# DIESEL EXHAUST

WHAT YOU NEED TO KNOW

UCLA Labor Occupational Safety & Health Program (LOSH)

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# What is diesel exhaust?

Diesel exhaust is a mixture of over 400 different fine particles, vapors, and toxic organic materials, that result when diesel fuel is burned. Over 40 chemicals in diesel exhaust are considered toxic air contaminants (TAC) by the State of California.

#### What chemicals are found in diesel exhaust?

These are some of the toxic air contaminants that are found in diesel exhaust:

- > carbon monoxide
- > sulfur dioxide
- > arsenic
- acetaldehyde
- benzene
- > formaldehyde

- inorganic lead
- > manganese compounds
- > mercury compounds
- > methanol
- > phenol
- > cyanide compounds.





#### Why is diesel exhaust dangerous?

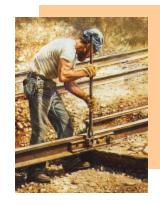
- ➤ In 1990, California identified and listed diesel exhaust as a known carcinogen under California's Safe Drinking Water and Toxic Enforcement Act (Prop. 65).
- ➤ Diesel engines spew out 100 times more sooty particles than gasoline engines for the same load and engine conditions. Approximately 25% of all hazardous particulate air pollution from fuel combustion comes from diesel engines.
- > Several studies see a correlation between respiratory diseases, pneumonia, asthma, and heart disease and fine airborne toxic particles.

# Who can be exposed to diesel exhaust?

Among others, the following workers may be occupationally exposed to diesel emissions:

- > mine workers
- railroad workers
- loading dock workers
- > truck drivers
- > ferry workers
- bridge and tunnel workers
- > auto mechanics
- > fork-lift drivers
- > farm workers
- > car, truck and bus maintenance garage workers
- > toll booth collectors.





Also, people operating diesel-powered equipment, engines, and vehicles, such as outdoor power equipment, recreational vehicles, boats, and locomotives may be exposed to toxic diesel emissions.

#### How can diesel exhaust affect your health?

The finest particles enter the deepest tissues of the lungs. It takes the cells of the immune system months or years to eliminate these particles from the body. Some of the particles may never be removed and accumulate in the lungs and lymph nodes.

Exposure to high concentrations of diesel exhaust may cause the following short-term symptoms:



- respiratory diseases
- > fatigue
- > altered sense of smell
- irritation of the eyes, nose, and throat
- > headache
- > drowsiness
- nausea
- heartburn.



People with asthma, heart disease, and emphysema could get worse if exposed to diesel exhaust. A long-term exposure to diesel exhaust may cause chronic obstructive lung disease, lung cancer, and also death.

# What can the employer do to reduce the risk of exposure to diesel exhaust?

- > Offer training programs regarding hazardous chemicals and protective measures.
- Ensure that all containers of hazardous materials in the workplace are labeled.
- ➤ Offer training of maintenance personnel in order to ensure the engines' proper operation and to control diesel emissions.
- > Provide regular maintenance of diesel equipment (tune-ups, checks for leaking fumes, etc.).
- ➤ When possible, introduce a cleaner alternative to diesel engines, such as engines powered by electricity, liquefied natural gas (LNG), or compressed natural gas (CNG).
- Ensure proper ventilation in garages, warehouses, and other enclosed areas. That is, provide roof vents, fans, open doors and windows, but also a ventilation system that includes both intake and exhaust fans, in order to remove fumes at their source.
- ➤ Provide air-conditioning in the booths for toll booth collectors and cabs of truck drivers in order to protect them from the fumes.
- Provide protective clothing in order to avoid skin contact (long-sleeved shirts, long pants, gloves, etc.)

A respirator is not a very effective solution. Respirators must meet the OSHA's Respiratory Protection Standard. Workers must be trained on how to use them properly and must pass a medical exam to make sure that they are physically able to wear a respirator.

#### Is there an OSHA standard for diesel exhaust?

No, there is no OSHA standard for diesel exhaust. However, there are standards for the various chemical components of diesel exhaust, such as carbon monoxide, benzene, carbon dioxide, formaldehyhde, etc.

### For more information contact:



Occupational Safety & Health Administration (OSHA) 200 Constitution Ave, NW Washington, DC 20210 www.osha.gov/SLTC/dieselexhaust/index.html