



Emission Facts

Impacts of Truck Idling on Air Emissions and Fuel Consumption

In the United States, heavy-duty diesel truck idling contributes significantly to both energy consumption and air emissions. EPA estimates that idling trucks consume, annually, over 950 million gallons of diesel fuel, and emit over 10 million tons of carbon dioxide (CO₂) and approximately 200,000 tons of oxides of nitrogen (NO_x). This fact sheet summarizes the results of EPA's comprehensive truck idling test program. The full report is available at the following web address: www.epa.gov/otaq/retrofit/idling.htm.

Idling Test Program

EPA's truck idling test program was conducted over a two year period at the U.S. Army's Aberdeen Test Center in Aberdeen, Maryland. EPA developed an idling test program that was reviewed by the American Trucking Association and the 21st Century Truck Partnership (government-industry group consisting of major U.S. truck and engine manufacturers).

To test actual long duration idling conditions, we selected representative truck idling scenarios that included the following categories:

- truck selection
- temperature ranges
- engine speed (rpm) ranges
- accessory loads

Average Truck Idling Emissions & Fuel Use

- 140 g/hr of NO_x
- 8200 g/hr of CO₂
- 0.80 gal/hr of diesel fuel

Truck Selection	Nine heavy-duty diesel trucks were selected for testing, from model years 1985-2001; thus representing the trucks traveling the roads today. The trucks/engines were manufactured by leading U.S. companies, including Caterpillar, Cummins, Detroit Diesel, Ford, Freightliner, International, Kenworth, and Volvo.
Temperature Ranges	The trucks were tested in a climate controlled chamber, at 0° F, 65° F, and 90° F. This temperature range accounts for idling not only in weather extremes, but in moderate conditions as well.
Engine Speed	Since truck drivers can adjust the engine speed (rpms) to provide more power at idle, the test program included engine tests from 600-1200 rpm. Use of the air conditioning or heat would normally require higher engine rpms, usually above 1000 rpm. Since not all idling takes place during air conditioner/heat needs, we also tested at the lower 600 rpm.
Accessory Loads	Since truck drivers idle for different reasons, the test program tested trucks under the following loads: air conditioning operating, heat operating, and no accessories operating. The first truck was tested for six hours to determine the emissions steady state, that is, the point upon which the emissions remained the same. We determined that this point was three hours. Therefore, all subsequent tests were for three hours per truck.

Results

After 42 unique test scenarios that represent actual long-duration truck idling conditions, the test program concluded that, on average, a typical 1980s-2001 model year idling truck emits 140 grams per hour (g/hr) of NO_x and 8200 g/hr of CO₂ and consumes about 0.80 gallons per hour of diesel fuel.

For More Information

You can access the full report, "Study of Exhaust Emissions from Idling Heavy-Duty Diesel Trucks and Commercially Available Idle-Reducing Devices" (EPA420-R-02-025, October 2002), at:

www.epa.gov/otaq/retrofit/idling.htm

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