



## Occupational Exposure Associated with Fire Scene Overhaul

### What does 'overhaul' mean?

Overhaul is the later stage of a fire after flames have been extinguished. The burned area is carefully examined searching for any remaining fire. After a fire has been extinguished the air can often contain toxic contaminants. In some cases the burned material may even give off harmful gases (off-gassing) for hours after the fire has been extinguished. Firefighters are exposed to many air contaminants during overhaul and eliminating these exposures is the only way to ensure protection.

### Is there reason to be concerned about exposures during overhaul?

Yes. A major contributor to the toxic environment during and after a fire is off-gassing from partially burned contents and building materials, such as:

- Wood
- Plastic goods
- Circuit boards
- Floor coverings
- Fabrics
- Glues
- Foams

### Have studies been done to identify and measure airborne contaminants during overhaul?

A number of studies have been conducted to evaluate the exposures to firefighters during overhaul. These studies were performed to determine the effectiveness of air purifying respirators (APRs) and other multipurpose canisters and cartridges at reducing exposures during the overhaul process. Data from these studies identified similar airborne contaminants in the atmosphere during overhaul. The specific types of airborne contaminants and concentrations varied at each fire.

### What are some of the hazardous air contaminants found during overhaul?

- **Carcinogens** including asbestos, benzene and formaldehyde
- **Suspected carcinogens** including acetaldehyde
- **Respiratory irritants** including hydrochloric acid, hydrogen chloride, nitrogen dioxide, sulfur dioxide and gypsum
- **Asphyxiants** including carbon dioxide, carbon monoxide, hydrogen cyanide and hydrogen sulfide



- **Heavy metal dust and fumes** including copper, lead, cadmium, chromium, and arsenic

### **Is respiratory protection needed during the overhaul phase?**

It is highly recommended to use respiratory protection during the overhaul phase. The level of air contaminants will vary depending on the specific materials involved in the fire, the fire's intensity and duration of the fire. It is difficult to quantify the hazardous components in the "post-fire" environment. Therefore using respiratory protection eliminates exposure to the hazardous environment and ensures protection for the user.

### **What type of respiratory protection is recommended during overhaul?**

To be adequately protected, fire personnel should minimize their exposure to the toxic contaminants commonly found in the overhaul environment. The only respirator that is known to prevent exposure to these various contaminants is a self-contained breathing apparatus (SCBA). Where feasible, forced air or natural ventilation should be the first control considered.

### **Where can I go for more information on safety and health in fire service?**

The PESH Consultation service is available by request from the employer. The PESH consultant can address this and many other topics free of charge for the employer.

Visit our website at [www.labor.ny.gov/workerprotection/safetyhealth/PDFs/PESH/p206.pdf](http://www.labor.ny.gov/workerprotection/safetyhealth/PDFs/PESH/p206.pdf) for more information or contact the PESH Office nearest you.

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