



The Training Brief

Quick Reference mini-training Topics
Overhaul Risk Reduction

The purpose of this training topic is to understand steps to take to reduce exposures during overhaul.

Discussion

Fact: Given the range of chemicals in the post fire environment, the ability to provide detection and concentration of each, the use of the SCBA throughout all phases of suppression and overhaul are justified for increased firefighter health and safety.

Key Points: Concentrations of air contaminants during fire overhaul exceed occupational exposure limits. Without the use of respiratory protection, firefighters are overexposed to irritants, chemical asphyxiants and carcinogens. Therefore, respiratory protection is recommended during fire overhaul. Finally, CO concentrations should not be used to predict the presence of other contaminants found in the overhaul environment.

Action: There is **ABSOLUTELY NO CORRELATION** between the levels found from air monitoring from CO and HCN and cancer-causing toxins found at a fire. Do **NOT** use CO and HCN readings as an indicator it is safe to remove SCBA masks. Stay on air from the beginning of fire attack through the end of overhaul.

We have the ability to control and reduce the amount of chemicals and toxins that we are exposed to on the fire ground thereby reducing our risk of cancer.

Make the necessary changes

Several fire departments monitor carbon monoxide after fires to know when it is safe for everyone to remove their SCBAs. Many firefighters remove their SCBA when the fire has been knocked down and they are working in the overhaul phase.

Research by the Underwriters Laboratory, suggests that basing the choice of removing your SCBA during the overhaul phase is not a best practice.

The UL team conducted a number of large-scale burns in their lab while monitoring the chemicals produced. The news is not good for firefighters who are quick to remove their SCBAs.

Carcinogenic chemicals may act topically, following inhalation, or following dermal absorption, including from contaminated gear.

Concentrations of several of these toxicants exceeded OSHA regulatory exposure limits and/or recommended exposure limits from NIOSH.

Removal of respiratory protection during fire overhaul exposes firefighters to a variety of toxic gases.

Recommended exposure levels for carbon monoxide, benzene, formaldehyde, hydrogen cyanide and arsenic were exceeded during overhaul. Nearly all, more than 97 percent, of the smoke particulates collected during overhaul were too small to be visible.

The team from UL also found there were times when carbon monoxide was low but other harmful gasses were high. Smoke particulates contained metals like arsenic, cobalt, chromium, lead and phosphorous. When the team analyzed the gloves and hoods, they found the same chemicals and concentrations were 100 times higher on both.

The SCBA is the Gold Standard of respiratory protection.

Recommended Actions:

- Wait 45 minutes after knockdown to begin overhaul.
 - This allows for the chemicals to naturally dissipate post knockdown.
- Wear your SCBA from the start of fire through overhaul.
- Perform a Preliminary exposure Reduction including the use of wet wipes for all crew members exposed to products of combustion.
- Shower within the hour.
- Wash all PPE and don't transport contaminated equipment and PPE in cab of apparatus.

Source: FCSN, Sara Jahnke, UL, Tualatin study