



Fire Fighter Cancer Awareness and Prevention



Fire Station Design: Best Practices to Reduce Exposures

All fire incidents produce toxic smoke that can have negative short and long-term health effects on fire fighters. Exposures can continue after leaving the fireground as harmful chemicals can be brought back to the station when contaminated gear and equipment are not gross decontaminated prior to leaving the fire scene.

Fire fighters are at high risk of exposure to diesel engine exhaust, particularly inside fire stations where fire apparatus release diesel exhaust that disperses to areas where fire fighters eat, work and sleep.

Fire fighters can also be exposed to diesel particles that have settled on apparatus or personal protective equipment throughout the fire station, including in living quarters and the kitchen. The International Agency for Research on Cancer (IARC) classifies diesel engine exhaust as a Group 1 carcinogen, which means it is known to cause cancer in humans.

HAZARD ZONES

When designing a fire station, it is important to reduce exposures and prevent contamination of carcinogens and other harmful agents. Existing stations should be retrofitted to best accomplish this where possible. It is recommended to divide the fire station in to **three hazard zones** to reduce exposure to cancer-causing chemicals at the fire station:

1. Hot (Red) Zone:

Designated area for everything contaminated that needs to be decontaminated.

- When decontaminating, wear proper PPE to minimize exposure.
- Contaminated PPE and equipment include, but are not limited to boots, gloves, helmets, turnout gear, SCBA, EMS equipment from medical calls, fire hoses, etc.

2. Warm (Yellow) Zone:

This is commonly the apparatus bay.

- Cleaned equipment can be stored in this zone (cleaned PPE should be stored in a separate area with its own ventilation system).
- Handwashing occurs here prior to entering the living areas of the fire station.
- Washer/extractors should be in the warm zone.

3. Cold (Green) Zone:

These are the living quarters of the fire station (e.g., kitchen, bathrooms, sleeping quarters, offices).

- Ventilation systems should not allow fireground contaminants or diesel exhaust to enter this area from the air, personnel or equipment.
- **Contaminated PPE and equipment should never enter the cold zone.**
- Do not prop open doors between living areas and the apparatus bay.

APPARATUS BAY BEST PRACTICES:

- Frequently replace all HVAC filters in accordance to the manufacturer's recommendations.
- **Diesel Exhaust:**
 - o To prevent exposure, use an exhaust capture system any time apparatus exits from or returns to the fire station.
 - o Perform apparatus checks outside of the fire station to minimize diesel exhaust exposure.
 - o Minimize vehicle operation time while inside the apparatus bay.
 - o Apparatus bays should not be cleaned using compressed air or a leaf blower. This can disturb diesel particulates, making them airborne and able to spread the particulates through the air and station easier.
 - o Mops used to clean the floors need to be separated: one for the apparatus bay, one for the living areas. Never use the apparatus bay mop to clean living areas.
- **Cleaning/Checkout of Tools and Equipment:**
 - o All decontamination of tools and equipment should be done outside the station as off gassing can occur from fire ground contaminants.
 - o Perform power tool checks outside of the station.
- **Personal Protective Equipment (PPE):**
 - o It is recommended to store all PPE in a separate room away from apparatus when not in use. This reduces diesel soot/exhaust exposure.

LIVING AREA BEST PRACTICES:

- Frequently replace all HVAC filters in accordance to the manufacturer's recommendations.
- PPE should never be worn in any living areas of the fire station. This includes day rooms, offices, kitchens, sleeping areas, training rooms, etc.
- Do not bring contaminated equipment into any living areas.
- The air pressure in living quarters should be higher than the apparatus bay to prevent airborne contaminants from entering the living quarters.
- Avoid using carpet in the station. Instead use hard, non-porous surfaces such as concrete to make it easier to clean.