


 PLANNING

PLANNING

Design fire stations and apparatus
with exposure prevention in mind

8

FIRE STATION DESIGN

When designing a fire station, departments should look for ways to reduce exposures and prevent cross-contamination of carcinogens, contaminants and other harmful agents. Fire station design must be centered around Total Worker Health and include ways to mitigate behavioral health and sleep outcomes. Some components of successful design include individual climate control in dorms, alerting systems specific to each room in the fire station, and providing natural light sources while also reducing bright light exposure at night. Existing stations can be retrofitted to best accomplish these best practices where possible.

- Within the station, the following zones should be established:
 - **HOT ZONE (RED):** Area with highest risk of exposure. This is generally the apparatus bay and adjacent areas that support the storage of vehicles. They should include boot-washing and hand-washing sinks.
 - **TRANSITION ZONE (YELLOW):** A designated area, as per WAC 296-305-06505, for cleaning contaminated equipment including SCBA, EMS equipment from medical calls, fire hose, turnouts, etc. When cleaning contaminated equipment, always wear appropriate PPE (gloves, splash gown and N95 if appropriate) to protect against exposures. Bunker gear, SCBA and extractors, along with lockers and showers, are located in the transition zone.
 - **COLD OR SAFE ZONE (GREEN):** “Keep it clean in the green.” The green zone is the living quarters of the fire station including the kitchen, living area, sleeping area, personal hygiene facilities and office. Contaminated EMS equipment, turnouts, etc., are never allowed.

Living quarters 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.

Source: IAFF Fire Fighter Cancer Awareness and Prevention — Fire Station Design: Best Practices to Reduce Exposures

FIRE STATION LAYOUT

ZONE LEGEND

- HOT - HIGH HAZARD
- TRANSITION - MODERATE HAZARD
- COLD - LOW HAZARD



- All new station design should include direct-source capture diesel exhaust handling systems for all vehicles and for every apparatus bay. These can be retrofitted into existing stations.
- The HVAC system in living and working areas should be positive pressure and systems in the apparatus bay and decon areas must be negative pressure to prevent airborne contaminants from entering the Cold or Safe Zone (GREEN). Air vestibules are now common in the Transition Zone (YELLOW) of new fire station designs to help reduce cross-contamination between Hot Zone (RED) and Cold or Safe Zone (GREEN).
- To avoid exposures to UV light, turnout gear should be stored in an enclosed ventilated room (NFPA Standard 1851).
- Carpet in fire stations acts like a sponge, collecting dirt, soot, feces, MRSA, staph, blood and other potentially infectious materials (OPIM) from response footwear worn by fire and EMS personnel.

Removing carpet and installing hard-surface flooring, such as polished concrete, is one way to mitigate these exposures, as solid surfaces are easier to clean than carpet.

- Similarly, furniture and fixtures in fire stations attract and collect dirt and biological toxins. A 2011 study by the University of Washington Field Research and Consultation Group found MRSA on chairs, phones, computers and kitchen counters in fire stations in western Washington. This study shows the importance of keeping frequently touched items clean and disinfected.
- For new fire station design, plan adequate space requirements for turnout cleaning extractors and SCBA washers to clean turnouts and SCBAs in-house, or provide an area to package turnouts at the station prior to shipping to an independent service provider (ISP) for third-party cleaning. Follow manufacturer's instructions on methods for cleaning turnouts.