

SAFETY MEETING TOPIC: Diesel Exhaust

Diesel engines are becoming increasingly common. When diesel fuel burns in an engine, the resulting exhaust is made up of soot and gases, which may contain thousands of different chemical substances. The soot consists of very small *particles* that can be inhaled and deposited in the lungs. Diesel exhaust contains 20-100 times more particles than gasoline exhaust. These particles carry cancer-causing substances known as *polynuclear aromatic hydrocarbons (PAHs)*. *Gases* in diesel exhaust, such as nitrous oxide, nitrogen dioxide, formaldehyde, benzene, sulfur dioxide, hydrogen sulfide, carbon dioxide, and carbon monoxide can also create health problems.

Those most likely to be exposed to diesel exhaust include bridge, tunnel, and loading dock workers, auto mechanics, toll booth collectors, truck and forklift drivers, and people who work near areas where these vehicles are used, stored or maintained.

Short-Term (Acute) Effects

Workers exposed to high concentrations of diesel exhaust have reported the following short-term health symptoms:

- irritation of the eyes, nose, and throat
- lightheadedness
- feeling "high"
- heartburn
- headache
- weakness, numbness, and tingling in extremities
- chest tightness
- wheezing
- vomiting

Ventilation

Diesel exhaust in service bays, warehouses, or other enclosed areas should be controlled using ventilation.

Local exhaust ventilation is the best way to reduce potential hazards to diesel exhaust. A good ventilation system should include both intake and exhaust fans that remove harmful fumes at their source. Tailpipe or stack exhaust hoses should be provided for any vehicle being run in a maintenance shop. *General ventilation* uses roof vents, open doors and windows, roof fans, or floor fans to move air through the work area.

Prolonged idling of machinery should be avoided. A worker should not be in the vehicle when it is idling for a long period.

OSHA Standards

There is no OSHA standard for diesel exhaust. However, OSHA does have workplace exposure limits for individual components of diesel exhaust, such as carbon monoxide, sulfur dioxide, benzene, carbon dioxide, nitrogen dioxide, acrolein, and formaldehyde.

In addition, OSHA has a standard for "nuisance" dust that is applicable to the soot in diesel exhaust. The standard limits "respirable" dust exposures (particles that are small enough to lodge in the lung) to 5 milligrams per cubic meter of air (5 mg/m³) averaged over eight hours. If adequate local and general ventilation is provided, and running of equipment indoor is kept to a minimum, these limits should never be reached.