

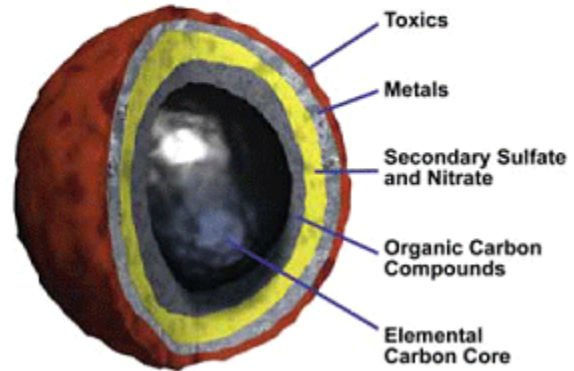


DIESEL EXHAUST

What is Diesel Exhaust?

Diesel engines used in trucks, buses, and trains produce exhaust that contains fine particle matter (PM). Diesel exhaust particles (figure 1) consist of a carbon core covered with toxic substances on the surface. PM in diesel exhaust accounts for an estimated 26 percent of the total particulate pollution in urban air. The gaseous portion of diesel engine exhaust is made up of carbon and nitrogen containing hydrocarbons including Polycyclic Aromatic Hydrocarbons (PAH), Volatile Organic compounds (VOC), and Sulfur Dioxide (SO₂). Gaseous sulfates react in the atmosphere to form airborne particles further increasing particulate pollution levels. NO_x is a major contributor to atmospheric ozone and smog. Diesel engines produce nearly 20 percent of the total nitrogen oxides (NO_x) pollution in outdoor air.

Diesel particles are carbon at their core with toxics and carcinogenic substances attached to their surfaces.



What are the Health Effects?

There are at least 40 significant toxic constituents in diesel exhaust of which at least 21 can cause cancer. PM inhalation is associated with asthma and heart disease as well as cancer. Children, the elderly, people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution impacts. Exposure to fine particles is associated with an increased frequency of childhood respiratory illnesses and can impair children's ability to breathe. There is significance to the PM constituent of diesel exhaust that is 5 μ m or smaller in diameter; particles in the air with a diameter less than 5 μ m are inhaled and deposited in deep lung alveolar spaces causing damage. Particles larger than 5 μ m are mostly deposited higher in the lung and are eliminated by muco-cilliary clearance reducing their opportunity for causing damage.

What can you do to protect your health?

Exposure to diesel exhaust varies widely in intensity and duration with location, season, and time of day. Take every step to reduce your exposure to diesel exhaust by learning more about local and national activities aiming to:

- Promote the reduction of diesel as a fuel source and the use of low sulfur diesel fuel [The Massachusetts Bay
- Transportation Authority (MBTA) has employed compressed natural gas fueled buses to replace buses with diesel engines.];
- Reduce children's exposure to diesel exhaust by retrofitting existing school bus fleets with diesel particulate filters;
- Support anti-idling campaigns in your school districts and neighborhoods to prevent unnecessary engine operation.

Read and learn more about the air quality and smog levels before scheduling outdoor activities by checking web sites such as:

- <http://www.airbeat.org/>
- <http://www.airnow.gov/>
- <http://www.scorecard.org/>

- <http://www.healtheffects.org/>

- <http://www.epa.gov/>