



# Health & Wellness Committee

## Firefighter Occupational Cancer – An Awareness

Commissioner Mala Sharma

Chair

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# Firefighter Health and Wellness

The mission of the Firefighter Health and Wellness Committee is to provide factual data and practical guidance regarding key areas of health and wellness to educate and facilitate the development of action guides by individuals and departments.



# Firefighter Health and Wellness

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# Firefighter Health and Wellness

## Scope:

- According to data collected by IAFF, Cancer has caused 61% of career firefighter Line of Duty Deaths since 2002.
- Firefighters have a 9% higher risk of cancer diagnosis than the general population.
- Firefighters are 14% more likely to die from cancer than the general population.
- Estimates that 1/3 of all firefighters will experience cancer at some point in their lives.
- Respiratory, digestive, and urinary cancer prevalent.
- Mesothelioma among firefighters is double the reported rate for the general population.



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Problems with data collection and defining the true scope of the problem:

- Firefighter occupational cancer not formally defined as Line of Duty, though generally accepted as such within fire service circles and some presumptive legislation.
  - Incidents not formally investigated as LODD or injury.
- Firefighter occupational cancer is reported voluntarily.
  - 10 reports of firefighter cancer reported to TCFP in 2017.
  - 14 reports of firefighter cancer reported to TCFP in 2016.
  - Note: several Texas Fire Departments anecdotally report much higher incidence of cancer.



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Scope:

Cancer Type	Risk
Testicular	2.02 (x) greater risk
Mesothelioma	2.0 (x) greater risk
Multiple Myeloma	1.53 (x) greater risk
Non-Hodgkins Lymphoma	1.51 (x) greater risk
Skin	1.39 (x) greater risk
Brain	1.31 (x) greater risk
Malignant Melanoma	1.31 (x) greater risk
Prostate	1.28 (x) greater risk
Colon	1.21 (x) greater risk
Lukemia	1.14 (x) greater risk



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## Background and significance:

- Risk associated with firefighting in an “Age of Plastics” identified as early as 1990, though firefighter longevity was noted earlier.
- Fire service did not embrace academia. Risk accepted.
- Firefighting methodology and accepted culture places firefighters at risk. Leadership failure.
- Sampling of research related to firefighting and cancer:
  - Johns Hopkins Bloomberg School of Public Health, Occupational investigation of cancer among firefighters, 2005
  - University of Cincinnati, 2006
  - Office of the State Fire Marshal, OR, Chemicals found during overhaul, 2011
  - NIOSH, 2013
  - Illinois Fire Service Institute, Cardiovascular and chemical exposure risk in modern firefighting, 2016
  - JAMA Dermatology, Report of data collected...firefighters...skin cancer, 2017



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Routes of exposure:

- Absorption:

- Modern fires more like hazardous materials incidents. Approximately 84,000 chemicals used in modern construction and contents.
- Prolonged dermal exposure to soot. Contaminants may adhere to personal protective equipment.
- Absorption increases 400% with each 5° increase in skin temperature.
- Neck area is one of most common areas for exposure, angle of the jaw, and forehead.





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Routes of exposure:

- Inhalation

- Failure to utilize SCBA/removing SCBA too early. Contaminants exist in gaseous state as well as particulate. Contaminants may be present and continue to off gas for several days following extinguishment.
- Diesel exhaust linked to brain, bladder, leukemia and other cancers. Exposure may occur at Station or outside while operating on the fireground.
- Smoke and dangers from smoke include:
  - Asphyxiants - CO; CO<sub>2</sub>; H<sub>2</sub>S
  - Irritants – HCl and gross particulates
  - Carcinogens – asbestos, benzene, styrene
- Levels exceed OSHA exposure limits.
- Ultrafine particles inhaled and imbedded in lung tissue.
- Exposure exacerbates existing health conditions.



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Routes of exposure:

- Ingestion

- Dermal exposure on hands, face, mouth. Contamination may occur on foodstuffs and liquids ingested on the fireground.
- Dermal exposure to hands, face, mouth followed by tobacco use, smoking and smokeless tobacco.
- Indirect ingestion of aerosolized/airborne particles when not protected by self contained breathing apparatus.



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## Life Safety Initiatives:

**LSI #1** – Define and advocate the need for a cultural change within the fire service relating to safety; incorporating leadership, management, supervision, accountability, and personal responsibility.

**LSI #3** – Focus greater attention on the integration of risk management with incident management at all levels, including strategic, tactical and planning responsibilities.

**LSI #6** – Develop and implement national medical and physical standards that are equally applicable to all firefighters, based on the duties they are expected to perform.

**LSI #13** – Firefighters and their families must have access to counseling and psychological support.



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Fire Service Changes: focusing on longevity.

- Fires decreasing, yet firefighter deaths are increasing. Why?
- How cancer is driving change in the fire service.
  - A shift in focus from TPP to particulates.
  - Post-fire operations in full PPE and SCBA.
  - Preliminary Exposure Reduction (PER) becoming SOP.
  - Hood/Gear exchange program.
- Consider a change in acronym from IDLH to **Immediately Dangerous to Life, Health and Future (IDLH-F)**.

PPE Industry Changes: focusing on cancer awareness.

- Textile companies asking NFPA “How clean is clean?”
- Making ISPs accountable.
- Testing is focusing more on particulate protection.



# Firefighter Health and Wellness

## References:

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- IAFF data 1.1.2002 to 3.31.2017 retrieved from <https://www.firefighterclosecalls.com/.../06/FF-Cancer-Fact-Sheet.pdf>
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- Pukkala, E, et al. (2014). “Cancer Incidence among firefighters: 45 years of follow-up in five Nordic countries *JOccup Environ Med* 71:398-404.