



Memorandum

TO: PUBLIC SAFETY, FINANCE, AND
STRATEGIC SUPPORT COMMITTEE

FROM: Robert Sapien, Jr.

SUBJECT: SEE BELOW

DATE: May 1, 2019

Approved

Date

5-7-19

**SUBJECT: FIRE DEPARTMENT FIREFIGHTER CANCER PREVENTION EFFORTS
ANNUAL REPORT**

RECOMMENDATION

Accept the annual report on Fire Department's firefighter cancer prevention efforts.

BACKGROUND

The Department provided its initial Fire Department Firefighter Cancer Prevention Status Report¹ to the Public Safety, Finance, and Strategic Support Committee (PSFSS) on May 18, 2017 and subsequently on May 17, 2018.² This third annual report continues to describe Fire Department efforts to prevent firefighter exposure to carcinogens through adoption of best practices including personal protective equipment improvements, changes to department policies and procedures, and restoration of staff dedicated to workplace safety.

Firefighters and Increased Risk of Cancer

In the past decade, a variety of research studies have assessed cancer mortality (death) and morbidity (incidence) within the fire service as compared to the general population. Studies¹ have found that firefighters have a higher rate of cancers of the brain, digestive tract, genitourinary tract, and lymphohematopoietic organs (such as the lymph nodes, spleen, etc.). A 2006 meta-analysis of 32 studies reported significant excess risk for brain, stomach, colon, rectum, prostate, testes, multiple myeloma and non-Hodgkin lymphoma. A 2013 study by the National Institute for Occupational Safety and Health (NIOSH) tracked 29,993 firefighters and found increased mortality from lung, esophagus, intestine, rectum, and kidney cancers. The challenge confronting the fire service is well articulated by NFPA associate editor Jesse Roman in his May 1, 2017 article: *Facing Cancer: As the nation's fire service acknowledges the toll the disease is taking on its ranks, Boston emerges as a leader in establishing practices to*

¹ May 18, 2017 Report: http://sanjose.granicus.com/MetaViewer.php?meta_id=634609.

² May 17, 2018 Report: <https://sanjose.legistar.com/LegislationDetail.aspx?ID=3485028&GUID=52114ECE-370D-4101-8264-EDD7950DA0A1&Options=&Search=>

protect firefighters against cancer. The article includes the following observation on firefighter cancer risks:

The contents of modern homes are a hodgepodge of plastics, rubber, and electronics, as well as wood, furniture, and fabrics laced with flame-retardant chemicals. When these materials burn, the products of combustion include a variety of fierce-sounding substances—acrylonitrile, arsenic, benzene, polycyclic hydrocarbons, cadmium, chlorophenols, chromium, carbon monoxide, dioxins, ethylene oxide, formaldehyde, orthotoluene, polychlorinated biphenyls, and vinyl chloride, to name just a few—that have been proven or are widely believed to cause cancer. The chemicals seep into the human body through the nose, ears, lungs, and unprotected skin. They attach like Velcro to anything they touch, such as turnout gear, gloves, hoses, and helmets, which can off-gas dangerous fumes for days, weeks, and months following a fire. The soiled gear contaminates the inside of trucks, kitchens, lockers, and bunks.³

In early 2016, with heightened cancer risk awareness across the fire service industry, focused cancer studies, and incidences of cancer amongst active and retired Department personnel, the Department engaged with San Jose Fire Fighters, International Association of Fire Fighters (IAFF) Local 230 to establish an ad hoc Cancer Prevention Committee charged with developing cancer risk reduction recommendations for the Department.

ANALYSIS

Mitigating Cancer in the Fire Service

Carcinogens take the form of a solid, liquid or gas. In emergency incidents, both solids and liquids are often aerosolized as, for example, dust, smoke, soot, particulates, mists, or sprays. Routes of carcinogen exposure include inhalation, absorption, ingestion, and injection. Inhalation exposure occurs when the process of breathing exposes the firefighter's mouth, nasal cavity, throat, lungs, and other related organs to these substances. Absorption occurs when any exposed body part (skin, mucosal membranes, eyes) comes into direct contact with these substances. The eyes are especially sensitive, and while the skin provides some protection, the skin's ability to absorb increases 400 percent for every five degrees of increase in temperature. Ingestion may occur when food or drinks are contaminated or consumed in contaminated areas. Injection is not known to be a common exposure route for firefighters.

Efforts to mitigate cancer risk in the fire service are focused upon reducing inhalation, absorption, and ingestion routes of carcinogen exposures (other personal lifestyle changes are also encouraged, including improved diet, alcohol moderation, tobacco cessation, and exercise).

³ <https://www.nfpa.org/News-and-Research/Publications-and-media/NFPA-Journal/2017/May-June-2017/Features/Facing-Cancer>

The fire service continues to identify industry best practices that will help reduce cancer risk, many of which the Department already has implemented.

Actions Implemented by the Department before 2017-2018

Prior to the forming the Cancer Prevention Committee the Department implemented several best practices including:

- Adopting a “mandatory mask” rule requiring firefighters to don self-contained breathing apparatus (SCBA) under all conditions where there is respiratory exposure potential;
- Equipping every firefighter with their own SCBA mask and regulator to improve hygiene, use accountability, and to ensure availability of equipment for each firefighter who may enter an environment requiring SCBA;
- Providing every firefighter with a second structural firefighting personal protective turnout ensemble, and providing professional cleaning and testing;
- Providing diesel exhaust removal systems in each fire station;
- Including ventilated personal protective equipment storage space in new fire station designs;
- Providing annual medical examinations;
- Establishing a database for firefighters to track their personal exposures;
- Specifying “Clean Living Areas” in fire stations to reduce contamination in station living areas;
- Implementing a 20-minute cool-down period immediately after a fire has been knocked down, allowing large amounts of gasses to be released before re-engaging firefighters for further overhaul;
- Reducing firefighter exposure through alternate firefighting and overhaul strategies;
- Implementing a no-tobacco policy;
- Providing chemical sunscreen PPE and adding wide-brimmed hats to the uniform policy.
- Implementing training on cancer risks and prevention practices; and
- Providing training and equipment for handling hazardous materials and establishing a Hazardous Incident Team (HIT).

Cancer Prevention Committee Recommendations and Status

The Cancer Prevention Committee reviewed evolving best practices and developed the following list of recommendations, some of which are policy driven and have no costs associated, and some of which may require additional equipment, resources, and funding. These items were received by Department Administration for further evaluation and/or implementation. The current status of these Committee recommendations are noted following each item.

1) Ensure Department members understand the significance of carcinogen exposures and how they can minimize exposure risks.

	Recommended Action	Current Status
a.	Training on cancer awareness	Implemented, ongoing
b.	Department-specific training, featuring department members who voluntarily offered to share their health issues with staff.	Under evaluation
c.	Training on need for SCBA use rather than dust mask use during overhaul to reduce exposure.	Implemented, ongoing
d.	Training on appropriate transportation and storage of personal protective equipment.	Under evaluation
e.	Training on the need to use sunscreen and hats, as well as overall sun exposure reduction.	Implemented, ongoing

2) Minimize Department member exposure to known carcinogens during fires.

	Recommended Action	Current Status
a.	Mandate use of SCBAs from initial attack through the finish of all overhaul.	Implemented, ongoing
b.	Accelerate crew rotation to minimize exposures, especially rotating out initial attack personnel.	Under evaluation
c.	Discontinue use of dust masks for overhaul.	Implemented

3) Minimize Department member exposure to known carcinogens after fires.

	Recommended Action	Current Status
a.	Mandate "gross decontamination" of all personal protective equipment on scene immediately following each fire.	Implemented, ongoing
b.	Mandate removal and bagging of personal protective equipment for cleaning on scene immediately following each fire.	Implemented, ongoing
c.	Provide each firefighter with a second set of structural gloves, a second structural hood, and a second structure helmet shroud so the contaminated one may be cleaned.	Partially Implemented
d.	Issue cleaning wipes (e.g. "wet wipes") to allow firefighters to thoroughly clean soot and contaminated particles from around their airway to reduce inhalation and from their skin to reduce absorption.	Implemented, ongoing
e.	Provide arson investigators with personal protective equipment appropriate for conducting arson investigations in structures that are still off-gassing carcinogens.	Under evaluation

f.	Issue a second set of wildland personal protective clothing (jacket, pants, gloves, shroud) to all firefighters to allow one set to be used for emergency response while the other is being decontaminated.	Under evaluation
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4) Implement services to improve early cancer detection and provide support for firefighters with cancer

	Recommended Action	Status
a.	Evaluate opportunities to enhance annual physical assessments with additional blood tests, skin checks, screenings, or body scans as per recommended best practices.	Under evaluation
b.	Implement a cancer tracking database for active and retired firefighters, providing the Department with a better understanding of cancer experiences to focus mitigation efforts.	No action
c.	Replace the outdated and unreliable exposure tracking database with a contemporary reliable solution.	In progress
d.	Develop a program similar to the San Francisco Firefighter Cancer Prevention Foundation, partner with the Firefighter Cancer Support Network, or identify other avenues to assist with early detection and Department member support.	No action

Actions Implemented by the Department in 2017-2018

In 2017-2018, the Department took actions to advance cancer prevention recommendations. The 2017-2018 Adopted Capital Budget approved one-time funding of \$110,000 to purchase second sets of gloves and flash hoods for each responder to enable cleaning of contaminated primary sets. This equipment was purchased and issued to responders in May 2018. Additionally, the Department implemented a new policy requiring fire ground decontamination and issued decontamination kits to each response unit. This policy is intended to minimize carcinogen exposure through removal of contaminated personal protective equipment and cleansing of exposed skin areas. Lastly, the Department increased the number of locations where personnel may submit contaminated personal protective equipment for professional cleaning and inspection and increased the number of pick-up/drop-off days to two per week resulting in a 96-hour turnaround. The increased locations were intended to encourage staff to increase the frequency of cleaning personal protective equipment.

Actions Implemented by the Department in 2018-2019

In 2018-2019 the Department continued to seek opportunities to reduce carcinogen exposure to personnel. The 2018-2019 Adopted Capital Budget approved the addition of \$200,000 annually

for the purchase of turnout ensemble, moving the department closer to the 10-year replacement cycle recommended by the National Fire Protection Association (NFPA) and the Occupational Safety Health Administration (OSHA). Additionally, the Department evaluated and initiated design changes to future fire apparatus. These changes will remove potentially contaminated SCBA equipment from the occupancy space of apparatus and place them in well-ventilated compartments. The Department continues to evaluate the effectiveness of additional personal protective equipment, use of decontamination kits, and adherence to policy.

2018-2019 Activity Highlights

Activity	Outcome
Provide new gloves and flash hoods	Received and distributed to all firefighters.
Achieve 96-hour turnaround for personal protective equipment cleaning and inspection	Achieved October 2018.
Provide Cancer prevention training	96% of suppression staff completed training.
Revise fire apparatus design	14 vehicles have been ordered with exterior SCBA compartments to reduce exposure to carcinogens. 4 of these vehicle have been delivered as of April 2019.

Department Safety Officer

In December of 2011, budget actions reduced the Department's Safety Officer program and duties were reassigned amongst staff in the Bureau of Field Operations and the Bureau of Administrative Services. The primary duties of the Safety Officer position included Injury and Illness Prevention Program (IIPP) administration, oversight of the firefighter wellness and fitness programs, response to greater alarm emergencies as the Incident Safety Officer, accident and injury investigation, response to OSHA inquiries, and improving the Department's safety culture through safety communications. The Safety Officer was also responsible for maintenance of the Department's safety culture through focused attention and communication through safety messages; identification of adverse safety trends; and continuous safety improvement. The 2018-2019 Adopted Operating Budget added a Battalion Chief to restore the Safety Officer position, which was filled in July 2018. The Safety Officer assumed responsibilities for advancing components of the Firefighter Cancer Prevention Initiative, which included the oversight of fireground decontamination policies and procedures, issuance of second sets of gloves and flash hoods, use of decontamination kits, and the cleaning program for personal protective equipment to prevent firefighter exposure to carcinogens.

CONCLUSION

The Department is committed to minimizing the impact of exposure to potentially hazardous materials on our personnel and as outlined above, has taken important steps towards improving

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education, prevention, and implementing best practices related to cancer prevention amongst firefighters. The Department will continue to pursue adoption of industry best practices toward minimizing firefighter cancer risk under its 2019-2020 work plan. Future updates on efforts related to firefighter cancer prevention are recommended to be consolidated with the Fire Department Safety Officer (Battalion Chief) updates that are included in the Worker's Compensation Program report that is heard semi-annually by the PSFSS Committee.

COORDINATION

This memorandum has been coordinated with the City Attorney's Office and the City Manager's Budget Office.

/s/

ROBERT SAPIEN, JR.

Fire Chief

Fire Department

For questions, please contact Robert Sapien, Jr., Fire Chief, at 408-794-6952.

ⁱ Sources for information cited in Background and Analysis sections:

- [Cancer Risk Among Firefighters: A Review and Meta-analysis of 32 studies](#)
- [Mortality and cancer incidence in a pooled cohort of US firefighters from San Francisco, Chicago and Philadelphia \(1950-2009\)](#)
- [Taking Action Against Cancer in the Fire Service](#)
- [Findings from a Study of Cancer among U.S. Fire Fighters](#)
- [Jesse Roman, Facing Cancer: As the nation's fire service acknowledges the toll the disease is taking on its ranks, Boston emerges as a leader in establishing practices to protect firefighters against cancer. \(NFPA Journal May, 2017\)](#)