School Bus Pollution and Children's Health

GREATER PHILADELPHIA Clean Cities

A GPCCP Fact Sheet

Every day, parents put their children on the school bus and send them off to school for a safe day of learning. But what many parents do not know is that this very act may be compromising both their children's safety and their health. Exhaust from diesel fuel, which powers nearly 90% of the school buses in the United States today, has been shown to cause or exacerbate many health problems. Children are especially vulnerable to these health problems, and exposing them to high levels of diesel pollution from school buses compromises their health.

Diesel Exhaust

All school buses release pollution from their tailpipes. Diesel buses, which comprise 90 percent of the 454,000 school buses in the United States, pose the biggest health risk to the children riding them. Many of the school buses in use are also older models, which emit much more pollution than today's models. School buses built before 1990 are allowed to emit six times the toxic soot and three times the nitrogen oxides (a smog-forming pollutant) released by today's buses. Every year, the nation's school bus fleets release 3,000 tons of soot, 95,000 tons of smog-forming pollution, and 11 million tons of greenhouse gases. School children are being exposed to these pollutants on a daily basis, and the health consequences are serious.

Health Consequences

Diesel exhaust contains a variety of pollutants that can have a number of adverse health consequences when inhaled. The nitrogen oxides and hydrocarbons in the exhaust, when in the presence of sunlight, react to form ground level ozone or smog. Smog can decrease lung function, aggravate chronic lung diseases, and exacerbate asthma. Ozone air pollution has been linked with as much as 10 to 20 percent of all summertime respiratory hospital visits and admissions. Diesel exhaust from school buses also is made up of particulate matter or soot. Particulate pollution is composed of a variety of different pollutants including carbon, ash, sulfate particles, and hydrocarbons. Breathing particulate matter is associated with many health effects including asthma, acute respiratory illness, and cardiac diseases. There are also many air toxins in diesel exhaust. Just like toxics from other sources, these chemicals can have many different health effects, from increased risk of cancer, immune system disorders, and reproductive problems.

Children At Risk

While exposure to air pollution and diesel exhaust is detrimental to everyone's health, children's developing bodies are more susceptible to the effects of this pollution. In addition, children are also exposed to pollution from school buses at a much higher rate than adults. Children often play near idling buses while waiting to be transported to and from school. Inside the buses, levels of pollution are also extremely high, exposing children to these pollutants for the duration of their trips to and from school. A study conducted by the Natural Resources Defense Council, the Coalition for Clean Air, and the University of California at Berkeley found that levels of diesel exhaust inside buses can be four times higher than the levels found in cars driving just ahead of the bus. Since children tend to ride school buses for extended periods of time on a daily basis, the level of exposure is quite high.

Limiting Exposure

The health risks from exposure to diesel exhaust are related to long term exposure to the pollution. For this reason, concerned parents do not need to keep their children from riding the school bus right away. What is more important is that school districts replace diesel buses with other alternative fueled buses so that children are not exposed to this health hazard over a number of years. For children with existing respiratory conditions, such as asthma, there may be more urgency. Since diesel exhaust can exacerbate existing conditions as well as contribute to their onset, it may be important to limit exposure immediately. For example, exposure to diesel exhaust has been shown to trigger asthma attacks. If your child's symptoms worsen with exposure to school bus pollution, consult your pediatrician.

Alternatives to Diesel

Although diesel is the most popular fuel choice for school buses, alternatives do exist. School buses powered by **natural gas** and other alternative fuels offer the cleanest option. Natural gas buses emit 90 percent less toxic soot than new diesel buses and 98 percent less than some of the older, dirtier ones. Natural gas buses also significantly reduce smog-forming pollution and other air toxics. Although natural gas buses initially cost more to purchase, the operating cost of this alternative can be significantly less. The Sacramento Regional Transit Agency reported a 38 percent cost reduction with their switch to natural gas.

Using natural gas also promotes energy security. 85 percent of the natural gas consumed in the United States is produced domestically. Also, the price of natural gas has historically been lower than the price of diesel.

Biodiesel, an alternative fuel made from soybean oil or recycled grease is registered with the Environmental Protection Agency. It is the only alternative fuel to have passed the rigorous Health Effects testing requirements of the Clean Air Act. Those test results show biodiesel reduces carcinogenic air toxics by 75-90% compared to diesel. The results, submitted to the EPA in 2000, also show biodiesel is nontoxic, biodegradable and free of sulfur. It is commercially available in all 50 states and has been proven successful in 30 million road miles. It has similar horsepower, fuel economy and performance to conventional diesel. Although biodiesel costs more than petroleum diesel, it is often the least cost option among alternative fuels. Fleet managers like it because there are no capital investment costs or operational range issues and it allows for a seamless transition for a diesel fleet to an alternative fuel program.[1]

Using biodiesel promotes energy security as well. The soybean feedstocks used to produce biodiesel are grown in the United States. Biodiesel is a way to support domestic markets such as agriculture and reduce our nation's dependence on foreign fuel sources.

A Pennsylvania Success Story

In response to concerns about diesel-powered school buses, **Lower Merion School District** began purchasing natural gas school buses in the mid-1990s. With the help of a rebate from the Greater Philadelphia Clean Cities Program (GPCCP), the cost of these buses to the school district was comparable to purchasing new diesel buses. The district currently operates a fleet of 68 natural gas buses and is committed to purchasing natural gas buses exclusively.

A New Jersey Success Story

"Biodiesel has been absolutely fantastic for our children, drivers and vehicles," said Joe Biluck, Jr., director of operations and technology for the **Medford Township School District** in New Jersey. The district has used B20, a blend of 20% biodiesel and 80% petroleum diesel in half of its school buses since 1997. "We're getting a significant reduction in emissions with the B20, and we've seen no drop in miles per gallon, which means the engines aren't working any harder," he said. "This is a great way for school districts concerned about the health of their children to accomplish their clean-air objectives with the buses they already have."[1]

What You Can Do

Contact the superintendent of your school district and voice your concern about diesel powered school buses. Contact GPCCP for more information about how to get alternative fueled school buses in your school district.

Greater Philadelphia Clean Cities Program (GPCCP) is a public/private partnership dedicated to reducing air pollution and improving energy security by promoting the development and use of alternative fuel vehicles in the Greater Philadelphia region.

GPCCP participates in the Clean Yellow Bus Association which is A coalition of Greater Philadelphia Clean Cities, Philadelphia Diesel Difference and PennFuture

It is the mission of the Clean Yellow Bus Association to encourage and assist schools in the Greater Philadelphia region to protect children's health and improve air quality through the reduction of air pollution from diesel school buses.

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[1]Press release "Back to School with Biodiesel" National Biodiesel Board, October 6, 2003