



Idle Reduction Educational Kit

Turn Off Your Engine; Idling Gets You Nowhere





Overview

One of the Clean Cities nationwide petroleum reduction strategies is to promote smarter driving practices, idle reduction, and the use of more fuel-efficient vehicles and advanced technologies. An idling vehicle is one whose engine is running while being parked or not in use. These vehicles produce emissions that contribute to the generation of smog and pollute the air. Idling is one of the biggest problems among today's drivers. People do not realize that idling wastes money, natural resources, and damages the environment and harms our health.

There are two types of Idling:

- Unavoidable: traffic lights, long lines and congestion
- Avoidable: overnight rest period

Who Idles?

- Long haul truckers
- School & transit buses
- Agriculture and construction equipment
- Locomotives (freight and passenger)
- Aircrafts
- Marine vessels

A Few Facts about Idling

- Like driving, idling releases emissions into the air. Unlike driving, idling is not necessary.
- Idling wastes fuel and money.
- Idling is harder on engines than restarting the vehicle or driving.
- Diesel engines emit more than 75% of all fine particulates from vehicles in the U.S.
- Each day, Americans waste approximately 3.8 million gallons of gas by voluntarily idling their vehicles. (Cumberland County Schools)
- The average annual carbon dioxide (CO₂) emissions from five minutes of daily voluntary idling ranges from 220 lbs. to 440 lbs. per year, depending on the size of engine.
- By avoiding idling five minutes per day, we can save between \$30 to \$60 per year per vehicle (assuming gas is \$3.15 per gallon)

Smog

**Nitrogen Oxides (NO_x) +
Volatile Organic Compounds
(VOCs) + Sunlight + Heat =
Smog**

NO_x can cause or worsen
respiratory diseases such as
asthma, emphysema and
bronchitis



Cars, truck, buses and other mobile sources are the number one source of air pollution in South Florida.



How Idling Affects Your Health

The pollutants found in exhaust not only affect our environment, they also affect our health. Particulate Matter (PM) is the name for tiny particles, such as soot, dust and dirt, found in the air. When inhaled, these small particles travel deep into the lungs and sometimes into the bloodstream.

Inhaling PM can:

- Aggravate asthma;
- Cause coughing or difficult breathing;
- Decrease lung function;
- Increase chances for emphysema;
- Lead to heart attacks;
- Increase chances for cancer;
- Exacerbate cardiovascular problems; and
- Lead to chronic bronchitis

Carbon Monoxide (CO) slows the delivery of oxygen to the body's organs and tissues. Exposure to CO aggravates heart disease and can cause headaches and visual impairment.



Run your errands back to back. Starting a warm engine pollutes up to five times less than one that's been sitting for more than an hour.

How Idling Affects the Environment

An hour of automobile idling burns approximately 1/5 of a gallon of gas and releases nearly four pounds of CO₂ into the air. Vehicle exhaust air pollutants are linked to ground-level ozone (or "smog"), acid rain, air toxics, climate change and other environmental problems. Excessive amounts of CO₂ in the atmosphere can increase global warming.

Air Impacts of Car Exhaust

Nitrogen Oxides (NO_x), Volatile Organic Compounds (VOCs), Particulate Matter (PM), Carbon Monoxide (CO) and Carbon Dioxide (CO₂)

An idling car needlessly releases these pollutants into the air. Reducing idling is an easy way to reduce vehicle emissions.

Pollutants of Concern

- **Long Haul Trucks:**
 - NO_x: 180,000 tons per year
 - PM: 5,000 tons per year
 - CO₂: 11 million tons
 - Fuel: 1 billion gallons
- **Switch Yard Locomotives**
 - NO_x: 13,000 tons per year
 - PM: 430 tons per year
 - CO₂: .75 million tons
 - Fuel: 65 million gallons



A poorly maintained car can release as much as 100 times the emissions of a well-maintained car.



The Cost of Idling

An idling car does not perform at full capacity, which can lead to expensive repairs. Some problems include:

- Oil contamination due to residue build-up on the cylinders.
- Corrosion caused by excessive condensation collected in the exhaust system.
- Decreased peak engine operating temperature due to spark plug residue.

An idling vehicle gets the worst gas mileage possible — 0 miles per gallon. According to the U.S. Department of Energy, if 145 million passenger vehicles idle for five minutes a day, approximately four million gallons of gasoline are consumed. It is estimated that the average truck idles over 1,800 hours a year. As gas prices rise, not idling a vehicle is a quick and easy way to save money.

Extent of Idling

- Population of long haul trucks:
 - 500,000 – 1,000,000
- Idling hours per year:
 - 1,800 – 2,400
- Fuel consumption per truck
 - .80 – 1.20 gallons per idle hour
- Maintenance costs
 - \$1.14 per day at idle
- Population of locomotives
 - “Switch yard” locomotives – 5,000





Options Available

There are alternatives to provide A/C and heat in a cabin without idling the truck's engine. These options allow drivers to be comfortable and safe while saving money, fuel and reducing idle emissions. Some of these alternatives are:

Automatic Engine Shut Down/Start Up

An automatic engine shut down/start up system controls the engine start and stop based on a set time period or ambient temperature, and other parameters (e.g., battery charge). The application for ambient temperature addresses the issue of cab comfort. For example, a driver can set the system to turn on the engine and heat when the outside temperature reaches 65° F. For trucks, these devices are available from some of the engine manufacturers and cost \$900 - \$1,200. For locomotives, one company manufactures such a product, though it is best used to control locomotive idling in warmer climates where the need to idle is discretionary. Estimated cost: \$7,000 - \$15,000. These small, lightweight devices provide heat only. They cost about \$1,000 and are available at the engine manufacturer level.

Direct Fired Heater

These small, diesel-powered engines (5 to 10 horsepower) are installed on the truck to provide air conditioning, heat, and electrical power to run appliances.

Truck Stop Electrification (TSE) and On-Vehicle Electrification

Electrification refers to a technology that harnesses an electrical system to provide the truck or locomotive operator with climate control and other needs, eliminating the need to idle the main engine. It can be a stand-alone system or it can include a combined on-board and off-board system.



Truck Stop Electrification is to be one of the most attractive and promising activities to reduce diesel emissions from the on-road vehicle sector



Other Things You Can Do to Reduce Idling

- Participate in an anti-idling campaign or create one.
- Ride your bike to places, carpool, and use public transportation.
- Reduce warm-up idling. Start driving after no more than 30 seconds of idling, assuming your vehicle's windows are clear.
- Avoid rapid accelerations and braking.
- Do not use remote starters, these starters encourage excessive idling.
- When picking up children at school, wait until they are in the vehicle to start the engine.
- On the highway, use your cruise control and overdrive gears.
- Park under a shaded area - if you use your car as your office, try to park in a shaded areas with the windows open to make calls and write reports.
- If you are stopped for more than 10 seconds (except at traffic lights), turn off the engine. Idling takes more fuel than restarting the vehicle and degrades the engine's ability to operate smoothly and efficiently.

Launch Your Personal Idling Campaign

- Step 1:** Turn off the engine if the vehicle is going to be parked for more than 60 seconds (except in traffic).
- Step 2:** Drive the vehicle to warm it up, rather than idling the engine (usually no more than two to three minutes of idling is needed on cold winter days).
- Step 3:** Use remote car starters wisely to avoid excessively long warm-ups.
- Step 4:** Use a block heater on cold winter days to warm the engine before starting it (ideally, the block heater should be turned on by an automatic timer two hours before leaving).
- Step 5:** Spread the word to your family and friends. Telling your family and friends about the benefits of reduced idling will help them save money and help protect the environment too.



Environmental Protection Agency Idle Free Corridors



Idling Myths

Myth: Idling does not waste that much fuel.

Fact: An hour of idling time consumes approximately a gallon of diesel fuel. Idling increases both fuel and maintenance expenses.

Myth: It's important to warm up the engine with a long idle period, especially in cold weather.

Fact: With today's school bus engines, bus and engine manufacturers routinely suggest a warm up time of less than five minutes. In fact, running an engine at low speed (idling) causes significantly more wear on internal parts compared to driving at regular speeds.

Myth: Idling does not affect the environment.

Fact: Every gallon of gas you use produces about 19 pounds of carbon dioxide.

Myth: It's better for an engine to run at low speed (idling) than to run at regular speeds.

Fact: Running an engine at low speed causes twice the wear on internal parts compared to driving at regular speeds.

Myth: The engine must be kept running in order to operate the school bus safety equipment (flashing lights, stop sign). It's impossible to run this equipment off the internal circuitry of the bus because the battery will run down.

Fact: Safety equipment can be operated without the engine running through re-wired circuitry for up to an hour with no ill-effects on the electrical system of the bus.

Myth: Idling is necessary to keep the vehicles' indoor environment comfortable.

Fact: Depending on the weather, many buses will maintain a comfortable interior temperature for a while without idling. Idling is also not an efficient way to keep the cabin warm. Bus routes should be timed so children and drivers do not need to spend a lot of extra time on the bus when it is not en route, particularly in hot or cold weather. In addition, auxiliary heaters can be purchased and installed to keep the cabin comfortable.

Myth: It's better to just leave the engine idling because a "cold start" produces more pollution.

Fact: A recent Environmental Protection Agency study found that the emission pulse measured after the school bus is restarted contains less carbon monoxide, nitrogen oxides, and other pollutants than if the school bus idled continuously over a 10-minute period. The analysis indicated that continuous idling for more than three minutes emitted more fine particle (soot) emissions than at restart.



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