



# Fire Fighter Cancer Awareness and Prevention



## Self-Contained Breathing Apparatus (SCBA) Through Overhaul

There is a common misconception that because the fire is out, you are out of danger.

Off-gassing of hazardous compounds and known carcinogens continues to occur even after the production of visible smoke has stopped. One of the routes of greatest concern for exposure to carcinogens is through the lungs (inhalation) when fire fighters prematurely remove their SCBA, especially during overhaul.

### CONCERNS DURING OVERHAUL

- Personnel should be cognizant that an exposure to products of combustion does not require visible smoke. Inhalation of airborne carcinogens and toxins at low doses, in the parts per million (ppm) range or microscopic amounts, can have a potential toxic effect.
- Concentrations of air contaminants during fire overhaul exceed occupational exposure limits. Without the use of a SCBA, fire fighters are overexposed to irritants, chemical asphyxiants and carcinogens. There are over 200 known chemicals found in smoke on the fireground. Therefore, a SCBA is strongly recommended during fire overhaul.
- Recommended exposure levels for carbon monoxide, benzene, formaldehyde, hydrogen cyanide and arsenic are exceeded during overhaul.<sup>1</sup>

### RECOMMENDATIONS

While exposure to toxicants is inevitable in firefighting, we should strive to reduce or eliminate exposure when possible. We can control and reduce the amount of chemicals and toxicants that we are exposed to on the fireground, thereby, reducing our risk of cancer.

- **Wearing a SCBA from the start of fire suppression through overhaul is one of the most important actions a fire fighter can do to help reduce exposures.** Using a SCBA should be standard when any amount of smoke or products of combustion are present at any fire. If you smell smoke, you are being exposed.
- Carbon monoxide (CO) and hydrogen cyanide (HCN) readers are commonly used post fire suppression to identify if it is safe to remove your SCBA. Unfortunately, they do not identify any other contaminants found in smoke that have been scientifically linked to cancer. **Therefore, we strongly recommend not using CO and HCN readings as an indicator that the air is safe and it is okay to remove your SCBA.** There is also no correlation between CO and HCN air levels and cancer-causing toxicants found at a fireground, so the CO and HCN levels can drop but cancer-causing toxicants can remain airborne. Stay on air from the beginning of fire attack through the end of overhaul.

- **Wearing SCBA and managing air use throughout fire operations, including overhaul, should be the standard practice for fire fighters.** This includes having policies and procedures about air management that will provide guidance on protection in the modern fire environment.

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**References:**

1. Bolstad-Johnson DM, Burgess JL, Crutchfield CD, Storment S, Gerkin R, Wilson JR. Characterization of firefighter exposures during fire overhaul. *AIHAJ*. 2000 Sep-Oct;61(5):636-41. doi: 10.1080/15298660008984572. PMID: 11071414.