



Coffee Break Training - Fire Investigation Series

Fire/Arson and Explosion Investigation Curriculum: Fire Scene Safety

No. FI-2013-5 June 3, 2013

Learning Objective: The student shall be able to identify the primary atmospheric hazards at fire scenes and explain the recommended personal protective measures to avoid potential injury, illness and exposure.

The safety and health of investigators is often taken for granted since most investigators assume that by the time they arrive at a fire scene, most hazards are either eliminated or diminished to the point that they are no longer a concern. However, today's fire investigators work in environments and conditions that are considerably more hazardous than those of 20 to 30 years ago. The widespread use of building materials and furnishings manufactured from plastics pose numerous short- and long-term health hazards that may result in injury, exposure, respiratory diseases and certain cancers unless personnel use effective protective measures.

Investigators should always assume that numerous toxic byproducts of combustion are present well after a fire is extinguished. Several of these toxic substances are poisons or known or suspected human carcinogens such as acrolein, acrylonitrile, benzene, formaldehyde, hydrogen cyanide and dioxins. Investigators face the risk of exposure to these toxic substances during and after overhaul unless proper personal protective equipment, including adequate respiratory protection, is worn.

As a result of the data collected and observations made during studies sanctioned by the Bureau of Alcohol, Tobacco, Firearms and Explosives in conjunction with the National Institute of Occupational Safety and Health, the following recommendations for investigator scene safety should be considered:

1. Agency policies should be established requiring investigators to wear appropriate respiratory protection when performing fire scene investigations. Since the use of self-contained breathing apparatus would not be practical during most fire scene investigations, full-face air-purifying respirators equipped with combination filter cartridges (P100 multipurpose organic vapor and acid gases) or powered APRs with the appropriate filter cartridges should be used.
2. Organizations should establish written respiratory protection programs for fire investigators and ensure that they comply with the requirements described in Occupational Safety and Health Administration 29 CFR 1910.134 (*Respiratory Protection Standard*).
3. The use of mechanical ventilation equipment (e.g., positive-pressure fans) that removes atmospheric contaminants from the areas where fire investigators are working should be utilized whenever possible. (Note: Use of gasoline-powered fans should be limited and controlled due to the possibility of contamination of evidence.) Alteration of the fire scene (removing windows, doors, etc.) that promotes natural ventilation should also be considered when it would not compromise the integrity of the fire scene.
4. To reduce the potential for contaminants being carried away from the scene (e.g., home, office, etc.) by investigators, the use of disposable coveralls, boots and gloves should be considered.

If disposable items are not used, clothing should be decontaminated and regularly laundered by a contractor who is aware of the contamination potential. Investigators should also be trained in the use of appropriate decontamination procedures as outlined in National Fire Protection Association 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*.

Additional information on fire investigator safety can be obtained from the *Fire Investigator Scene Safety* online training module at www.cftrainer.net or www.firescenesafety.com.



Investigators should wear appropriate PPE at all fire scenes to avoid potential injury or exposure to toxic substances. (Photo courtesy of Montgomery County Fire Marshal's Office (Maryland))