

VERMONT IDLE-FREE FLEETS

† AMERICAN LUNG ASSOCIATION®



Extended idling by commercial trucks costs truck owners about three billion dollars annually and wastes over one percent of U.S. petroleum resources.

ECONOMICS OF TRUCK ENGINE IDLING

Much of this petroleum use could be avoided by installing idle reduction technologies, adopting more efficient freight scheduling policies, or in some cases, simply turning the trucks off. Reducing idling improves the durability of the vehicles and maintenance cost savings by reducing engine-on time and the frequency of oil changes, as well as increasing the interval to engine overhaul.¹

IDLING ENGINE WEAR AND TEAR




Letting an engine idle actually does more damage to the engine than starting and stopping. Running an engine at low speed (idling) causes twice the wear on internal parts compared to driving at regular speeds, which can increase maintenance costs and shorten the life of the engine. Generally, fuel consumption during engine start-up is equivalent to about 30 seconds of engine idling.²

Manufacturers of heavy-duty engines, including Kenworth Truck Co.³, Caterpillar, Inc.^{3,4}, IC Corporation⁴ and Cummins Inc.⁴, advise operators to limit idling to a maximum of three to five minutes.

IDLING WASTES FUEL AND MONEY

A typical heavy-duty truck burns approximately one gallon of fuel for each hour of idling.² If this truck idles for one hour per day and operates 300 days a year, it would waste 300 gallons of fuel per year, simply idling; if it idles for six hours per day and 300 days a year, it would waste 1,800 gallons of fuel.²

At a price of \$2.94 per gallon of diesel, idling comes with a price tag of \$882 for one hour of idling per day/300 days a year per truck, \$5,292 for six hours idling per day/300 days a year per truck.²

| | hrs/day | \$/gal | \$/yr |
|---|---------|--------|-----------------|
|  (1) × | 1 | \$2.94 | \$882 |
|  (1) × | 6 | \$2.94 | \$5,292 |
|  (6) × | 6 | \$2.94 | \$31,752 |

MYTHS AND REALITIES ABOUT DIESEL ENGINES AND IDLING Although there are some legitimate reasons why

Initial Starting: Cold Engine / Warm-up Time

MYTH: Warm-up time for a heavy-duty diesel engine should be 10 minutes or more.

REALITY: Most engine manufacturers recommend that newer engines run for roughly three to five minutes before driving. In colder climates, block heaters are a good alternative to excessive idling. They plug into electrical outlets and help warm the engine to avoid starting difficulties and reduce idling time during engine warm-up.⁵

Restarting

MYTH: Shutting off and restarting a heavy-duty diesel engine will increase wear.

REALITY: While engine manufacturers recommend that you let your engine idle for a few minutes after you stop for high speed high load operation in order to let the turbocharger cool down⁵, in normal on-road driving, there is no additional wear when shutting the truck on/off several times a day⁶. There are benefits

in fuel economy and wear/durability when shutting the truck down rather than idling. Most newer diesel engines stay warm for several hours after they have been running, retaining more than enough heat to keep the engine warm and avoid starting difficulties. Older vehicles may have more difficulty restarting, but don't assume new engines should be operated like older ones. Check the manufacturer's recommendations².

Fuel Gelling

MYTH: To avoid fuel gelling, heavy-duty diesel engines should not be shut off in cold weather.

REALITY: Gelling of diesel fuel used to be a problem years ago, but refiners have worked to resolve that issue by creating winter blends that better withstand colder temperatures⁵.

Engine Wear and Tear

MYTH: Letting a heavy-duty diesel engine idle for the day is best for the engine.

DIESEL EMISSIONS: HEALTH & HEALTH CARE COSTS

DIESEL EXHAUST AND HEALTH

Diesel exhaust is a mixture containing over 450 components, including nitrogen oxides, volatile organic chemicals and particulate matter (PM).

PM comes in different sizes and the ones of most concern are tiny enough to lodge deep in the lungs where they can do serious damage. Particles of 2.5 microns in diameter are small enough to pass from the lung into the bloodstream just like oxygen molecules. By comparison, the diameter of the human hair—at 70 microns—is huge.

The United States Environmental Protection Agency (EPA) has determined that diesel exhaust is a likely human carcinogen.

HEALTH CARE COSTS

Vermont will spend an estimated \$78 million in health care costs and lost productivity from problems related to diesel exhaust in 2010.⁷

SHORT-TERM AND LONG-TERM HEALTH EFFECTS

- Breathing in diesel fumes can cause coughing, itchy or burning eyes, chest constriction, wheezing and difficulty breathing.
- Long-term exposure increases risk of lung cancer.
- Dozens of studies link airborne PM, such as those in diesel exhaust, to increased hospital admissions asthma, chronic obstructive pulmonary disease (COPD), pneumonia and heart disease.
- Exposure to diesel exhaust causes up to 60,000 premature deaths annually in the U.S.

WHO IS AT GREATEST RISK?

Workers: analysis of over 30 studies of people who work around diesel equipment, including truck drivers, showed they were more likely to develop lung cancer than those who were not exposed to diesel emissions.

Children: pound-for-pound they take in much more air than adults and have less developed lungs and immune systems. Asthma is the leading cause of school absenteeism due to chronic illness. Approximately 12,378 Vermont children have asthma.

The elderly and people with respiratory disease, diabetes and heart disease.

Currently there are approximately 45,329 Vermont adults with asthma, 21,669 with chronic bronchitis and 9,636 with emphysema.⁸

trucks and buses idle, there are also some misconceptions.

REALITY: Letting an engine idle actually does more damage to the engine than starting and stopping. Running an engine at low speed (idling) causes twice the wear on internal parts compared to driving at regular speeds. According to the American Trucking Association, such wear can increase maintenance costs by almost \$2,000 a year (2002 figure) and shorten the life of the engine. Generally, fuel consumption during engine start-up is equivalent to about 30 seconds of engine idling².

Drivers in Cabs

MYTH: Drivers in their cabs are protected from exhaust emissions while idling.

REALITY: Idling poses health risks to drivers. While sitting in an idling vehicle, drivers are exposed to the vehicle's pollution more so than when the vehicle is in motion since there is no air flow to vent the emissions.



ENDNOTES

¹ 21st Century Truck Initiative/Partnership, Idle Reduction, *GlobalSecurity.org, Military*
<http://www.globalsecurity.org/military/systems/ground/21c-truck-ir.htm>

² What You Should Know About Truck Engine Idling, *EPA New England*, April 2002 [dollar figures adjusted to Nov. 2009]

³ Crack Down On Idle Time, *Equipment Today*, May 15, 2008

⁴ Clean School Bus USA, *US EPA*
<http://www.epa.gov/cleanschoolbus/antiidling.htm>

⁵ Vermont Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division

⁶ Mike Powers, *Caterpillar Global On-Highway*, "Crack Down on Idle Time", *Cygnus Business Media*, May 2008

⁷ Clean Air Task Force

⁸ Estimated Prevalence of Lung Disease by Lung Association Territory, *American Lung Association Epidemiology and Statistic Unit, Program and Research Services*, July 2008

**VERMONT
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IDLE-FREE RESOURCES

CALCULATORS/COST SAVINGS ESTIMATES

Argonne National Laboratory Savings Calculator for Idling Reduction
<http://www.transportation.anl.gov/pdfs/TA/361.pdf>

Environmental Protection Agency (EPA) Savings Calculator
<http://www.epa.gov/otaq/smartway/transport/calculators/>

TRUCKING INDUSTRY

American Trucker Associations Air Quality Improvement Effort
<http://www.truckline.com/AdvIssues/AdvocacyMaterials/TruckingEffortsImproveAirQuality.pdf>

GOVERNMENT SUPPORT/PROGRAMS:

Vermont Department of Environmental Conservation
<http://www.anr.state.vt.us/air/MobileSources/>

U.S. Department of Labor Safety and Health Administration
<http://www.osha.gov/SLTC/dieselexhaust/>

EPA SmartWay
<http://www.epa.gov/smartway/>

EPA New England Diesel Exhaust
<http://www.epa.gov/NE/eco/diesel/>

NON-GOVERNMENT ORGANIZATIONS SUPPORT/PROGRAMS:

National Clean Diesel Campaign
<http://www.epa.gov/diesel/documents/420f05012.pdf>

Northeast Diesel Collaborative
<http://www.northeastdiesel.org/diesel101.htm>

Idle-Free VT
<http://www.idlefreevt.org/>

American Lung Association
www.lungusa.org

Clean Air Task Force
<http://www.catf.us/>