HEALTHY IN HEALTHY OUT

BEST PRACTICES TO REDUCE OCCUPATIONAL HAZARDS FOR FIRE FIGHTERS TO ENSURE A SUSTAINABLE AND HEALTHY CAREER

Mission Statement:

The objectives of this manual are to promote safe and healthy practices for fire fighters from their first day to retirement. It identifies best practices for reducing exposure to carcinogens, preventing injury, promoting behavioral health, prioritizing sleep hygiene, and maintaining wellness and fitness. Fire fighters must adopt healthy lifestyle choices and reduce their exposure to known cancer risks to minimize the risk of cancer. Common-sense practices, specialized equipment and guidelines promote safety and health in the workplace. These best practices and guidelines should be used to promote a long and healthy career.

Fire Fighter Health + Safety Collaborative Statement:

The Washington State Council of Fire Fighters, Washington Fire Chiefs and Washington Department of Labor & Industries have joined forces to establish a collaborative effort aimed at improving communication within the state to support the FIIRE initiative. The primary goal is to promote better outcomes and advance best practices. Although still in development, progress has been made in creating a supportive website (firefighterhealthsafety.org) and the governance structure for continued growth is expected soon. Expect further updates and information from this collaborative initiative in the future.

Funding:

The funding for this initiative has been provided by the Assistance to Firefighters Grants program administered by FEMA (Federal Emergency Management Agency), specifically through a Fire Prevention and Safety Grant award.

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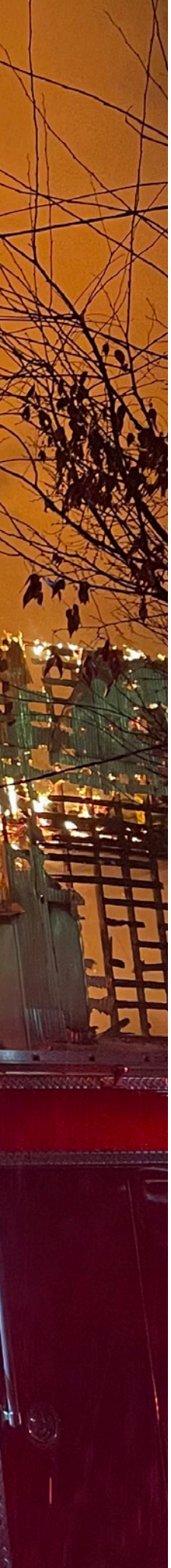

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HEALTHY IN, HEALTHY OUT

Best practices for fire fighter wellness including reduced risk of carcinogen exposure, musculoskeletal injury prevention and behavioral health awareness

It has been several years since the game-changing *Healthy In, Healthy Out* was published to establish a manual on the "Best Practices for Reducing Fire fighter Risk of Exposures to Carcinogens." Since that time, research funded by FEMA grants has increased significantly, and so much more is known about the risks fire fighters face at emergency scenes, inside fire stations and while using apparatus—as well as how sleep, fitness and nutrition are linked to cancer. For fire fighters, it's important to acknowledge that work-related factors can greatly influence their overall health and well-being. Therefore, any approach to Total Worker Health (TWH), a holistic approach to worker safety and health, must take into account both the physical and psychosocial aspects of the job.

In 2020, FEMA awarded a Fire Prevention and Safety Grant to Puget Sound Regional Fire Authority, formerly Kent Fire Department, to update this manual with new research identifying the increased risk of cancer to fire fighters. We have updated cancer-prevention tactics and included best practices for behavioral health, wellness, fitness and nutrition, along with sleep hygiene and exposure documentation. Lastly, information about musculoskeletal injury prevention has been added to help avoid those often-debilitating injuries that have lifelong impacts.

In June 2022, the International Agency for Research on Cancer (IARC) reclassified the occupation of firefighting to Group 1, the highest hazard category, due to their risk of exposure to certain carcinogens. Occupational exposure as a fire fighter has been shown to be carcinogenic based on sufficient evidence of cancer in humans. Fire fighters are at risk of exposure to a variety of hazardous substances, including polycyclic aromatic hydrocarbons (PAHs), benzene, formaldehyde and asbestos, among others. It has become more important than ever for the fire service to implement best practices to prevent and eliminate the risks associated with cancer.

The Washington State Council of Fire Fighters (WSCFF) provided the technical review panel with members from the International Association of Fire Fighters (IAFF) locally across the state of Washington. We also have worked with the Washington State Department of Labor & Industries (L&I), the IAFF and national experts who dedicate themselves to researching the prevalence of cancer in the fire service.

This technical panel searched fire service agencies across the state, the country and the world to identify the current practices that will, to the greatest extent possible, reduce the risk of exposures to carcinogens for firefighting activities.

A best practice is a method or technique that identifies a standard way of doing something that multiple organizations can use and adopt. A best practice can, and will, evolve to become better as improvements are discovered.

This document is organized in the format of the Incident Management System (IMS) with Finance, Command, Planning, Operations and Logistics sections. While not every fire department will have the capability or the budget capacity to implement all of these practices, this document refers to the best practices that have been identified to reduce exposures to carcinogens with the goal of propagating potential change.

FINDING WORKABLE SOLUTIONS:

Beth Gallup Initiates Program 'By Fire fighters, for Fire fighters'

BY STEVE HANSEN

Captain Beth Gallup of the Kent Fire Department knew that when fire fighters would begin the process of decontaminating after combating a fire, they would often avoid a crucial step: washing their hands, neck and face. And they would avoid doing so for one simple reason—the water was too cold.

So, Gallup and the department's lead mechanic, Eric Heintzinger, set out to solve the problem. With about $70 of hoses and other fittings, Heintzinger found a way to route water from the heat exchanger to the pump panel. A warm-water wash station with water at a comfortable 98 degrees eliminated a key obstacle that often kept fire fighters from removing dangerous carcinogens from their bodies. In fact, with Heintzinger's help, Pierce Manufacturing made the feature available on fire engine models within a couple of years.

Beth Gallup is no engineer. Nor is she a mechanic. But she is a problem-solver, and her ability to identify key issues that affect the long-term health of her fellow fire fighters—and find simple solutions—is unmatched. In fact, there may be no better example than what you hold in your hands: this edition of *Healthy In, Healthy Out*.

First published in March 2016, *Healthy In, Healthy Out* was created by Gallup and a group of dedicated career fire fighters from around the state of Washington as a response to a crisis unfolding throughout fire stations across the United States, and certainly at Gallup's own Kent Fire Department, which became known in 2017 as the Puget Sound Regional Fire Authority. As Gallup recalls, over a stretch of five years, she and her department lost three fire fighters to cancer. One of those victims was Marty Hauer, who was so fit and healthy that everyone simply assumed he'd never suffer even a scratch on the job. "Marty was an Adonis," Gallup recalls. "If he can get sick, what about us mere mortals?"

Then Gallup herself got sick. It was a brain tumor.

Gallup received treatment, and the tumor hasn't grown bigger since. Although her career fighting fires was over, she sought new ways to make a difference. With incredible support from her boss, Assistant Chief of Operations John Willits, Gallup got to work. Just six months—six months!—after her diagnosis, Gallup applied for and received a $103,000 Safety & Health Investment Projects grant from the Washington State Department of Labor & Industries. The goal was to gather fire fighters from across the state and seek out experts across the nation to collect and identify best practices that could help protect fire fighters from exposure to carcinogens that are present at *every* fire.

Just as the makeshift fire engine's warm-water wash station was a common-sense solution to a nagging problem, so too was what would become *Healthy In, Healthy Out*. Gallup intended

to create a simple, easy-to-digest publication that was "by fire fighters, for fire fighters." The committee would seek to find how fire stations were dealing with carcinogen exposure, and then determine what mitigation techniques might be most successful. "There wasn't anywhere that had collected best practices in one place," recalls Gallup. "And there was no national standard."

The results have been phenomenally successful. Over the years, Gallup sees the safety measures she championed becoming just as consequential to fire fighters as the mandatory use of air packs in the 1960s to help reduce emphysema or the use of latex gloves in the 1980s and '90s to stop the transmission of hepatitis B were. Indeed, in the years since *Healthy In, Healthy Out* was first published, such measures have become a Blue Card standard, and the National Fire Protection Association is set to make such protocols a national standard, pending a final vote from its Standards Council.

Of course, there's more work to be done. In this third printing of *Healthy In, Healthy Out,* you'll find the best practices for minimizing carcinogen exposure that Gallup and her team worked so hard to assemble. You'll also find essential information on the next crisis facing the firefighting community: mental wellness.

Beth Gallup may be retired, but she still has a deep connection to the cause. Her second cousin, John Gallup, is now taking on this deeply important issue. Aside from being, in Beth Gallup's words, "a rock star" in the mental health community, second-cousin John is a battalion chief with Puget Sound Regional Fire Authority.

Those mental wellness best practices are now assembled in *Healthy In, Healthy Out*. The mental health of fire fighters has become a conflagration in the fire service, and proactively confronting these issues is every bit as critical as it has been to address the causes of emphysema, hepatitis B transmission and carcinogen exposure.

"It is so sad," Beth Gallup says. "In the last few years, the rate of suicides for fire fighters has now surpassed the rate of line-of-duty deaths, based on some fire-service studies."

FINANCE

Invest in keeping fire fighters safe today to help ensure a healthier tomorrow

Over time, it has been shown that sick and injured members create financial costs to their organizations. The overall concept of this manual is to keep members safe from exposures while protecting organizations from long-term injury, illness and even death.

Considering best practices and their implementation, fire departments may use a phased-in approach as necessary. While many of the practices identify low-cost items like garbage bags, other items require a significant cost to implement.

A fiscal analysis of implementation considers the money available, the money requested and the money actually spent. Fire departments are funded differently—some are municipalities, some are fire districts, some employ career fire fighters, some have volunteers and some employ a combination of these approaches. In seeking a funding solution to implement the best practices, a "one size fits all" approach will not work for all fire departments. Individual departments should conduct a fiscal analysis to determine the level of participation they can afford.

Funding sources to consider include local fees associated with fire and building permits as allowed, sales tax, real estate excise tax, impact fees, bonds, levies and fees for service. Departments may consider grants, including FEMA's Assistance to Firefighters Grant (AFG), for alternative funding for major or capital purchases.

Low-cost items can include:

- **Garbage bags (42-gallon, 6 mil) for transporting contaminated personal protective equipment (PPE), equipment and hoses; approximately $1 per bag**
- **Emergency Medical Services (EMS) latex or nitrile gloves**
- **Consultation with an ergonomist to help design equipment and outline lifting techniques to prevent musculoskeletal injuries or free assistance from Washington State Department of Labor & Industries ergonomists**
- **N95 respirators**
- **Splash gowns**
- **Blackout shades in dorms for better sleep hygiene**
- **Disposable wipes to use at fire scenes**
- **Hand-washing stations on every fire engine; retrofitting with time and materials for approximately $500**
- **Station shoes, which range from $50 to $100**
- **Investing in the Ready Rebound healthcare navigation program**
- **Friction-reducing or lifting devices to transfer patients from bed to gurney**

Higher-cost items can include:

- Annual physicals for all suppression personnel, including cancer screening and comprehensive blood work
- Separate climate controls in each dorm with individual alerting systems
- Initiating wellness/fitness/nutrition programs
- Purchasing two sets of turnouts for all suppression personnel to have a variety of sizes available to wear while contaminated sets are being cleaned
- Modifying apparatus to incorporate clean cab designs for ease of cleanup and separation of contaminated equipment
- Direct-source diesel exhaust capture and removal systems
- A comprehensive behavioral health program that includes resiliency training and functional peer support teams
- PPE cleaning by an independent service provider (ISP) or purchased extractors and self-contained breathing apparatus (SCBA) washers
- Initiating a health advocacy program
- UV-C light for cleaning and disinfecting fire department apparatus
- Ultrasonic helmet and SCBA mask cleaner
- Steam cleaner for hard-to-clean soft surfaces, like cloth apparatus seats
- Portable on-scene gross decon units
- Hood exchange program or issuing mulitple sets of hoods

ABOVE: *Steam cleaning can kill bacteria, like MRSA and other pathogens, while thoroughly cleaning surfaces by removing deeply embedded contaminants.*

COMMAND

Promote safety by developing and enforcing policies and procedures and encouraging timely reporting

HEALTH AND SAFETY OFFICER

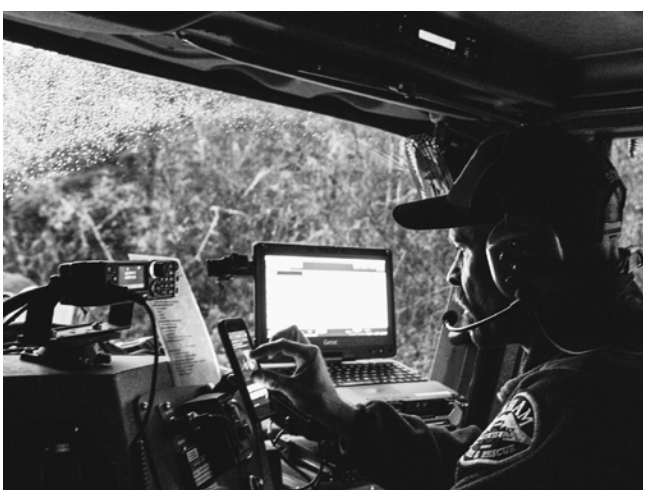
An important aspect of an organizational cancer-prevention effort is developing the comprehensive accident, injury, illness and exposure policies and procedures as required by Washington Administrative Code (WAC) 296-305-01501 and 01503. Such policies and procedures meet the dual needs of managing on-the-job injury processes and providing organizations with data to help prevent future events. In the context of cancer prevention, an organization's policy and culture ideally support precautionary reporting of exposure to carcinogens as a way to identify and mitigate hazards. Similar to near-miss reporting, precautionary reporting of exposure to carcinogens allows organizations to identify the root causes of the exposure and to design and implement corrective interventions.

Also important to fire fighters' overall health are policies and procedures related to wellness, fitness, nutrition, behavioral health, sleep deprivation and musculoskeletal injury prevention.

In developing policy that encourages precautionary reporting, it is important to clearly define the parameters of the organization's reporting system. The Washington State Council of Fire Fighters' Personal Injury, Illness and Exposure Reporting System (PIIERS) allows members to record all incidents where there is the potential to have been exposed to the products of combustion. An organizational reporting system, however, should only be used when an exposure actually occurs.

For example, acting as a pump operator upwind of a large commercial fire may warrant a PIIERS report, but it may not warrant the filing of an organizational precautionary report. On the other hand, if the wind shifts and the pump operator suddenly finds himself engulfed in acrid smoke, then the member needs to fill out a PIIERS report as well as an internal report. These distinctions are clearly not black and white and must be supported by good policy along with a culture of mutual trust within an organization.

From labor's perspective, a robust organizational reporting system may reinforce the organization's commitment to transparency and safety. Labor also must recognize, however, that management may feel exposed to increased scrutiny if every "routine" fire call generates a wave of exposure reports. Because of this, labor and management can undertake a collaborative effort to clearly define the formal and informal parameters of reporting policy. After all, both groups have a shared interest: the health and safety of the organization and its members. An additional benefit of maintaining a collaborative approach to precautionary reporting is that it moves training, policy and operational norms toward a culture of safety.



EXPOSURE REPORTING WITHIN FIRE DEPARTMENTS

In addition to strong policy, organizations are encouraged to develop strong processes for precautionary reporting. This begins by creating forms and other documents that are logical, accessible and user-friendly. In addition, these forms not only should support ease of use, but also should allow for advantageous data collection by the department. Methods such as check boxes, drop-down menus and practical narrative prompts reduce subjectivity and allow for easier retrieval of data.

Exposure report forms also should have clean approval queues that require input from multiple layers within the organization. For example, the pump operator who breathed acrid smoke but did not require immediate medical attention should initiate the report and thoroughly complete all sections related directly to his experience. His company officer would then receive the report and "proof" the pump operator's work by checking it for completeness and accuracy. The officer also would provide their own version of events and recommendations to prevent future occurrences. This process should continue through a logical queue that involves all relevant individuals in the affected member's chain of command.

An additional benefit of maintaining a collaborative approach to precautionary reporting is that it moves training, policy and operational norms toward a culture of safety.

FIIRE Initiative: WA Fire Fighters Need to Know

The Firefighter Injury and Illness Reduction (FIIRE) program is managed by the Washington State Department of Labor & Industries (L&I). It was developed with the guidance of representatives from the Washington State Council of Fire Fighters (WSCFF) and Washington Fire Chiefs (WFC). Its primary goal is to reduce the occurrence of occupational injuries and illnesses among professional fire fighters. The program's focus is on developing best practices to reduce carcinogen exposures and musculoskeletal injuries.

Employers of fire fighters can participate in this program to proactively manage risks and implement best practices in accordance with Revised Code of Washington (RCW) 51.04.170. Fire departments that participate in FIIRE will benefit from a discount on their workers' compensation insurance premiums for risk class 6904. The program is currently only funded for employers of the state-insured workers' compensation program.

Participating employers can apply for grant funding to purchase additional equipment and gear necessary for implementing the best practices. In addition, the Safety & Health Investment Projects (SHIP) grant program, funded by the Medical Aid Fund at L&I, also provides grant opportunities for those interested.

WAC 296-305-01505 requires organizations to develop an accident-prevention program. As part of this program, the statute includes language mandating both a safety orientation process and the development of a Safety Committee. The final review of a precautionary report should lie with these groups. This policy states that the Safety Committee should be tasked with identifying the root causes of the event and, in doing so, it should suggest action items via the organization's Health and Safety Officer (HSO). These items may include policy, procedural, training and/or operational changes to prevent future occurrences. All Safety Committee and HSO recommendations should be documented, managed and revisited until the corrective actions are complete.

A confidential document library is the final step for the precautionary report and associated Safety Committee and HSO records. The document library can be accessed if a precautionary report should become relevant to an injury or illness that occurs downstream. At this point, both the organization and employee will have a record that the initiating event was reported, reviewed and acted upon.

PLANNING

Design fire stations and apparatus with exposure prevention in mind

FIRE STATION DESIGN

When designing a fire station, departments should look for ways to reduce exposures and prevent cross-contamination of carcinogens, contaminants and other harmful agents. Fire station design must be centered around Total Worker Health and include ways to mitigate behavioral health and sleep outcomes. Some components of successful design include individual climate control in dorms, alerting systems specific to each room in the fire station, and providing natural light sources while also reducing bright light exposure at night. Existing stations can be retrofitted to best accomplish these best practices where possible.

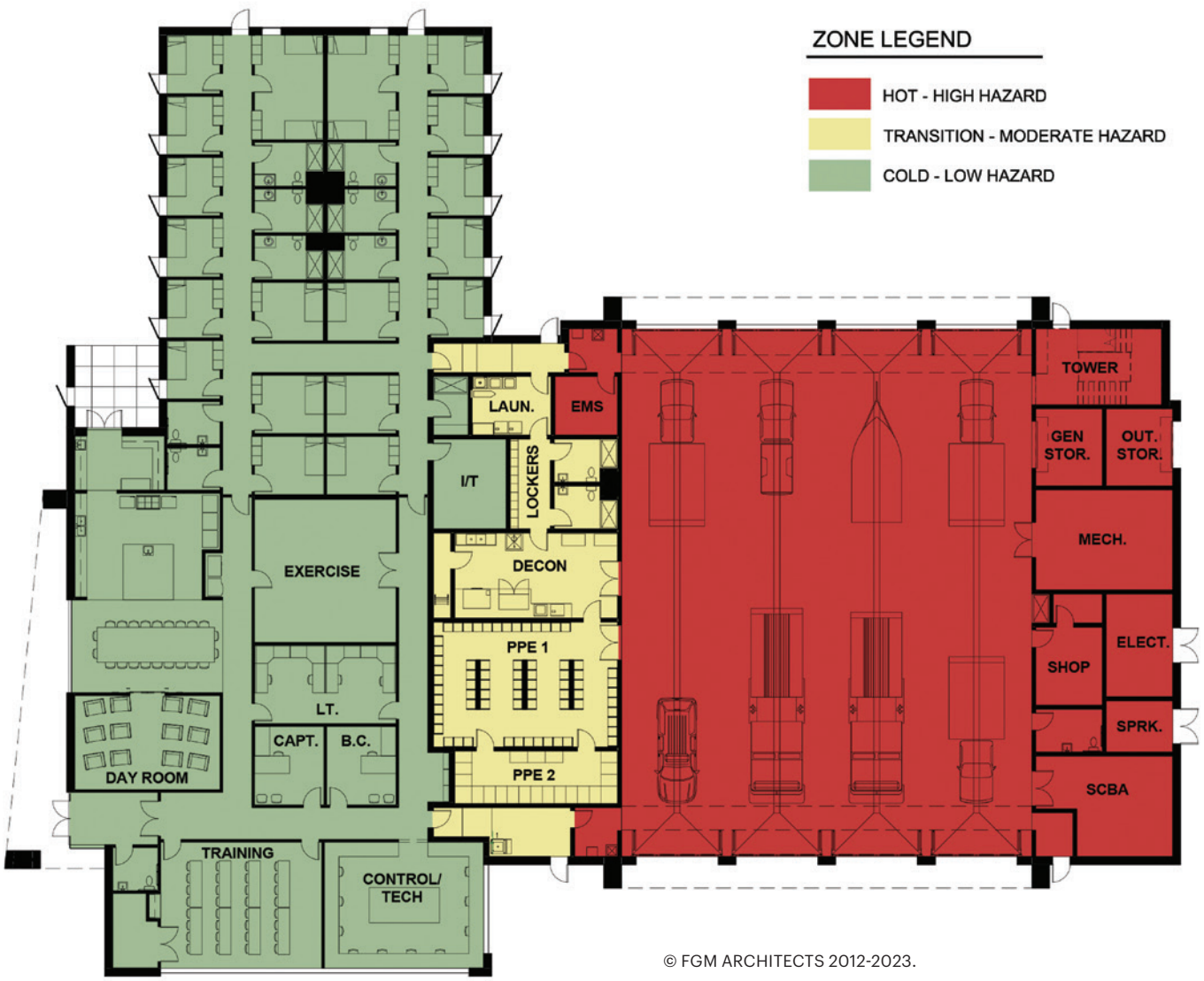
- Within the station, the following zones should be established:
  - **HOT ZONE (RED):** Area with highest risk of exposure. This is generally the apparatus bay and adjacent areas that support the storage of vehicles. They should include boot-washing and hand-washing sinks.
  - **TRANSITION ZONE (YELLOW):** A designated area, as per WAC 296-305-06505, for cleaning contaminated equipment including SCBA, EMS equipment from medical calls, fire hose, turnouts, etc. When cleaning contaminated equipment, always wear appropriate PPE (gloves, splash gown and N95 if appropriate) to protect against exposures. Bunker gear, SCBA and extractors, along with lockers and showers, are located in the transition zone.
  - **COLD OR SAFE ZONE (GREEN):** "Keep it clean in the green." The green zone is the living quarters of the fire station including the kitchen, living area, sleeping area, personal hygiene facilities and office. Contaminated EMS equipment, turnouts, etc., are never allowed.

Living quarters best practices:

- **Frequently replace all HVAC filters in accordance to the manufacturer's recommendations.**
- **PPE should never be worn in any living areas of the fire station. This includes day rooms, offices, kitchens, sleeping areas, training rooms, etc.**
- **Do not bring contaminated equipment into any living areas.**
- **The air pressure in living quarters should be higher than the apparatus bay to prevent airborne contaminants from entering the living quarters.**
- **Avoid using carpet in the station. Instead use hard, non-porous surfaces such as concrete to make it easier to clean.**

Source: IAFF Fire Fighter Cancer Awareness and Prevention — Fire Station Design: Best Practices to Reduce Exposures

FIRE STATION LAYOUT



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- All new station design should include direct-source capture diesel exhaust handling systems for all vehicles and for every apparatus bay. These can be retrofitted into existing stations.
- The HVAC system in living and working areas should be positive pressure and systems in the apparatus bay and decon areas must be negative pressure to prevent airborne contaminants from entering the Cold or Safe Zone (GREEN). Air vestibules are now common in the Transition Zone (YELLOW) of new fire station designs to help reduce cross-contamination between Hot Zone (RED) and Cold or Safe Zone (GREEN).
- To avoid exposures to UV light, turnout gear should be stored in an enclosed ventilated room (NFPA Standard 1851).
- Carpet in fire stations acts like a sponge, collecting dirt, soot, feces, MRSA, staph, blood and other potentially infectious materials (OPIM) from response footwear worn by fire and EMS personnel. Removing carpet and installing hard-surface flooring, such as polished concrete, is one way to mitigate these exposures, as solid surfaces are easier to clean than carpet.
- Similarly, furniture and fixtures in fire stations attract and collect dirt and biological toxins. A 2011 study by the University of Washington Field Research and Consultation Group found MRSA on chairs, phones, computers and kitchen counters in fire stations in western Washington. This study shows the importance of keeping frequently touched items clean and disinfected.
- For new fire station design, plan adequate space requirements for turnout cleaning extractors and SCBA washers to clean turnouts and SCBAs in-house, or provide an area to package turnouts at the station prior to shipping to an independent service provider (ISP) for third-party cleaning. Follow manufacturer's instructions on methods for cleaning turnouts.

Diesel exhaust is classified by the International Agency for Research on Cancer (IARC) as carcinogenic to humans (Group 1).

FACILITIES MAINTENANCE

Initial and/or periodic testing should be conducted at fire stations to ensure a safe environment for fire and EMS personnel working there. It is important to reduce or eliminate exposure to these known fire station concerns:

- **Diesel exhaust:** Diesel exhaust is classified by the International Agency for Research on Cancer (IARC) as carcinogenic to humans (Group 1). Engineered systems, such as direct-source capture systems, need to be maintained to ensure they are exhausting gases and particulate matter to the outside atmosphere. The use of diesel exhaust fluid (DEF) does not decrease the hazard.
- **Staph, VRE, C. difficile, COVID and MRSA:** Chronic health effects from bloodborne exposures are persistent in the fire service.
- **Asbestos:** Older fire stations should be assessed for asbestos encapsulated pipe wrap. Damaged wrap should be repaired or replaced.
- **Radon:** A radioactive gas that occurs naturally in the ground, radon can enter living spaces—especially basements through groundwater or cracks in foundations—and accumulate there. Radon is known to cause lung cancer, so if levels are above Environmental Protection Agency (EPA) guidelines, mitigation is recommended.

STATION SHOES VS. WORK BOOTS

Fire and EMS personnel regularly respond to incidents in which exposures to biologics and carcinogens can occur. It is not uncommon for personnel to step in hazardous substances (e.g., soot, blood, urine, vomitus, feces, etc.) with their response footwear during a call. To reduce contamination that may be brought into the station on the soles of response footwear, an alternate form of footwear (the station shoe) is authorized for wear inside the stations.

- An example of a station shoe could be a black, closed-toed non-safety shoe that is easy to clean if needed.
- Station shoes should be easy to change into and out of quickly without delaying response to a call.
- Station shoes should be worn only in the Cold or Safe Zone (GREEN).
- Station shoes should *not* be worn when performing apparatus checks, responding to calls or performing work where safety shoes (impact and crush protection) are required.
- Boot washers should be located in strategic areas when moving from the RED zone into the YELLOW or GREEN zones in the fire station.

ABOVE: ***Turnouts are strictly prohibited in living quarters to prioritize the safety of firefighters and minimize their exposure to contaminants.***

It is recommended that all fitness or exercise activities occur in the Cold or Safe Zone (GREEN) of fire stations. Participating in those activities within apparatus bays poses a substantial risk of personal contamination, as there is the potential for contaminants and toxic chemicals to enter the body through ingestion absorption, and respiration. The apparatus bays are recognized as the most hazardous and unsafe areas for such activities.

Apparatus should be designed with careful thought given to biological and chemical contamination and the potential for cross-contamination.

APPARATUS DESIGN

Apparatus should be designed with careful thought given to biological and chemical contamination and the potential for cross-contamination. The cab of the apparatus should be kept free of toxins, both on the hard and soft surfaces as well as in the air.

- SCBAs and turnouts should have their own compartment away from the cab. SCBAs that are designed into the seat also should come with provisions for decontamination and cleaning prior to placing back into the seat after a fire.
- All seat material should be of vinyl or other material to reduce absorption of toxins and for easy cleaning.
- Apparatus can be adapted to have a warm-water outlet, which provides a personal washing station. Prior to 2016, NFPA 1901 required a heat exchanger for the engine coolant; most apparatus manufacturers accomplish this with water from the tank through a heat exchanger. A simple diverter valve to the pump panel can create a warm-water outlet for a personal hand-washing station.
- All flooring should be designed with a waterproof material that can be washed with a hose and scrubbed out.
- Exhaust pipes can be designed to exit where fire fighters are least affected when opening cabinets and accessing pump panel controls.
- Prepackaged water bottles carried on apparatus for personnel to rehydrate are a handy solution. A reusable water cooler container can be safely utilized, provided a timely cleaning and disinfecting plan is in place.
- All interior material used in the cab should be easily cleaned and designed to repel moisture, yet durable enough to be cleaned daily or after each call with disinfecting agents, soap and water. Do not use cloth for the apparatus seat materials.
- Contaminated equipment (SCBAs, fire hose, TICs, etc.) should not be allowed in the cab of the apparatus until the equipment has been properly decontaminated. This may involve arranging transportation of the contaminated equipment from the incident to the fire station for proper decontamination.
- As a best practice, groceries should not be routinely transported in fire department apparatus due to potential cross-contamination. Because this is a common practice while working 24-hour shifts, a designated cooler or insulated zippered container can be used to minimize cross-contamination. Groceries also can be placed in designated contaminant-free compartments.

APPARATUS TURNOUT STORAGE

All apparatus should have a designated turnout compartment separate from the cab.

- Turnouts, including helmets, should not be routinely allowed in the cab of the apparatus, with the exception of responding to emergencies or participating in trainings.
- No contaminated turnouts should be allowed in any apparatus cab.
- After an incident or training that involves contaminants, all turnouts should be grossly decontaminated on scene, encapsulated in a designated disposable bag, and transported to a fire station or an ISP for proper cleaning.

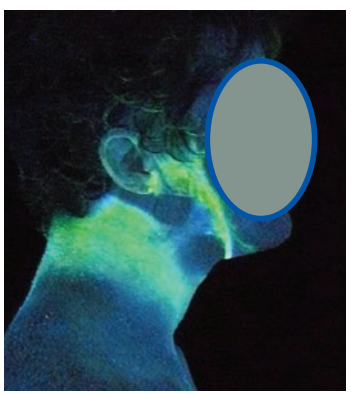
SCBAs and turnouts should have their own compartment away from the cab.

EMERGENCY

Minimize risk by limiting exposure to toxic carcinogens on scene, in transit and during cleanup

Fire departments should conduct a risk/benefit analysis that takes into consideration the risk of fire fighters being unnecessarily exposed to carcinogens. It is important to limit toxic exposures to personnel on scene as much as possible. Additionally, Incident Commanders (IC) can minimize risks by cancelling units that are not needed.

- Upon arrival at the incident, units should stage uphill and upwind of the fire when practical. Keep apparatus windows closed and keep air conditioner and heat turned off to minimize airborne contaminants entering the cab and contaminating the interior. If you need to keep the air conditioner and heat on, we recommend using indoor air circulation mode to prevent airborne contaminants entering from the outside.
- If the apparatus is not involved in an integral process of fireground operations (pumping, supplying or aerial operations), turn off the motor to reduce the diesel exhaust on the scene.
- On-deck and Rapid Intervention Crews (RIC) can be readily available without standing in the smoke. Stay outside of the smoke envelope — the area surrounding the scene where airborne contaminants are present — and be aware of the greater picture. This envelope depends on atmospheric conditions. For example, on low-wind days with atmospheric inversion, the smoke envelope may surround a fire scene with a large spread of emissions in all directions.
- Responders, including the pump operator/engineer and IC, should wear appropriate PPE whenever the situation warrants. Some personnel may need to wear Self-Contained Breathing Apparatus (SCBA) when exposed to the products of combustion or hazardous materials.
- All personnel engaged in firefighting shall use SCBA from initial attack throughout overhaul. FCSN 2011 states that not wearing SCBA is the "single most dangerous voluntary activity" in today's fire service. Such usage should include not only interior structural firefighting, but also for car fires and dumpster fires.



LEFT: ***RTI conducted a fluorescent aerosol test that found aerosol particles can penetrate a fire fighter's hood and deposit on the skin. There were very heavy aerosol deposits on the neck, cheeks, ears and hair due to penetration through the hood. The dark bands below the ears were relatively clean areas that were covered by the mask straps.***

Test conducted by RTI International, Research Triangle Park, N.C., and sponsored by the International Association of Fire Fighters.

Common Carcinogens in House Fires

and why following industry best practices is important to your health and safety

- **Benzene:** Highly toxic compound released during combustion of plastics, rubber and petroleum-based products. Linked to various cancers. Fire apparatus exhaust a common source of exposure for fire fighters.

- **Formaldehyde:** Colorless gas used in building materials, released during fires. Prolonged exposure linked to nasal and lung cancers. OSB boards in training burns are a frequent source of exposure.

- **Polycyclic aromatic hydrocarbons (PAHs):** Chemicals produced during incomplete combustion of organic materials. Potent carcinogen associated with various cancers, including lung, skin and bladder cancer.

- **Asbestos:** Present in older homes, released into air when ignited. Inhalation causes lung cancer, mesothelioma and respiratory diseases. Frequent exposure during overhaul stages of building fires.

- **Carbon monoxide:** Deadly gas produced during fires. High exposure levels in burning buildings can cause carbon monoxide poisoning, leading to neurological damage, heart problems and death. Continuous monitoring crucial during firefighting overhaul stage.

Fire fighters face a heightened risk from carcinogens for several reasons. They often work in enclosed spaces with concentrated smoke and toxins, leading to higher levels of exposure. Additionally, they encounter these cancer-causing agents repeatedly throughout their careers, increasing their cumulative exposure. Despite the use of personal protective equipment (PPE), it is not entirely foolproof as small gaps or tears can still allow harmful substances to come into contact with the skin or be inhaled. Thus, ensuring proper fit of PPE is crucial to accurately safeguard fire fighters from potential exposures.

Fire fighters face an increased risk of developing various cancers due to exposure to carcinogens, including lung, skin, brain, kidney, bladder and blood cancers. The effects may not appear immediately, but can take years or decades to develop. Given the repeated exposure, potency of carcinogens, and inherent risks, fire fighters must take preventive measures. This includes proper decontamination procedures and regular health screenings. Ongoing research continues to develop better protective measures for fire fighters. It is crucial for fire fighters and fire service leadership to document exposures accurately to show the cumulative impact over their careers.

The Comparative Toxicogenomics Database (CTD) is a publicly available database that focuses on the molecular interactions between chemicals, genes, and diseases.

More information can be found on their website at ctdbase.org.

PRELIMINARY EXPOSURE REDUCTION (PER)

- The term PER defines the initial process of removing contaminates from bunker gear prior to cleaning or decontamination as defined in NFPA 1851.
- Prior to removing firefighting ensembles worn in the hot zone, a preliminary exposure reduction shall be performed to remove potentially harmful contaminants (NFPA 1851 and WAC 296-305-05002 (15)).
  - **Wet mitigation:** Members should brush large debris first, then spray each other with water to remove loose particulates from turnouts and equipment. Utilizing the pump operator for decontamination should not be allowed due to their lack of respiratory protection. The designated Gross Decon line should be deployed approximately 50 feet from the pump panel, toward the egress of the immediate danger to life and health (IDLH) zone and should be designated by a cone. Do not connect a decontamination line to a foam discharge port during foam operations.
  - **Dry mitigation:** During cold weather operations, dry brushing should be conducted to remove the toxic products of combustion from fire fighters prior to going off air and removing SCBA face pieces.
- When cleaning contaminated equipment, always wear appropriate PPE (gloves, splash gown and N95 if equipment is dry and particles could become airborne) to protect against exposures from contaminated equipment (WAC 296.62).
- All fire fighters engaged in suppression activities, overhaul or exposure to smoke should exchange their contaminated hood for a clean one every time they exit the IDLH. Replacement hoods should be readily available on scene.
- After PER and before eating or drinking, a personal hand-washing station, including hand soap and towels, will be set up. In lieu of soap and water, use disposable wipes for hands, face and neck. Personnel should wash their hands before rehab, at the end of suppression activities including overhaul, and before returning to the living quarters. The hand-washing station or wipes should be available at the entry point to rehab.
- When released from the incident, fire fighters should bag their contaminated turnouts in large, encapsulating 6 mil leak-proof bags for transport back to the station. If using a trash bag, ensure it is clear so it's easy to identify what is in the bag. Wearing contaminated turnouts back to the fire station will transfer contaminants to apparatus seats, resulting in exposure to the next member who sits there due to cross-contamination.
- To protect hands from dermal absorption of contaminants while packaging turnouts, wear a minimum of EMS latex or nitrile gloves.
- Personnel must shower upon returning to quarters, or as soon as practical.
- Keep a reserve set of turnouts at assigned stations. Clean contaminated turnouts, including hood, gloves, boots and helmets, in accordance with NFPA 1851, or send them out to a designated station or an ISP for cleaning.

INCIDENT REHABILITATION (REHAB)

It's essential to provide rehabilitation and medical monitoring at the scene to establish the mental and physical condition of personnel participating in tactical operations and training. Carcinogens can be absorbed, inhaled and ingested at a fire scene. Proper decontamination and rehabilitation procedures reduce exposures to carcinogens during these critical times.

- Rehab must be located in a place that allows enough space and protection from adverse environmental conditions including fire, smoke, exhaust, and extreme heat and cold. An ideal location would be out of direct sight of the working incident, with room for separate areas to remove PPE, a rest and evaluation area, a treatment area, and access to a restroom when possible.
- Personnel are to rotate through rehab after an IDLH work period of 2/30s or 1/45-minute SCBA cylinder or anytime the environment, workload and/or atmospheric conditions indicate the probability of injury or temperature-related illness to personnel. This includes, but is not limited to, working fires and hazmat incidents when encapsulating suits are worn.
- Before entering rehab, fire fighters are to use a personal hand-washing station with water, hand soap and towels. In lieu of soap and water, disposable wipes can be used for hands, face and neck.
- Each time a fire fighter enters rehab, an evaluation will occur for the following: name, time and unit; mental status; and any physical symptoms such as a chief complaint of shortness of breath, poor gait, confusion, dizziness, nausea or vomiting, cramps, or aches and pains. All symptoms will be thoroughly evaluated by the appropriate EMS level of care.
- Personnel not working in the IDLH but within the hazard zone (pump operators, IC, etc.) should be observed and periodically monitored for potential exposure to toxic gases and/or heat and cold stress.
- In warm weather, removal of turnout gear is necessary to allow the body's temperature-regulating mechanism to function properly. The duration of the ventilation process will depend on the workload and atmospheric air temperatures.
- Tarps for shade and electric fans to provide airflow may be necessary during hot weather, and other appropriate shelter should be utilized during inclement weather.
- Fluid replacement is necessary to maintain the high metabolic demand placed on fire fighters during emergency operations. It is recommended that members drink one liter of water per hour for several hours to replace fluids lost due to dehydration. After one hour, electrolyte additives should be added to the water source (NFPA 1584).
- Caffeinated beverages and "energy drinks" should be avoided during emergency incidents due to their diuretic effect. High usage of energy drinks also has been linked to cardiac issues.

Accumulation of soot and chemicals on turnouts, tools and SCBA can lead to persistent exposures of carcinogens to fire fighters. Turnouts, tools and SCBA should be cleaned after each exposure to toxic products of combustion.

OVERHAUL

The primary emphasis during post-fire operations should be the safety of all fire personnel operating on the scene. Decontamination, rehabilitation and rehydration procedures should already be in place. When crews are able to exit the structure, chemicals will start to dissipate naturally, and their overall exposure will be reduced. An additional benefit of timely crew removal is that it will allow fire investigators to gather information before a scene is further disturbed by overhaul.

As a best practice, the most contaminated crews should be sent home to shower within the hour. They should put on a clean change of clothing to further remove the toxic products of combustion that accumulate on fire fighters during firefighting operations and reduce off-gassing exposure to these contaminants. The Jacksonville (Florida) Fire and Rescue Department has had a policy in place since 2010 (SOG 437) that designates a new crew be dispatched to the scene of working fires as a CUT Team, or "Clean Up Team." The primary job of the CUT is to "perform overhaul duties and assist the fire investigator at structure fires." This allows the original firefighting crews to return to quarters and clean up after their firefighting operations.

Research done by Tualatin Valley Fire Department and the State of Oregon assessed the risk to fire fighters during the overhaul process to better understand airborne contamination risks to fire fighters and fire investigators. The data showed that allowing more time after knock-down was beneficial and should be an important consideration when determining the best practices for fire fighters during overhaul. Though not part of the study, ventilation seemed to improve conditions. However, time after extinguishment seemed to have been a more significant factor in improving atmospheric air quality.

These additional overhaul best practices should be followed:

- During the structural cooling-off period, the IC can develop an overhaul plan that includes the identification of safety issues, such as holes in floors or unstable walls/roofs, and the establishment of hot, warm and cold zones.
- SCBA is mandatory to be used for any work performed inside the structure for the duration of overhaul. Monitor for fatigue and hydration and cool crews by removing SCBA and bunker jackets while in rehab.
- Fire investigators can begin interviews and investigation outside the hot and warm zones of the structure during the structural cooling-off period.
- Fire investigators are subject to the same toxic environments as other firefighting personnel. They must be protected from respiratory and dermal absorption hazards when operating inside the hot zone (WAC 296-305-05002 (16)).

FIRE INVESTIGATION

In 2022, the International Association of Arson Investigators (IAAI) updated its comprehensive guide to best practices regarding the exposure risk fire investigators face once the fire is out and they begin their work to determine cause and origin. This comprehensive manual, developed with leading fire service researchers, will provide best practices for those in the fire service who work in our Fire Investigation Units.

For updated information visit wscff.org/fireinvestigations.

TRANSPORTING CONTAMINATED EQUIPMENT

Contaminated equipment, turnouts and hose should be transported back to the fire station in a manner designed to reduce cross-contamination. That includes:

- Gear should be encapsulated utilizing a single-use, clear or well-marked heavy-duty plastic bag. The bag should be of sufficient size (42-gallon) and strength (6 mil) to contain all contaminated gear, including turnouts, helmet, mask, gloves and boots. WAC 296-62 provides requirements for asbestos activities and abatement, which includes encapsulating the hazard with a thicker bag. With the uncertainty of specific hazards at the fire scene, a best practice should assume all gear and clothing contaminated by fire-suppression activities contains asbestos.
- The encapsulated gear should be placed outside of the passenger compartment, in an external compartment. Transport gear in a similar manner to a facility with an extractor or to an ISP.
- Upon arrival back at the fire station, and prior to personnel taking showers, wear appropriate PPE to open the turnout bag and let the turnouts off-gas outside the fire station. After showering and changing into a clean uniform, remove any tools from turnouts and launder in extractor or repackage for transport to designated cleaning station or ISP.
- Contaminated equipment, hose and turnouts transported in the bed of a utility pickup will not need to be encapsulated. Be sure to wear appropriate PPE when handling contaminated equipment and clean the transport vehicle after use.

CLEANING TURNOUTS

Preliminary exposure reduction (PER) happens at the fire scene first. Turnouts should then be cleaned after each exposure to toxic products of combustion. Exposures can be from car fires, dumpster fires, structure fires and training burns. Accumulation of soot and chemicals on turnouts can lead to persistent exposures of carcinogens to fire fighters. Structural turnouts, including gloves, helmet, hood, boots, pants and coat, should be cleaned according to manufacturer's recommendation and NFPA 1851.

IAFF PFAS and Fire fighter Turnout Gear

The International Association of Fire Fighters (IAFF) and Metropolitan Fire Chiefs Association (Metro Chiefs) have come together to notify members of the adverse health risks from fire fighter turnout gear. Recent studies have shown that all three layers of fire fighter turnout gear contain per- and polyfluoroalkyl substances (PFAS), a class of fluorinated chemicals known as "forever chemicals" that have been linked to cancer and other serious health effects. These studies highlight the risks associated with the materials and finishes used in turnout gear even before it is exposed to its first fire.

The IAFF and Metro Chiefs share a commitment to eliminating PFAS chemicals from turnout gear. They are working together to engage with regulatory bodies and are in ongoing conversations with manufacturers. Meanwhile, they urge fire fighters to minimize exposure to PFAS in turnout gear by taking the following precautions:

- Turnout gear should NOT be taken into firehouse living areas.
- When transporting gear in a personal vehicle, it should be in a sealed container or bag and preferably NOT transported in the passenger compartment.
- Apparatus cabs should be cleaned regularly and after every fire.
- Wash your hands after handling turnout gear.
- Legacy turnout gear should be replaced as new PFAS-free technologies become available.
- Do not wear turnout gear on responses where this level of protection is not necessary.

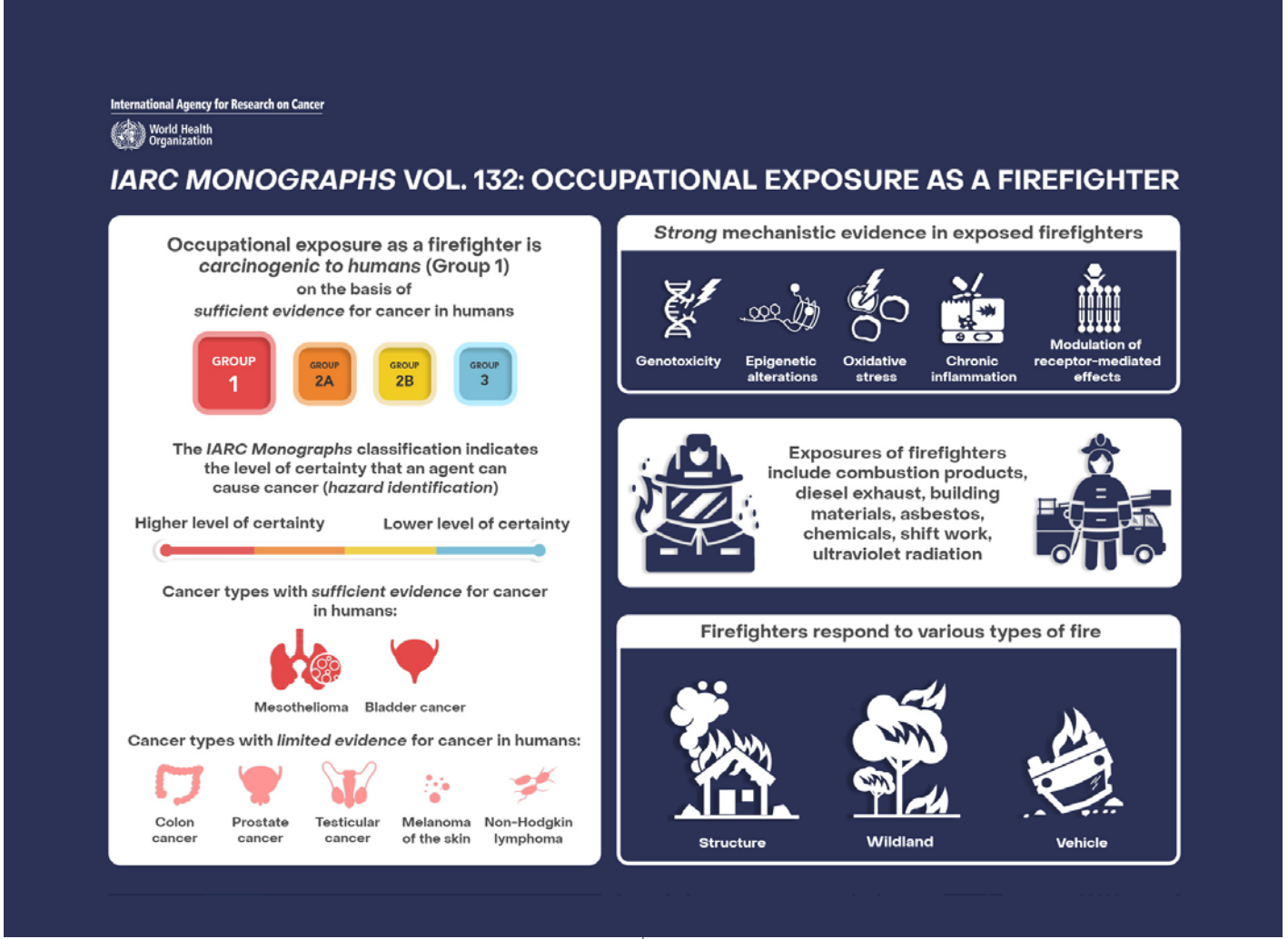
- **66% of the firefighters reported not always reporting hazards on the job.**
- **About one-third of firefighters reported experiencing coughing, wheezing, shortness of breath, and/or chest tightness shortly after fire suppression, overhaul, or live fire training.**
- **Firefighters reported not always using SCBA when exposed— 12% during fire suppression, 25% during live fire training, and 38% during overhaul.**
- **9% reported not always following the Incident Chain of Command (ICC) during emergency response.**

Source: Washington Firefighter Survey
2018 Safety and Health Assessment and Research for Prevention (SHARP) Program
Washington State Department of Labor and Industries

CLEANING SCBA

SCBA gear washers are crucial for maintaining the health and safety of fire fighters and have become a best practice to provide thorough cleaning. Hazardous environments can contaminate SCBA with chemicals, toxins and particulate matter. Regular cleaning and decontamination can reduce the risk of exposure to fire fighters. Proper maintenance of the gear also can extend its lifespan and ensure it functions properly. Compliance with regulations is also important, as regulations dictate proper cleaning and maintenance for SCBA.

ABOVE: *Bagging up contaminated turnouts and SCBAs prevents cross-contamination.*



ABOVE: *This IARC table helps to explain the inherent risks associated with "occupational exposure as a fire fighter causes cancer." Sufficient evidence also was found for increased risk in fire fighters for mesothelioma and bladder cancer, and limited evidence for several other cancers.*

RECLASSIFICATION OF FIREFIGHTING THROUGH IARC

The International Agency for Research on Cancer (IARC) is an intergovernmental agency under the World Health Organization (WHO) that focuses on conducting research into the causes of cancer, identifying factors that increase the risk of cancer and developing strategies for cancer prevention. The agency also provides guidance to governments and health organizations on cancer-control policies and strategies.

In 2022, leading cancer experts conducted a thorough investigation and analysis that resulted in IARC's declaration that "occupational exposure as a fire fighter is carcinogenic to humans based on sufficient evidence of cancer in humans." This signifies that the risks and hazards that fire fighters encounter in their line of work are comparable to highly potent cancer-causing agents such as benzene, tobacco and asbestos. The IARC's reclassification of this profession as a Group 1 carcinogen carries significant implications for fire fighters, policymakers and those responsible for ensuring the safety and well-being of fire fighters in their roles. This highlights the critical need for proactive measures to minimize exposure to carcinogens, along with ongoing research and advocacy efforts to support the health and welfare of fire fighters.

Group 1: The agent is *carcinogenic to humans*.
This category is used when there is *sufficient* evidence for cancer in humans. In other words, there is convincing evidence that the agent causes cancer in humans. The evaluation is usually based on the results of epidemiological studies showing development of cancer in exposed humans.

As stored energy devices become increasingly common, the associated hazards, such as thermal runaway and toxic gas release, pose greater risks to fire fighters.

Visit wscff.org/hiho for more information.

ROUTINE

Healthy daily habits and awareness can play a key role in preventing illness and injury on the job—and off

TOTAL BODY WELLNESS COMPONENT

How the body performs is the best indicator of what is going on inside of it. If it doesn't feel right, it might not be. All fire fighters are encouraged to listen to their bodies and get checked at the first sign of abnormal issues and symptoms.

There are many important components to help the body stay cancer-free in the fire service. A key step is to never start using tobacco products of any kind. If a member occasionally smokes cigarettes, e-cigs or cigars, or dips smokeless tobacco, they are encouraged to stop immediately. Regular use of a sunscreen or sunblock can help prevent skin cancer. General wellness can be achieved by regular exercise, a healthy diet and, most of all, awareness of what is going on in the body.

PHYSICAL FITNESS

Physical fitness is crucial for fire fighters as it helps to prevent injuries, improve job performance, increase career longevity and enhance quality of life after retirement. To perform effectively and safely in the fire service, a fire fighter must have high levels of aerobic fitness, muscular endurance, strength, power and flexibility. The physically demanding tasks performed on the fireground can put stress on the heart, making it important for fire fighters to maintain their fitness levels to reduce the risk of heart attacks, which are a leading cause of fire fighter fatalities. Maintaining fitness throughout one's career, working out on shift, and promoting camaraderie among crew and station members are important for the overall well-being of fire fighters.

The Fit to Thrive program (F2T) developed by the IAFF is a significant step forward in the promotion of fitness and wellness in the fire service. By supporting the Fire Service Joint Labor Management Wellness-Fitness Initiative (WFI), F2T aims to encourage fire fighters to be more active and adopt healthier lifestyles. The program's connection to the Peer Fitness Trainer (PFT) program highlights the importance of peer support and mentorship in promoting wellness and fitness among fire fighters. The IAFF's commitment to improving the health and well-being of fire fighters through programs like F2T is commendable and has the potential to make a positive impact on the fire service community.

The F2T program is a comprehensive approach to promoting wellness and fitness among fire fighters. By providing direct access to resources that address the specific needs of each fire department, the program aims to help certified members effectively serve as ambassadors for wellness and fitness. The focus on practical strategies for improving physical, psychological and social well-being is a key aspect of the program, as is the commitment to accommodating the diverse needs and interests of all fire fighters. By making education, training, mentorship and support accessible, the program seeks to encourage behavior change and help fire fighters maintain their health and wellness.

ABOVE: *Research shows that aerobic fitness and muscular strength and endurance help members to perform safely and effectively in the fire service.*

Building a program for fire fighters requires genuine, passionate and influential leadership from all levels of a department. In addition to leadership, a successful wellness program also should prioritize the following characteristics:

Comprehensive: The program should address various aspects of wellness, including physical, mental and emotional health. It also should cover topics such as nutrition, sleep, stress management and injury prevention.

Evidence-based: The program should be based on scientific evidence and research, and it should be regularly updated as new information becomes available.

Relevant: The program should be tailored to the unique demands of firefighting, taking into account the physical and mental challenges of the job.

Accessible: The program should be easily accessible to all fire fighters, regardless of their rank or location. This could include online resources, group classes or individual coaching.

Inclusive: The program should be inclusive and welcoming to all fire fighters, regardless of their age, gender or fitness level.

Cultural change: The program should aim to create a culture of wellness within the department, with a focus on prevention and proactive health practices.

Collaboration and communication: The program should encourage frequent collaboration and communication between all parties involved, including labor, management and peer fitness trainers. This can help ensure that the program remains relevant and effective over time.

Fire Department Culture Regarding Best Practices

Best practices are crucial in the fire service to attain optimal health and safety outcomes for fire fighters. The culture within the fire service plays a significant role in shaping the well-being of fire fighters. By prioritizing their physical and mental health, we can address cultural norms that might downplay the importance of factors impacting their safety. This recognition is essential in tackling the growing challenges faced by fire fighters, including severe injuries, mental health issues and cancer.

To effectively address these challenges, continuous progress is necessary in recognizing the significance of total worker health. Fire department and union leaders play a vital role in promoting health and safety initiatives. They should prioritize supporting fire fighters by providing adequate training and resources, enforcing preventive policies and fostering a culture that values well-being. These initiatives can include regular health screenings, facilitating access to mental health resources, promoting physical fitness, and emphasizing the importance of proper fire station and apparatus design.

By prioritizing the overall well-being of fire fighters and adopting a comprehensive approach to health and safety, significant benefits can be achieved. Not only can this approach prevent costs associated with injuries and illnesses, but it also ensures the long-term health of fire fighters throughout their careers and into retirement. By implementing best practices, the fire service can create an environment that values the physical and mental well-being of its members, resulting in safer and healthier fire fighters who are better equipped to serve their communities.

BASIC NUTRITION

Maintaining a heart-healthy and balanced diet is essential to reduce the risk of cancer and other diseases, and to keep the body functioning optimally. This can be achieved by consuming whole foods that provide necessary nutrients, avoiding processed foods and incorporating a variety of vegetables into meals. While the nature of the fire service can make it challenging to stick to a regular eating schedule, aiming to have a well-balanced breakfast and timing meals to occur around midday and early evening can be helpful. Choosing low-sugar snacks and staying hydrated by drinking adequate amounts of water also can promote better overall nutrition and well-being.

The IAFF recommends that fire fighters follow a balanced and heart-healthy diet that provides adequate amounts of macronutrients (carbohydrates, proteins and fats), micronutrients (vitamins and minerals) and fluids. Here are some basic nutrition guidelines recommended by IAFF:

Carbohydrates: Carbohydrates provide energy to the body and are essential for fire fighters who need to perform physically demanding tasks. Complex carbohydrates such as whole grains, vegetables and fruits are recommended over simple carbohydrates such as sugar.

Proteins: Proteins are important for muscle repair and growth. IAFF recommends that fire fighters consume lean protein sources such as chicken, turkey, fish, beans and nuts.

Fats: Fats provide energy and help the body absorb certain vitamins. IAFF recommends that fire fighters consume healthy sources of fats such as olive oil, avocado, nuts and seeds, and limit saturated and trans fats found in fried and processed foods.

Micronutrients: Vitamins and minerals are essential for the proper functioning of the body. IAFF recommends that fire fighters consume a variety of fruits and vegetables to ensure they are getting an adequate amount of micronutrients.

Hydration: Fire fighters need to stay hydrated to perform at their best. IAFF recommends drinking water regularly throughout the day and consuming sports drinks during intense physical activity to replace lost electrolytes.

It's important to note that the specific nutritional needs of fire fighters may vary based on individual factors such as age, gender, weight and level of physical activity. Therefore, it's recommended to consult with a registered dietitian to develop a personalized nutrition plan.

According to the U.S. Centers for Disease Control and Prevention, alcohol use is a leading cause of, and a contributing factor in, many forms of cancer. Over time, excessive alcohol use can lead to the development of chronic diseases and other serious problems including high blood pressure, heart disease, stroke, liver disease, digestive problems, and cancers of the breast, mouth, throat, esophagus, liver and colon. Limit alcohol consumption to no more than one drink per day for women and two drinks per day for men.

SLEEP HYGIENE

Sleep hygiene is important for fire fighters because adequate sleep helps to improve physical and mental health, cognitive function, reaction time and overall job performance. Poor sleep can lead to decreased alertness, reduced decision-making abilities, and increased risk of injury or accidents on the job. Therefore, practicing good sleep hygiene helps to ensure that fire fighters are well-rested and able to perform their duties effectively and safely.

Fire fighters often work long shifts of 24, 48 or more hours, which can have negative effects on their health and contribute to irregular sleep habits. As recommended by the National Institute of Occupational Safety and Health (NIOSH), fire fighters should focus on getting plenty of rest while off-duty and practice good sleep hygiene, rather than exacerbating potential health hazards by going without sleep or limiting the opportunity to get adequate rest when available.

Additionally, working long and irregular hours can lead to poor nutrition, lack of physical activity and other unhealthy habits. This can result in a range of health problems, including obesity, heart disease, diabetes and digestive issues.

Strategies that fire fighters can use to mitigate the negative effects of shift work on their health and well-being include:

Maintaining a healthy sleep routine: Fire fighters should aim to maintain a consistent sleep schedule and establish a bedtime routine that helps them relax and wind down before bed.

Eating a balanced, heart-healthy diet: Fire fighters should try to eat a balanced diet that includes plenty of fruits, vegetables, whole grains and lean proteins. Eating regularly and avoiding large

A sleep quality study by the University of Washington found that the number of nights on shift in the previous 30 days is associated with an increase in off-shift sleep disturbances.

meals close to bedtime can help maintain a healthy weight and improve sleep quality. Stefanos Kales, MD, MPR, director of the Occupational Medicine Residency at the Harvard Chan School of Public Health, advocates for the Mediterranean diet as an effective nutritional approach for fire fighters due to its numerous health benefits, including reduced risk of heart disease, improved weight management and increased overall well-being.

Staying active: Physical activity can help improve sleep quality and boost energy levels. Fire fighters can try to incorporate regular exercise into their schedules, even if it means finding short, high-intensity workouts that they can do during breaks or after their shifts.

Limiting caffeine, alcohol and energy drinks: Caffeine, alcohol and energy drinks can interfere with sleep, so it's important to limit their intake, especially close to bedtime.

Building a supportive network: Fire fighters should try to build a supportive network of friends, family and colleagues who can help them manage the demands of shift work.

Managing stress: Stress can have a negative impact on sleep quality, so it's important for fire fighters to develop effective stress-management strategies, such as mindfulness and relaxation techniques, in addition to regular exercise.

Seeking support: Fire fighters who experience symptoms of shift work sleep disorders or other health problems related to shift work should seek support from a Peer Support Team member, a healthcare provider or a mental health professional.

By implementing these strategies, fire fighters can help mitigate the negative effects of shift work and improve their overall health and well-being.

TRAINING: BEHAVORIAL HEALTH AWARENESS

Fire fighters are often exposed to traumatic events and hazardous situations on the job, which can take a toll on their mental and emotional health. This can lead to a variety of behavioral health issues such as anxiety, depression, post-traumatic stress disorder (PTSD) and substance abuse. These conditions can have a significant impact on a fire fighter's personal and professional life and can negatively affect their ability to perform their duties effectively.

Therefore, it is crucial to educate fire fighters in the recruit academy on the behavioral health impacts of their job and provide them with tools and resources to create resilience. By doing so, they can better understand the importance of taking care of their mental and emotional well-being and develop coping strategies to manage the stress of their job.

In addition to educating fire fighters on the impact of trauma and stress on their behavioral health, the recruit academy can also provide training on resiliency skills and techniques. This can include mindfulness practices, stress-management techniques, and strategies for building and maintaining supportive relationships. Additionally, recruit academies can provide information on available support resources, such as counseling services, peer support programs and employee assistance programs, which can be beneficial to fire fighters as they navigate the challenges of their job.

In conclusion, educating fire fighters in the recruit academy and throughout their career on behavioral health impacts and ways to create resilience is essential for promoting their mental and emotional well-being, improving job performance and reducing the likelihood of behavioral health problems in the future.

TRAINING: CANCER AWARENESS

Training, education and recognition of the epidemic of cancer in the fire service has been a goal of the Firefighter Cancer Support Network for many years. It is imperative that new generations of fire fighters are made aware of the large impact that cancer has on fire fighters during their career as well as into retirement. The following list highlights some of the topics that are taught during these cancer awareness outreach classes. This curriculum should be taught at every recruit school and reviewed annually at every fire department. WAC 296.62 also requires an awareness of the hazards of carcinogens on the job, and annual refresher training is required prior to entering any live fire training scenario or actual fire scenario.

- Fire Department Accident Prevention plans as required by WAC 296-305-01505 should include mitigation techniques associated with the hazards of occupational cancer.
- Carcinogenic hazards of chemicals encountered on the fireground, including local and systemic toxicity
- Benefits of personal wellness efforts, including exercise, nutrition and annual physicals
- The most common types of cancer in the fire service that fire fighters are more likely to develop than the general population: multiple myeloma, non-Hodgkin's lymphoma, esophageal cancer, brain cancer, colon cancer, prostate cancer, skin cancer and testicular cancer
- Supporting research and findings demonstrating the scope of cancer in the fire service
- Laws and standards applicable in the specific state and jurisdiction regarding cancer in the fire service
- Common exposures and chemicals that pose a risk to fire fighters
- Methods of reducing exposures to carcinogens at incident scenes
- Benefits of Personal Exposure Reduction, such as hand, face and neck washing on scene
- Methods for cleaning turnouts and self-care after an incident
- Methods of documenting exposures after an incident
- Education on exposures and cancer risks before any training or incidents that have the potential to expose fire fighters to known carcinogens, asphyxiates, poisons, irritants and allergens
- Provision of all appropriate PPE to minimize exposures
- Requirements to use all appropriate PPE to minimize exposures
- Recommendation that all staff who participate in the training of fire fighters conform to the practices listed in this document

DOCUMENTING EXPOSURES FOR INDIVIDUALS

The National Firefighter Registry (NFR) for Cancer is a program established by the National Institute for Occupational Safety and Health (NIOSH) to gather information about the occurrence of cancer among fire fighters. This registry aims to improve the understanding of the impact of firefighting on the risk of developing cancer and to inform preventive efforts to reduce that risk. By collecting data from individuals and fire departments across the country, the registry provides a comprehensive and standardized picture of cancer among fire fighters. This information can help identify areas where additional research is needed and inform the development of protective measures and policies to reduce the risk of cancer among fire fighters.

The importance of the NFR lies in the fact that fire fighters face a higher risk of developing cancer than the general population due to the nature of their work. Fire fighters are exposed to a variety of cancer-causing substances and toxins in smoke, soot and ash that can be absorbed through the skin and inhaled. A centralized database of information on fire fighter cancer cases will help researchers better understand the relationship between firefighting and cancer and develop effective strategies to reduce the risk of cancer in this population. The registry also will provide valuable information to fire fighters, fire departments and public health officials, allowing them to make informed decisions about cancer prevention and occupational safety.

The Personal Injury, Illness and Exposure Reporting System (PIIERS) was created in 2014 by the Washington State Council of Fire Fighters and is designed to follow fire fighters throughout their career and into retirement. It is a one-stop place to record injuries, illnesses and exposures experienced while on the job. Usage history will follow members throughout their career, even if they have multiple employers. Personal information always will be confidential and safeguarded; only the user will have access to personal information.

As a PIIERS user, one can track their exposures to chemicals, smoke, toxins and diseases throughout their career. The system also can be used to track work-related injury claim information such as sprains, strains and broken bones, along with illnesses such as any cardiac events. Users have access to the results of preventive and wellness exams in the PIIERS program as part of a complete health history. Before annual physicals, users can download a report including current exposures to share with their doctor. A fire fighter's PIIERS report may show changes over time and throughout their career.

For the WSCFF, PIIERS provides the ability to run reports on non-protected and generic information to track trends and develop health education or prevention materials. PIIERS also can be used for legislative and safe workplace initiatives. PIIERS will continue to have a place in the confidential storage of important information during fire fighters' careers that will be easy to access and easy to input.

Help yourself and fellow fire fighters by documenting injuries, illnesses and exposures while on the job. To access PIIERS or the National Firefighter Registry, visit these websites:

PIIERS | **wscff.org/piiers**
NATIONAL FIREFIGHTER REGISTRY FOR CANCER | **cdc.gov/niosh/firefighters/registry.html**

ANNUAL MEDICAL EXAMS

Annual medical exams for fire fighters are important to detect cancer and other health conditions early because fire fighters are exposed to hazardous materials and chemicals on a regular basis, which increases the risk of developing various health issues, including cancer. Early detection through regular check-ups allows for prompt treatment and can improve outcomes. Additionally, regular physicals can help identify and address other health problems, such as cardiovascular disease, respiratory issues and musculoskeletal injuries, all of which are common among fire fighters. By monitoring one's health regularly, fire fighters can take proactive steps to maintain their physical and mental well-being.

Medical exams are important for a few other reasons:

- WAC 296-842 mandates respiratory protection if a member is entering an atmosphere with toxic products of combustion. WAC 296-842-14005 requires a medical evaluation prior to being fitted for respiratory protection.
- WAC 296-62-07314 requires a medical exam for any employee prior to being assigned to work in an area that may release carcinogens. Fire fighters often enter unknown carcinogenic environments, including structure fires, car fires or dumpster fires.

These exams are to be provided at no cost to the employee and should be provided annually after an initial examination. The National Fire Protection Association (NFPA) Standard 1582 also provides guidance for annual medical exams.

A sample recommendation of an annual medical exam, Provider's Guide to Firefighter Medical Evaluations, is included in Appendix C. The IAFF/IAFC Joint Wellness Fitness Initiative also provides an annual recommended physical for incumbent fire fighters. Specific tests, such as red and white blood cell counts, heavy metals screenings and cancer screenings, can assist with early detection of many common cancers seen in the fire service today. These simple exams can determine if cancer is a risk, as well as if it is present. Having this annual exam is imperative to ensure early detection and aggressive action to address any problems.

It is important to include retired fire fighters alongside active members for annual exams and bloodwork to ensure their continued health and well-being. In Washington State, presumptive illness laws typically extend up to five years from retirement, acknowledging the potential long-term effects of their prior exposures to hazardous substances and stressful conditions on their overall health. To adhere to best practices, it is recommended that retired fire fighters undergo the same medical exams, bloodwork and behavioral health screenings as active members.

In addition to the health conditions covered in this report, there is increasing information from research studies demonstrating adverse reproductive effects in both male and female fire fighters. While addressing these reproductive outcomes is outside the scope of this current manual, many of the best practices detailed in this report, such as exposure reduction, also should help prevent adverse reproductive effects.

PROVIDING CANCER ANSWERS:

John Johnson Turns His Diagnosis into an Opportunity

BY JENN WOOLSON

John Johnson is a big believer in regular department physicals. That's because they saved his life not once, but twice. In 2014—sixteen years after Johnson was hired as a fire fighter with Gig Harbor Fire Department—blood work at a routine physical came back abnormal. He was sent to a hematologist and, after additional lab work and a bone marrow biopsy, he was diagnosed with essential thrombocythemia. This rare form of leukemia, caused by a mutation on the Janus kinase 2, or JAK2, gene, can lead to blood clots and strokes. Although Johnson's platelet count was 792,000, compared to the normal 400,000, he'd been experiencing no symptoms.

"That genetic mutation is caused by exposure to *something* at *some* point, but they'll never be able to pinpoint it exactly," Johnson says. But fortunately for him, in the state of Washington, leukemia is covered under presumptive language, so his ongoing treatment, medications and doctor visits are covered.

Johnson, who was promoted to assistant chief at Gig Harbor in 2020, continued working throughout his treatment and added duties working with the Washington state affiliate of the Firefighter Cancer Support Network. The organization aims to provide education and information about cancer prevention to all of the state's fire academies. They also provide peer support to fire fighters or family members diagnosed with cancer, including a toolbox of information on cancer and a calendar to keep track of appointments. The network will deliver the toolbox in person if requested or mail it out and follow up with a phone call to answer questions.

Johnson's department took a break from physicals during the height of COVID but restarted the practice in the fall of 2021. In addition to monitoring his cancer, he knew his age indicated that he needed a colonoscopy.

He had the screening procedure, and when he woke up, the nurse said that the doctor would like to speak to him in the consultation room. "That's usually not a good sign, right?" he jokes. "The doctor said, 'I'm not an oncologist, but I've been doing this for a long time, and you have a mass in your colon that I think is cancer."

Johnson was referred to a colorectal surgeon and was able to get an appointment the next morning. Two weeks later, the surgeon removed his entire ascending colon and 12 adjacent lymph nodes. The mass was indeed malignant, and because there also was cancer detected in one lymph node, his cancer was designated as stage 3B.

After recovering for a few months, he started 12 rounds of chemo, finishing the last one in July 2022. Since then, bloodwork, a follow-up colonoscopy and a full-body CT scan have all shown no signs of cancer.

"Back when I started [as a fire fighter], we really had no education about cancer risks," Johnson says. His own personal knowledge was based on his dad's experience. After serving as a fire fighter in the U.S. Navy, he ended up with three different forms of cancer.

"Firefighting is a great job," Johnson says. "I wouldn't change what I've done for anything. I've been lucky enough to have cancers that are treatable. But the Firefighter Cancer Support Network and other organizations are trying to educate first responders early on about cleaning your gear, what's in the smoke and what we can do to make a better future for ourselves."

He says that early in his career, dirty gear was kind of a badge of honor. Not anymore.

At Gig Harbor, in addition to having an extra set of gear, gross decontamination and regular professional gear cleanings, Johnson also is focused on the bigger picture. His district recently passed an $80 million bond to redesign some stations. Johnson is part of the team redesigning the new stations to be safer, including decontamination facilities within *all* of the stations, updated diesel exhaust systems and negatively ventilated bunker gear rooms.

And, last but not least, Johnson goes back to those lifesaving department physicals. He admits that some fire fighters are hesitant to get a physical because they worry that if they're diagnosed with cancer, they'll lose their job. "I am the poster child that that will not happen," he says. "Departments invest a large amount of money in their employees—with hiring, outfitting them with gear, doing all of the training. They've invested all that money in you, and they want to keep you as an employee.

"Plus," he adds, "you're a human being to them."

Firefighter Cancer Support Network
Any local union or fire department interested in information or a presentation from the Firefighter Cancer Support Network (FCSN) can put in a request at FCSNWA.org. Washington state is one of the few states where the Firefighter Cancer Support Network is self-sustaining through dues made to the Washington State Council of Fire Fighters.

BEHAVIORAL HEALTH

A focus on physical, mental, emotional, spiritual and social well-being provides a balanced approach to fire fighter wellness

Fire fighters put their own lives at risk to help protect and save the lives of others, often in high-risk environments. As such, it is important for them to have a strong sense of psychological and emotional well-being so they can do their job to the best of their abilities. Fire fighter behavioral health is defined as the state of physical, mental, emotional, spiritual and social well-being that allows fire fighters to perform their job duties safely and effectively. It includes aspects such as stress management, communication skills, self-care practices, resilience building and healthy lifestyle habits.

Fire fighters are constantly exposed to stressful and potentially traumatic situations that can take a toll on their behavioral health. It is therefore essential for them and their departments to prioritize behavioral health to remain effective in their job. Fire fighters experience physical, emotional and psychological stress due to the hazardous environments they work in and the difficult tasks they must perform. They also may be affected by traumatic events, such as significant fires, large-scale accidents, multiple-casualty events, and other natural and man-made disasters. As a result of these experiences, it's not uncommon for fire fighters to suffer from depression, anxiety, post-traumatic stress disorder (PTSD), substance abuse problems or other behavioral health issues, according to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2018). It is important for fire departments to understand the behavioral health risks associated with these events and take steps to promote fire fighter behavioral health wellness at all stages of the career lifespan.

Promoting behavioral health is an important practice that is being increasingly embraced by fire departments all around the world. It involves promoting mental, spiritual, emotional, social and physical health among fire fighters to ensure their overall well-being, both on and off the job. This proactive approach helps reduce the impact of negative behavioral health outcomes. Ultimately, it serves to help keep fire fighters safe and healthy so they can continue doing the important work they do every day. Taking care of one's behavioral and physical health is essential to living a balanced life and can be achieved through activities such as learning about behavioral health issues, mindfulness, stress management, consuming nutritious meals, engaging in regular physical activity, fostering healthy social relationships and practicing healthy self-care activities. This is what is becoming known as resiliency training. By implementing these strategies into their lives, fire fighters can better manage the stressors they face on the job while also improving their overall quality of life.

While encouraging and developing resiliency, fire fighters, officers, members of administration and their fire departments need to be aware of the signs that indicate someone may be progressing toward a behavioral health crisis. Early identification of these signs can help prevent more serious issues from arising, while also ensuring that the individual has access to the necessary resources for successful recovery. It is essential to understand the importance of being proactive in recognizing these signs and providing fire fighters with appropriate resources and support to maintain good behavioral health.

SIGNS THAT A FIRE FIGHTER MAY BE PROGRESSING TO A CRISIS INCLUDE:

- **Increased irritability**
- **Difficulty sleeping**
- **Changes in appetite**
- **Withdrawal from friends or family**
- **Increased substance use**
- **Changes in emotional responses**
- **Changes in normal behavior**
- **Increased isolation**

If identified early, these signs can be addressed before they become more serious problems. It is important for fire fighters to recognize these signs so they can get the help they need before it becomes too late.

Many fire fighters are unable to realize they are in a behavioral health crisis until it is too late. Fire fighters may not be aware of the signs and symptoms of mental health issues, or they may be reluctant to seek help due to the stigma associated with seeking help for mental health issues. Fire fighters also may struggle with limited access to local available mental health resources. Other fire fighters may feel they cannot take the necessary time off to pursue mental health help—especially if they are supporting a family and juggling multiple jobs or life roles. All these factors contribute to fire fighters being unable to realize they are in a behavioral health crisis until it is too late.

Fire fighter peer support teams are essential for the behavioral health of fire fighters. By providing access to confidential, one-on-one engagement and a safe space to talk about their experiences, trained peer supporters help fire fighters identify when they need help and how to access it.

Peer support teams have been widely recognized as a successful method for improving behavioral health among fire fighters. Studies, including a 2021 study published in the *International Journal of Environmental Research and Public Health*, indicate that peer support has been effective in reducing stress, increasing job satisfaction, motivating fire fighters to seek the help of mental health professionals, and guiding them to seek appropriate treatment programs for substance abuse. They provide a confidential, safe space for fire fighters to talk about their shared lived experiences without fear or judgment. The close relationships that are developed through peer support also create a sense of trust, which can lead to better communication, collaboration, problem-solving, increased help-seeking behaviors and resiliency within a department.

Peer support teams, fire fighters, chaplains, fire administration staff, families and friends all play an important role in providing ongoing support for fire fighters in need. They can provide invaluable behavioral health support to fire fighters during the initial portion of their recovery process by simply being present. Through compassionate dialogue and understanding, they can help provide meaningful comfort and companionship for those who are going through a difficult recovery period. They also can provide practical assistance, such as helping with responsibilities outside of work or providing connections to relevant resources. Moreover, they can help create an environment that is conducive to recovery by reducing any stigma associated with seeking help. Departments that want to learn more about how and when to provide these types of support activities can check out "Helping Members in Recovery," a new online course from the International Association of Fire Fighters (IAFF). Learn more about the course at iaff.org/behavioral-health.

Many fire fighters feel there is a stigma associated with seeking help for mental illness because it is perceived by some as a sign of weakness. A 2017 survey conducted by IAFF found that that up to 92% of surveyed fire fighters indicate this stigma as a reason for their unwillingness to get help.

For a long time, fire departments have addressed behavioral health issues through department discipline. Disciplining someone with a behavioral health crisis can have unintended consequences for the person and those around them, while failing to address the source of the problem. Rather than disciplining members with a behavioral health issue, it is essential that we take decisive steps toward greater understanding and appropriate support for those who are facing various kinds of behavioral health crises. We must create an environment where fire fighters feel safe, supported and respected to ensure that individuals with behavioral health issues are not subjected to unnecessary discipline or punishment. Can you imagine a fire fighter being disciplined for breaking their leg while working on duty? Why then would we discipline a fire fighter for substance abuse that developed while coping with unprocessed traumatic exposure?

BEHAVIORAL HEALTH PROBLEMS

Behavioral health problems involve negative changes in our behavior, thoughts and emotions, often accompanying increased psychological stress. These issues can range from mild symptoms to debilitating mental health disorders, such as anxiety, depression, eating disorders. or addiction. They can have a significant impact on our lives, so it is important to understand the different types of behavioral health problems in order to get the best treatment possible. Below are some of the most common problems affecting fire fighters.

Substance Use Disorder

Substance use disorder is a mental health disorder that can have lifelong effects on an individual's physical, emotional, spiritual, social and mental well-being. It is characterized by an uncontrollable urge to use drugs or alcohol despite the negative consequences and can develop into addiction. These disorders involve the misuse, abuse, and dependency on drugs or alcohol, which can lead to a variety of physical, psychological and social problems. Because addiction is a progressive disease, if left untreated, a person will continue to deteriorate. Substance use disorders can range from mild to severe and can be caused by a variety of factors such as genetics, environment, lifestyle choices and external stressors. It is important to understand the signs of substance use disorder to identify them early and seek appropriate treatment.

According to the American Psychiatric Association, a substance use disorder involves patterns of symptoms caused by using a substance that an individual continues taking despite its negative effects. Based on decades of research, there are 11 criteria that can arise from substance misuse. These criteria fall under four basic categories: impaired control, physical dependence, social problems and risky use:

- Using more of a substance than intended or using it for longer than you're meant to.
- Trying to cut down or stop using the substance but being unable to.
- Experiencing intense cravings or urges to use the substance.
- Needing more of the substance to get the desired effect— also called tolerance.
- Developing withdrawal symptoms when not using the substance.
- Spending more time getting and using drugs and recovering from substance use.
- Neglecting responsibilities at home, work or school because of substance use.
- Continuing to use even when it causes relationship problems.
- Giving up important or desirable social and recreational activities due to substance use.
- Using substances in risky settings that put you in danger.
- Continuing to use despite the substance causing problems to your physical and mental health.

Like other illnesses, substance use disorder worsens over time. The criteria above allow clinicians to determine how severe a substance use disorder has become depending on how many symptoms are present. For example:

- One symptom could indicate an individual is at risk.
- Two or three criteria point to a mild substance use disorder.
- Four or five criteria show someone has a moderate substance use disorder.
- Six or more criteria indicate a severe substance use disorder, which signals an addiction to that substance.

Knowing how severe a substance use disorder is can help physicians and addiction specialists determine the best course of treatment for the individual.

- **42% reported binge drinking in the past month.**
- **7% of the fire fighters screened positive for current PTSD.**
- **16% screened positive for current depression.**
- **39% with likely PTSD or depression reported never having seen a mental health professional.**

Source: Washington Firefighter Survey 2018
Safety and Health Assessment and Research for Prevention (SHARP) Program
Washington State Department of Labor and Industries

BREAKING DOWN BARRIERS

John Gallup Addresses Behavioral Health Issues Head-On

BY JENN WOOLSON

John Gallup's 30-plus-year fire service career has been fairly typical. He got involved with the union as a local officer, he was promoted to engine company officer and he learned early not to be bothered by the job.

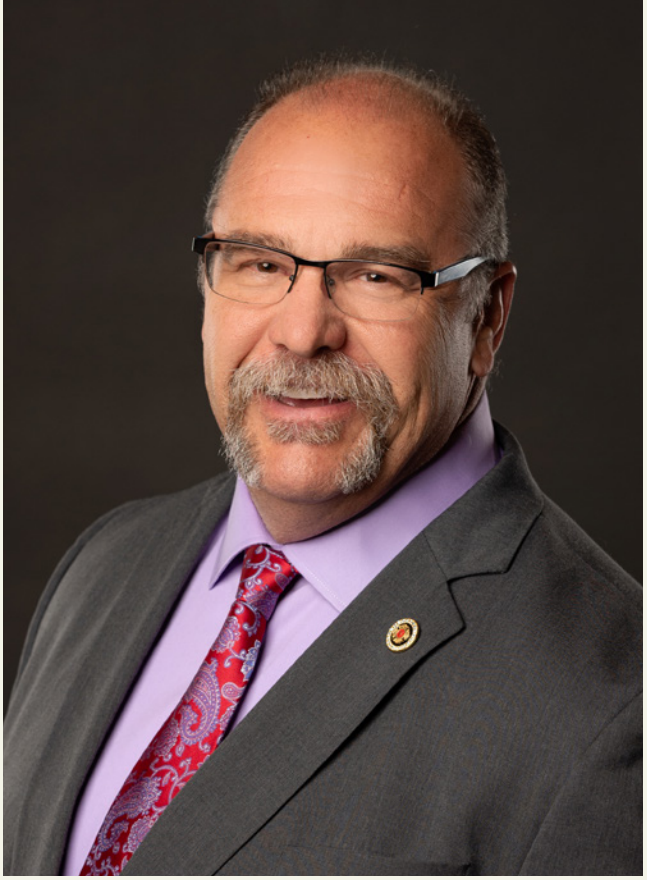
"When I started in the fire service, it was the old-school mentality that fire fighters aren't supposed to have emotions," Gallup says. "I learned early on that I'm just not supposed to have any kind of response outwardly. Unfortunately, you still have a response on the inside."

To his friends, family and fellow fire fighters, Gallup seemed to be stuffing down those emotions just fine. But inside, a storm was brewing. About seven or eight years ago, he says, he was using alcohol as a coping mechanism, to the point that he was drinking from morning to night. "It was a fairly dark time in my life," he admits. "I had pretty much decided my career and my life were basically over, and I was just going to continue in a spiral until it came to an end. I didn't have any hope of any relief. I just thought, somehow, I had outlived my time."

Despite his efforts to hide his struggles, a person in his department who was part of the peer support team sensed something was wrong and engaged Gallup in conversation. Although it took a while, he was eventually persuaded to seek treatment and get sober. In the process, he also uncovered some issues with social anxiety and post-traumatic stress disorder (PTSD) that he wasn't even aware of.

Through his experience, he realized there were likely many other fire fighters in the same position he was in, battling private demons while putting on a brave face on the job. He wanted to help them the same way he had been helped. "When you find something that seems to work for you, you want to be able to share that if you can," he says. "That drove me into changing my union focus from the traditional labor work into behavioral health."

Now Gallup is his department's health and safety officer and a member of the peer support team at Puget Sound Regional Fire Authority. In that capacity, he works with people one-on-one who are struggling with a behavioral health issue, while also providing support at a department, state and regional level as a member of the IAFF Behavioral Health Committee for the 7th District, which includes Montana, Idaho, Alaska and Washington.



Gallup strongly believes that addressing behavioral health issues goes behind mental well-being. Rather, it's essential to getting to whole-person wellness. For example, he says, "Nobody goes through cancer without a behavioral health component," he says. "If you don't take care of the behavioral health side, everything that we try to do on the cancer side will be less than effective."

It's difficult, though, he acknowledges, to address problems fire fighters aren't willing to admit because of the stigma attached to them. Gallup says that education can play a big role in breaking down those walls. "We need to be able to talk about suicide and addiction and PTSD with science-based facts about exactly what it is, how it takes place and what the components are. The only way to eliminate those social stigmas and false beliefs is by bringing in experts to talk about it."

Beyond education and awareness, Gallup says it's essential for departments to create an environment of comfort for vulnerability. That's because he believes the only way to get through behavioral health issues is through complete honesty and openness. "I think being vulnerable is the scariest thing in life, and certainly, the job of a fire fighter is not one of being vulnerable. But it doesn't matter the amount of book knowledge or the number of times you go through rehab or meet with a trauma counselor, it's just not going to work until you're vulnerable."

Making it "OK to not be OK," Gallup says, relies on fire chiefs and union presidents being willing to stand up and talk about their shortcomings, their failures and their challenges in a very honest, open way. "When you're facing a problem and you don't know what to do, you have to be willing to admit that; and until leaders are willing to do that, it's going to be very hard for anybody else to follow."

All of these efforts are a beginning, Gallup says. But there's more work to do. "There's no finish line in behavioral health," he says. "It's not an illness that you treat and cure, and then move on with your life. It's a forever process and a day-by-day-by-day process."

Anxiety, Depression and PTSD

Even though being anxious occasionally is normal, it can affect your functioning at work or at home if it becomes severe. In the long run, this can lead to lasting physical and psychological damage. Fire fighters are often put in highly stressful situations, making them susceptible to anxiety disorders such as generalized anxiety disorder (GAD), social anxiety disorder and panic disorder. Handling such intense levels of stress on a regular basis can be very difficult for these individuals, so it is important to take measures to support their well-being.

Anxiety disorders can become debilitating, affecting individuals in multiple ways. They are marked by excessive fear, nervousness and unease that can interfere with a fire fighter's daily life. Being in the station, putting on gear and responding to alarms may feel different than it has in the past. Feelings of hesitation and becoming emotional in situations are common. Even mundane activities can become very trying when dealing with anxiety.

Generalized anxiety disorder is defined as:

- A pattern of excessive and uncontrollable worry about a range of issues, lasting for at least six months, which causes major distress or impairment in the person's daily functioning
- Worry is associated with at least three of the following symptoms occurring more days than not:
  - Restlessness or feeling on edge
  - Being easily fatigued
  - Difficulty concentrating or feeling like mind is "blank"
  - Irritability
  - Muscle tension
  - Difficulty falling asleep, difficulty staying asleep or having restless sleep

Generalized anxiety is sometimes accompanied by other symptoms as well, including gastrointestinal distress, headaches or avoidance behaviors.

Anxiety, when left unchecked, is like a never-ending loop. It's important to take the necessary steps to stop it before it spirals out of control. Prolonged and ongoing anxiety levels can be dangerous—they can contribute to a higher risk of infection, heart problems, depression and even addiction.

With any disorder, the management and treatment may be different for each person, and often trial and error are needed to identify what works best. Fire fighters can start by contacting a peer support member. Because they have worked with other fire fighters and have specific training, the peer support member can talk about successes in management and treatment and may offer a referral to a mental health professional.

Below are some ways to help manage anxiety; however fire fighters should seek the guidance of mental health professionals. It's important to identify the people, places, things or situations that may trigger one's anxiety and have a plan for coping with them.

Maintain a healthy lifestyle

- Keep active
- Practice breathing techniques
- Practice progressive muscle relaxation
- Meditate
- Eat well
- Reduce alcohol and nicotine use
- Spend time outdoors in nature
- Spend time with family and friends
- Reduce stress
- Participate in activities you enjoy
- Be kind to yourself—challenge your self-talk

Depression is a mood disorder and affects many people during their lives. According to SAMHSA, the occupational stress fire fighters experience puts them at increased of risk of suffering from depression, when compared with the general population. It's important to be aware of this and to make sure that fire fighters have adequate support. There are multiple forms of depression, and it can affect people in different ways. Symptoms may differ from person to person, so it's essential to recognize the signs and seek out a mental health professional.

Struggling with depression can have a negative effect on a fire fighter's personal and professional lives. Early treatment of depression is critical to prevent it from getting worse. Delaying treatment could lead to further disruptions in your life, so fire fighters should seek help at the earliest opportunity. Clinical depression is distinguished from general sadness by the duration of depressed mood and/or the loss of interest or pleasure in daily life. Signs of a major depressive episode must remain two weeks and include at least five of the symptoms listed below. Symptoms must cause major distress or impairment in the person's daily functioning and represent a change from previous level of functioning:

- Depressed mood most of the day, nearly every day; includes feeling sad, hopeless or empty
- Loss of interest or pleasure in most or all activities
- Weight loss (when not dieting) or weight gain
- Sleeping too much or too little
- Appearing restless or slowed down, as observable by others
- Fatigue or loss of energy nearly every day
- Feelings of worthlessness or inappropriate guilt
- Difficulty concentrating or making decisions
- Recurring thoughts of death or suicide, with or without a plan

Clinical depression is a serious mental health issue that can change the lives of anyone it affects and those close to them. Loved ones, such as spouses, children and family members, often can be significantly impacted by the struggles of someone they're close to. It is not unusual to suffer with them. Fire fighters who struggle with depression not only can have their job performance affected but also put the lives of others in danger. Untreated depression can lead to substance use or making other harmful coping choices.

Depression is unlikely to go away on its own. If a fire fighter has identified the signs of depression in their life, they need to seek the help of a mental health professional to obtain an accurate diagnosis and develop a treatment plan.

PTSD is a psychological disorder that can affect those who have gone through a traumatic event or a series of experiences. It usually occurs when individuals have been exposed to an overwhelming and frightening experience. Trauma can leave a person feeling emotionally or physically distressed and it may have a negative impact on their mental, physical, social and/or spiritual well-being. It can be very intimidating and life-threatening. Through their work, fire fighters are exposed to potentially traumatic experiences during every shift. It is important to remember that fire fighters are people too and have the same risks that others do with their personal lives.

Those suffering from PTSD find it difficult to cope with their experience, as they continue to endure long-lasting, extreme and distressing thoughts and feelings even after the traumatic situation has ended. Fire fighters may find themselves living it over again through flash recollections or nightmares. Additionally, they may experience intense emotions like fear, sadness and anger and feel disconnected from their crew, their family or their community. Fire fighters struggling with PTSD often try to avoid situations or anything that reminds them of the traumatic event.

To be diagnosed with PTSD, someone must have been exposed to a traumatic event. This could include firsthand experience of the event, witnessing it taking place to others, or being informed that a close family member or friend has gone through something upsetting. Repeated exposure to horrific details of trauma, such as those that fire fighters may witness firsthand, can lead to the development of PTSD. This can be particularly true when it comes to responses concerning children who have been victimized and hurt.

PTSD symptoms can be categorized into four groups and a diagnosis requires specific number of symptoms in each category. The intensity of each symptom may vary from person to person.

1. Intrusion (one or more symptoms): Intrusive thoughts such as repeated, involuntary memories, distressing dreams or flashbacks of the traumatic event. Flashbacks may be so vivid that people feel they are reliving the traumatic experience or seeing it before their eyes.

2. Avoidance (one or more symptoms): Avoiding reminders of the traumatic event may include avoiding people, places, activities, objects and situations that may trigger distressing memories. People may try to avoid remembering or thinking about the traumatic event. They may resist talking about what happened or how they feel about it.

3. Alterations in cognition and mood (two or more symptoms): Inability to remember important aspects of the traumatic event; negative thoughts and feelings leading to ongoing and distorted beliefs about oneself or others (e.g., "I am bad," "No one can be trusted"); distorted thoughts about the cause or consequences of the event leading to wrongly blaming self or other; ongoing fear, horror, anger, guilt or shame; much less interest in activities previously enjoyed; feeling detached or estranged from others; or being unable to experience positive emotions (a void of happiness or satisfaction).

4. Alterations in arousal and reactivity (two or more symptoms): Arousal and reactive symptoms may include being irritable and having angry outbursts; behaving recklessly or in a self-destructive way; being overly watchful of one's surroundings in a suspecting way; being easily startled; or having problems concentrating or sleeping.

American Psychiatric Association, 2022

MENTAL HEALTH ADVOCATE

Tim Sears Overcomes Struggles to Build Stronger Families

BY JENN WOOLSON

Tim Sears grew up in a family of police officers, and like most cops' kids, he thought that would be his career path too. But when a neighbor who was a fire fighter invited him to the station, his career path took a left turn. At age 16, that same neighbor gave him his own bunker gear and a pair of used bunker boots—no small feat, since Sears wears a size 16 shoe. He graduated from volunteer fire fighter in high school, community college and while at Washington State University to his first full-time position with the Kirkland Fire Department (Local 2545) in 1992, where he stayed for 30 years.

It was a long and successful career, Sears says, but in 2018 "the wheels came off the bus." He woke up in the firehouse panicked and in a cold sweat. "I didn't know what was going on, and it got progressively worse," he says. "I started having nightmares. Things were just not going well."

They were going so "not well" that it started affecting his life at home, where he was so edgy and not himself that Lauri, his wife of 28 years, told him he needed to retire. Sears, of course, denied it. But after a few years of struggle, in 2021, he turned in his resignation.

He says, "I felt like everything was going 1,000 miles an hour in my mind, and I couldn't calm it down, and I wasn't sleeping. But I thought if I retired, maybe everything would go back to normal." Spoiler alert: It didn't.

During that time, Sears got a call from an organization called Stronger Families. The non-profit program was founded in 1988 to assist military personnel with communication, relationships and conflict resolution skills, and they wanted to expand its reach to first responders. And they wanted someone familiar with that world, someone like Sears, to lead the charge.

Although he was reluctant at first because he felt "broken" mentally, physically and spiritually, Sears eventually agreed to join Stronger Families. One of his first official acts was attending the 1st Responders Conference in Jacksonville, Fla., as a representative of the organization. Listening to attendees present about their experience with PTSD (post-traumatic stress disorder), Sears says he started bawling. At that same conference, he heard Matt Quackenbush, an expert in first responder PTSD, speak, and had the same reaction. The light bulb went on. "I think I have that," he said to himself.

He wasn't yet ready to admit his findings to anyone else, though, even Lauri. But he knew it was PTSD because everything Quackenbush was describing—the sweats, the dreams, the nightmares, the suicidal thoughts—were exactly what Sears was experiencing. So, what next?

"Well, I'm not going to call anybody," he says. "Fire fighters don't call people for help." But shortly thereafter, when a fight with his wife came to a head, he spilled it all to her and she took him to a doctor. As Sears told his story, the doctor started crying. A military vet himself who suffers from PTSD, he knew the suffering Sears was enduring. Together, Tim and Lauri started learning all they could about the disorder, and he attended an intense six-week nighttime program with Deer Hollow treatment center as as well as a week-long program in California with Mighty Oaks.

Is he cured? No. Is he better? Sometimes. Sears knows once you have PTSD, it doesn't ever go away. You just have to learn how to manage it. But he now knows that most PTSD symptoms are normal reactions to abnormal experiences. And that knowledge helps.

That's exactly what he wants to help other first responders do. Like him, he knows that many fire fighters, EMS, and law enforcement officers who are struggling with PTSD and other behavioral health concerns have a hard time admitting it and asking for help. Fortunately, he sees that issue and overall mental health awareness in the first responder world improving "one retirement at a time."

Sears says the newer generations of fire fighters are much better educated about mental health, with many departments bringing in their own psychiatrists and mental health programming. With a lot of younger fire fighters moving into administration roles post-COVID, he believes this is the perfect time to bring mental wellness in as a norm.

Stronger Families

When first responders are struggling at home, they can't be their best at work. Stronger Families exists to bring life-changing relationship skills to military, veteran, and first responder families so they can be strong and thrive.

The organization's vision is for healthy marriages and stronger families in every first responder community: We believe our heroes in our communities sacrifice greatly. We are committed to helping protect what they value most—their family. A life of service comes with unique stressors that can greatly impact those who serve emotionally, mentally and relationally.

Stronger Families offers workshops, seminars and online resources to strengthen the families and departments of those who serve. That includes First Responder OXYGEN weekend retreats designed for police, fire, EMS and dispatcher couples to receive life-changing relationship skills, so they can be strong and thrive at home and at work. The retreat includes tools and opportunities for couples to connect with their partners, learn to better navigate their relationships and meet with counselors if they want. Stronger Families also offers Wellness Block Training for departments with 90-minute sessions to build skills in communication, conflict resolution, understanding differences, leading from strengths and navigating transitions.

LEARN MORE ABOUT THE PROGRAM AT strongerfamilies.com.

After exposure to a traumatic event, many people may develop signs and symptoms like those previously mentioned in the days that follow. These symptoms often dissipate and do not interfere with daily functioning. PTSD is diagnosed only if the related criteria outlined previously persist for more than a month after exposure to the traumatic incident and result in major distress or impairment in one's daily functioning. In most cases, signs of PTSD appear within three months after a traumatic event. In some instances, however, symptoms may take longer to emerge. When they do occur, they can last for weeks or even years without treatment. Additionally, this disorder can be accompanied by other psychological health issues, such as depression and memory problems, as well as drug and alcohol addictions.

It is important to note that not everyone who experiences a potentially traumatic event develops PTSD, and not everyone who develops PTSD requires psychiatric treatment. Some people get better with the help of their support system (family, friends or clergy). But many people with PTSD need professional treatment to recover from psychological distress that can be intense and disabling. It is important to remember that trauma may lead to severe distress. That distress is not the individual's fault, and PTSD is treatable. The earlier a person gets treatment, the better their chance of recovery.

Mental health professionals use various effective (evidenced-based) methods to help people recover from PTSD. A couple of effective therapies are cognitive processing therapy (CPT) and eye movement desensitization reprocessing (EMDR). Both have been very successful, with multiple studies showing decrease in symptoms and high remission rates over time. In addition, some medications can help reduce the intensity of symptoms, and these often can assist patients as they are working through their treatment in therapy. All therapy should be guided by licensed mental health professionals using an individualized treatment plan.

Various treatment alternatives are becoming more widely used to aid those with PTSD. These strategies complement traditional mental health care and can involve less conversation and disclosure than psychotherapy. Some of these alternatives include acupuncture, yoga and animal-assisted therapy.

In addition to medication, those struggling with PTSD may find benefits from connecting with others with similar experiences. This can be achieved through participating in a support group of fire fighters, where they are free to share their stories and feelings.

If you are thinking about suicide or concerned about someone, call/text 988
(Suicide & Crisis Lifeline is available 24/7)

Additional first responder hotlines:

FIRESTRONG 24/7
FIREFIGHTER & FAMILY CRISIS | 844.525.FIRE (3473)
CODE 4 NORTHWEST | 425.243.5092
SAFE CALL NOW | 206.459.3020

Suicide

Being a fire fighter can be a rewarding job and provide a real sense of purpose. However, fire fighters often face life-and-death situations and chaotic scenes that are overwhelming to others—bearing witness to tragedies that involve all walks of life. Fire fighters also have off-duty lives that are intermixed with their work. It is not uncommon for a fire fighter to deal with a horrific event one day and leave for a family vacation the next. Over time, if a fire fighter doesn't have a way to process this exposure, it can build up. The weight of being exposed to traumatic events can become too much to bear, which can lead to making poor coping choices, such as substance abuse. Over time, fire fighters can develop compassion fatigue and burnout or mental health disorders such as PTSD, anxiety or depression. Some fire fighters find themselves struggling with a combination of all of these. In more severe cases, some may find themselves developing psychological conditions that lead them to consider suicide. Suicide is a traumatic event that can devastate a fire department and leave many fire fighters wondering why they choose this profession.

It is vital that fire fighters know both the risk factors and warning signs and have a clear understanding of what to do when they are recognized.

Peer support teams are in a unique position to bring this education to other fire fighters and have the skills to have one-on-one, confidential conversations with their sisters and brothers when they recognize the warning signs. Peer support members can help guide their fellow fire fighters to mental health professionals for proper diagnosis and treatment.

Suicide Risk Factors for Fire fighters

- Frequent exposure to trauma
- Pain resulting from occupational injury
- Decreased fear of death or becoming conditioned to confront your own death
- Exposure to suicides
- High incidence of mental health disorders including depression, PTSD, anxiety and substance abuse

Warning Signs of Suicide

While risk factors are qualities of a person that may increase their likelihood to die by suicide, warning signs are both internal and external changes in a person that indicate a suicide attempt may be imminent.

Warning signs that someone may be at immediate risk for attempting suicide include:

- Talking about wanting to die or wanting to kill themselves
- Talking about feeling empty or hopeless or having no reason to live
- Talking about feeling trapped or feeling that there are no solutions
- Feeling unbearable emotional or physical pain
- Talking about being a burden to others
- Withdrawing from family and friends
- Giving away important possessions
- Saying goodbye to friends and family
- Putting affairs in order, such as making a will
- Taking great risks that could lead to death, such as driving extremely fast
- Talking or thinking about death often

Other serious warning signs that someone may be at risk for attempting suicide include:

- Displaying extreme mood swings, suddenly changing from very sad to very calm or happy
- Making a plan or looking for ways to kill themselves, such as searching for lethal methods online, stockpiling pills or buying a gun
- Talking about feeling great guilt or shame
- Using alcohol or drugs more often
- Acting anxious or agitated
- Changing eating or sleeping habits
- Showing rage or talking about seeking revenge

Safety Planning for Suicide Prevention

Safety planning is an evidence-based intervention that acts an emergency plan, or standard operating guide (SOG), to avert a suicidal crisis and prevent a person from acting on their suicidal thoughts or urges. A safety plan helps keep a person physically safe from their suicidal urges by creating time and space between the individual in distress and their suicidal action. Safety planning is designed as intervention for mental health clinicians, but peer supporters also can be trained to complete a safety plan with another member in distress.

A safety plan can be completed with a fire fighter who has made a suicide attempt, reported thinking about suicide or who otherwise may be at risk of suicide. Through this process, the fire fighter will learn how to recognize when they are experiencing a suicidal crisis and will develop a prioritized set of coping skills to keep themselves safe during the suicidal urge.

Best Practices for Fire Service Behavioral Health Programs

To protect and promote the emotional health and wellness of fire service members, behavioral health programming must be incorporated into the fabric of the department. A comprehensive behavioral health program should include the following components:

- **Behavioral health education**
- **Department-wide resiliency training**
- **Peer support program**
- **Periodic behavioral health screening**
- **Comprehensive health insurance coverage (includes behavioral health coverage)**
- **Post-traumatic exposure response**
- **Chaplaincy program**
- **Partnerships with (vetted) mental health providers**
- **Physical fitness program**
- **Retiree outreach and inclusion**
- **Family outreach and inclusion**

The six components of a safety plan are:

- Identifying warning signs: thoughts, emotions and behaviors that signal a crisis is starting
- Identifying solo activities: things the person can do independently to distract themselves
- Identifying social distractions: people and places to distract the person from suicidal thoughts
- Identifying supportive family, friends, peers: people one can ask for help to get through a crisis
- Identifying professionals to contact: emergency lines and professionals one can call for help
- Making the environment safe: reducing access to lethal means

IAFF-trained peers can access the online training Safety Planning Intervention for Suicide Prevention by visiting their IAFF profile and clicking on the Advanced Training tab.

Peer Support

The stresses faced by fire service members throughout the course of their careers—incidents involving children, violence, inherent dangers of firefighting and other potentially traumatic events—can have a cumulative impact on mental health and well-being. Peer support programs have been demonstrated to be an effective method for providing support to occupational groups, including fire fighters.

Trained peer supporters are trained members of the fire service who seek out and talk with other peers about behavioral health concerns and connect members with helpful services. Peer supporters are educated on common behavioral health problems that impact fire fighters and receive special training to operate with a peer support team.

Trained peer supporters are equipped to:

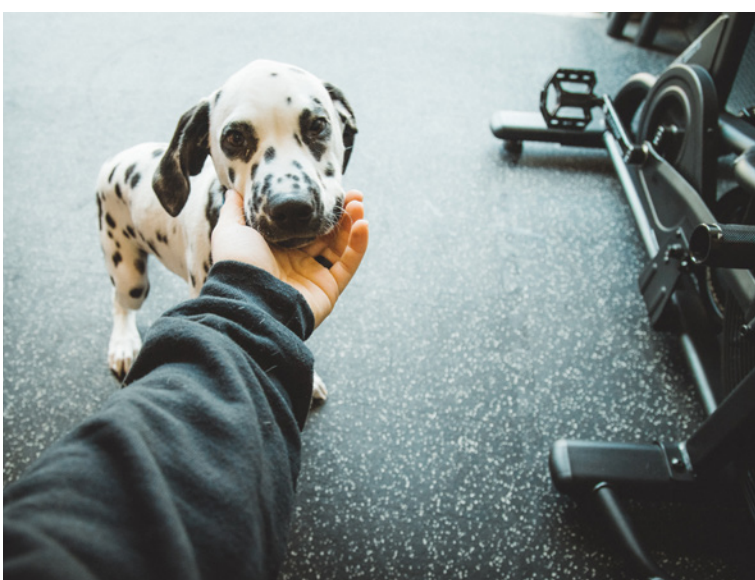
- Approach a fire fighter who is displaying signs of a behavioral health problem
- Establish trust and confidentiality
- Use active listening skills to provide support
- Determine whether a crisis is developing
- Refer the person to available resources
- Educate others about behavioral health

For more information about the IAFF Peer Support Training program, visit iaff.org/peer-support/.

Self-Care

Serving your community as a fire fighter/paramedic is both a stressful and rewarding job. It places great strain on your physical health, mental health and relationships. To thrive today, tomorrow and well into retirement, prioritize these strategies for self-care now:

- **Find a daily diversion for stress.** Find something enjoyable that helps you unplug and do it daily. Twenty minutes of your favorite hobby, music, sports or playing with your dog can go a long way. Both purposeful and mindless activities have a role to play in creating a mental buffer against the impact of cumulative stress.
- **Stay connected.** The role of your support system in coping with personal and occupational stress cannot be overstated. While isolating may seem more comfortable in times of severe stress, good relationships with your crew, family and friends are essential to your longevity in the highly stressful occupation you have chosen. Don't wait until you are in crisis to develop supportive relationships.
- **Get moving.** Exercise not only releases feel-good endorphins (chemicals in the brain), but has been shown to reduce rumination, improve confidence and strengthen socialization. Do not assume that because you are a fire fighter you are exempt from a daily exercise routine. Start simple and consider using an accountability partner. Ensure proper food and fluid intake. A balanced diet and adequate hydration are essential to your daily functioning, mood and cognition. Start each day with a healthy breakfast, eat plenty of vegetables and whole grains, and be sure to drink enough water throughout the day by carrying a bottle with you.
- **Balance busy time with downtime.** While many fire fighters work two jobs, do charity work or have other civic engagements, too much activity can become an effective but unhealthy strategy to avoid feeling anything. Try to schedule at least one day a week of mostly downtime, where you can rest, process and recuperate.
- **Assume personal responsibility.** Regardless of your specific circumstances, only you can take charge of your well-being and self-care. Decades of research on trauma survivors has identified this quality—the willingness to assume personal responsibility for one's well-being—as a key predictor of resilience in the aftermath of severe trauma and adversity.



Spokane Valley Shop Talk Is Saving Lives

The first ever Spokane Valley 876 Shop Talk was held in the fall of 2021. It stemmed from Spokane Valley Fire Department Captain Jeff Fraser talking with mental health therapist Stephanie Thoet about behavioral health concerns he needed help with. He knew others in the department were struggling too, so he suggested they put together a group in which fire fighters could talk openly about their feelings and issues. Thoet, whose background is in working with first responders, agreed to facilitate.

There was no funding, so when Fraser suggested the group meet in a shop on his property, Shop Talk was born. That first meeting, 17 fire fighters showed up. The ground rules of Shop Talk are simple. There's no rank at Shop Talk, and what's discussed at Shop Talk stays there. Attendees can feel safe being vulnerable with their feelings and even shedding tears.

Captain Sean Nokes says that's one of the biggest benefits of the group. "It's important to have a place where we can talk about the issues we share so everyone knows they're not going through it by themselves. There's someone to open up to who understands."

Thoet focuses on teaching signs of PTSD and suicide risk for the fire fighters to watch for in themselves—and how to watch out for each other. She also teaches that it's OK to have feelings. "So many first responders think they either have to feel pain all the time, or never feel it. I teach a third option: We can feel it for a bit, process it, then watch it move on."

Nokes, for one, is happy to see that and other lessons being taught in the group, especially for newer recruits. "It's nice to see the younger guys getting the help they should be getting right from the get-go," he says. He adds that the Shop Talk experience makes it easier to open up with fellow fire fighters outside of the group too.

Each meeting, Thoet comes prepared with information on topics such as building resiliency or setting boundaries. But if the check-in at the beginning of the meeting steers the group on a different course, that's fine too, she says. She sees the most change happening from what they learn from one another. "More than once, people at Shop Talk have admitted to the entire group that it has saved their life," she says. "It's such a privilege that I get to work with this population because I know the stakes."

Shop Talk is now fully funded by the union and has expanded to four weekly meetings: two in Spokane Valley and two hosted by the Cheney Police Department and Cheney Fire Department. There also is a new Shop Talk meeting in Richland, Wash., and first responders' spouses—of which Thoet is one—have their own Shop Talk twice a month.

So far, about half of the members of Spokane Valley 876 have attended Shop Talk, but Thoet knows that others in the station are benefiting too. "Even though they haven't come themselves, by proxy they're getting exposure to the cultural shift that's happening."

- **Challenge negative thinking.** We each have a daily internal dialogue or "self-talk" that unconsciously impacts our mood, functioning, social interaction and behavior. Especially during difficult times, we tend to think in overly negative, simplistic and dysfunctional ways. While learning to "just think positive" may be unrealistic, you can learn to catch unhelpful thoughts and replace them with more balanced, rational ideas.
- **Know when to ask for help.** Feeling persistently agitated, hopeless or apathetic toward daily life is not a "normal" part of working hard or getting older. These experiences may be symptoms of a treatable behavioral health problem that requires attention. Know the warning signs and when it's time to ask a peer, loved one or healthcare provider for help.

(Adapted from "Taking Care of You," IAFF 2018)

For more details and suggestions on vetting clinicians, please see the IAFF guide *Finding the Right Clinician.*

VETTING CLINICIANS

For fire fighters and paramedics experiencing post-traumatic stress, depression, anxiety or addiction, finding the right individual mental health clinician is an essential component of recovery. When seeking a clinician, fire fighters should ask these critical questions:

- Do you have experience working with fire fighters or other emergency responders, including EMS, police or military populations? Tell me about it.
- What evidence-based practices do you use to treat post-traumatic stress disorder, depression, anxiety and co-occurring substance abuse? Do you assign homework?
- How many sessions does it typically take for you to complete your initial assessment? Do you offer appointments within 24 hours or access to an on-call clinician?
- If an individual has a psychiatric emergency and needs inpatient care, what facility or hospital do you refer to?
- Do you work closely with a prescriber for individuals who need medication?
- Would you be willing to participate in experiential training to gain a better understanding of the daily experiences of the fire service professional?

MUSCULO-SKELETAL

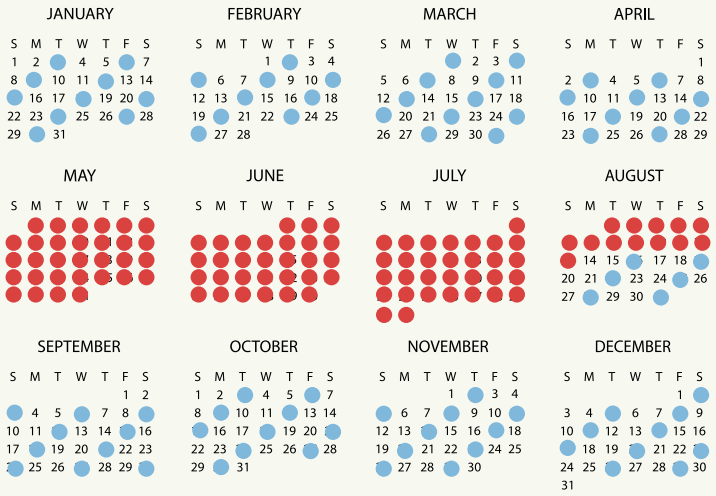
Best practices for prevention of occupational musculoskeletal disorders

Fire fighters and Emergency Medical Services (EMS) personnel work in complex environments resulting in significant risk for occupational injuries. Whether it's fighting a fire, providing EMS, transporting patients, responding to an emergency, training on the drill ground, participating in routine physical fitness, or completing simple tasks around the fire station, the risk for injuries and musculoskeletal disorders is present. Every year, tens of thousands of emergency responders are injured while performing their job.

What are occupational musculoskeletal injuries and disorders?

Musculoskeletal injuries and disorders (MSD) are non-impact injuries or disorders of the muscles, nerves, tendons, joints, cartilage, and spinal discs (Centers for Disease Control and Prevention [CDC], 2020) caused by workers' forceful exertions, highly repetitive motions, awkward postures, and vibration. A musculoskeletal injury usually results from a single event, whereas a musculoskeletal disorder results from cumulative exposures. Fire fighters are exposed to occupational risks for MSDs, such as lifting and carrying heavy items, pushing and pulling heavy loads, working in awkward positions, bending, twisting or reaching overhead, and performing the same tasks repetitively (Occupational Safety and Health Administration [OSHA], n.d.). Furthermore, environmental factors can contribute to MSDs, such as heat, cold, noise, vibration, inadequate lighting, and poorly designed or inadequate equipment. Examples

MSDs are the most common cause of lost work time workers' compensation claims among Washington fire fighters. Four of 10 fire fighter lost time workers' compensation claims are MSDs.



Although, fire fighters tend to recover and return to work more quickly than many other occupations, the average time lost from work due to an MSD was 105 days.

of MSDs include but are not limited to strains, sprains, tears, numbness and tingling, back pain, joint pain, and carpal tunnel syndrome (CDC, 2020).

MSDs are the most common cause of lost work time workers' compensation claims among Washington fire fighters. Four of 10 fire fighter lost time workers' compensation claims are MSDs.

Fire fighters experience lost time MSDs at more than four times the rate of all other occupations in Washington; the rate of MSDs is among the highest for all occupations.

Although, fire fighters tend to recover and return to work more quickly than many other occupations, the average time lost from work due to a MSD was 105 days.

The most common type of injuries were sprains, strains, and pain of the back, shoulder, and knee, with overexertion as the leading cause of the work-related musculoskeletal disorders. It is important to note that these numbers only represent employees who actually reported their on-duty injury. Some estimates suggest that only 10% of work-related MSDs are reported to their employer or the workers' compensation system (Morse, 2005).

Why is the prevention of musculoskeletal disorders important in the fire service?

The primary purpose of any injury prevention programs is to prevent workplace injuries, illnesses, and deaths (OSHA, 2012). Occupational injuries create an extensive amount of physical, financial, and emotional hardship for employers, employees, and their families. In addition to physical pain and suffering, MSDs can cause a loss of wages and productivity, an increase in absenteeism and debt, an increase in workers' compensation and healthcare costs, a permanent disability, and a reduction in quality of life. Preventing occupational injuries is not only important for employee health and well-being but also for organizational morale and productivity. When occupational injuries increase, employee morale and productivity decrease.

DEVELOPING AND IMPLEMENTING WORKPLACE CONTROLS

Reducing and limiting exposures to hazards through risk assessments and ergonomic controls can reduce musculoskeletal injuries and disorders to fire fighters and other emergency responders. Reducing the MSD risk requires an assessment of the work environment, tools and equipment used, and department policies and procedures fostering MSD risk identification and prevention. Once risks are identified, the goal is to control the hazards using two different approaches:

- Implementing changes that automatically make the work safer (elimination, substitution, and engineering controls).
- Making changes that rely on people to do the right thing (administration controls) (NIOSH, 2023).

The best approach is to make the work automatically safer by eliminating, if possible, the hazardous task, or by substituting away the hazard—think using lighter equipment or designing easier access to equipment. The second approach relies on the fire department administration or fire fighter to change the work or work processes to reduce the hazards. Administrative controls reduce exposure without changing the workplace by using actions like rotating jobs and organizing work to allow specific staffing levels in response to emergency calls, for example, so you can lift a patient through teamwork. Work practice controls can be used to modify work tasks to reduce ergonomic hazards through safe work procedures such as proper body mechanics and education.

- **One-third of respondents (33%) reported a work-related injury or illness in the past year, over 5 times higher than expected among other workers.**
- **Musculoskeletal symptoms were very high among respondents. Most fire fighters reported problems in the low back (84%), shoulders (75%), and neck (69%).**

Source: Washington Firefighter Survey 2018
Safety and Health Assessment and Research for Prevention (SHARP) Program
Washington State Department of Labor and Industries

BEST PRACTICES RECOMMENDATIONS

The following are best practices recommendations for reducing musculoskeletal disorders during EMS incidents, on-duty physical training, apparatus design and handling large-diameter hose.

EMS INCIDENTS

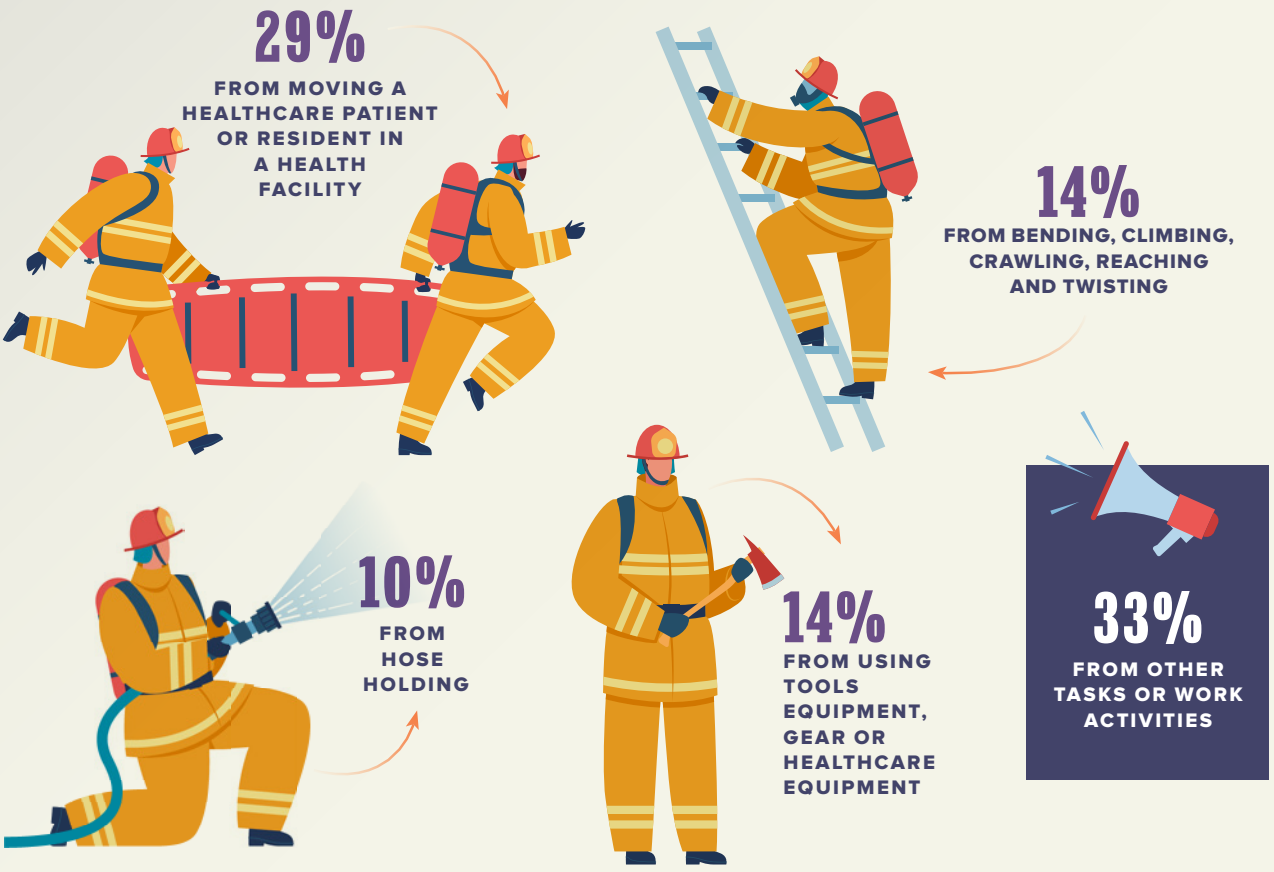
POWERED STRETCHERS AND LOADERS

One out of four EMS workers will suffer a career-ending back injury in the field within their first four years, primarily due to lifting (Sanders, 2011). Some of these injuries occur while the patient is being loaded onto the stretcher, while others are due to lifting the stretcher and loading the patient into the ambulance. Powered stretchers and loaders significantly reduce the physical back and shoulder strain placed on fire and EMS personnel during repetitive lifting and lowering of the stretcher, and repetitive loading and unloading of patients during EMS incidents and transports. Patients, EMS equipment and stretchers are heavy. Powered stretchers assist fire and EMS personnel with lifting and lowering a gurney through a battery-powered hydraulic system, which raises and lowers the stretcher with the push of a button. Powered loaders improve personnel and patient safety by allowing loading and unloading into the ambulance without manually lifting and supporting the weight of the stretcher and patient during the process. Powered stretchers and loaders make transfers and transports not only safer, but easier for both first responders and the patient.

STRETCHER STATISTICS

Using powered stretchers may decrease compression forces on spinal discs by approximately 50% and shear forces by approximately 46% compared with manual stretchers (Fredericks, 2013). One study done in Canada compared injury rates of two different organizations during EMS incidents. One organization used powered stretchers and loaders while the other used manual stretchers. One year after introducing powered stretchers, occupational injuries dropped 78%. Meanwhile, injuries increased 37% over the same period when using manual stretchers (Armstrong, 2017). An analysis of costs and benefits revealed that investing in powered stretcher and load systems would yield a return on investment within the operational lifespan of the system. This return would be achieved through decreased expenses related to workers' compensation claims. (Armstrong, 2017).

Common Causes of Fire fighter MSDs in Washington



STAIR CHAIRS

Stair chairs allow fire and EMS personnel to carry patients up and down stairs and in other tight spaces when using a stretcher is not an option. Navigating a patient on a blanket, backboard, scoop stretcher or even a Reeves™ Sleeve Dragable stretcher through narrow areas and corners can be challenging, requiring personnel to put their bodies in awkward and compromising positions to remove a patient from their home. Well-designed stair chairs are equipped with wheels, tracks and extending handles to aid first responders with moving a patient safely down a hallway, a set of stairs or even a few steps. The tracks allow responders to lower and move patients down stairs without having to lift the patient, increasing safety for both first responders and the patient. The weight of the patient and the equipment is transferred through the tracks and onto the stairs, creating a braking force that controls the descent, improves ergonomics, and reduces strain, fatigue, and injuries (Lavender, 2007). Stair chairs equipped with tracks allow gliding on stairs, and adjustable handles help personnel stand more upright. The gliding movement significantly reduces back compression forces and decreases the physical demands placed on the worker when compared to traditional chairs.

CARDIOPULMONARY RESUSCITATION (CPR)

Mechanical chest compression devices can significantly reduce first responder fatigue and subsequent injury risk while maintaining consistent chest compressions to patients during CPR emergencies (Lucas, 2023). First responders are often required to do manual chest compressions while standing on a gurney or standing while unrestrained in the back of an EMS unit during a priority transport. Mechanical chest compression devices reduce fatigue, awkward positions, and tripping, slipping or falling incidents during CPR. Furthermore, mechanical chest compression devices increase personnel safety when prolonged CPR is required during patient transport.

LEFT: *LUCAS® Chest Compression System*

APPARATUS DESIGN

Apparatus design plays a significant role in preventing occupational injuries and MSDs. When a fire department is purchasing equipment, its design and the risk for musculoskeletal injuries and disorders during use should be considered. Injuries can occur when personnel are getting on or off an apparatus or when trying to retrieve or store equipment. Table 1 lists a sample of good design elements to consider. If relevant National Fire Protection Association (NFPA) guidelines exist, they also should be considered when designing an apparatus.

Table 1. Good Design Elements of Apparatus/Equipment

- ☐ Proper placement of handrails
- ☐ Proper placement of steps
- ☐ Proper positioning of lights
- ☐ Surfaces are of appropriate length and width
- ☐ Surfaces where fire fighters tread have a non-slip surface
- ☐ Compartment layout allows for equipment storage based on weight, size and frequency of use
- ☐ Compartment slide-out trays to allow for better accessibility
- ☐ Warm-water station

STEPS AND HANDRAILS

Minimum depth and height requirements should be considered to ensure an individual's ability to ascend and descend steps safely. It is recommended that step depth be increased and step height be decreased to prevent injuries or MSDs. Steps should be slip-resistant and outfitted with fluorescent and/or reflective material. Steps should have adequate lighting to illuminate the step and surrounding area. It's also important to look at the boot/step interface to make sure that boots don't get caught on the steps and cause a trip and fall. Slip-resistant handrails should be available to aid personnel with ascending and descending.

APPARATUS SURFACES

Apparatus surfaces should be slip-resistant and indicated with fluorescent and reflective material, and should have adequate handrails to aid the user. Surfaces that are intended for foot traffic should be clearly designated. Edges, corners and protrusions should be rounded to minimize contact injuries.

LIGHTING

Adequate lighting should be located below running boards, tailboards and bumpers; around steps and ladders; and in the cab. Lights should illuminate automatically when power is turned on, a door is opened or an exterior step is lowered/activated.

STORAGE COMPARTMENTS

Storage compartments should be equipped with slide-out trays, which allow for heavier equipment to be brought to the fire fighter and allow for better accessibility and body mechanics. With higher compartments, slide-out and tilt-down trays may be more appropriate. Handles or levers should be located at multiple points to allow for correct body mechanics. All equipment should be securely fastened in compartments to prevent items from falling out and injuring personnel when opening a compartment. It is recommended that self-contained breathing apparatus (SCBAs) be stored outside the crew cab to maintain a "clean cab" and reduce carcinogen exposure in the cab.

CAB

The NFPA requires that each crew riding position shall be fully enclosed. Low-hanging ceilings should be padded and outfitted with reflective surfaces to warn and protect personnel. All equipment carried in the cab should be securely fastened so that equipment doesn't become projectiles in the event of abrupt braking or motor vehicle collision. Adjustable seats and steering wheels allow for better ergonomics and accommodate all operators. In-cab headsets should be worn to allow for better communication and hearing protection.

AERIAL LADDERS

The rungs on aerial ladders should be slip-resistant and indicated with fluorescent and reflective material.

TAILBOARD AND RUNNING BOARDS

Running boards, tailboards and bumpers should have appropriate length and width to allow personnel to climb, retrieve equipment and dismount safely while wearing full PPE and SCBA. These areas should be outfitted with slip-resistant surfaces, fluorescent and reflective material, and adequate handrails and lighting to aid personnel in mounting and dismounting these surfaces.

HOSE BED

Hose beds equipped with diamond plate or heavy covers should be outfitted with electric/powered openers or sliders and automatic lighting.

LARGE-DIAMETER HOSE

Large-diameter hose (LDH) is heavy, bulky and awkward to move and load, making it a common contributor to occupational injuries during training and emergency incidents. It is recommended that LDH be moved with a folding hand truck that can be stored in a compartment or via a two-person carry. A tool such as a New York hook or prybar can be inserted in the middle of the rolled LDH to provide the carriers with handles. When loading, it is recommended that a lazy Susan be used to limit the amount of bending required to unroll LDH to load a hose bed.

QUESTION & ANSWER:

INJURY PREVENTION EXPERTS TALK TRUTH: DON'T IGNORE PAIN

BY JENN WOOLSON

To dig deeper into musculoskeletal injury prevention, we spoke with **David Bonauto, MD,** an occupational medicine physician who runs the Safety and Health Assessment and Research for Prevention (SHARP) program at the Washington State Department of Labor & Industries (L&I); and **Richard Goggins**, an ergonomist in charge of the FIIRE (Fire fighter Injury and Illness Reduction) Initiative, a program designed by L&I in partnership with the Washington Fire Chiefs and the Washington State Council of Fire Fighters to bring best practices into the fire service.

Q: What's a common misconception about musculoskeletal injury prevention?

Richard Goggins: One misconception is the idea that if you are strong enough and fit enough, you can lift heavy things in awkward positions and be safe. Certainly, being strong enough for the job is important. But there can be physical demands that go beyond where being a big strong individual is going to help you. Another reality of firefighting activities is that they can be really fatiguing. Once those really strong muscles get tired out, they're not protecting you anymore, so injuries are more likely to happen.

What can fire fighters do in those situations to avoid injury?

RG: One of the things we've been talking to the fire departments about is just taking a moment. Not everything you're doing is an emergency. If you're responding to a call, and it's not absolutely critical that you get the patient onto the stretcher right away, take a little time to make sure you're working safely. If needed, wait for more co-workers to show up to help.

What are some signs to watch for that might signal the early stages of an injury?

David Bonauto: The simplest advice is: Don't ignore pain. Recognize that, while pain may be transient, if it is persistent, that may indicate something a bit more problematic that you want to pay attention to. You shouldn't work through pain. You should recognize it and take care of yourself. Remember that sometimes problems with nerves manifest as numbness and tingling, so you don't want to ignore those symptoms either.

What's a good way for fire fighters to think about musculoskeletal injury prevention?

DB: The tasks of patient transport and lifting equipment, hoses or using tools, for example ... these are work activities fire fighters know they will be doing regularly. The key to injury prevention is breaking down each of those tasks, recognizing where the hazards are and then trying to proactively control those hazards.

Are there any special considerations older fire fighters need to consider in terms of injury prevention?

RG: As we age, we lose some of our more explosive types of strength. So that one-time heavy lift that fire fighters might have to do or picking up a heavy patient off the floor, those kinds of things become more of a strain on the body. Plus, you have the cumulative wear and tear that comes with a very physical job doing the same thing over and over again.

DB: On the other hand, older fire fighters have learned from their experiences and may be more likely to do things more efficiently and strategically. [Participating in Fire OPS] I experienced how incredibly significant the physical demands of the job are. Thankfully, there was a very experienced fire fighter who was my shadow, and from him I learned some tricks of the trade about how to do things a little more efficiently or a little more strategically, or using a little bit more leverage. A lot of that you don't read in a book. You learn it from your peers, who share this wisdom with you.

How can the FIIRE Initiative help departments with injury prevention?

RG: Fire departments that sign on with the FIIRE Initiative start by filling out a vulnerability assessment program survey. They get feedback on areas they should be focusing on and then we give them some risk-management training that walks them through that process of looking at your frequent activities, identifying where during those activities you have exposures and hazards, and then brainstorming solutions. All of that feeds into a safety improvement plan that addresses what the department will do in the coming year to address carcinogen exposures and musculoskeletal injuries. They submit that plan to us, then they can apply for a grant to purchase equipment to help with their safety improvement plan.

ON-DUTY PHYSICAL TRAINING (PT)

ANNUAL TESTING

Fire fighters not only have a dangerous job, but it's a physically demanding occupation that requires them to stay in shape to safely and effectively perform their duties. At a minimum, fire fighters should complete an annual medical exam with their primary care or department physician. It is recommended that all operational personnel participate in routine physical training (PT) each shift and complete an annual physical fitness exam, such as the Candidate Physical Ability Test (CPAT) or a department-adopted equivalent.

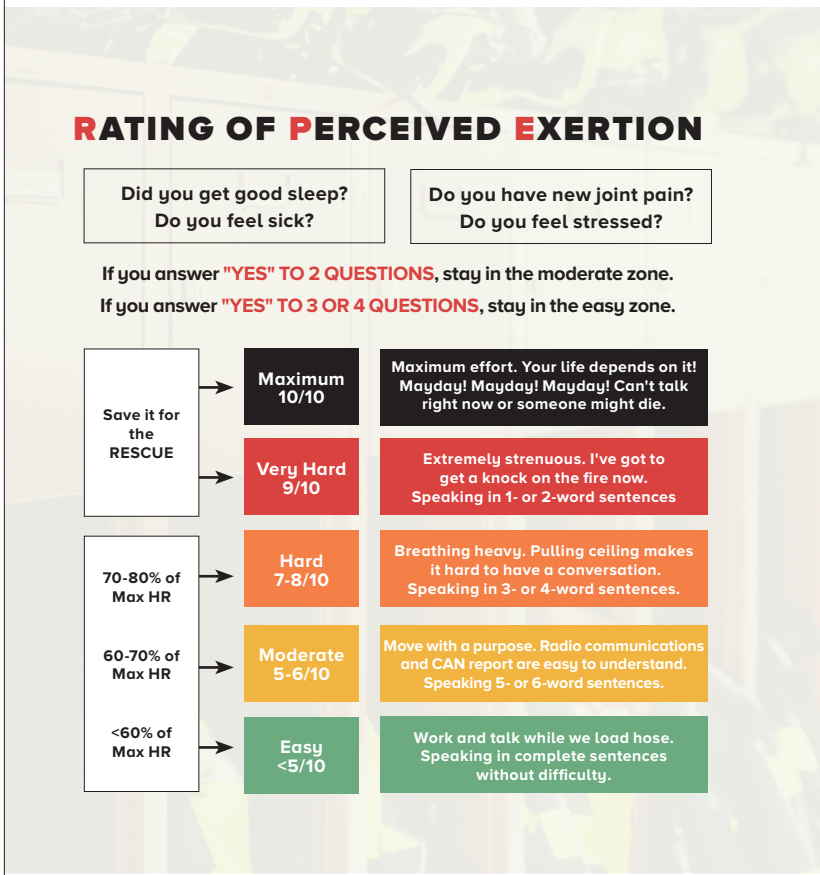
WARMING UP AND COOLING DOWN

When possible, fire fighters should warm up prior to and cool down after participating in PT or training on the drill ground. This will prepare the heart, muscles and joints for exercise by lubricating the joints and pushing blood out to the arms and legs to increase elasticity and motion of muscles and tendons. Large full-motion-based movements are recommended for warmups, such as high-knee marching, lunges, squats, raising arms overhead and trunk rotation for five minutes. If drilling, this should be conducted prior to donning bunker gear to ensure no restrictions of normal movement patterns and to reduce exposure to carcinogens.

GAME DAY

Rating of perceived exertion (RPE) can be used to help personnel stay within appropriate effort levels for on-duty PT so they can respond to a call without compromising their physical capacity. For example, if you knew you were about to go to a structure fire, would you max out on squats and physically destroy your legs prior to the call? Absolutely not—you'd be fatigued and more susceptible to injuries during the call. Professional athletes don't do an intensive workout before they hit the field, court or ice on game day. Fire fighters should consider on-duty as game day with on-duty fitness as their pre-game warm-up. The goal is to not give the gym 100% when 100% is required for the next call or major incident.

> "Working out very hard on shift can be equated to overeating on shift. Always keep in mind: 'You never want to eat any more than your mask can hold …' Similarly, you should never overexert yourself during PT to the point that you could not pull out a downed person in a structure fire."
>
> —BETH GALLUP



EXERCISE EFFORT

Before training, fire fighters should do a quick assessment to determine the type of workout and how much energy they should exert during on-duty PT. The goal is to maintain conditioning, save some strength and energy for your next "strenuous" call, and still get meaningful exercise in while on-duty. Departments and fire stations have different call volumes, work schedules, time of day when PT may be conducted, training requirements, and different demographics and fitness levels among their assigned personnel. These factors contribute to how fatigued someone is during a shift, which could result in an injury during PT.

Personnel should honestly answer the following questions and adjust their RPE or heart rate goals prior to performing on-duty PT:

- Did you get good sleep?
- Do you feel sick?
- Do you have new joint pain?
- Do you feel stressed?

Heart rate-based training allows you to assess the intensity of the physical exercise, the duration of the exercise and the appropriate recovery time. RPE also can be used to help fire fighters stay within appropriate effort levels for on-duty PT. See RPE Ratings poster above.

Definitions

Beginner: Untrained or several years of no resistance or cardiovascular training

Intermediate: Six months to several years of consistent resistance or cardiovascular training

Advanced: Several years of consistent resistance or cardiovascular training

ON-DUTY PHYSICAL TRAINING

On-duty PT may include training that involves cardiovascular exercise, strength training, balance, mobility or dynamic stretching. On-duty cardiovascular training should be aerobic and last from 10 to 60 minutes; work at 60% to 80% of maximum ability with an RPE of 5 to 8, "moderate" to "hard." Cardiovascular training includes treadmill, stairs, cycling, rowing and swimming.

On-duty strength training should require roughly 50%–70% of maximum effort or an RPE of 5–7 out of 10 on the RPE chart. Strength training includes the use of one's body weight, dumbbells, resistive tubing, cable machines, stability balls and kettlebells. During strength training, exercise selection and order of performance should move from large muscle groups early in the session to smaller muscle groups later in the session. Powerful, multi-joint movements should be performed earlier in a training session than slower, less powerful, single-joint movements. Higher-intensity exercises should be performed before lower-intensity exercises.

WHAT TO AVOID ON-DUTY

To prevent on-duty exercise-related injuries:

- Avoid competitions between personnel, which can lead to injuries. Instead, compete with yourself.
- Avoid basketball and volleyball games (or similar), as these types of games also lead to injuries and become competitive.
- Avoid barbells overhead. Dumbbells are safer than barbells because they allow for differences in strength between the right and left side of your body.
- Academy recruits should avoid any additional workouts outside of the Academy. Use days off for recovery, which will result in improved performance.

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LOGISTICS

Put proper cleaning protocols in place to minimize exposure

LAUNDRY

The employer will provide personnel with uniforms. This uniform is not designed to protect against hazardous materials, toxins or bloodborne pathogens, although these contaminants will occasionally come in direct contact with uniforms. Under no circumstances will employees take home uniforms that have been worn in a contaminated environment, nor those that are soiled with blood or other potentially infectious materials (OPIM).

- Washers, dryers or laundry services are to be provided by the employer. No equipment, detergents or disinfectants should be used other than those provided by the employer.
- Contaminated uniforms and linens should be washed with detergent in water between 140 and 160 degrees Fahrenheit for a minimum of 25 minutes. If low-temperature laundry cycles are used, chemicals suitable for low-temperature washing at proper concentration must be used.

HOUSEKEEPING

Develop cleaning procedures to mitigate contamination and to avoid cross-contamination from fire incident scenes to living quarters. Employees handling contaminated equipment, hose and turnouts will wear appropriate PPE (gloves, splash gown and N95 if appropriate) to protect against exposures from contaminated equipment.

Written schedules for station cleaning and methods of equipment decontamination, cleaning and disinfecting should be located at each work site.

PRELIMINARY EXPOSURE REDUCTION, CLEANING AND DISINFECTING

Preliminary exposure reduction (PER) occurs at the scene and removes many of the toxic products of combustion or biological contaminants. Cleaning occurs back at the fire station and uses soap, other cleaning products and warm-water rinses. Disinfection can only happen after the object has been cleaned. Contact, or dwell, time is the amount of time required to “kill” the microorganisms. Disinfection products vary widely on their contact time; read the labels before using.

EQUIPMENT CLEANING

SCBA facemasks and tools are exposed to the same products of combustion as turnout gear. They are contaminated any time they are exposed to a smoky atmosphere, including, but not limited, to structure fires, car fires, dumpster fires, training fires or burnt food on the stove. If not properly cleaned, contaminated equipment will continue to expose personnel to carcinogens long after the incident.

- PER of equipment should be done at the scene.
- Proper PPE that will limit dermal absorption should be used any time contact is made with the contaminated equipment at the scene or while cleaning.
- Transportation of contaminated SCBAs, masks and other equipment:
  - Contaminated equipment should be grossly decontaminated first, then encapsulated if transporting in the fire engine to further reduce exposure or contamination to uncontaminated areas.
  - Contaminated equipment does not need to be encapsulated if it can be transported to the cleaning facility in a vehicle (e.g., a pickup truck) that will not allow further cross-contamination of the apparatus cab, compartments or exposure to personnel.
- Equipment should be cleaned in a location that will allow for proper cleaning without further exposure to personnel or living quarters.
- After each use, all equipment will be cleaned according to the manufacturer's recommendations.
- For most hand tools (axe, hooligan, shovel, etc.), use mild soap and water.
  - If necessary, scrub with a soft- to medium-bristled brush to remove stubborn contaminants.
  - Using a garden hose, completely rinse the soap from the tools.
- Gas-powered equipment can be wiped free of smoke, soot and debris.

BELOW: ***To clean SCBA masks, remove electronic components and use a damp sponge or cloth to clean those parts. Scrub face piece with a brush, then ensure exhalation valve moves freely and hang mask to dry.***

SPECIFICS ON SCBA AND FACEMASK CLEANING

- The cylinder needs to be removed from the backpack for proper cleaning. It should be washed with warm, soapy water and thoroughly rinsed, making sure to clean all components of the cylinder (i.e., cylinder valve, gauge and cylinder body). After cleaning, the cylinder valve should be cracked open to blow out any moisture that has collected in the valve opening.
- Masks can be cleaned in a commercial mask washer or ultrasonic cleaner designed specifically for SCBA masks, if allowed by the specific manufacturer. Otherwise, masks can be cleaned inside and out to remove all contaminants and sanitized prior to being placed back in service.
- The backpack (minus cylinder) should be thoroughly cleaned in accordance with the manufacturer's recommendations. Warm, soapy water, a sponge and a soft-bristled brush should be used, with care taken to make sure all surfaces are thoroughly cleaned, including hard and soft surfaces (WAC 296-842).
- SCBA washers are proven to reduce contaminants and should be a best practice.




SPECIFICS ON HOSE CLEANING

- Contaminated fire hose should be cleaned per NFPA 1962 Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose.
- It is recommended to "dry" brush the hose using a soft- to medium-bristle brush. However, if the dirt cannot be thoroughly brushed from the hose, or if the hose has come in contact with harmful materials, the hose should be washed. Covered (nitrile, rubber) hoses can be wiped dry.
- Unroll the hose and stretch it out in its entirety on a clean, level surface. Thoroughly rinse the fire hose with clean water.
- Fill a large bucket with mild, soapy water. The water should be ambient temperature. Using a long-handled brush with soft to medium bristles, scrub the entire length of the hose.
- Turn the hose over and scrub the opposite side.
- Using a garden hose, completely rinse the soap from both sides of the hose.
- Dry the hose thoroughly using the method best suited for the weather conditions and facility equipment (hanging in hose tower, hose dryer, etc.).
- Gloves shall be worn while cleaning hoses to protect against dermal exposure.

APPARATUS DECONTAMINATION, CLEANING AND DISINFECTING

Proper apparatus decontamination, cleaning and disinfecting are vital in limiting fire fighter exposure to contaminants.

- All apparatus cabs, compartments and equipment should be cleaned weekly and decontaminated after every incident or training that involved contaminants.
- Parking upwind, keeping windows closed, and heaters and air conditioners off during fireground operations will minimize the volume of airborne contaminants that enters the cab.
- All cleaning can be done utilizing cleaning solutions, designated rags, mop buckets, brushes and disinfectants. HEPA vacuums are useful tools to pick up soot and other loose debris prior to cleaning with wet agents.
- Apparatus cab cleaning should use a top-down cleaning method, followed by disinfecting. Special attention should be paid to computers, radios, map books, seats, steering wheel, floorboards and headsets. Disinfecting is intended to prevent the spread of contagious illnesses such as C. difficile, MRSA, staph, etc.
- All cloth surfaces should be cleaned using a vacuum and/or steam extractor.
- Remove all equipment and use the top-down method to clean apparatus compartments. All equipment should be cleaned prior to being placed back on the apparatus.
- After cleaning is complete, utilize the department's cleaning program for the rags and mops. Wash hands, face and neck or take a shower.
- UV-C light disinfecting has been a feature added to many patient compartment boxes on apparatus. Make certain to follow manufacturer recommendations for the proper use and cleaning.

CLEANING THE APPARATUS CAB

Apparatus cabs should be used and designed to reduce cross-contamination. Some manufacturers offer a 'clean cab package' and should be a best practice when ordering apparatus.

- All apparatus should have designated turnout compartments that are separate from the cab for all crew members.
- Turnouts should not be routinely allowed in the cab of the apparatus, with the exception of responding to emergencies or participating in trainings.
- No contaminated turnouts should be allowed in any apparatus cab.
- After an incident or training that involves contaminants, all turnouts should be grossly decontaminated on scene, encapsulated in designated disposable bags and be transported to a fire station for proper cleaning.

USING A PERSONAL VEHICLE

Special care should be taken to ensure that contaminated turnouts are not transported in a personally owned vehicle in a fashion that would expose people or pets in the passenger compartment to harmful contaminants. Some guidelines are:

- If the personally owned vehicle is a pickup truck with an open bed, transporting the contaminated turnouts in the bed without any riders would be an option.
- If the passenger vehicle has no trunk, like station wagons, passenger vans or SUVs, the contaminated turnouts should be sealed into a container that prevents harmful contaminants from entering the passenger compartment.
- If the personally owned vehicle has a separate trunk, the turnouts should be sealed in a bag or container and transported in the trunk.

IN ALL CASES, the transport of contaminated turnouts in a personally owned vehicle should only be done after a preliminary exposure reduction has been performed in the field and gear is contained within a sealed gear bag or other type of container.

The contaminated turnouts should be cleaned in accordance with approved fire department policy as soon as practical.

Clean turnout gear may be transported in a personal vehicle in an enclosed container or encapsulated in a designated bag to avoid cross-contamination to personal belongings.

How to clean structural firefighting gloves

1. Wear appropriate PPE and EMS nitrile or latex gloves for dermal protection.

2. Fill a decon sink with approximately 2 inches of warm water and detergent of choice.

3. Grab gloves by gauntlet, pinching off end or wear one glove at a time.

4. Using a medium-bristled brush, submerge the glove and scrub the exterior of the glove, working from gauntlet toward the tip. Turn glove over and repeat on other side. Continue until glove is clean, then rinse under running water. Perform same procedure on other glove.

5. Empty sink and fill with clean water and approved sanitizer to clean the inside of the glove.

6. Do not wring, as the lining may become dislodged from the shell.

7. Hang upside down to dry.

Preliminary results presented in the Illinois Fire Service Institute's 2015 Cardiovascular & Chemical Exposure Risks in Modern Firefighting Interim Report indicate that, in relation to glove cleaning, "Gross on-scene decon with water/detergent and scrubbing appears to be effective in bringing the PAH (polycyclic aromatic hydrocarbons) contamination to pre-fire levels."

UNIVERSITY OF WASHINGTON STUDY ON GLOVES FOR DECON

The University of Washington Department of Environmental & Occupational Health Sciences started a study in 2022 on the use of gloves for decon while getting apparatus back into service at the scene. Part of the study is comparing the use of structural gloves vs. other types of gloves, to look at how their protective benefits weigh against the need for dexterity and comfort. The use of gloves by firefightes varies greatly, and results of this study should help provide best practices in the future. Updates to the study, along with final recommendations once the study is complete, will be available on the wscff.org/hiho.

APPENDIX A

MODEL GUIDELINE

PURPOSE

Numerous studies have proven that fire fighters are at greater risk of contracting many cancers as a result of their assigned duties. These studies have shown that proper use of the PPE, SCBA (Self Contained Breathig Apparatus) and a gross decontamination process are beneficial in limiting the duration of fire fighter exposure to toxic carcinogens. The (insert Fire Department) is committed to the overall health of employees; the (insert Fire Department) recognizes the increased risk of cancer associated with firefighting activities. In an effort to provide a safe and healthy work environment, the (insert Fire Department) has created the following guidelines to reduce the cancer risk to its employees.

SCOPE

These guidelines apply to all (insert Fire Department) employees.

REFERENCES

NFPA, Jurisdiction Policy, WAC, RCW, FCSN and IAFF.

DEFINITIONS

See Appendix B.

STATEMENT OF INTENT

It is the intent of (insert Fire Department) to take proactive and reasonable steps to limit employee exposures to carcinogens.

COMMAND

- Develop comprehensive accident, injury, illness and exposure policies and procedures.
- The Safety Committee can identify root causes and suggest changes to prevent future occurrences.
- Join the Washington State Labor & Industries FIIRE Initiative (State Insured Workers' Compensation Only).
- Take a Drexel University FOCUS assessment on the culture of health and safety in your fire department.
- Educate members on wellness and exposure prevention.

FINANCE

- Budget for two sets of turnouts for all emergency response personnel.
- Budget for PPE cleaning by an ISP or by purchasing the necessary equipment to bag, transport and clean PPE and SCBA washers in an area designated as safe and appropriate to do so.
- Consider grants, including FEMA's Assistance to Firefighters Grant Program (AFG), for alternative funding for major or capital purchases toward best practices.
- Provide engineering controls and associated equipment to reduce or eliminate exhaust from internal combustion equipment in living and work areas.
- Budget for annual physicals, other wellness programs and equipment.

PLANNING

- Develop an exposure control plan to include red, yellow and green zones in stations and apparatus.
- Use an apparatus design that reduces exposures and prevents cross-contamination by using solid, cleanable surfaces whenever possible.
- Provide a hand-washing station on every fire apparatus.
- Design fire station to address exposure reduction and cross-contamination prevention.
- Conduct testing to ensure a hazard-free work environment: MRSA, radon, asbestos, diesel exhaust, etc.

OPERATIONS: Emergency

- Ensure that all personnel are wearing full PPE and SCBA on all fire calls.
- Establish hot, warm and cold hazard zones at the scene. Limit entry to necessary personnel only, and limit time in hot zone.
- Limit the time that support personnel (including driver/engineer, rehab, incident commander and other support staff) are in potentially contaminated areas.
- Establish preliminary exposure-reduction processes including decontamination for every entry into a toxic smoke environment (including car fires and dumpster fires).
- Provide warm water and soap, or, if unavailable, use disposable wipes to clean hands, face and neck.
- Establish rehabilitation with medical surveillance when work event exceeds 2/30s or 1/45 cylinder or 45 minutes of strenuous labor, or as needed.
- Release most contaminated personnel first to reduce continued exposures to toxic products of combustion. First in, first home.
- Transport contaminated PPE and SCBAs in encapsulated bags to prevent further exposure to apparatus and personnel.
- Keep contaminated PPE, SCBAs and other equipment out of crew cab after fire calls.
- Allow personnel to return to the fire station out of service to shower and change into clean PPE. Monitor dispatch frequency and do not pass a critical call returning to quarters.

OPERATIONS: Routine Activities

- Ensure diesel exhaust capture systems or similar engineering controls are used every time the apparatus enters and/or exits the fire station.
- To further reduce contamination that may be brought into the station by response footwear, encourage personnel to wear a station shoe inside the living quarters of the fire station.
- Practice wellness in general. Conduct annual physicals including cancer screenings. Use sunscreen when outdoors, don't use tobacco and participate in daily exercise.
- Document exposures, injuries and illnesses throughout career.
- Conduct initial recruit and annual refresher training to include cancer awareness, behavioral health, wellness and fitness.
- The Safety Committee will review occupational exposures to identify root causes and/or necessary mitigation efforts.

LOGISTICS

- Establish a PPE, SCBA and uniform cleaning program for all entries into contaminated environments.
- Provide a second set of turnouts for all emergency response personnel.
- Institute an on-scene hood exchange program or similar controls to prevent continued use of contaminated hoods.
- Maintain the exposure control plan to include cleaning, disinfecting and maintenance programs to reduce exposures in the fire station.

APPENDIX B

DEFINITIONS

APPARATUS: A mobile piece of fire equipment such as a pumper, aerial, tender, automobile, etc.

APPROVED: A method, equipment, procedure, practice, tool, etc., that is sanctioned, consented to, confirmed or accepted as good or satisfactory for a particular purpose or use by a person, or organization authorized to make such a judgment.

BLOODBORNE PATHOGENS: Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), human immunodeficiency virus (HIV) and other potentially infectious materials (OPIM).

CBRN: Chemical, biological, radiological and nuclear.

CHRONIC HEALTH EFFECT: An adverse health effect resulting from long-term exposure to a substance. The term is also applied to a persistent (months, years or permanent) adverse health effect resulting from a short-term (acute) exposure.

CLEANING: To make (something or someone) free of dirt, marks or mess, especially by washing, wiping or brushing.

CONTAMINATED: The presence or the reasonably anticipated presence of materials foreign to the normal atmospheres, blood, hazardous waste or other potentially infectious materials on an item or surface.

CONTAMINATION: The process of transferring a hazardous material from its source to people, animals, the environment or equipment, which may act as a carrier.

DECONTAMINATION: The physical or chemical process of cleansing an object to remove contaminants such as microorganisms or hazardous materials, including chemicals, radioactive substances and infectious diseases. Decontamination is sometimes abbreviated as "Decon." Also prevents the spread of contamination to other persons or equipment.

DISINFECTION: A procedure that inactivates virtually all recognized pathogenic microorganisms, but not necessarily all microbial forms (i.e., bacterial endospores) on inanimate objects.

ENGINE (PUMPER): A piece of apparatus equipped with hose and a pump for the purpose of supplying water under pressure through hose lines.

EXPOSURE OR EXPOSED: When an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g., accidental or possible) exposure. “Subjected” in terms of health hazards includes any route of entry like inhalation, ingestion, skin contact or absorption (OSHA - 29 CFR 1910.1200).

FIIRE: Fire fighter Injury and Illness REduction (FIIRE) is a safety initiative for employers of professional fire fighters to reduce incidence of fire fighter occupational injuries and illnesses through proactive risk management and implementation of best practices according to RCW 51.04.170. L&I partnered with representatives from the Washington Fire Chiefs and the Washington State Council of Fire Fighters to develop this initiative.

FIRE APPARATUS: A fire department emergency vehicle used for rescue, fire suppression or other specialized functions.

FIRE DEPARTMENT FACILITY: Any building or area owned, operated, occupied or used by a fire department on a routine basis.

FIRE FIGHTER HEALTH AND SAFETY COLLABORATIVE (FFHSC): The stakeholders, WA State Labor & Industries, Washington State Council of Fire Fighters and Washington State Fire Chiefs created this collaborative for fire departments to share policies, procedures, best practices, and resources on fire fighter safety and health issues.

GROSS DECONTAMINATION: The initial phase of the decontamination process during which the amount of surface contaminant is significantly reduced.

HAZARD CONTROL ZONES:

- **COLD zone:** The control zone of an incident that contains the command post and such other support functions as are deemed necessary to control the incident.
- **TRANSITION zone:** The control zone outside the hot zone where personnel and equipment undergo decontamination and the hot zone support takes place.
- **HOT zone**: The control zone immediately surrounding the hazard area, which extends far enough to prevent adverse effects to personnel outside the zone. The hot zone presents the greatest health risk to members and will often be classified as an IDLH atmosphere.

HEALTH AND SAFETY OFFICER: The member of the fire department assigned and authorized as the administrator of the department’s health and safety program.

IARC: The International Agency for Research on Cancer (IARC) is the specialized cancer agency of the World Health Organization. The objective of IARC is to promote international collaboration in cancer research.

IDLH: Immediately dangerous to life and health. Exposure to airborne contaminants that is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment.

INCIDENT COMMANDER: The person in overall command of an emergency incident. This person is responsible for the direction and coordination of the response effort.

INCIDENT SAFETY OFFICER: The person assigned the command staff function of safety officer in the incident command system.

ISP: Independent service provider, relating to NFPA 1851 for the care and maintenance of structural firefighting ensembles.

NFPA: National Fire Protection Association.

NFR: The National Fire fighter Registry for Cancer is a program established by the National Institute for Occupational Safety and Health (NIOSH) to gather information about the occurrence of cancer among fire fighters.

NIOSH: National Institute of Occupational Safety and Health.

OCCUPATIONAL EXPOSURE: Reasonably anticipated skin, eye, mucous membrane or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

OSHA: Occupational Safety and Health Administration.

OPIM: Other potentially infectious materials, which include the following body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva, any body fluid that is visibly contaminated with blood and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.

APPENDIX B

OVERHAUL: A firefighting term involving the process of final extinguishment after the main body of a fire has been knocked down. All traces of fire must be extinguished at this time.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

• Equipment to shield or isolate a person from the chemical, physical and thermal hazards that may be encountered at an incident.

• PPE includes both personal protective clothing and respiratory protection. Adequate PPE should protect the respiratory system, skin, eyes, face, hands, feet, head, body and hearing.

• Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

PFAS: Per- and polyfluoroalkyl substances, a class of thousands of chemicals. These pollutants, which repel water, oil and grease, are used in hundreds of everyday products including firefighting foams and bunker gear.

PRELIMINARY EXPOSURE REDUCTION (PER): Techniques for reducing soiling and contamination levels on the exterior of the ensemble or ensemble elements following incident operations.

RCW: Revised Code of Washington.

REHABILITATION: The process of providing mental and medical evaluation, rest, hydration and nourishment to members who are engaged in emergency operations.

RESPIRATORY PROTECTION: Equipment designed to prevent the wearer from inhaling contaminants.

RISK ASSESSMENT: To set or determine the possibility of suffering harm or loss, and to what extent.

SCBA: Self-contained breathing apparatus.

STATION (FIRE STATION): Structure in which fire service apparatus and/or personnel are housed.

STRUCTURAL FIREFIGHTING PROTECTIVE CLOTHING: Often called turnout or bunker gear, this refers to the protective clothing normally worn by fire fighters during structural firefighting operations. It includes a helmet, coat, pants, boots, gloves and a hood. This clothing provides limited protection from heat but may not provide adequate protection from the harmful gases, vapors, liquids or dusts that are encountered during hazardous materials incidents.

THERMAL RUNAWAY: An incident in which one exothermal process triggers other processes, finally resulting in an uncontrollable increase in temperature. This can result in the destruction of a battery or, in severe cases, in fire.

TLV/TWA: Threshold limit values/time weighted average.

TOTAL WORKER HEALTH (TWH): A holistic approach to workplace health and safety that emphasizes the integration of injury and illness prevention efforts with health-promotion initiatives.

TURNOUT CLOTHING: See structural firefighting protective clothing.

VAPOR BARRIER: Material used to prevent or substantially inhibit the transfer of water, corrosive liquids, steam or other hot vapors from the outside of a garment to the wearer's body.

WAC: Washington Administrative Code: apps.leg.wa.gov/wac.

WISHA: Washington Industrial Safety and Health Act.

Next Steps: Building Organizational Resilience

Action Planning Worksheet B

Review the components of organizational resilience in the left column. Using an "X", mark what components your organization (fire department) has in place and how well they are working. Next, consider what components you feel should be the top priorities for your organization at this time. Select one component to focus on and complete that row. You can return to this worksheet to evaluate other components.

Provided by the IAFF

ORGANIZATIONAL COMPONENT	In Place Working Well	In Place Not Working	Not in Place	Why is this important to your organization?	What is the next step to move this initiative forward?	Who should take the lead?	Target Date for Action
Behavioral Health Education							
Department-wide Resiliency Training (Includes recruits)							
Peer Support Program							
Periodic Behavioral Health Screening							
Comprehensive Health Insurance Coverage *(Includes behavioral health coverage)*							
Post-Traumatic Exposure Response							
Chaplaincy Program							
Partnerships with Mental Health Providers							
Physical Fitness Program							
Retiree Outreach and Inclusion							
Family Outreach and Inclusion							
Other:							

CANCER CHECKLIST 2.0

YES	NO	DESCRIPTION
		Current carcinogen-exposure reduction policy
		Apparatus equipped with fire incident decon materials
		Apparatus equipped with materials for transport of contaminated PPE
		Consistent Health and Safety Officer review of incidents with known carcinogen exposures
		Department-wide familiarization/access to PIIERS for exposure documentation
		PIA-ARR policy/process includes assessment of exposure-control efficacy
		Fire stations/facilities contain identified decon areas and required materials
		Annual department training calendar has content on carcinogen-exposure Reduction
		Response plans address staffing for decon, scene monitoring, and rehabilitation
		Regional interoperability—adoption of common process for exposure reduction and decon
		Recruit Academies—exposure reduction training, utilize decontamination and documentation practices
		Department members receive annual WFI/NFPA 1582 physicals
		Department participation in FIIRE program—"Best Practices" adoption
		Recent participation in Vulnerability Assessment Program
		Strategic plan includes infrastructure upgrades needed to minimize carcinogen exposures
		Align employer exposure documentation with Fire Department requirements (Municipalities)
		Include an exhaust capture system function check and maintenance as part of facility inspection
		PPE cleaning procedure after incident includes all PPE, turnouts, plus helmets, masks, boots, gloves and hoods
		Process/materials for members to transport PPE while preventing contamination of passenger vehicle
		Fire station supplies two (2) sets of PPE (turnouts) for each member

YES	NO	FIRE FIGHTER TO MID-LEVEL SUPERVISORS (LT. TO CAPT.)
		Review and enforce your department's current policies.
		Rehab/gross decontamination policies.
		Contaminated fire hose should be cleaned per NFPA 1962 Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose.

YES	NO	OPERATIONS: EMERGENCY INCIDENTS
		Ensure that all personnel are wearing full PPE and SCBA on all fire calls.
		Establish hot, warm, and cold hazard zones at the scene. Limit entry to necessary personnel only, and limit time in hot zone.
		Limit the time support personnel (including driver/engineer, rehab, incident commander and other support staff) are in potentially contaminated areas.
		Establish gross decontamination for every entry into a toxic smoke environment (including car fires and dumpster fires).
		Provide warm water and soap, or, if unavailable, use disposable wipes to clean hands, face, and neck.
		Establish rehabilitation with medical surveillance when work event exceeds 2/30s or 1/45 cylinder or 45 minutes of strenuous labor, or as needed.
		Release most contaminated personnel first to reduce continued exposures to toxic products of combustion. First in, first home.
		Transport contaminated PPE in encapsulated bags to prevent further exposure to apparatus and personnel.
		Allow personnel to return to the fire station out of service to shower and change into clean PPE. Monitor dispatch frequency and do not pass a critical call returning to quarters.

YES	NO	OPERATIONS: ROUTINE ACTIVITIES
		Ensure diesel exhaust capture systems or similar engineering controls are used every time the apparatus enters and/or exits the fire station.
		To further reduce contamination that may be brought into the station by response footwear, encourage personnel to wear a station shoe inside the living quarters of the fire station.
		Practice wellness in general. Conduct annual physicals including cancer screenings. Use sunscreen when outdoors, don't use tobacco, and participate in daily exercise.
		Document exposures, injuries and illnesses throughout career.
		Conduct initial recruit and annual refresher training to include cancer awareness, wellness, and fitness.
		The Safety Committee will review occupational exposures to identify root causes and/or necessary mitigation efforts.

Provider's Guide to FIREFIGHTER MEDICAL EVALUATIONS

Firefighting is a uniquely stressful and dangerous job that requires working in unpredictable and often toxic environments. Due to the demands, firefighters are at increased risk for job-related **CANCER**, **MENTAL HEALTH CONCERNS**, and **CARDIOVASCULAR EVENTS**.

While the USPSTF recommendations should be used as a baseline, they are designed for the general population and not an occupational group with increased risk. Providers should be aware of the unique exposures and consider this in conjunction with personal and family risk factors when weighing timing and frequency of screenings.

CARDIOVASCULAR DISEASE (CVD)

Sudden cardiac events account for ~50% of acute duty-related death among firefighters primarily by myocardial infarction or cardiac arrest.[1]

Consider thoroughly screening and aggressively treating CVD risk factors. An ASCVD risk score can help identify firefighters who may need to initiate treatment for hypertension or dyslipidemia.

Expert Panel Recommendation: Based on risk factors, evaluate firefighters for coronary heart disease (CHD) and structural heart changes, specifically consider:[2]

Coronary Artery Calcium (CAC) Scan at age 40 yrs., or earlier based on clinical judgment and risk profile

Screening for structural heart disease including left ventricular hypertrophy, cardiac chamber enlargement, valvular abnormalities, or diastolic/systolic dysfunction using screening echocardiography in the presence of hypertension, obesity, Metabolic Syndrome or sleep apnea

A large-scale autopsy review found approximately 80% of firefighters who suffered a sudden cardiac event had evidence of both coronary heart disease (>50% occlusion) and a structurally enlarged heart. Only about 20% of autopsies had evidence of an intracoronary thrombus, suggesting ischemic heart disease and resultant complications may be responsible for a large percentage of cardiac line of duty deaths.[3]

FIREFIGHTERS AS TACTICAL ATHLETES

Cardiovascular
Extreme physical work, >70 lb of gear, strain on cardiovascular system

Hematological
Dehydration (decreased plasma volume), hemoconcentration

Thermoregulatory
Elevated core temperature, dehydration, heat stress

Respiratory
Increased breathing rate and oxygen consumption

Metabolic
Oxygen cost (extreme physical work), increased lactate, fatigue

Immune/Endocrine
Increased leukocytes and hormones

Nervous
Sympathetic surge, increased adrenaline

Muscular
Increased oxygen use and heat production

Psychological
Repeated exposures to trauma, sleep disruption, increased mental and behavioral health concerns

Click here bit.ly/3yX8lfA or Scan the QR code for Screening Tools, Resources & More

CANCER

Firefighters have been found to be diagnosed with cancer at earlier ages than the general population.[4-8]

While firefighters do wear PPE, their gear does not protect them from all carcinogenic exposures on the fire ground and modern fires burn hotter and dirtier than ever before.[10]

While studies are evolving to empirically validate screenings beyond those of the USPSTF for firefighters, experts working with this population strongly suggest considering:

Discussing pros and cons of tracking PSA annually starting at age 40

Colorectal cancer screening beginning at age 40

Cervical cancer screening every 1-3 years based on risk factors

Annual mammograms beginning at age 40

Annual testicular exam and instruction for self-examination

Annual head-to-toe skin examination and appropriate dermatology follow-up

Urinalysis annually for microscopic hematuria

CANCERS found to be increased among Firefighters

Brain[4,6,7]	Colon[8,9]	Bladder[5,8,9]
Non-Hodgkin Lymphoma[4,8,9]	Cervical[9]	Mesothelioma[4,8,9]
Leukemia[7]	Prostate[4,6-9]	Rectum[4,5,8]
Breast[10]	Testicular[4,6,8,9]	Intestines[5]
Melanoma[6-9]	Stomach[4]	Lung[5]
Kidney[5,7]	Thyroid[6,8]	Esophagus[5,7]

Multiple Myeloma[4,7]

CARCINOGENS found in smoke

Carbon Monoxide, Hydrogen Cyanide, Hydrogen Chloride, Asbestos, Sulfur Dioxide, Formaldehyde, PCB, Benzene, PAH, Chloroform, Styrene

BEHAVIORAL HEALTH

Firefighters have high rates of depression, post-traumatic stress, acute stress reactions, anxiety, high rates of suicidal ideation and report frequent binge drinking.[12-18]

Consider screening for behavioral health issues, suicidal thoughts, and substance use/abuse such as binge drinking.

SLEEP DISORDERS

Firefighters are at high risk for sleep disorders (e.g. sleep apnea, insomnia, shift-work disorder, and restless leg syndrome).[13,19]

Based on the substantially high rate of sleep disorders, experts in firefighter health recommend aggressive screening and treatment for sleep disorders.

LUNG DISEASE

Firefighters are often exposed to products of combustion that may lead to acute respiratory issues (i.e.: hypoxemia, bronchoconstriction).[20] Repeated exposure may cause chronic pulmonary disease and abnormal lung function.[21,22]

Based on risk factors, experts in firefighter health recommend considering:

Baseline Chest X-ray and repeat imaging as clinically indicated

Low dose CT for screening of lung cancer in high-risk individuals

Regular spirometry to include FEV1, FVC, and the absolute FEV1/FVC ratio if clinically indicated

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Dear Firefighter,

The partner document for this letter (the Provider's Guide to Firefighter Medical Evaluations) is designed to be taken to your primary care provider to let them know what unique occupational risks you face as a firefighter.

Firefighters are at increased risk for:

- Several types of cancers
- On-duty cardiovascular events
- Sleep disorders
- Behavioral health concerns such as -
  - depression
  - suicidal thoughts
  - anxiety
  - post-traumatic stress

THIS IS WHERE YOU COME IN.

Every firefighter needs to take control of their own health care and ensure their providers are aware of the physical and mental health stress common for firefighters.

The **US Preventative Services Task Force (USPSTF)** provides recommendations for exams and screenings for the general population. While these should be used as a baseline, they are not designed for an occupational group with increased risk. Providers should be aware of the unique exposures and consider this when weighing timing and frequency of screenings.

The attached document provides recommendations on screenings that experts in firefighter health believe are appropriate for firefighters.

This document is not meant to be prescriptive for your primary care provider, but rather to raise his/her awareness as they weigh your occupational and personal risk factors in making clinical decisions about screenings and treatment.

If your department has medical evaluations to clear you for duty, GREAT! However, occupational medicine/department exams are focused on clearing you for duty for your department.

YOUR primary care provider is focused on managing YOUR health.

If your department does NOT provide an annual exam, it is even more important for you to work with a primary care provider to ensure your health is protected.

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