

## Firefighter Cancer Reduction and Decontamination Suggested Guideline

Firefighting is a dangerous profession, and a growing body of research and data shows the contributions that job-related exposures have in the development of cancer. The National Institute for Occupational Safety and Health recently undertook two large studies, (<https://firefightercancersupport.org/wp-content/uploads/2013/10/NIOSH-Firefighter-Cancer-Study-w-Summary.pdf>) which focused on firefighter cancer and concluded that firefighters face a 9 percent increase in cancer diagnoses, and a 14 percent increase in cancer-related deaths, compared to the general population in the U.S.

Latest statistics suggest that firefighters have a 63% increased risk of developing some form of cancer than the citizen population. Increased risk for firefighters compared with the general population is as follows:

- Testicular cancer (2.02 times greater risk)
- Multiple myeloma (1.53 times greater risk)
- Non-Hodgkin's lymphoma (1.51 times greater risk)
- Skin cancer (1.39 times greater risk)
- Prostate cancer (1.28 times greater risk)
- Malignant melanoma (1.31 times greater risk)
- Brain cancer (1.31 times greater risk)
- Colon cancer (1.21 times greater risk)
- Leukemia (1.14 times greater risk)

Some of the more hazardous carcinogens are Benzene, Formaldehyde, PCB's, and Asbestos, among many others. Additionally, there are significant chemical hazards, such as Carbon Monoxide, Hydrogen Cyanide and Phosgene, just to name a few. The microscopic particles of incomplete combustion are heavily laden in the smoke of all types of fire to which we respond. These known cancer-causing toxins are present in structure fires, car fires, dumpster fires, wildland fires and smoke from any fire in general.

The risk of absorbing these chemicals through the skin has been shown to occur, even through firefighting personal protective equipment (PPE). Chemical / carcinogen absorption increases as the body temperature increases from physical exertion. Skin becomes 400% more absorptive for every 5 degrees increase in core

body temperature. In general, body temperature increases between 3-5 degrees while performing firefighting activities. The body takes approximately 30-50 minutes to return to normal temperature after firefighting. Additionally, PPE off gasses vapors of the chemicals found in smoke well beyond extinguishment of the fire.

The guideline below provides minimum recommendations to reduce the hazards of cancer causing agents related to firefighting.

### **ON-SCENE MEASURES**

- Always wear full PPE during firefighting activities.
- Use Self Contained Breathing Apparatus (SCBA) from the initial attack until completion of the investigation. Don SCBA mask and go on air prior to entering smoke / hazard zone.
- Recognize the need for decontamination.
- Utilize positive pressure decontamination upon exiting an Immediately Dangerous to Life and Health (IDLH) environment.
- Upon leaving IDLH /smoke atmosphere, do not remove PPE until gross decontamination is completed.
- Perform gross field decontamination of PPE with water and dish detergent soap to remove any potential carcinogens.
- Utilize hand wipes to remove products of combustion from the head, neck, jaw, throat, underarms and hands immediately while on scene.
- Use nitrile exam type gloves for cleaning equipment.
- Rinse all hose, tools, equipment, and SCBA's with water and dish detergent soap before placing back on the apparatus.

### **PPE DOFFING PROCEDURE**

- Remove structural gloves and use latex gloves for remainder of doffing.
- Remove helmet.
- Remove SCBA mask.
- Remove hood quickly to reduce spreading contaminants on face and neck.
- Remove SCBA.
- Remove turnout coat.
- Use wipes to clean neck, face, hands & groin.
- Remove bunker pants and boots.
- clean inside helmet with wipes.
- Place all gear in a plastic bag for storage and washing.

## **IN-STATION MEASURES**

- Use latex gloves when handling any contaminated equipment or PPE.
- Ensure that PPE is laundered and dried as soon as possible after exposure to carcinogens.
- Shower thoroughly after exposure to products of combustion.
- Change to a clean uniform and wash contaminated uniform immediately, and separate from other laundry, after a fire.
- Do not take contaminated PPE or station uniforms home or store in lockers or vehicles.
- Decontaminate apparatus interior immediately after a fire.
- Open all bay doors or use mechanical exhaust system when apparatus is entering or exiting the station to facilitate diesel exhaust removal.
- Perform vehicle and equipment checks outside of the station; including running of small equipment.
- No vehicle idling in the apparatus bay.
- Keep turnout gear out of living and sleeping space.
- Keep doors between apparatus floor and living spaces closed and limit traffic through these doors as much as possible.
- Wear work or latex gloves when possible and wash hands frequently.

Cancer prevention is not an easy, one-step project. The practices for prevention are as varied as the exposures firefighters encounter at any given incident. Attached is a list of resources to help you develop a comprehensive cancer reduction program, including on-scene decontamination.

The most important recommendation is to get the ball rolling with your own practices, in your own department. Whether motivation comes from the top down or the bottom up, prevention is a long-term and evolving process that must start today.

## **Fire Service Cancer Reduction Resources:**

- Firefighter Cancer Initiative:  
[https://www.youtube.com/watch?v=Y1HJliZM0rM&list=PL1Dvr5f\\_AgZeqvLJs5dPM6RwGcLy0\\_fkX&t=0s&index=4](https://www.youtube.com/watch?v=Y1HJliZM0rM&list=PL1Dvr5f_AgZeqvLJs5dPM6RwGcLy0_fkX&t=0s&index=4)
- Bruce Smith Story / Game Changer:  
[https://www.youtube.com/watch?v=X7\\_nJDErpPg](https://www.youtube.com/watch?v=X7_nJDErpPg)
- Post Fire On Scene Decontamination:  
<https://www.youtube.com/watch?v=rWT4Ia0sU1s&index=7&list=WL&t=0s>
- Firefighter Cancer Support Network: <https://firefightercancersupport.org/>
- Firefighter Cancer Alliance: <http://www.firefightercanceralliance.org/>
- Firefighter Cancer Foundation: <http://www.ffcancer.org/>
- Cleaning and Decontamination Considerations after the Fire / IFSI research resources: <https://www.firehouse.com/safety-health/ppe/turnout-gear/article/12352711/ifsi-research-supplement-cleaning-and-decon-considerations-after-the-fire>
- Fire Service Research: 10 Considerations Related to Cardiovascular & Chemical Exposure Risks: <https://clarity.firehouse.com/issue/59b1aabf57ab464f74618fe5>
- IAFC - Best Practices for Preventing Firefighter Cancer:  
<https://www.iafc.org/topics-and-tools/resources/resource/best-practices-for-preventing-cancer-poster>
- UL / FRSI Cardiovascular and Chemical Risks Faced by Firefighters:  
<https://ulfirefightersafety.org/research-projects/assessing-the-cardiovascular-and-chemical-risks-faced-by-firefighters.html>
- The Silent Killer - Firefighter Cancer:  
[https://www.youtube.com/watch?v=fyZ\\_HQM9Z\\_c](https://www.youtube.com/watch?v=fyZ_HQM9Z_c)
- Lexipol - <http://www.lexipol.com/firefighter-cancer-prevention/>
- United States Fire Administration, (USFA):  
[https://www.usfa.fema.gov/current\\_events/032218.html](https://www.usfa.fema.gov/current_events/032218.html)
- First Responder Center for Excellence - <https://www.firstrespondercenter.org/cancer>