthma:

- Exposure to DEP can disrupt the regulation of the immune system, which increases a sensitive person's risk of having allergic reactions to other things in their environment.⁹
- Laboratory animals and human volunteers exposed to DEP developed asthma-like inflammation in their air passages.⁹
- Particulates and ozone from traffic causes cellular damage directly to the lung lining, as well as through inflammation.^{10,11}
- Children are highly vulnerable to the health risks from diesel exposure. It is well known that children raised in heavily polluted areas face the prospect of reduced lung capacity and prematurely aged lungs.
- Fine particulates can penetrate children's narrow airways and lodge deep within the lung, where they are more likely to be retained and absorbed.
- Children have higher respiration rates than adults, which can increase their exposure to air pollutants relative to their body weight.

The Following Research Demonstrates the Impact on Our Children:

- A study of about 6,000 low-income asthmatic children in San Diego found that those living close to high-traffic areas made more doctor visits than those who lived further from traffic. Children living near high traffic areas (near a freeway or major road) were more likely to have made two or more doctor visits for asthma than those who did not live near high density traffic areas.¹²
- Another study found that doctor-diagnosed asthma was more prevalent among children living within 100 meters (125 feet) of a freeway. The study also found that

children living and attending schools closer to freeways and areas of high truck traffic had more chronic respiratory symptoms (coughing and wheezing) and doctor-diagnosed asthma than those who did not.¹³ In California in 2000, 173 K-12 public schools, with an enrollment over 150,000, were located within 500 feet of high-traffic roadways (greater than 50,000 vehicles per day).¹⁴

- A study done in Atlanta, Georgia, during the 1996 Summer Olympic Games found that reduced traffic in the downtown area, due to altered traffic patterns and reduced traffic density, reduced asthma hospitalizations. Children reported fewer recorded doctor visits and hospitalizations for asthma during the games compared to four weeks before and after the Olympic Games.¹⁵

What Can Be Done About Exposure to Diesel Pollution?

Community Action to Fight Asthma (CAFA) is a network of asthma coalitions in California working to shape local, regional and state policies to reduce the environmental triggers of asthma for school-aged children where they live, learn, and play. A few examples of local and state policy include efforts to:

- Enforce idling regulations for trucks and buses to reduce exposure to diesel exhaust.
- Establish policies to restrict diesel truck routes through neighborhoods.
- Shape policies around California's Goods Movement, reducing pollution at the ports, on truck routes, and in communities across the state.

Please go to our website at www.calasthma.org to learn more about Community Action to Fight Asthma connect with local coalitions, locate asthma resources across California, and sign up for our newsletter.

*IT IS ESTIMATED THAT DIESEL CAUSES 3,000 PREMATURE DEATHS IN CALIFORNIA IN A SINGLE YEAR—MORE THAN ESTIMATED HOMICIDES.
—Union of Concerned Scientists¹⁷*

Footnotes

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