



School Transportation Issues

U.S. school buses carry their precious cargoes across 5 billion miles each year. Most of those miles are traveled by buses using diesel and gasoline. Nearly 60 percent of the nation's school buses run on diesel while 40 percent run on gasoline. So how do schools ensure a safe, clean environment? One solution is to power buses with alternative fuels, such as biodiesel, electricity, ethanol, natural gas, or propane. Alternative fuel technologies represent the cleanest available options for heavy-duty applications. In fact, a 2000 document titled *Bus Futures: New Technologies for Cleaner Cities* reports that natural gas buses emit 40 to 86 percent less particulate matter and 38 to 58 percent less nitrogen oxides than diesel buses.

Why are petroleum-fueled school buses harmful? When combusted, all petroleum-based fuels release potentially harmful substances. Diesel-fueled school buses pose a greater health risk, as their exhaust is high in particulates. The U.S. Environmental Protection Agency classifies particulates as probable human carcinogens. Particulates are also increasingly associated with lung diseases, such as asthma. According to the American Lung Association, asthma prevalence among children increased 72 percent between 1982 and 1994.

What are our alternatives? School buses consume more than twice the amount of fuel used by the average passenger car. Collectively, when powered by alternative fuel, they can make a big difference in reducing our nation's petroleum consumption. Predictable routes, centralized refueling, high fuel usage and health concerns as well as the opportunity to educate future energy consumers, all make school buses a desirable application for alternative fuel vehicles. More and more schools are providing a cleaner and healthier route to school with alternative fuel buses (AFBs). AFBs offer greatly reduced emissions and—in some cases—lower fuel and maintenance costs than buses that run entirely on petroleum fuels. The alternative fuels used today in school buses are—natural gas (CNG and LNG), propane (liquefied petroleum gas or LPG), biodiesel, ethanol, methanol, and electricity.¹

Besides alternative fuels, what else can be done? Reduce idling. Unnecessary school bus idling pollutes the air, wastes fuel, and causes excess engine wear. Fortunately, it's easy to implement practices that reduce school bus idling.

¹ Text used comes from the Rebuild America website. Retrieved on February 11th, 2005, from: <http://www.energysmartschools.gov/sectors/SectorPages/BusTransportation.asp>.

Isn't it important to warm up the engine with a long idle period, especially in cold weather? With today's school bus engines, bus and engine manufactures routinely suggest a warm up time of less than five minutes. In fact, running an engine at low speed causes significantly more wear on internal parts compared to driving at regular speeds. ²

Aren't all school buses on the road required to meet today's pollution standards? No. It's true that pollution standards for buses have become progressively stronger, providing better protection for children and their maturing lungs. However, buses built before 1990 and 1991 are still on the road; they are allowed to emit six times more toxic soot and three times more smog-forming nitrogen oxides (NOx) than newer models. Older school buses expose children, whether they are riding the bus or waiting for it in the schoolyard, to greater levels of air pollution. In addition, diesel school buses may release more pollution, particularly soot, under real-world driving conditions than estimated in government laboratory tests.³

What can be done with an aging bus fleet?

- Get rid of the oldest, dirtiest buses first: About one-third of the school buses on the road today are over ten years old, and in need of replacement. Luckily, there are new school buses available today powered by alternative fuels and to a lesser extent low sulfur diesel that can provide both safe and clean transport for children. The highest priority is to replace the school buses on the road that were built before 1991, some of which do not even have to meet minimum safety requirements
- Retrofit buses built 1991 to today: For buses that have years of service remaining, the best alternative is to retrofit them with clean-up technologies. Though not as clean as a new bus, emission controls can reduce toxic soot 25 to 85 percent.⁴

Links:

EPA's Clean School Bus USA program: <http://www.epa.gov/cleanschoolbus/>.

State Environmental Resource Center "School Bus Diesel Emissions":

<http://www.serconline.org/schoolbus/stateactivity.html>.

CleanSchoolBus.org: <http://www.cleanschoolbus.org/faq.asp#1>.

Rebuild America:

http://www.energysmartschools.gov/sectors/SectorPages/BusTrans_PetroleumFueled.asp.

Union of Concerned Scientists:

http://www.ucsusa.org/clean_vehicles/trucks_and_buses/page.cfm?pageID=241.

² The two questions about idling come from the Environmental Protection Agency's Clean School Bus USA website. Retrieved on February 11th, 2005, from: <http://www.epa.gov/cleanschoolbus/antiidling.htm#resources>.

³ The pollution standards question is taken from the Union of Concerned Scientists' "Clean Vehicles" site. Retrieved on February 14th, 2005, from: http://www.ucsusa.org/clean_vehicles/trucks_and_buses/page.cfm?pageID=244.

⁴ The aging bus fleet question comes from the Union of Concerned Scientists' "CleanSchoolbus.org" site: Retrieved on February 14th, 2005, from: <http://www.cleanschoolbus.org/faq.asp#1>.