

School Buses Can Be Dangerous to Kids' Health

by Lynda Crawford

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The children are there on West 26th Street every morning, waiting to board the yellow school bus. They say their quick good-byes to parents and caregivers, and the adults rush off to jobs or daily chores, completely unsuspecting of any danger. And why should they worry? A Transportation Research Board report (in pdf format) found that kids are much safer traveling on school buses than by foot, on bicycle, or in private vehicles. But in fact, there is danger awaiting these children that perhaps their parents and caregivers, and even the Transportation Board, overlooked.

A majority of the school buses serving New York City children use diesel fuel, and while the dangerous effects from exposure to diesel exhaust are fairly well known -- cancer, for example, and respiratory ailments, including asthma, which is on the increase in alarming proportions among children -- who knew that diesel emissions were actually greater ON the school bus than in the outside air?

According to "No Breathing in the Aisles," a report (in pdf format) conducted by the Natural Resources Defense Council, the Clean Air Coalition, and the University of California at Berkeley, the average child riding a school bus is exposed to levels of diesel pollution that are up to four times greater than those measured in a passenger car directly in front of the bus, and up to eight times greater than the average diesel exhaust levels in outside air.

The combustion of diesel fuel creates particulate matter, the majority of which are fine particles, less than one micron in diameter. "The fine particles are particularly harmful, especially to children," explained Craig Wilson, associate director of environmental health at the American Lung Association of New York State. "They penetrate deep into the lungs and interfere with the development of lung tissue. They also contribute to asthma, exacerbate allergies, decrease lung function, and have been linked to lung cancer and premature mortality."

The New York Power Authority agreed to pick up the tab to retrofit 1000 city school buses with diesel particulate filters which would reduce emissions significantly. The initiative focuses on school buses in all boroughs except Manhattan. After a year and a half, however, not one school bus company has taken advantage of the deal.

Diesel particulate filters trap exhaust particles and, combined with an engine adjustment and the switch to using ultra-low sulfur diesel fuel (with all related costs covered by the power authority), emissions on the school buses are reduced by 90 percent.

Bus engines built before 1995 are not able to accept this particular retrofit (and 3200 buses in the fleet of 5000 that serve New York City school children presently have pre-1995 engines), but the New York Power Authority also agreed to cover installation costs for diesel oxidation catalysts that would reduce pollution on the older school buses by approximately 20 percent to 30 percent. To date, 10 buses have had oxidation catalysts installed, and 30 more will be completed in July. An additional 200 older buses are in the pipeline, according to the authority, awaiting completion of the agency's bidding and selection process for vendors to service the installations. All 10 of the older buses that have been equipped with oxidation catalysts, and

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those in line to receive them, are from one company, Atlantic Express in the Bronx. None of the other 64 bus companies serving the school system have requested installation of the catalyts on their older buses.

Even more disturbing, not one bus company has agreed to install diesel particulate filters on their newer buses and switch to using ultra-low sulfur diesel fuel, the combination that achieves the greatest reduction in emissions. "Our goal is not a 20 percent reduction," said Wilson of the American Lung Association. "It is to get in excess of a 90 percent reduction."

In a recent [article](#) in the New York Times, bus company officials blamed the technology for the delay, and expressed fears regarding engine damage or manufacturer warranties not being honored, as well as the suspicion that switching to low sulfur diesel fuel -- a necessity with the diesel particulate filters -- would eventually mean higher costs.

The New York Power Authority has done everything it can to allay these fears, according to New York Power Authority spokesperson, Connie Cullen. "We've been talking with the bus operators, answering their questions and concerns. We independently contacted every school bus engine manufacturer and were able to get letters of verification that the warranties on the engines will remain intact when this equipment is installed. This is in addition to already existing warranties that come with the filters and catalyts. We've shared all these letters with the bus operators.

"Initially we offered to pay the difference in cost between the regular onroad diesel and the ultra-low sulfur diesel (a differential that fluctuates between 10 and 18 cents a gallon in New York), and then we decided not only to pay the differential, but the whole cost. None have agreed to use the ultra-low sulfur diesel."

In 2006, all bus and truck operators will be required by federal Environmental Protection Agency regulations to use ultra-low sulfur diesel fuel (15 parts per million sulfur as opposed to 500 parts per million sulfur in onroad diesel). The New York Power Authority initiative covers the cost of purchasing the cleaner fuel for the three years prior to the mandate.

"All New York City transit buses and sanitation trucks are already using ultra-low sulfur diesel fuel," added Ms. Cullen.

It takes the same amount of time to install the diesel particulate filter (or the diesel oxidation catalyst) as it does to replace a muffler on the vehicle, between two to eight hours. The New York Power Authority also offered to accommodate the schedule of the bus operators, to do the work on weekends or school holidays, and to pay overtime for the maintenance workers involved.

Apparently, these efforts have not swayed NYC school bus operators. And it is a voluntary program. The Department of Education has yet to require the retrofits as a condition for doing business with the city.

Some school bus associations, citing other public health studies, dismiss the Natural Resources

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Defense Council report as unscientific and even play down the danger to children outlined in it.

"People call anything 'unscientific' when what they really mean is that they didn't like the results," said Gina Solomon, Senior Scientist at NRDC, and one of the authors of the report. "The study was scientifically designed in collaboration with well-respected researchers from the University of California at Berkeley, and was peer-reviewed. In addition, scientists from Yale University repeated our study in Connecticut and found the same results."

In the Yale study, released last year by Environment and Human Health, Inc., measurements of fine particulate matter were five to 15 times higher on the school buses than in the average outside air. Monitoring equipment was not only located on the bus, as in the NRDC study, but on the children themselves as they went through their school day. Levels spiked every time the children were on the buses, or even when they approached them. A moving bus once again produced the highest levels in the back of the bus and with the windows closed. But levels were even higher inside an idling bus that was loading and unloading students, and highest when idling with the windows open, particularly if more than one school bus was lined up, allowing exhaust from one bus to enter another.

In both studies, emission levels varied by bus, and none of the buses tested had any pollution control devices and/or used ultra-low sulfur (or "green") diesel.

Advocates of the retrofit program in New York City are frustrated by the delay. "We know other school districts have done it, one in Connecticut, and one in Boston," said Craig Wilson of the American Lung Association. "There are some technical challenges, but there is no reason why it can't be done."

"They will be legally required to use low sulfur diesel fuel in three years anyway," noted Ms. Solomon of NRDC, "so it's hard to argue against it now. Some people are just resistant to anything new."

Do parents need to take their children off school buses? According to Natural Resources Defense Council recommendations, if a child has asthma, the parent should observe whether the condition worsens as a result of riding on the bus and, if so, consult a pediatrician and consider alternate transportation. All other school children should be instructed not to sit in the back of the bus, particularly for long trips. Harmful effects accumulate over years, so it is important to contact school districts and local politicians, appealing to them to reduce diesel emissions on school buses immediately through retrofits and the use of ultra-low sulfur diesel, prohibiting bus idling, and the purchase of alternatively fueled buses.

Amid news of an unprecedented rise in asthma for New York City children, a new grassroots group, the Asthma Free School Zone, is gearing up for community action in the next school year. Director and founder, Rebecca Kalin, has a 6-point agenda for the Asthma Free School Zone, and the first two items on the list involve diesel emissions: prohibiting idling within a school zone, and insisting on clean fuel technology on school buses.

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Kalin related a story about a public school on East 12th Street where the yellow school bus is no longer a welcome sight. "One teacher I know runs to the windows and slams them shut every day when the school bus appears," she said. "He doesn't want his kids to have to breathe the smelly fumes." Kalin hopes the community will come together on this issue so that teachers can keep their classroom windows open, and students can breath safely.

Various funding options exist for school bus operators in New York, in addition to the \$6 million available through the New York Power Authority initiative. The New York State Clean Air School Bus Program has allocated \$5 million for awards up to 100 percent of school bus retrofits or replacement costs. Another \$5 million is available for upgrading buses built before 1990, as well as other funding incentives for retrofits, through EPA's Clean School Bus Program . And \$20 million is available from the EPA to retrofit school bus diesel engines, as part of a consent decree with Toyota stemming from emission violations.