



Hazard Alert

Firefighter Exposure to Diesel Particulate Matter

Diesel Particulate Matter (DPM)

DPM is a component of diesel exhaust that includes soot particles made up primarily of carbon, ash, metallic abrasion particles, sulfates and silicates. Fire apparatus are equipped with diesel engines that produce diesel exhaust. Firefighters can be exposed to diesel exhaust in the apparatus bay and living quarters.

What are the health effects of DPM?

Short term exposure to high concentrations of DPM can cause headache, dizziness, and irritation of the eye, nose and throat severe enough to distract or disable firefighters. Prolonged DPM exposure can increase the risk of cardiovascular, cardiopulmonary and respiratory disease and lung cancer.

VOSH does not have a permissible exposure limit (PEL) for DPM. However, VOSH has PELs for other components of diesel exhaust. Monitoring for these gases can identify the presence of diesel exhaust and can help in evaluating the effectiveness of controls implemented to minimize the potential for exposure to exhaust when working around diesel-powered firefighting apparatus.

How can exposures to DPM be controlled?

Engineering controls are the most effective strategy for minimizing worker exposure to DPM. A combination of controls is often required. Examples include:

- Performing routine preventive maintenance of diesel engines to minimize emissions
- Installing engine exhaust filters
- Installing cleaner burning engines
- Using special fuels or fuel additives (e.g., biodiesel)
- Providing equipment cabs with filtered air
- Installing or upgrading ventilation systems, such as tailpipe or stack exhaust vents to capture and remove emissions in apparatus bays
- Keeping air pressure in living quarters higher than that of the apparatus bay to prevent airborne contaminants from entering the living quarters
- Avoiding apparatus areas until diesel exhaust has been vented to the outside

How can VOSH help employers?

VOSH encourages all fire departments to identify and control diesel exhaust exposure to employees. If you need further assistance or would like additional information please contact our Consultation Division at 804-786-8707.