

SPEAKING OF FIRE SPECIAL EDITION

CANCER IN THE FIRE SERVICE...



FIRE PROTECTION PUBLICATIONS | OKLAHOMA STATE UNIVERSITY
930 N. WILLIS, STILLWATER, OK 74078-8045
800.654.4055 | IFSTA.ORG

SPRING 2016



EXECUTIVE DIRECTOR'S RAMBLINGS

“You have cancer.” Those are three words that you never want to hear. I know. I had a doctor say them to me. Three times. Nothing can really prepare you to hear those words. You think “this only happens to other people, how can it be happening to me? I left active fire fighting 10 years ago. I have a lovely bride and two beautiful very young children. This can’t be!” But it was real and many years later I learned that one reason it may have happened to me was because I was a firefighter. The cancer was metastatic melanoma. I learned later that firefighters have a significantly greater chance of developing that type of cancer than the general population. Instantly, I became part of that statistic. A part of this reality.



IFSTA/FPP colleagues support Mike Wieder in his cancer fight with new hair styles to match his (December, 2007).

We have all heard of specific incidents or situations in which exposed firefighters developed cancers at an unusually high rate. There have been fire stations where the firefighters assigned to that station had an unusually high cancer rate, regardless of which shift they were on. The firefighters who responded to an underground utility vault fire in New York City who years later became sick and died. We all know what the number 343 means. It is the number of FDNY firefighters who made the supreme sacrifice at the World Trade Center attack on September 11, 2001. Today’s reality is that dozens of additional firefighters have died from illnesses related to their work at that site and thousands more have incident-related illnesses. The tragedy of that single, terrible day seemingly has no end.

You may be thinking, “I never worked in that kind of fire station. I did not go to any of those big events or anything even like them. It won’t happen to me.” Here is your reality check. Every brush fire, every car fire, every house fire, every hazardous materials incident that you respond to exposes you to the possibility of developing some type of cancer. The cancer may grow years after you went to that incident. The truth is that you may never know which incident was one that got you. We have to treat every incident as potential cancer risk.

The firefighter cancer risk is no longer a dirty little secret. It has come to the forefront of the North American fire service and the organizations that lead our profession. Organizations such as the International Association of Fire Fighters (IAFF), International Association of Fire Chiefs (IAFC), National Fallen Firefighters Foundation (NFFF), Firefighter Cancer Support Network (FCSN), and the National Institute for Occupational Safety and Health (NIOSH), along with IFSTA and many more people and agencies have committed to doing the research and program development needed to ensure that today’s firefighters are better aware of these hazards and, more importantly, how to minimize our risk to them.

This special edition of *Speaking of Fire* is solely focused on the firefighter cancer issue. In this issue you will hear stories from individuals whose lives have been affected by cancer, from researchers who are studying firefighter cancers, and from the fire service organizations who are working hard to find ways to reduce the incidents of firefighter cancer. There is an old adage that states “It takes a village...” Today’s fire service village is united in their effort to drastically lower the incidences of firefighter cancer. We challenge you to join us in this effort. Whether you wish to recognize it or not, this is a matter of life and death, and that life may be yours.

Mike Wieder
Associate Director, FPP
Executive Director, IFSTA
Cancer Survivor



TABLE OF CONTENTS

Executive Director’s Ramblings inside cover

Cancer in the Fire Service...

- Cancer in the Fire Service – A Public Policy Risk Analysis*.....2
- FCSN: We Help Firefighters and Their Families Cope with Cancer*6
- The Role of IAFC in the Fire Service Cancer Fight*8
- Fighting Fires. Fighting Cancer*.....10
- The Fire Service Occupational Cancer Alliance*12
- Taking Action Against Cancer*.....13

Advertising

- Fire and Emergency Services Safety Officer, Second Edition**..... 5
- Occupational Safety, Health, and Wellness, Fourth Edition**..... 9
- Firefighter I and II Interactive Courses**back cover



Cancer in the Fire Service – A Public Policy Risk Analysis 2



The IAFC’s Role in the Fire Service Cancer Fight 8



Courtesy of Ron Jeffers, Union City, New Jersey.

GO GREEN AT IFSTA.ORG

Do you want to read *Speaking of Fire* online at ifsta.org? If so, we will notify you when it is available for viewing — all you need to do is send your email address to sof@osufpp.org. You can print your own copy at your convenience and therefore won’t need a printed copy from us. If you definitely don’t want a printed copy of *Speaking of Fire*, please include in your email your name, address, and account number so that we can remove you from the SOF mailing list. Thanks!



Fire Protection Publications | Oklahoma State University | 930 N. Willis, Stillwater, OK 74078-8045 | 800.654.4055 | ifsta.org
Director: Craig Hannan | Associate Director and IFSTA Executive Director: Mike Wieder | Assistant Director: Nancy Trench
Sr. Graphic Designer: Desa Kinnamon | Graduate Assistant: Joel Billings | Administrative Assistant: Jenny Bayles
Special Edition Editor: Joel Billings

Contributing Writers: Peter S. Berger, Gregory Moulin, Timothy Elliott, Todd J. LeDuc,
International Association of Fire Fighters, and JoEllen L. Kelly, Ph.D.

Marketing Comments or Questions? Contact Marketing by email: marketing@osufpp.org or call: 800.654.4055.

This special issue of *Speaking of Fire* is produced by IFSTA, a member of the Fire Service Occupational Cancer Alliance, to raise awareness about the cancer risks inherent to fire fighting, to promote action for mitigation of firefighter cancers and to honor firefighter cancer survivors including our IFSTA Executive Director, Mike Wieder, who is six years cancer free.

Copyright© 2016 Fire Protection Publications. This material may not be reproduced without the express permission of the publisher.

Oklahoma State University, in compliance with the title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, sex, age, religion, disability or status as a veteran in any of its policies, practices or procedures. This includes but is not limited to admissions, employment, financial aid and educational services. Title IX of the Education Amendments and Oklahoma State University policy prohibit discrimination in the provision or services or benefits offered by the university based on gender. Any person (student, faculty or staff) who believes that discriminatory practices have been engaged in based on gender may discuss his or her concerns and file informal or formal complaints of possible violations of Title IX with OSU’s Title IX coordinator: the Director of Affirmative Action, 408 Whitehurst, Oklahoma State University. This publication, issued by Oklahoma State University as authorized by Fire Protection Publications, was printed at no cost to the taxpayers of Oklahoma.



CANCER IN THE FIRE SERVICE...

Cancer in the Fire Service – A Public Policy Risk Analysis

Peter S. Berger and Gregory Moulin

Firefighter Exposure to Carcinogens

New evidence suggests that cancer is overtaking heart attack as the number one killer of firefighters in the United States.¹ In a recent report by the United States Fire Administration (USFA), cancer will surpass heart attacks as the number one cause of firefighter fatalities.¹ A 2006 review indicated that cancer among firefighters is growing at an alarming rate.² This article also noted that a firefighter is more likely to develop multiple myeloma, non-Hodgkin lymphoma, prostate or testicular cancer above all other types of cancer. Other studies have noted that firefighters have a greater cancer rate than the general population.^{1,3-6}

Risk of exposure to carcinogens includes inhalation, absorption through the skin, and by ingestion. Inhalation of smoke, along with the unburned products of combustion, poses one of the most significant health concerns for firefighters. Three of the most dangerous substances found in the air/smoke in and around a fire are carbon monoxide, benzene, and hydrogen cyanide. These poisons are released in the chemical breakdown of plastics, furniture, rubber, adhesives, synthetic materials, and building materials. However, smoke from incomplete combustion of these products contains many more potentially dangerous chemicals.

Two common practices allow firefighters to accidentally inhale carcinogens. First, some firefighters conduct overhaul operations without an SCBA. The second common practice involves starting or running apparatuses in a closed bay without a proper exhaust removal system. Benzene, which is the primary byproduct of diesel fuel combustion, can accumulate quickly in a sealed structure. Furthermore, the byproducts can disperse via the HVAC system or seep under doors and into living quarters.⁷ Appropriate exhaust removal systems, as well as ventilation and positive pressure bunkrooms, can help keep dangerous exhaust gases out of bays and station living areas.



Courtesy of Bob Esposito.

Dermal absorption involves a toxin being absorbed through the skin. Some areas of the skin are more penetrable than others. These areas include the face, angle of the jaw, neck, and throat. So any and all equipment that contacts those areas, especially the hood, need to be doffed carefully and cleaned regularly. The hood and the protective piece of equipment worn by firefighters over their SCBA masks provide an external filter for carcinogens. But as mentioned above, the hood must also be kept as clean as possible because the highly vascular throat area is a prime absorption point. According to a recent report, the “skin’s permeability increases with temperature; for every 5 degree increase in skin temperature, rate of absorption increases 400%. ”³

In the context of cancer in the fire service, bunker gear issuance is another area worthy of discussion. Departments generally issue one set of bunker gear at a time to firefighters, which are replaced at least every ten years per NFPA 1851. Repeated exposure to fires from actual incidents and training evolutions causes saturation of the gear. A direct correlation exists

between the amount of carcinogen saturation on bunker gear and the degradation of that gear.^{8,9} A second set of gear could curb carcinogenic absorption through the degradation of the gear. Unfortunately, due to budget constraints, a second set of bunker gear is rarely an option. In addition, some firefighters view darkened and worn gear as a “badge of courage,” thus, often ignoring manufacturer recommendations or department policies for washing/maintaining gear. This perspective may have a negative influence on younger, impressionable firefighters.

The third possible method of exposure to carcinogens is through ingestion. Unfortunately, ingestion of carcinogenic materials regularly occurs. When firefighters complete a fire fighting evolution, command usually sends the crew to a rehabilitation (rehab) station. The firefighter may doff their gear (coat, pants, and gloves) or perhaps only parts of the gear prior to entering the rehab area. At that point, they handle food or water provided at the rehab station without any thought of the potential long-term effects of ingesting silent but deadly carcinogens from their contaminated hands, face, or neck. Ingestion of toxins can have a detrimental effect on internal organs among firefighters; forms of stomach, liver, intestinal, and even pancreatic cancer have been on the rise. Simply washing hands, and other exposed areas, before eating/drinking or after handling contaminated gear can help to mitigate this hazard.

Policy/Action Plan

So what can we do to help prevent or at least reduce cancer in the fire service? In order to responsibly address the increasing number of cancer deaths and illnesses in the fire service, a number of policy alternatives should be considered. Some policy recommendations may prove to be too expensive to adopt or they may not be implemented for other reasons. The serious health concerns associated with cancer did not develop overnight, so we must understand and accept that this crisis cannot be fixed overnight. While many potentially effective alternatives exist, a policy/risk analysis performed on cancer in the fire service leads us to two primary recommendations: 1) awareness and developing action plans and 2) HIPAA compliant cancer screening programs.

The first recommendation is to develop a comprehensive training program designed to enhance cancer risk awareness and prevention. In a national survey of firefighters, 83 percent (N=1,036) perceived “heart attack” was the leading cause of death for firefighters.¹⁰ Less than 15 percent selected cancer. This suggests a limited level of awareness of cancer risk among firefighters. Therefore, the objective of the first recommendation is to promote behavioral change through the use of current scientific research that will help create consistent training programs to mitigate the risk of carcinogen exposure.

While the research has demonstrated a causal link between firefighting and an increased risk of cancer,³ a cancer prevention and awareness program may not be an easy sell. Any proposals will need broad-based national, state, and local support including active coordination with the National Institute for Occupational Safety and Health (NIOSH), National Fire Protection Association (NFPA), United States Fire Administration (USFA), the state organizations governing fire departments, and state fire chiefs associations. A coordinated action plan, backed by science, will help gain political traction at the local, state, and national levels. The Firefighter Cancer Support Network (FCSN) is already hard at work delivering the awareness message and taking action on a local level across the country and fire departments are beginning to take notice and action.

The second low cost/high impact solution is to create an annual HIPAA compliant cancer screening program. This program would 1) detect firefighters with existing cancer and 2) monitor firefighters’ health over years to aid early detection and treatment. Most firefighters favored annual screening (80 percent).¹⁰ In addition, 95 percent of firefighters said they would participate in screening if it was an option and the result remained confidential.¹⁰

The message must be consistent and unrelenting to maximize reach and promote action among fire service personnel, educators, and officials. Implementing a HIPAA compliant screening detection policy including early detection and treatment will likely lead to less cancer deaths and decrease leave of absence. Early cancer treatment can also lower healthcare costs, a worthy study in itself.

continued on page 4...

Cancer in the Fire Service – A Public Policy Risk Analysis

Discussion

The policy alternatives identified above are offered to stimulate discussion and action. Prevention and early detection are two areas that can make a difference. Fire administration support is critical to a national fire service cancer policy, which should emphasize education and screening at a minimum. These initial policies will allow administrations to budget appropriately and prepare policy makers and employees for future initiatives. Together we can reduce the occupational risk of cancer to an absolute minimum by implementing multiple policies over time, beginning with these two sensible policy initiatives.

For further information or for a copy of our team's complete Policy/Risk Analysis on Cancer in the Fire Service, please contact Peter S. Berger, Captain/Paramedic for Hallandale Beach Fire Rescue, at peter.berger@okstate.edu or Greg Moulin, Captain, DFW Airport Fire Department, at greg.moulin@okstate.edu.

Acknowledgements

This paper was derived from an Oklahoma State University graduate public policy analysis course project. We would like to acknowledge the other group members: Ryan Devine, Lanita Magee, Roberto M'Causland, and Danny Gato.

Works Cited

1. Daniels, R. Daniels., Travis. L. Kubale, James. H. Yiin, Matthew M. Dahm, Thomas R. Hales, Dalsu Baris, Shelia H. Zahm, James J. Beaumont, Kathleen M. Waters, and Lynne E. Pinkerton. 2013. "Mortality and Cancer Incidence in a Pooled Cohort of US Firefighters from San Francisco, Chicago and Philadelphia (1950–2009)." *Occupational and Environmental Medicine*, 71(6):388-397.
2. LeMasters, Grace, Ash Genaidy, Paul Succop, James Deddens, Tarek Sobeih, Heriberto Barriera-Viruet, Kari Dunning, and James Lockey. 2006. "Cancer Risk among Firefighters: A Review and Meta-Analysis of 32 studies." *Journal of Occupational and Environmental Medicine*, 48(11):1189-1202.
3. Firefighter Cancer Support Network (FCSN). 2013. "Taking Action against Cancer in the Fire Service." Honeywell.
4. Bates, N. 2006. "Registry-based Case-control Study of Cancer in California Firefighters." *Epidemiology*, 17(6), S174.
5. King, J. K. 2003. "Job Related Cancers in Firefighting." Eastern Michigan University Course Paper.
6. Ma, F., L. E. Fleming, D. J. Lee, E. Trapido, and T. A. Gerace. 2006. "Cancer Incidence in Florida Professional Firefighters, 1981 to 1999." *Journal of Occupational and Environmental Medicine*, 48(9):883-888.
7. Baldwin, Tommy, Thomas Hales, and Maureen Niemeier. 2011. "Controlling Diesel Exhaust Exposure inside Firehouses." *Fire Engineering*, Issue 2:63-74.
8. Perry, Justin. 2011. "Thermal Degradation of Firefighter Turnout Gear Due to the Effects of Moisture." College Park, Maryland. Master's Thesis.
9. Alexander, Barbara. 2014. "Plasticizer Contamination of Firefighter Personal Protective Clothing - A Potential Factor in Increased Health Risks in Firefighters." *Journal of Occupational and Environmental Hygiene* 11(5):D43-D48.
10. Peter S. Berger, Gregory Moulin, Ryan Devine, Lanita Magee, Roberto M'Causland, and Danny Gato. 2014. "A Public Policy Analysis of Cancer Prevention in the Fire Service." Oklahoma State University POLS 5613 Public Policy Analysis Course.

JUST RELEASED

FIRE AND EMERGENCY SERVICES SAFETY OFFICER SECOND EDITION

Achieve JPR's for Fire Department Health Safety Officer (Chapters 1-12)

Achieve JPR's for Incident Safety Officer (Chapters 13-16)

Meet NFPA 1521: *Standard for Fire Department Safety Officer Professional Qualifications* (2015)

References NFFF 16 Firefighter Life Safety Initiatives

Available in Print and as an eBook

IFSTA.ORG • 800.654.4055





CANCER IN THE FIRE SERVICE...

FCSN: We Help Firefighters and Their Families Cope with Cancer

Timothy Elliott

Cancer is the Leading Cause of Line-of-Duty Deaths for America's Firefighters.

Cancer is the most dangerous threat to firefighter health and safety today. Between 2002 and 2014, cancer caused 60 percent of line-of-duty deaths for career firefighters.¹

Yet, the U.S. Fire Administration's firefighter fatality statistics do not include cancer-related deaths. It is a stark reality: firefighting increases cancer risks significantly for every firefighter.

Since 2005, the Firefighter Cancer Support Network (FCSN) has provided assistance and one-on-one mentoring to thousands of cancer-stricken firefighters and their families. The FCSN also delivers extensive firefighter cancer awareness and prevention training nationwide.

The FCSN is a 501(c)(3) organization established by Los Angeles County Firefighter Paramedic Michael Dubron, a survivor of stage IV colon cancer. Today, FCSN's key supporters and partners include the International Association of Fire Fighters (IAFF), the International Association of Fire Chiefs (IAFC), the National Volunteer Fire Council (NVFC), Firefighter Close Calls (FFCC), and the National Fallen Firefighters Foundation (NFFF), among many other respected fire service organizations. The FCSN is a founding member of the Fire Service Occupational Cancer Alliance.

Now in our 10th year, the FCSN has active operations in 36 states. In 2016, we are expanding FCSN's cancer-prevention training and launching our new train-the-trainer program nationwide. We are also developing the second white paper in FCSN's occupational-cancer series. Of course, we are continuing our primary focus, which is supporting firefighters and their families following a cancer diagnosis.

Immediate Help

The FCSN can start helping immediately following a cancer diagnosis with a FCSN cancer-support toolbox. The FCSN's signature toolbox, delivered free of charge, contains tested and proven resources to help firefighters and their families cope with the cancer diagnosis, treatment, and recovery. If you have received a cancer diagnosis, please call the FCSN's toll-free number – 1-866-994-FCSN (3276) – or use the online assistance-request link at www.firefightercancersupport.org/request-assistance/. One call, one click of a "send" button is all it takes to rally your brother and sister firefighters.

Badge-to-Badge Support

The FCSN also offers free badge-to-badge peer support for fire/EMS members and their immediate families. The FCSN's unique network includes more than 130 volunteer peer-support mentors—nearly all are firefighters and paramedics who are cancer survivors. The FCSN's network also includes mentors for spouses and children. Many mentors started their relationship with the FCSN seeking assistance, and are now giving back by helping others through the process.

Awareness and Prevention

The FCSN has delivered our extensive occupational cancer awareness and prevention training to thousands of firefighters across America. The IAFF's new online cancer awareness and prevention course, created in cooperation with FCSN, launches later in 2016.



The FCSN instructors provide training at some of the largest fire service events, including the Fire Department Instructors Conference, Fire Rescue International, Firehouse World, and the National Volunteer Firefighter Council national conference.

We also provide training for fire departments large and small. In 2015, the FCSN collaborated with Boston Fire Commissioner, Joseph Finn, and leaders of IAFF Local 718 to bring our cancer prevention training to Boston. Cancer caused 67 percent of the Boston Fire Department's line-of-duty deaths between 2002 and 2014. "Boston firefighters develop cancer at a rate two-and-a-half times higher than other Boston residents," Finn said. "We have recognized cancer's effect on our firefighters, and FCSN's department wide prevention training is an important part of our ongoing, comprehensive safety, health, and wellness program."

Boston IAFF Local 718 President Richard Paris agreed. "Since 1990, the Boston Fire Department has lost 160 members to cancer," Paris said. "It's a staggering number. We know that cancer is killing our members, and we're making a collaborative effort to save the lives of Boston firefighters. The FCSN's training focuses on preventive measures the department and firefighters can take to reduce exposure to carcinogens and help avoid contracting this deadly disease."

The FCSN President, Bryan Frieders, division chief, Verdugo Cities, California Fire Rescue, praised Boston's collaborative, aggressive approach to reducing firefighters' occupational cancer risk. "Addressing the occupational cancer epidemic requires a cultural change for the fire service," Frieders said. "Joe Finn and Richie Paris are leading from the front. Their work together with FCSN illustrates how effective labor-management relationships can be to enhance the safety and well being of firefighters."

The Boston training was part of a FCSN pilot program funded by a Federal Emergency Management Administration Fire Prevention and Safety grant. The FCSN's new train-the-trainer program, set to launch later in 2016, will help the FCSN ensure consistent, accurate education delivered with highly personal interaction by fellow firefighters and other qualified instructors. The FCSN will be extending the prevention pilot in other cities with a \$10,000 grant from the Scott Safety Foundation. Please direct inquiries about FCSN's firefighter cancer prevention training and new train-the-trainer program to Tim Elliott at telliott@fcsn.net.

Research and Development

The FCSN leaders are participating in cancer-related engineering and medical research. The FCSN's new cancer prevention white paper is scheduled for release in April 2016. It will review the latest occupational cancer research and provide real-world tools that fire-service leaders can use to reduce cancer risks.

The new white paper will be the second in FCSN's occupational-cancer series. The FCSN's widely hailed 2013 white paper, "Taking Action Against Cancer in the Fire Service," provides lifesaving details about recognizing and reducing firefighters' cancer risks. It includes eleven (11) immediate actions (see page 13) that firefighters should take to protect themselves, their families, and their fellow firefighters. The full paper is available at <http://bit.ly/1R9TVYR>.

"The first white paper created staggering results," Frieders said. "FCSN's 2013 white paper has been added to the study material for promotional exams, from lieutenant all the way up to fire chief. The new white paper builds on those street-level actions with higher level resources, including sample policies, practices, and guidance. We can't eradicate cancer in the fire service, but we certainly can reduce firefighters' exposure to carcinogens."

Honeywell First Responder Products contributed \$10,000 toward the 2016 white paper meeting expenses. Honeywell also supported the printing and distribution of the 2013 white paper and FCSN's ongoing "Wash Your Hood Sunday" campaign.

Get Involved!

To learn more about FCSN and how you can get involved, please visit firefightercancersupport.org.

Sources

1. International Association of Fire Fighters data.



CANCER IN THE FIRE SERVICE...

The Role of IAFC in the Fire Service Cancer Fight

Todd J. LeDuc

I recently had the honor of attending the 2016 Firefighter Cancer Support Network's (FCSN) "Taking Action against Cancer in the Fire Service" held in South Florida. This was a gathering of national fire service stakeholders, researchers, and medical clinicians in follow-up to the 2013 gathering. It is important to review why this topic is important.



Multiple studies, including the NIOSH cancer study, have demonstrated significantly higher rates of cancer in firefighters compared to the general population. This includes: testicular cancer (2.02 times greater risk), multiple myeloma (1.53 times greater risk), non-Hodgkin lymphoma (1.51 times greater risk), skin cancer (1.39 times greater risk), prostate cancer (1.28 times greater risk), malignant melanoma (1.31 times greater risk), brain cancer (1.31 times greater risk), colon cancer (1.21 times greater risk), leukemia (1.14 times greater risk) and preliminary results from the San Francisco Fire Department indicate elevated incidence of breast cancer in female firefighters.¹

The research continues to evolve on additional occupation carcinogen risks. Evidence has demonstrated a 400 percent increase in skin absorption rates for every 5 percent increase in skin temperature. Much of the work that has been done by the FCSN and others has focused on preventative efforts surrounding diligent adherence to respiratory protections; aggressive and thorough cleaning of personal protective gear (bunker gear) and protective hoods. Significant focus has been on early decontamination of exposed firefighters with showering and wipes as soon as possible after exposure.

The second FCSN gathering (2016) focused on additional areas of needed research and work. This includes the effectiveness of personal protective equipment cleaning processes, enhanced personal protective equipment design for exposure protection, different types of exposure risks, and approaches to reducing and limiting occupational exposure risks.

Despite having a National Fire Protection Association (NFPA) standard that recommends annual physical exams for all firefighters, that recommendation is not widely implemented. In fact, 27 percent of career and 28 percent of mostly career departments do not require medical exams. Volunteer and mostly volunteer departments have even fewer mandated physicals for their personnel, 40 percent and 42 percent, respectively (Fischler, 2006). Annual medical screenings of firefighters provide for early detection of a host of medical conditions. Early detection of cancer results in enhanced treatment options and outcomes.

Our experience at Broward County Fire Department illustrates a successful program, which mandates firefighters receive annual physicals with ultrasound screening. We used a joint labor-management approach, which lead to the identification of numerous firefighters needing clinical follow-ups and interventions (not just cancer-related concerns). Six cases of thyroid cancers, one case of testicular cancer, and one case of lung cancer were found among 700 firefighters examined.

Todd J. LeDuc, MS, CFO, CEM, MIFirE is Division Chief of Health, Safety & Accreditation for Broward County, FL., a career internationally accredited metro department. He is the elected Secretary of International Association of Fire Chiefs Safety, Health and Survival Section. He is also a reviewer for chief officer credentialing and agency accreditation. He can be reached by email at tjlbcems@aol.com.

References

1. Statistics from the FCSN 2013 white paper

COMING IN 2017!

OCCUPATIONAL SAFETY, HEALTH, AND WELLNESS FOURTH EDITION





CANCER IN THE FIRE SERVICE...

Fighting Fires. Fighting Cancer.

International Association of Fire Fighters

Fire fighters know they could die in a fire on any given day. They do not expect cancer to threaten their life. Fighting fires poses obvious risks, but a fire fighter's medical battle — and the battles that hundreds of fire fighters wage each year against cancer — proves that if you are fighting fires, chances are you may also be fighting cancer one day.

The growing body of evidence shows that cancer poses a significantly greater threat to fire fighters than the general public.^{1,2} That doesn't surprise researchers who say the toxic soup of carcinogens in fire smoke that fire fighters are exposed to likely is the primary reason that first responders fall victim to a range of cancers.¹⁻⁵

"We aren't making this up," says IAFF General President Harold Schaitberger. "The connection between firefighting and cancer is real and there is scientific data to support our position. But we can't stop there. We must continue to learn more so we can prevent our members from contracting this horrible disease and help them in their time of need."

Smoke from burning computers, televisions, and other plastics, furniture, and building materials in older structures all can release harmful toxins. Those materials can be laced with dangerous metals — lead, cadmium and uranium — or minerals — like asbestos. Variability in exposures among fire fighters can be great; however, a number of chemicals are commonly found in most fire scenarios. The common combustion products encountered by fire fighters that present a cancer hazard include, but are not limited to, acrylonitrile, asbestos, arsenic, benzene, benzo(a)pyrene, and other polycyclic hydrocarbons (PAHs), cadmium, formaldehyde, chromium, diesel fumes, polychlorinated biphenyls, and vinyl chloride.

Additionally, one of the most abundant chemicals in modern household furnishings and appliances are flame retardants. Polybrominated diphenyl ethers (PBDEs) and its penta, octa, and deca congeners were the most commonly used flame retardants in the U.S. With the phase-out of PBDEs, manufacturers are increasing the use of halogenated organophosphate flame retardants, including tris(1,3-dichloro-2-propyl)phosphate (chlorinated tris or TDCP) and tris(1-chloro-2-propyl)phosphate (TCPP). While these chemicals can inhibit the formation and spread of flames, they cause unintended health consequences for fire fighters. When foam containing flame retardants burns, it releases higher levels of carbon monoxide, soot, and smoke creating a more hazardous fire compared to foam without flame retardants. They also release dense black smoke that reduces visibility and increases highly corrosive gases. Fire fighters can have acute exposures to PBDEs during active firefighting and overhaul activities.

Fire fighters cannot avoid fire smoke, but they can limit their exposure to carcinogens by wearing their breathing apparatus while on the fire ground. Many fire fighters do not wear masks unless they are inside a structure. Fire fighters who are on the fire ground or in the vicinity of a fire run the risk of inhaling fire smoke and exposing themselves to poisonous carcinogens if they do not wear their breathing apparatus. Additionally, fire fighters should continue to wear their breathing apparatus and personal protective clothing during overhaul operations.

Personal protective equipment doesn't provide sure-fire protection from exposure to cancer-causing agents. Fire fighters are exposed to carcinogens even if they do not inhale fire smoke because carcinogens can attach to ultrafine particles that can't be seen, but are still in



the fire scene environment. In addition to wearing breathing apparatus on the fire ground, fire fighters can limit exposure to carcinogens by simply taking a shower after returning from a fire and properly cleaning personal protective equipment to wash away toxins. Soot, which contains polycyclic aromatic hydrocarbons, can be absorbed through the skin. Researchers believe the dangerous hydrocarbons can lead to lung, bladder, and skin cancer.^{6,7} "People think soot is benign but it is not, and most fire fighters coming back from a fire are covered in soot," Schaitberger notes.

Risks are not limited to the fire ground. The IAFF has found that many firehouses still do not properly control diesel exhaust to the outdoors, placing fire fighters at risk of inhaling benzene-laced diesel exhaust, which is a cancer-causing agent.

It has been a decades-long goal of the IAFF to prevent occupational cancer from afflicting its members. Prevention is aimed at stopping a cancer from developing in the first place. Prevention also focuses on behavioral changes and avoidance of hazards to decrease individual risk factors for cancer. This includes IAFF programs addressing personal protective equipment, diesel exhaust control devices, tobacco cessation programs, nutrition programs, and wellness/fitness.

Additional prevention includes techniques that detect early cancer or precancerous conditions so that early intervention can decrease the risk of advanced disease. The IAFF and the IAFC have incorporated these protocols into mandatory annual medical evaluations under the IAFF/IAFC Wellness and Fitness Initiative.

Schaitberger states, "Now more than ever, we need to raise awareness in order to safeguard our members from exposures to carcinogens, and we need to implement changes to our standard operating procedures that will keep our members healthy and extend their lives."

References

1. LeMasters, Grace, Ash Genaidy, Paul Succop, James Deddens, Tarek Sobeih, Heriberto Barriera-Viruet, Kari Dunning, and James Lockey. 2006. "Cancer Risk among Firefighters: A Review and Meta-Analysis of 32 studies." *Journal of Occupational and Environmental Medicine*, 48(11):1189-1202.
2. Daniels, Robert D., Travis L. Kubale, James H. Yiin, Matthew M. Dahm, Thomas R. Hales, Dalsu Baris, Shelia H. Zahm, James J. Beaumont, Kathleen M. Waters, and Lynne E. Pinkerton. 2014. "Mortality and Cancer Incidence in a Pooled Cohort of US Firefighters from San Francisco, Chicago and Philadelphia (1950-2009)." *Occupational and Environmental Medicine*, 71(6):388-397.
3. Brandt-Rauf, P. W., L. F. Fallon, T. Tarantini, C. Idema, and L. Andrews. 1988. "Health Hazards of Fire Fighters: Exposure Assessment." *British Journal of Industrial Medicine*, 45(9):606-612.
4. Golden, Anne L., Steven B. Markowitz, and Philip J. Landrigan. 1995. "The Risk of Cancer in Firefighters." *Occupational Medicine (Philadelphia, Pa.)*, 10(4):803-820.
5. International Agency for Research on Cancer. 2010. "IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Painting, Firefighting, and Shiftwork." IARC, 98:397-451.
6. ATSDR. 1995. "Toxicological Profile for Polycyclic Aromatic Hydrocarbons. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR). Atlanta, GA: U.S. Publication No. 1995-639-928.
7. Boffetta Paolo, Nadia Jourenkova, and Per Gustavsson. 1997. "Cancer Risk from Occupational and Environmental Exposure to Polycyclic Aromatic Hydrocarbons." *Cancer Causes and Control*, 8(3):444-472.



CANCER IN THE FIRE SERVICE...

The Fire Service Occupational Cancer Alliance

JoEllen L. Kelly, Ph.D.

The 2014 Firefighter Life Safety Summit (Tampa2) and the National Fire Service Research Agenda Symposium in 2015 identified cancer as a troubling and growing reality of firefighting. The recently formed Fire Service Occupational Cancer Alliance is a response and strategy to address these concerns. Under the management of the National Fallen Firefighters Foundation (NFFF), the Alliance represents a movement in the fire service to fight the occupational diseases associated with this great profession. The Alliance is composed of over 80 representatives from the fire service, fire service constituent organizations, product manufacturers, and medical researchers.

The first meeting, held in Washington D.C. in January 2015, was focused on learning what science can tell us about cancer and firefighting, the identification of research gaps, and an examination of the state and federal laws that govern benefits to cancer survivors. Chairman of the NFFF Board, Chief Dennis Compton (cancer survivor) asked the audience during the first meeting how many knew a firefighter who has or had cancer. Virtually everyone raised their hand. Chief Compton then asked how many cancer survivors were in the room. It was amazing how many hands went up in response to that question as well. There was also an overlay in all discussions of practical things firefighters can do “right here, right now” to help protect themselves from the occupational cancers related to firefighter risk and exposures.

During the following May, a smaller steering committee met to review the January meeting report and develop an action plan for the Alliance. This committee made 22 recommendations related to research, prevention, legislation, and the engagement of other organizations. The committee also made recommendations on line-of-duty inclusion criteria.

A second full meeting of the Alliance took place in Arlington, VA in October, 2015. At this meeting the Alliance reviewed the action plan and progress to-date. One of the most important outcomes from this meeting was the formation of development groups to study the following areas: a cancer registry, understudied populations, exposure reporting, the sources and mechanisms of cancer, and personal protective equipment (PPE) effectiveness. It was determined that secondary contamination and other pertinent issues should be studied. Finally, the group tackled the very important challenge of identifying effective prevention programs, especially concentrating on early interventions.

Shortly after this meeting, the NFFF released an extraordinary and impactful video on this topic called *The Silent Killer: Firefighter Cancer*. This compelling collection of insights and memories is a great training tool and should be shown in both large and small venues throughout the fire service. It is available in the *Resources* below.

The Alliance steering committee is set to meet again in Washington, D.C. in April of 2016. This will be a time to check on progress regarding the action plan and to review materials regarding cancer prevention in the fire service.

Resources

Find information on the work of the Alliance go to: <http://www.everyonegoeshome.com/2015/12/02/cancer-in-the-fire-service/> *Cancer in the Fire Service: Fighting Back Against a Growing Trend* (Dec. 2015).

There are resources available for you at the following link: https://www.dropbox.com/sh/hjolkf3xelsoxnw/AAAh_6bZYRStmgfTfvGl_5Pza?oref=e&n=35243205.

The NFFF has produced a video on cancer in the fire service, *The Silent Killer: Firefighter Cancer*. We urge every firefighter to view this film at: <http://www.everyonegoeshome.com/2016/02/17/the-silent-killer/>.

The Congressional Fire Services Institute has passed a resolution supporting federal legislation, funding and policies to address firefighter occupational cancer: <http://www.cfsi.org/downloads/NFFF%20Cancer%20Resolution%2012.16.15%20-%20Final%20Approved.pdf>.

If you have questions regarding the Fire Service Occupational Cancer Alliance, please contact Chief Victor Stagnaro at the NFFF, vstagnaro@firehro.org.

Taking Action Against Cancer in the Fire Service

WHAT IMMEDIATE ACTIONS CAN I TAKE TO PROTECT MYSELF?

1

Use SCBA from initial attack to finish of overhaul.
(Not wearing SCBA in both active and post-fire environments is the most dangerous voluntary activity in the fire service today.)

2

Do gross field decon of PPE to remove as much soot and particulates as possible.

3

Use Wet-Nap or baby wipes to remove as much soot as possible from head, neck, jaw, throat, underarms and hands immediately and while still on the scene.

4

Change your clothes and wash them immediately after a fire.

5

Shower thoroughly after a fire.

6

Clean your PPE, gloves, hood and helmet immediately after a fire.

7

Do not take contaminated clothes or PPE home or store it in your vehicle.

8

Decon fire apparatus interior after fires.

9

Keep bunker gear out of living and sleeping quarters.

10

Stop using tobacco products.

11

Use sunscreen or sunblock.

The importance of annual medical examinations cannot be overstated — early detection and early treatment are essential to increasing survival.

These 11 lifesaving actions are excerpted from FCSN's "Taking Action Against Cancer" white paper; it's available free of charge at firefightercancersupport.org.

©2013-2016 Firefighter Cancer Support Network | firefightercancersupport.org

**JUST
Released**



Firefighter I and II Interactive Courses



ifsta.org/e6course

VIDEOS POWERED BY

ActionTraining
SYSTEMS

SPEAKING OF FIRE
OKLAHOMA STATE UNIVERSITY
FIRE PROTECTION PUBLICATIONS
930 N. WILLIS STREET
STILLWATER, OK 74078-8045

NONPROFIT
ORGANIZATION
U. S. POSTAGE
PAID
Permit No. 191
Stillwater, Oklahoma