



Diesel Exhaust in Fire Stations: Recommendations

Purpose

Fire apparatus and emergency equipment vehicles can generate diesel exhaust. The Massachusetts Department of Labor Standards (DLS) provides these recommendations to reduce exposure to diesel exhaust in fire stations as part of a comprehensive safety and health program. These recommendations are not a regulation.

Health Effects

Diesel exhaust is a known human carcinogen (IARC 2012). It also contains ultrafine particulates and Carbon Monoxide which can cause adverse cardiovascular effects in persons with pre-existing heart disease.

Diesel exhaust contains a mixture of compounds that can vary according to fuel and engine type, load cycle, engine maintenance, and tuning. Diesel exhaust contains gasses and particulates that include Carbon Monoxide, Nitrogen Dioxide, Sulfur Oxides, Formaldehyde, polynuclear aromatic hydrocarbons (PAH's), and ultrafine particulates called diesel particulate matter.

Recommendations

Fire Departments are encouraged to implement as many of these recommendations as possible to keep exposure to diesel exhaust as low as possible. Feasible methods include:

1. Keep apparatus and vehicles maintained and tuned according to manufacturer guidelines.
2. Minimize time idling indoors.
3. Capture exhaust directly at the apparatus when feasible. The United States Fire Administration recommends that fire stations provide direct capture of exhaust at the vehicle such as a flexible ventilation hose that is connected directly to the vehicle exhaust, or an onboard filter system that is mounted integral to the apparatus exhaust. Download information here: www.usfa.fema.gov/downloads/pdf/publications/design_of_fire_ems_stations.pdf
4. Provide adequate ventilation in the building so that engine exhaust from the apparatus bay does not migrate towards occupied areas. Air flow in the building should travel from occupied areas towards the apparatus bay. Ceiling-mounted filter systems, downdraft ventilation, or exterior wall fans could be considered in buildings without direct capture systems.
5. Provide air barriers between apparatus bay and other areas of the building. Barriers include self-closing doors and self-closing covers at fire pole openings.
6. Buildings with HVAC system should maintain system and replace filters regularly.
7. Ensure that engine exhaust is not located near the compressor inlet for SCBA air cylinder filling. DLS can issue a citation for this condition under 29 CFR 1910.134(i)(5).
8. Store turnout gear in a manner to reduce diesel exhaust particulate from settling on gear.
9. Ice machines should not be located in the apparatus bay so that diesel exhaust particulate does not settle on the machine. DLS can issue a citation for this condition under 29 CFR 1910.141(g)(4).
10. Conduct frequent cleaning and housekeeping to remove settled dust from surfaces.
11. Install Carbon Monoxide detectors in all sleeping and living areas.
12. Prohibit smoking inside fire station and on fire station grounds.

Resources

1. United States Fire Administration: "Safety and Health Considerations for the Design of Fire and EMS Stations" 05/18. More information here: www.usfa.fema.gov/downloads/pdf/publications/design_of_fire_ems_stations.pdf

