TURNOUT GEAR CONTAMINANTS BEST PRACTICES

NIOSH recently published two companion bulletins on methods for reducing firefighters' exposure to gear contaminated from the fireground. Contaminated gear can pose health risks to firefighters, as some fireground contaminants have been linked to illness, including cancer. They are now available: NIOSH Science Bulletins Protecting Firefighters from Contaminated Gear.

Firefighters can be exposed to hundreds of different chemicals at fire incidents. Some of these hazardous chemicals are produced when materials burn, including benzene, formaldehyde, and polycyclic aromatic hydrocarbons (PAHs). Others may be released when building materials fall apart, like asbestos in older buildings. These hazardous substances can contaminate firefighters' protective clothing. On and off the scene, these contaminants can transfer from firefighters' gear to their skin, other equipment, or areas within the station. Reducing exposure to these contaminants is important, as some have been linked to negative health outcomes for firefighters, including cancer.

Contaminants primarily enter firefighters' bodies by being (1) breathed in, (2) ingested, or (3) absorbed through the skin. NIOSH focuses on research to understand these exposure pathways and evaluate protective measures to control or limit them.

1. Cleaning gear and skin on the scene: Contaminants on gear can transfer to firefighters' skin, where they could be absorbed or ingested. Gross decontamination (also known as preliminary exposure reduction) before removing gear can help prevent this exposure. Gross decontamination involves washing hazardous materials off gear and equipment at the scene. Best practice is to use detergent or soap with a scrub brush to decontaminate gear before removing it.

   After removing gear, use skin-cleansing wipes (or soap and water) to remove contaminants before they are absorbed, and wash your hands before eating to reduce the risk of accidental ingestion.

2. Properly removing gear: Doffing (removing) gear can also pose an exposure risk. Certain doffing methods may result in bare skin touching contaminated gear, potentially increasing exposure. NIOSH developed an Infographic: How to Remove Your Gear at a Fire Incident that shows how to doff gear, including how to use an overhead hood removal technique to limit exposure using the process described in NFPA 1010.

3. Bagging gear: Some contaminants at a fire scene may release vapors into the air, known as off-gassing, which can create an inhalation risk. After removing the gear, bag it to prevent inhalation of any off-gassing contaminants, and place it in a non-passenger compartment of the fire vehicle for transport. Do not put gear in personal vehicles or bring it home.

   At the station, store gear in a dedicated gear-storage area to help isolate contaminants. This area also protects gear from other sources of contamination, such as diesel engines in the apparatus bay.

4. Laundering gear: Properly laundering turnout gear is important for reducing firefighters' exposure to contaminants and limiting cross-contamination. Through research and partnerships, NIOSH evaluates and recommends changes to gear-laundering methods to better protect firefighters from these harmful exposures. Read the latest research and best practices in the NIOSH Science Bulletin Laundering Gear to Protect Firefighters. The Science Bulletin offers recommendations on:

   - Laundering validation criteria and the PPE Cleaning Validation Kit
   - Laundering temperatures
   - Updates to NFPA Standard 1581 concerning laundering best practices.