

Diesel Exhaust in Minnesota

What are the health effects? Who is at risk? What can you do?

Air Quality/Motor Vehicle Pollution #2.25 February 2005

Diesel Exhaust and Your Health

Diesel exhaust contains tiny particles known as fine particulate matter (PM) or soot. These “fine” particles are so small that several thousand could fit in the period at the end of this sentence. **Diesel engines are a large manmade source of fine particulate matter.** Diesel exhaust also contains ozone-forming nitrogen oxides and toxic air pollutants.

- Exposure to fine particles contributes to the development of heart and lung disease. Ozone exposure aggravates existing respiratory diseases such as asthma.
- Nationwide, particulate matter—such as that in diesel exhaust—causes more than 15,000 premature deaths every year.
- Diesel exhaust is also understood to be a likely human carcinogen.

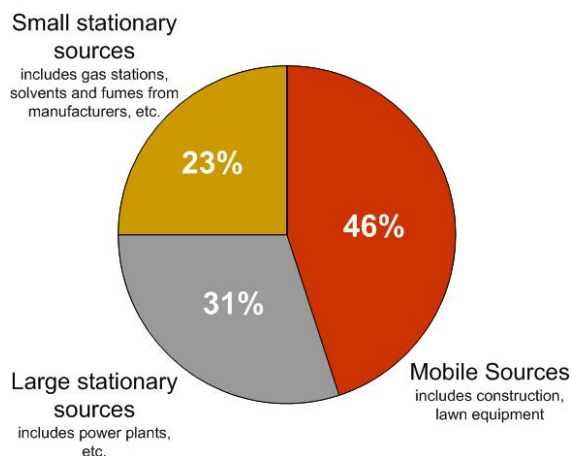
Who is most at risk?

- People with existing heart or lung disease, asthma or other respiratory problems are most sensitive to the health effects of fine particles, as are the elderly.
- Children are especially sensitive to air pollution because they breathe 50 percent more air per pound of body weight than adults.

Other Health and Environmental Effects

- Fine particles from diesel engines travel far from their source and contribute to haze which restricts visibility even in national parks and wilderness areas.
- Diesel exhaust also contributes to ozone formation (a component of smog), acid rain, and global climate change.

Sources of air pollution in Minnesota



Source: MPCA report, *Air Quality in Minnesota: Into the Future 2003*, pg 2.

What can owners/operators do?

1. Turn off engines when vehicles are stopped for more than a few minutes, especially around people. Do not idle near the air intake of a building.
2. Retrofit engines with pollution control devices and or use cleaner burning fuel.
3. When purchasing new vehicles, buy the lowest emitting vehicles available.
4. Keep engines well tuned and maintained.
5. Visit www.epa.gov/otaq/retrofit or www.epa.gov/cleanschoolbus for more details or call 1-734-214-4636.



After and before retrofit, at Boston's Big Dig.



Reducing Emissions

Reduce Idling and Save Money

- A heavy-duty truck or large off-road diesel engine burns one gallon of diesel fuel per hour at idle, generating significant pollution, wasting fuel, and causing excessive engine wear.
- Vehicle owners can buy small generators or auxiliary power units to provide heat, air conditioning, and/or electricity while a vehicle is parked. They substantially cut fuel consumption and emissions generated during long-duration idling.
- Owners of older vehicles can buy block heaters to help warm the engine to avoid starting difficulties and reduce idling time during engine warm-up. **Newer vehicles (late 1990s or newer) are designed to start easily at all temperatures without idling.**

Retrofits and Cleaner Fuels

- Use ultra-low sulfur diesel fuel in combination with pollution control equipment such as particulate matter filters. This approach reduces particulate matter by more than 90 percent.
- Although ultra-low sulfur diesel fuel is not required until 2006, it is becoming available in Minnesota and across the United States.

New Vehicle Purchase Considerations

- Vehicles equipped with the most advanced emission control systems available.
- Vehicles equipped with devices that minimize idling and warm-up time automatically.
- Vehicles that run on cleaner fuels such as biodiesel, ULSD or compressed natural gas.

For information on finding cleaner fuels or retrofit equipment, call Jeff Buss, MPCA Mobile Sources coordinator: 651-297-8659.

What is Government Doing?

- EPA and states like Minnesota are promoting cleaner diesel engines and fuels.
- **In 2006, diesel fuel will contain 97 percent less sulfur.** This ultra-low sulfur diesel fuel in combination with advanced pollution control technology will mean that in 2007, new trucks and buses will be up to 95 percent cleaner than today's models.
- EPA has issued emission standards for new, non-road diesel engines, such as construction and farm equipment, and is working to strengthen these standards in the future.
- Existing fleet engines will not be subject to the new regulations, yet may remain in operation for another 25-30 years.

Therefore, the EPA and states plan to:

1. Retrofit existing diesel vehicles with pollution controls.
2. Implement emission testing programs for diesel vehicles.
3. Implement anti-idling programs.
4. Promote cleaner fuels like ultra-low sulfur diesel or compressed natural gas.

EPA Standards for New Trucks and Buses+

Nitrogen Oxides	EMISSIONS*	
	Particulate Matter	
1984	10.7	0.60
1991	5.0	0.25
1994	5.0	0.10
2007	0.2	0.01

+ Since 1993, urban buses have had stricter standards.

* EPA's emission standards for trucks and buses are based on the amount of pollution emitted per unit of energy (expressed in grams per brake horsepower hour).

Information is from EPA420-F-03-022 June 2003