

# Frequently Asked Questions

## **Why do trucks idle?**

Truck drivers idle primarily for cab comfort needs. As the driver rests in the truck sleeper compartment, he or she will often need to cool or heat the cab to rest comfortably. Even in moderate temperatures the cab will need air conditioning or heat because drivers usually do not sleep with their windows open for security reasons. Another popular reason for idling is to operate on-board appliances such as a television or microwave or off-board electrical equipment such as school bus flashers or cranes. In extremely cold weather, truck drivers will idle their engines to prevent the engine block from freezing. Another often overlooked reason for idling is habit: for many years, truck drivers have been taught to not turn off a diesel engine and, while there may be some need to do this with much older engines, it is not necessary for today's engines.

## **How much fuel is consumed by long-duration truck engine idling?**

The average truck will consume approximately one gallon of fuel per hour. Long-haul truckers are required to rest 10 hours per 11 hours of driving.

## **What are the emissions at idle?**

Based on the emissions and fuel consumption data generated from this study, the test data showed that (a) on average, a class-8 truck could emit 144 g/hr of NOX and 8224 g/hr of CO<sub>2</sub>, and could consume about 0.82 gal/hr of diesel fuel and (b) the use of idle reduction technologies can reduce fuel consumption and emissions significantly. Long-duration truck idling emits 11 million tons of carbon dioxide, 180,000 tons of nitrogen oxides, and 5,000 tons of particulate matter annually.

## **What are the truck maintenance and engine wear costs at idle?**

The trucking industry has analyzed the impact of idling on engines, both in terms of maintenance and engine wear costs. Long-duration idling causes more oil and oil filter deterioration and increases the need for more oil and filter changes. Similarly, the longer the idling time, the sooner the engine, itself, will need to be rebuilt. The trucking industry estimates that long-duration idling costs the truck owner \$1.13 per day, based on the need for

more frequent oil changes and sooner overhaul costs.

### **What is the extent of idling? How long? How many?**

Determining the exact number of idling trucks is difficult. At best, estimates of the number of trucks traveling more than 500 miles on a given trip, thereby requiring a mandated rest period, may be an indicator of the number of idling trucks. The number of trucks with sleeper berths is another indicator of the potential number of idling trucks as is the number of available public and private truck parking spaces in the country. Conservatively, a range of 500,000 to 1,000,000 trucks may idle for extended periods.

As for idling times per day, this number fluctuates as well. On average, truck driver surveys have revealed rest periods in the range of six to eight hours per day, over 300 days per year. When looking at an engine's electronic control module which calculates total idling times, data suggests idling times in the range of 30% to 40% of total engine operating time.

### **Should you turn off your engine while waiting in a line or in traffic?**

Obviously for safety and practical reasons it makes no sense to shut an engine off in traffic that is moving. But any time one anticipates the vehicle standing still for over five minutes it makes sense, both in terms of fuel and emissions, to shut down the engine.

### **Are the "start-up" emissions after a long shut-down period more than the emissions if the engine just idled?**

Much depends on the age and maintenance of the engine, but it's safe to assume that the start-up emissions are negligible after either a short or long period of time. In other words, the start-up emissions are not as great as the idling emissions, so it's always better to shut down. Of course this ignores the main reason for idling which is to provide cab comfort.

For example, we assume a truck consumes about 1 gallon per hour at idle and emits 135 g/hr of NO<sub>x</sub> and 3.68 g/hr of PM. If one were to argue that it is better to just idle overnight for 10 hours instead of shutting down, then one would have to claim that the start-up emissions (i.e., the amount of emissions over the time it took the engine to warm up) exceeds the idling emissions for 10 hours. If the truck idled for 10 hours it would emit 1,350 g of NO<sub>x</sub> (135 g/hr x 10 hours). So the question is would the start-up emissions exceed 1,350 g? While this question has not been answered with

test data, a fairly strong argument can be made based on common sense that the start-up emissions would not exceed this amount.