OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Diesel Idle Reduction

What is Idling?

Idling is running a vehicle's engine when the vehicle is not moving. Unnecessary idling of diesel vehicles pollutes the air, waste fuel, and cause excess engine wear. Fortunately, it is easy to implement practices that reduce idling.

Health Concern

Diesel exhaust contains many harmful pollutants such as carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), and a significant level of particulate matter (PM)[1]. These particles can lodge deep in the lungs and heart and are linked to:

- allergies,
- heart problems,
- aggravated asthma,
- decreased lung function,
- lung cancer, and
- premature death.

Children are more susceptible than healthy adults because their respiratory systems are still developing, and they have a faster breathing rate[1]. Children breathe 50 percent more air per pound of body weight than adults. This is why idle reduction in school buses is especially important.

Environmental Concern

Diesel exhaust pollutants such as carbon dioxide and those listed above contribute towards ground level ozone, smog, acid rain, and climate change. A simple way to reduce these emissions is to stop unnecessary idling.

Engine Wear-and-Tear

Engine manufacturers generally recommend no more than three to five minutes of idling. Operating a diesel engine at a low speed can cause twice the wear on internal components than normal operation. This raises maintenance costs and shortens engine life.

Wasted Fuel and Money

Idling vehicles waste fuel and money. When idling, a diesel engine can burn up to a gallon of fuel per hour[2]. Eliminating unnecessary idling can save significant dollars in fuel costs each year.

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To estimate Cost Savings, use the formula:

Cost Savings = FS × IT × DU × DC × Days, where

- **FS** is the size of your fleet
- **IT** is the reduction in idling time per day for each vehicle in hours
- **DU** is the gallons of diesel used for each hour of idling
- **DC** is the cost of diesel in dollars/gallon
- **Days** is the number of days per year each vehicle is used.

100 buses × 0.5 hours per day × 1 gallon of diesel per hour × $3.80 per gallon × 180 days = $34,200 per year

Using this formula and assuming idling uses one gallon of diesel per hour, a company with a fleet of 100 vehicles operating 180 days per year, which reduces idling time by an average of one-half hour per vehicle per day, at a diesel cost of $3.80 per gallon (the average price of diesel from April 2021 to April 2022[3]) will save $34,200 per year in fuel costs.

School Bus Fleets

According to the American School Transportation Association, in the USA there are 480,000 school buses in circulation each day[4]. Nationwide, 50 percent of students, kindergarten through 12th grade, are transported in a school bus. This makes it by far the biggest source of mass transportation in the country. School buses are also the safest mode of transportation to schools. Students are 70 times safer in school buses than a car. By implementing anti-idling strategies, we can make it even safer for the students, the community, and the environment by reducing pollution.

Anti-Idling Strategies

Implement an anti-idling policy; an example can be found at **https://www.epa.gov/schools/idle-free-schools-toolkit-sample-idling-policies**.

- Train and coach drivers to reduce the amount of time spent idling.
- Have a designated area where drivers can wait if they arrive early or take breaks between rides.
- Limit early morning idling time to manufacturer's recommendation to reduce exhaust buildup in vehicles.
- Turn off engines as soon as possible after arriving at loading or unloading areas.
- Use GPS fleet tracking software to gather data to find ways to improve performance and decrease idling.
- Recognize and celebrate drivers who successfully reduce idling.
- Install auxiliary power units (APUs) or other idle reduction technology to run lights and heating/cooling without burning fuel.
- Install an Idle Timer that turns the engine off after a preset amount of idle time.

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Idling Myths

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

Fact: With today's improved diesel engines and modern fuels, it is not necessary to idle your vehicle for long periods. Manufacturers suggest a warm-up time of less than five minutes.

Myth: It is 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[5].

Myth: The engine must be kept running in order to operate the vehicle lights and heating/cooling. It is impossible to run this equipment off the internal circuitry of the vehicle because the battery will run down.

Fact: Lights and heating/cooling 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 vehicle.

Myth: Idling is necessary to keep the cabin comfortable.

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

Contact Us

If you have further questions, please contact the Oklahoma Department of Environmental Quality's Air Quality Division at (405) 702-4100.

References

1 https://www.epa.gov/dera/learn-about-impacts-diesel-exhaust-and-diesel-emissions-reduction-act-dera

2 https://www.mcnallyinstitute.com/how-much-fuel-does-a-diesel-engine-use-at-idle/

3 https://www.statista.com/statistics/204169/retail-prices-of-diesel-fuel-in-the-united-states-since-2009/

4 https://s3-us-west-2.amazonaws.com/nsta/6571/Yellow-School-Bus-Industry-White-Paper.pdf

5 https://learndiesels.com/8-idle-facts/#:~:text=Does%20idling%20hurt%20a%20diesel,costs%20and%20shorten%20engine%20life