



Diesel school bus emissions have recently received significant national and local attention. Each day in the state of Washington 450,000 children ride school buses to and from school. Several studies have found that exposures for school children riding school buses can be as much as 16 times higher than the ambient exposure levels, so children are even more at risk from diesel exhaust. These studies have heightened public awareness and have resulted in a call for action to reduce diesel school bus emissions.

Diesel engines spew out 100 times more sooty particles than gasoline engines. Diesel engine emissions contain more than 40 chemicals, a mixture that can cause cancer and exacerbate asthma and other health problems.

Airborne fine particles (which are much smaller than the diameter of a human hair) can bypass nasal and upper respiratory filtering mechanisms and penetrate deeply into the lungs. Those most at risk to the adverse effects of fine particles and toxics from diesel exhaust are children, the elderly and people with asthma, chronic heart problems or chronic respiratory disease.

Locally, it has been established that the cancer risk from breathing air toxics in the Puget Sound region is as high as 700 in a million. About 70 to 80 percent of this risk is from diesel exhaust. There is no known safe level of exposure to diesel exhaust.

Cancer risk, however, is not the only problem created by the diesel exhaust. Other health problems include aggravation of juvenile asthma and even associations with heart problems such as arrhythmia.

Children are especially susceptible because their airways are smaller and more easily blocked, they have less developed immune systems, and they are less resistant to air pollutants. They also breathe more rapidly, taking in more pollution per pound of body weight.

Exposures to diesel exhaust have been linked to missed school days for students; increased hospital admissions for people with respiratory diseases,

chronic obstructive lung disease, pneumonia and heart disease; and up to 60,000 premature deaths annually.

Medical studies linking breathing fine particles to bronchitis, allergic reactions and asthma are especially significant for Washington residents. A recent study by the Washington Department of Health revealed that one in every six households has someone who suffers from asthma. Local data tells us that Seattle schools have some the highest asthma rates in the state. In addition, our region has some of the country's highest levels of toxic pollutants from diesel vehicles and other sources.

When we add to this toxic mix that Washington State and California have the oldest and most polluting school buses in the U.S., we know that something must be done.

HB 1762 provides a needed solution...it provides the funding that is dedicated to retrofitting diesel school buses with cleaner fuels and retrofit devices. This will make the buses as much as 90% cleaner.

The public health benefits to children from such a program would be great.



Reducing fine particles and toxic emissions from diesel engines will:

- Reduce lost school days for children and work days for parents and adult asthmatics. A recent study by the Washington State Department of Health indicated that one in six households have someone who suffers from asthma
- Reduce hospital visits due to asthma and other respiratory ailments. Exposures to fine particulates have been linked to increased hospital admissions for respiratory and heart diseases and up to 60,000 premature deaths annually
- Reduce the incidence and severity of asthma attacks, chronic bronchitis, coughing, wheezing and phlegm formation
- Reduce the health effects on children from school buses
- Reduce chronic health effects on children's lungs.
- Reduce susceptibility to allergens. Reactions to allergens such as pollen can be more severe when there is also exposure to diesel exhaust.
- Reduce cancer risk.

Health Studies: EPA, the World Health Organization, the Department of Health and Human Services, and the National Institute of Environmental Health Sciences have listed diesel exhaust as a likely carcinogen. Recent studies indicate lung cancer risk can be significantly increased by exposure to diesel exhaust. A 100-cities epidemiological study indicates an 87 percent increase in lung cancer rates for each 10 micrograms increase in fine particle (PM_{2.5}) levels.

Fine particles and toxic emissions have been shown to reduce lung function growth in the developing lungs of children. Children with decreased lung function may be more susceptible to respiratory disease and more likely to have chronic respiratory problems as adults.

[Multiple Air Toxics Exposure Study in the South Coast Air Basin: MATESII, Draft Final Report.](#) South Coast Air Quality Management District, November 1999.

[Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution.](#) Journal of the American Medical Association, 2002; 287:1132-1141.

[International Agency for Research on Cancer \(IARC\) Monograph on the Evaluation of Carcinogenic Risks to Humans.](#) Vol. 46: Diesel and Gasoline Engine Exhausts, 1989.

[US Department of Health and Human Services, 9th Report on Carcinogens](#) (PDF file). Revised January 2001.

[Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. Part B: Health Risk Assessment for Diesel Exhaust.](#) California EPA, May 1998.

[Health Assessment Document for Diesel Exhaust.](#) Office of Research and Development, US EPA/600/8-90/057E, July 2000.

[Air Quality Criteria for Particulate Matter on health effects associated with PM2.5.](#) US EPA/EPA 600/P-99/002aB, bB, March 2001.

[Children's Exposure to Diesel Exhaust on School Buses.](#) Environment and Human Health, Inc., February 2002.

School Bus Studies: This February 2001 study from NRDC and the Coalition for Clean Air shows that children who ride a diesel school bus may be exposed to up to four times more toxic diesel exhaust than someone traveling in a car directly in front of it. The study found that excess exhaust levels on school buses were 23 to 46 times higher than levels considered to be a significant cancer risk according to the U.S Environmental Protection Agency and federal guidelines.

<http://www.nrdc.org/air/transportation/schoolbus/sbusinx.asp>

Environment and Human Health, Inc. cites the particular risk to children from regular exposure to exhaust from diesel school buses.

http://www.ehhi.org/pubs/children_diesel.html

Seattle Air Toxicity Study 2001: The report confirms early results from U.S. Environmental Protection Agency's National-Scale Air Toxics Assessment (NATA), which show the Puget Sound region in the top five percent in the nation for air toxics. EPA plans to release its final NATA data soon.

The Clean Air Agency's report is based on actual air monitoring conducted by the state Department of Ecology and on agency staff analysis of the sources of toxic air pollutants uncovered by the monitoring. The staff analysis includes review of monitoring data and NATA modeling, emission inventories, source apportionment and application of best available risk factors.

This is the first time a relatively large group of toxic air pollutants has been studied, analyzed for cumulative health effects and then ranked by their effect on people's health. The data indicate the cancer risk from outdoor air toxics could be as high as about 700 in a million.

http://www.pscleanair.org/news/other_pubs.shtml#.20020516psatedf