

INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS

# **FIRE FIGHTER OCCUPATIONAL EXPOSURE REDUCTION:**

## **BEST PRACTICES AND INTERVENTION WORKSHOP**

**OCTOBER 26-27, 2023 • FINAL REPORT**



## **LAND ACKNOWLEDGEMENT**

The land on which the workshop was held is the unceded, unsurrendered Territory of the Anishinaabe Algonquin Nation. We are grateful to have had the opportunity to work and hold this workshop here.

## **FUNDING**

This workshop was jointly funded by Health Canada and the International Association of Fire Fighters (IAFF).

## **DISCLOSURE**

This report summarizes discussions held during the workshops. This report does not necessarily reflect the views of Health Canada.

## **ABOUT THE WORKSHOP**

Fire fighters are exposed to a wide range of both known and suspected carcinogens. Due to the growing concern around firefighting and cancer in Canada, Health Canada and the IAFF co-sponsored a workshop on fire fighter cancer intervention best practices, state of science, and forward looking research priorities. Objectives included outlining the state of the science regarding intervention strategies designed to reduce fire fighters' exposure to toxicants of concern, and to delineate research priorities that will advance the science of intervention, exposure control, and mitigation of adverse health outcomes such as cancer. Fire service stakeholders were identified and invited due to their multidisciplinary expertise, including subject matter experts, speakers, fire fighters, academics, industry representatives, Indigenous organizations, and governmental representatives (e.g., federal, provincial/territorial, municipal).





# INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS

November 9, 2023

**COLLEAGUES,**

On behalf of the International Association of Fire Fighters, thank you for your participation in the Workshop on Fire Fighter Occupational Exposure Reduction: Best Practices and Intervention. I would also like to thank the Honourable Mark Holland, Minister of Health, and Parliamentary Secretary to the President of the King's Privy Council for Canada and Minister of Emergency Preparedness Sherry Romanado for their continued efforts to protect the health and safety of fire fighters across Canada. This event brought fire fighters, researchers, and fire service stakeholders together to identify and discuss best practices and interventions to mitigate fire fighters' exposures to carcinogens and other toxins. It also identified priorities for research on intervention efficacy, specific priorities for Canada, and the resources needed to address them. Your commitment to improving the health and safety of fire fighters across North America is greatly appreciated. Together, we will continue to work toward promoting research and improving data collection on the prevention and treatment of cancers linked to fire fighting in order to study and identify new and better ways to protect those who serve our communities.



We are grateful to everyone who contributed to a successful and important event in the name of fire fighter safety.

**Sincerely,**

**Edward A. Kelly  
General President**

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## WORKSHOP PARTICIPANTS INCLUDED:

- IAFF Local Affiliates
- Health Canada
- National Institute on Occupational Safety & Health
- International Agency for Research on Cancer
- Australian Fire Brigade
- Underwriters Laboratories
- Occupational Health Clinics for Ontario Workers
- National Indigenous Fire Safety Council
- Canadian Association of Fire Chiefs
- University of Miami Firefighter Cancer Initiative
- University of Montréal
- University of Queensland
- Instituto Superior de Engenharia Insituto Politécnico do Porto
- National Development & Research Institutes
- National Institute on Occupational Safety & Health
- Ontario Ministry of Labour Immigration Training and Skills Development
- Dalhousie University
- Occupational Cancer Research Centre
- Canadian Interagency Forest Fire Centre
- Canadian Forces
- PSAC
- IRSST
- University of Washington
- Duke University
- University of Guelph
- Veterans Affairs Canada
- Wildfire Conservancy
- Drexel University
- Monash University
- Statistics Canada
- OHS Prevention Service Alberta
- BC Wildfire Service Ministry of Forests
- OH&S with the Dept. of Fisheries, Forestry and Agriculture Newfoundland Labrador

The workshop was held in Ottawa, Ontario on October 26–27, 2023. Workshop participants exchanged information regarding cancer and firefighting and discussed existing best practices, personal best practices, knowledge gaps and priorities for future research on cancer intervention and firefighting exposures. More specifically, the workshop was successful in generating stakeholder participation, both in person and virtually, to identify best practices to or minimize fire fighters' occupational exposures, identify knowledge gaps, and propose research questions to guide future intervention research regarding the minimization and/or prevention of occupational exposures.

### ***The objectives of the workshop were to:***

1. Provide an overview of the state of knowledge regarding fire fighters' occupational exposures, best practices, and interventions to mitigate exposure.
2. Identify knowledge gaps pertaining to best practices and interventions to mitigate exposure.
3. Identify priorities for research on intervention efficacy.
4. Identify specific priorities for Canada, and the resources needed to address them.

## OPENING

The workshop was opened by the federal Minister of Health The Honourable Mark Holland, and Parliamentary Secretary to the President of the King's Privy Council of Canada and Minister of Emergency Preparedness Sherry Romanado, where they discussed the epidemic of cancer within the Canadian fire fighter population, and how the passing of the Act To Establish A National Framework For The Prevention And Treatment Of Cancers Linked To Firefighting requires the outcomes from this workshop to help guide next steps for the implementation of the Act. Following the Ministerial Opening, IAFF Assistant to the General President Sean McManus, and IAFF Chief of Field Services Patrick Morrison welcomed the in-person and virtual participants to the workshop and spoke to the importance of the workshop in producing solutions to the occupational exposures fire fighter endure which contributes to their increased rates of cancers and other negative health outcomes.



## PRESENTATIONS

The first day presentations began with opening remarks by co-host representatives from Health Canada and the IAFF to frame the objectives and scope of the meeting. Next, invited leaders in the field described and summarized the state of knowledge on:

- PPE (personal protective equipment) design and innovations
- Municipal fireground best practices, SOPs (standard operating procedures) and resources
- Wildland fireground best practices, SOPs and resources
- Personal best practices for exposure reduction (e.g., personal hygiene and PPE use)
- Workplace exposure reduction strategies related to infrastructure, and
- Workplace exposure reduction strategies related to behaviours and PPE deployment.



## **BEST PRACTICES IDENTIFIED AT THE WORKSHOP**

Subject matter experts delivered presentations on the current state of science as far as the best fire service and industry standards, products and practices in addressing exposure mitigation.

## **KNOWLEDGE GAPS IDENTIFIED AT THE WORKSHOP**

Knowledge gaps were identified by presenters throughout the workshop, and further evaluated through a series of breakout sessions and broader group discussions. The key gaps fall into various categories, such as improving data on underrepresented populations, improving studies on health outcomes and possible interventions, need for improved knowledge translation and sharing of practices, need for improved data collection and data resources, coordinated governance and government action, and improved health surveillance and cancer screening.



## ***PROBLEM STATEMENT: FIRE FIGHTERS AND CANCER***

**Approximately 85% of all duty-related deaths of fire fighters in Canada are due to occupational cancer.**

There is sufficient evidence that fire fighters are at an increased risk for developing and dying from a great many forms of cancer. Fire fighters also have a higher-than-average risk of other negative health effects such as cardiovascular risks, metabolic disorders, reproductive disorders and negative outcomes in offspring and behavioural/mental health injuries from their occupational exposures as fire fighters.

Action to better reduce exposures span the spectrum of possible interventions, and also include increased awareness to research to prevention, across situations in which fire fighters may be exposed to chemicals, screening, treatment, and support to fire fighters and their families.

## OVERVIEW PURPOSE OF THE WORKSHOP

Fire fighters are exposed to a wide range of toxic substances, and physical exposures such as shiftwork; and these exposures have been causally linked to a wide range of adverse health effects, including cancer. Over the past few decades, there has been a growing body of evidence that fire fighters have increased occurrences and mortality from a number of cancers. A carcinogenic hazard evaluation culminated in July 2022 with the World Health Organization's International Agency for Research on Cancer (IARC) re-evaluation of fire fighter exposures resulting in Monograph Vol. 132-Occupational Exposure as a Firefighter. The result was a categorization of Occupational Exposure as a Firefighter to a Group 1 carcinogen (i.e., known human carcinogen). Subsequently, on June 22, 2023, Bill C-224 received Royal Assent in the Canadian House of Commons. The Bill called for the creation of a National Framework for the Prevention and Treatment of Cancers Linked to Firefighting. Following Royal Assent, the Minister of Health now has a legislative responsibility to consult widely, develop a national framework with the goal of improved prevention and treatment of cancers linked to firefighting, and table this new framework within one year. Upcoming initiatives will "promote research and improve data collection on the prevention and treatment of cancers linked to firefighting." Consequently, there is considerable interest in the implementation of strategies to mitigate fire fighters' exposures to carcinogens and other toxicants.

The IAFF and Health Canada would like to thank the Honourable Mark Holland Minister of Health, and Parliamentary Secretary to the President of the King's Privy Council for Canada and Minister of Emergency Preparedness Sherry Romanado for their support throughout this workshop and in the continued efforts to protect the health and safety of fire fighters.





# IARC EVALUATIONS OF FIREFIGHTING

In 2007, the International Agency for Research on Cancer (IARC) classified “occupational exposure as a firefighter” as possibly carcinogenic to humans (IARC Group 2B) for three cancer types (testicular, non-Hodgkin lymphoma, and prostate). In 2021, additional research published since the evaluation in 2007 prompted IARC re-evaluate of the relationship between occupational exposures as a firefighter and cancer.

The Working Group, which met in Lyon, France June 7-14, 2022, was made up of 25 scientists from eight countries, including four from Canada. As a Working Group, they concluded that “occupational exposures as a firefighter” is carcinogenic to humans (IARC Group 1) for seven cancer types (sufficient: bladder cancer, mesothelioma, limited evidence: testicular, non-Hodgkin lymphoma, prostate, colon, and melanoma of the skin).



# ABOUT IARC

The International Agency for Research on Cancer (IARC) is a specialized agency of the World Health Organization (WHO), founded in 1965.

# WHAT IARC DOES:

IARC’s mission is to promote international collaboration in cancer research. The IARC Monographs Program identifies and evaluates causes of cancer in humans and is the leading international agency for the classification of causes of cancer. IARC classifies hazards into four categories depending on the strength of the evidence that they increase the risk of cancer in humans:

- 1 Carcinogenic to humans
- 2A Probably carcinogenic to humans
- 2B Possibly carcinogenic to humans
- 3 Carcinogenicity not classifiable

## **THE NATIONAL FRAMEWORK ON CANCERS LINKED TO FIREFIGHTING ACT**

*An Act to establish a national framework for the prevention and treatment of cancers linked to firefighting* was proposed as Bill C-224 in January 2022, and officially became law in June 2023<sup>1</sup>.

The purpose of this national framework is to “raise awareness of cancers linked to firefighting with the goal of improving access for fire fighters to cancer prevention and treatment.” The Act outlines measures that may be included in the framework to reach this goal, including promoting research, data collection and knowledge sharing related to cancers among fire fighters.

### **NATIONAL FRAMEWORK MAY INCLUDE MEASURES TO:**

- Explain and support research on the link between firefighting and certain types of cancer.
- Identify the training, education and guidance needs of health care and other professionals related to the prevention and treatment of cancers linked to firefighting and compile information relating to those needs.
- Make recommendations respecting regular screenings for cancers linked to firefighting.
- Promote research and improve data collection on the prevention and treatment of cancers linked to firefighting.
- Promote information and knowledge sharing in relation to the prevention and treatment of cancers linked to firefighting.
- Prepare a summary of existing standards that recognize cancers linked to firefighting as occupational diseases.

# DAY ONE: PRESENTATIONS ON BEST PRACTICES FOR EXPOSURE REDUCTION

## PRESENTATION SUMMARIES

### ***The Scope of the Problem – Keven Rojecki, Chairman of the WSCFF Health & Safety Committee:***

Occupational exposures occur during fireground operations, inside fire halls and stations from cross-contaminations such as a lack of diesel capture systems, cleaning gear, dermal decontamination, drill ground (fire training), and other sources. Chemicals of interest include benzene, formaldehyde, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls, asbestos, carbon monoxide, and form an unknown toxic cocktail as they combust. Implementing best practices includes standardization and understanding that practices will evolve. Exposure reduction is a holistic approach, and sleep, nutrition, and fitness are part of the total worker health, which is primary goal, not just cancer. Fire fighters need to find a way to implement best practices.

Quick wins that have high impact and involve low effort consist of safety committees, annual training, and the posting of fact sheets around the hall. Medium efforts involve decontamination programs, cleaning programs, and institutional leadership. High efforts require infrastructure changes of fire halls to include decontamination and washing spaces, a diesel system to reduce contamination, and annual medical exams.

Future research should involve the effects on the reproductive health of fire fighters, how fire fighters' sleep practices are impacting adverse health outcomes, what are the impacts from the rising of fire fighters' core temperatures, what are the impacts of PFAS exposure in bunker gear, station uniform, and how can they be mitigated, the best practices for using gloves during decontamination, and carcinogenic exposures and their impacts on total worker health.

### ***Limitations of Current PPE – Amanda Newsom, Underwriters Laboratories Project Manager:***

The NFPA 1971 approach for PPE is that any firefighting garment has one single level of protection. The garments were required to protect against the typical exposures (strength, thermal, and biological) and be able to perform in terms of durability, heat stress prevention, cleaning, and functionality. Testing the garments is carried out on individual pieces which means that each piece of the full suit is certified as an individual piece without performance testing on an ensemble level. This is to allow an increase in the number of garment options available for fire fighters.

There are four forms of hazardous chemicals exposure: Liquid (fuels, foam), particulate (combustion), biologicals, vapors. All these exposures can occur together. Protection from these exposures is critical. There are no performance requirements for vapor contamination. Tests show that protection only reduced exposure by 9.7%.

Limitations include lack of ensemble level testing, Interfacing, and cleaning PPE shows signs of degradation where the strength declines especially in the outer shell and flame properties decreased mostly in the outer shell, but after-flame properties did not change. After initial washing, thermal properties and breathability were affected, however, after 30 washes they are the same without further decline.

***Innovations in PPE Design – Amanda Newsom, Underwriters Laboratories, Project Manager:***

NFPA is trying to consolidate standards. For example, NFPA 1970 is consolidating 1971, 1975, the station wear, 1981, which is the SCBA, and '82 which are the patch devices. The thought was since this is what fire fighters wear, so put them all into one document. This allows the different committees to meet at similar times, if not at the same time, which can be difficult to arrange. It allows for more collaboration and for committees to talk about the same things at the same time.

NFPA 1950 includes special operations garments, wildland garments, and EMS garments. The 1950 was difficult to align between the garments as the products crossed over different standards with different testing requirements and would require multiple certifications, which is being added to the 1950. The NFPA 1950 adds a multifunction certification option. NFPA 1850/1857 consolidate the cleaning and care documents for structural and wildland fire fighting. This helped with the timing and aligning the implementation of the standards to occur one year after the product standards.

Materials are changing in the standards. Several changes have occurred starting with the light degradation test. Light degradation test done on moisture barriers and exposed to UV light, looking to see if the water penetrates through. It can be argued that light degradation testing may be inappropriate, therefore it was eliminated in the last edition of the standards and being replaced. The viral penetration test for garments was removed to innovate moisture barrier materials. The multi environment conditioning test addresses changes and finishes of the ensemble to make sure that strength of material is maintained over a certain range of exposures and environments (ex. Increased amount of laundering, heat exposure, UV light.) UV exposure to outer shells is the most severe test and causes significant degradation after UV exposure. Flame after fuel exposure test involves letting oil soak into outer shell, clean it, and see if after washing ensemble is still flame-resistant.

Cleaning of PPE products is also evolving. The largest changes are washing gear at higher temperatures, improved cleaning products, water hardness requirement standards, alternative washing methods (CO2 and Ozone). There are also ongoing discussions on increasing the cleaning efficiency requirement from 50% to 70%.

Use of recycled materials for building foundations could be detrimental as VOCs and hazardous vapor exposure will increase. As companies continue to move towards sustainable products, there will be a higher chemical exposure than today.



### ***Pasco County Fire Service Decontamination Program – Dixon Phillips & John Schmidt:***

The Pasco County Fire Service (PCFS) put an emphasize on the importance of implementing small changes, modifying rehabilitation procedures, properly cleaning gear and equipment, addressing cultural issues, and promoting best practices for maintaining cleanliness and reducing risks in the firefighting environment.

PCFS discussed the implementation and importance of decontamination practices for firefighters to reduce occupational disease risks. They highlighted the changes made by Chief John Schmidt to promote a culture of clean gear, such as bagging gear after fires and providing new hoods with every new breathing apparatus. The Florida Firefighter Cancer Bill 112.1816 is mentioned, which covers the department's expenses for firefighters' cancer treatment and provides a lump sum of \$25,000 for any loss of work. The concept of Personal Preliminary Exposure Reduction (P-PER) and the addition of decontamination trucks to improve response time and minimize cross-contamination were discussed. The on-scene decontamination process involves setting up a cold zone, using green buckets and soap for immediate decontamination, and utilizing DOT bags to store contaminated gear.

The cleaning of equipment at the scene will allow for the contaminants to remain at the scene, and not transported back to the fire station. The importance of training new hires and maintaining inventory for decontamination trucks was emphasized. Responsibilities of decontamination technicians include providing clean personal protective equipment, managing and repairing gear, and overseeing inventory. The decontamination program's timeline, training hours, and future plans for exhaust capture and station construction were also mentioned (hot/warm/cool zones). Additionally, the provision of in-house physicals and facilities for occupational health were highlighted.

### ***Vancouver Decontamination Program – Kevin Tomyk:***

Lieutenant Kevin Tomyk from the Vancouver Fire & Rescue Services gave a presentation on best practices for limiting and remediating exposure on the fire ground. He highlighted the need for gross decontamination using water and soap and emphasized the importance of safety managers identifying those who do not take safety seriously. Kevin suggested fostering a culture of safety by bringing together local firefighters and management, is key. Care for our colleagues is integral to fire service culture, and the adoption of safe exposure reduction practices in consistent with what is valued within fire service culture and is the avenue to adoption of new polices and practices in exposure reduction. The challenge lies in transitioning from considering dirty fire fighting gear as a source of pride to embracing the practice of decontamination. He acknowledges the existence of a problem regarding firefighters and cancer and suggests using social media to raise awareness among new recruits. Various strategies were discussed, such as signage between hot and cold zones, washroom signage, and creating a rehab truck with amenities to incentivize firefighters to take breaks after fires. The importance of decontamination was emphasized, including the use of hazmat spray and wet decontamination, as well as cleaning gear, bottles, and thermal imaging cameras on-site. The proper cleaning process for turnout gloves was mentioned, which involves washing the outer shell using bucket and brushes instead of a washing machine. Kevin also mentioned the need for a cleaning program for gear, including the use of extractors, hanging gear to dry, and organizing gear with names to ensure accountability. In Vancouver, new gear is provided at year 6, while the old gear is classified as Service Ready and used as backup. The document concludes by noting the need to mitigate hazards and the culture of pushing limits within the fire service.

**Wildland Fires & Wildland-Urban-Interface – Rick Swan, Wildfire Conservancy, NFPA/ISO rep.:**

The session focused on Personal Protective Equipment (PPE) for wildland fires. It was noted that wildland firefighters face longer exposure periods without interventions. There is a lack of equity between structural and wildland firefighters, particularly in terms of shift lengths. The understanding of exposure levels is limited.

There are several knowledge gaps, including limited studies and standard operating procedures (SOPs) for training. Cancer studies do not differentiate between structural and wildland firefighters, and ongoing studies have limited data due to various types and lengths of exposure and a limited sample size. Challenges include particulate protection for skin, respiratory protection for long periods (as current filters do not filter out volatile organic compounds), and cleaning/decontamination protocols which need improvement in terms of training, logistics, cost, and time.

Some recommendations include removing PPE, when possible, regular gross decontamination, avoiding contamination of water and food, implementing robust decontamination protocols, updating materials, using external storage for PPE and gear/tools, improving in-cab filtration, and installing washing stations on vehicles. The workshop emphasized the need for scalable solutions that can be applied across different industries.

One of the proposed next steps is to explore international comparisons, particularly the Finland Conference where wildland firefighters globally receive protection and respirators.

The main contaminants/particulates identified in the discussion were carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), nitrogen oxide (NO), hydrogen fluoride (HF), hydrogen chloride (HCl), sulfuric acid (H<sub>2</sub>SO<sub>4</sub>), cyanide, polycyclic aromatic hydrocarbons (PAHs) which account for 90% of smoke, and volatile organic compounds (VOCs) such as benzene, which are essentially present in smoke.

Overall, the workshop highlighted the need for better understanding, improved protection, and more effective decontamination protocols for wildland fire fighters. International comparisons and collaborations were seen as valuable avenues for finding solutions to these challenges.

**Personal Best Practices – Dr. Sara Jahnke, NDRI-USA:**

The workshop focused on personal best practices for fire fighters to prevent exposure to harmful chemicals. Videos emphasized the contamination risks and highlighted higher rates of miscarriage, fertility issues, and birth defects among fire fighters. Fire fighter miscarriage rates are 2.3 times higher than the national average. Male fire fighters are 46% more likely to seek fertility treatments. There is also higher incidence of developmental issues and birth defects in the fire fighter community. The importance of proper glove removal techniques and individual preventive measures like using wipes, laundering gear in pairs, using saunas, and donating plasma were discussed. Adoption of these practices was deemed critical for fire fighter safety. Saunas were found to be beneficial. They decrease inflammation and oxidative stress. Studies showed a non-significant decrease in PAHs concentrations after use of Saunas. The establishment of the National Firefighter registry program in Canada was also mentioned as a way to track personal exposure.



***Exposure Reduction – Behaviour and Use of Hard Assets – Chris Kehde FGM Architects:***

The session discussed fire station design focused on exposure reduction and contamination control. This included zone cauterization including hot-zones, transition-zones, and clean/safe-zones, key considerations and case studies. Engineered spaces can help to contain and control contaminants brought into structures. This includes HVAC systems separate for apparatus and living areas, atmospheric pressure differentials, personal hygiene areas and infrastructure, equipment storage areas, decontamination and disinfecting tools, and proper disposal practices and areas. Additionally the way in which occupant movement and transition paths are designed, interior layouts and flow all contribute to the way fire fighters interact with these spaces, and how they will either remediate or proliferate contamination from workplace exposures. Proven solutions include direct diesel exhaust capture systems, PPE extractors, uniform washers, showers located in transition zones, humidity control and high airflow. Takeaways include the need to further educate, establish, develop, define and design specific to the locations fire fighters spend the majority of their work-life, the fire station.



***Exposure Reduction in the Workplace – Dr. David Frost, University of Toronto:***

This session discussed indirect occupational factors relating to health, culture, and behaviour. Dr. Frost explained the relationship between diet, body composition, sleep and other modifiable factors and cancer as well as other forms of disease and unwanted negative health outcomes. The principles of: Move, Eat, Sleep, Connect were illustrated to give holistic measures to reduce occupational illness through best practices applied by both fire service managers and individual fire fighters. The session also emphasized the influence of cultural and social factors on these behaviors and the importance of influencing culture in a positive way. The high rates of obesity among fire fighters are highlighted, along with the associated risk factors for chronic diseases and cardiovascular events. Dr. Frost suggested that capability, motivation, and opportunity are important factors in behavioral change and that interventions need to be tailored accordingly. He also addressed the importance of exercise, food habits, sleep routines, and building meaningful relationships to protect fire fighters from psychological stress. He raised the issue of obstacles and facilitators to behavior change, such as leadership support, union support, and the overall culture within fire fighting departments. He concluded that education alone is not sufficient and emphasizes the need for a larger perspective that considers systemic factors and the overall wellbeing of fire fighters. Lastly, Dr. Frost mentioned that fire fighters often work multiple jobs and suggested the need for higher wages, to limit the non-fire fighting exposures fire fighters are forced to endure.

## DAY TWO: FACILITATED DISCUSSION OF BEST PRACTICES, HARMONISED APPROACHES & KNOWLEDGE GAPS

The purpose and successful outcomes from the facilitated discussions included identification of knowledge gaps related to exposure control and post-fire event exposure mitigation. Facilitated knowledge transfer between key stakeholders also allowed for clearly delineated next steps to improve upon policies, practices and products required for the protection of Canadian fire fighters from undesirable occupational exposures to chemicals of concern. Key stakeholders provided views, experiences, and perspectives which collectively contributes to content within this report. Beyond direct exposure reduction interventions and mitigation strategies, stakeholder engagement also provided recommendations for improvements in existing standards related to training and operating procedures, PPE innovations, and strategies to improve adherence to protective recommendations, policies, and regulations.

### **Academia/Research**

Throughout the workshop, Stakeholders placed emphasis on the need to update existing science to which exposure mitigation methods built from. Stakeholders from academia and research institutions stated the need for more research addressing cancer risk factors other than chemical exposures, which would include diet, exercise, and sleep. Researchers also noted a need for accessible funding, labs, and research teams to further investigate fire fighter exposures and best practices to mitigate these exposures. Furthermore, academia acknowledged that robust research on cancers within sub-groups of the fire service: females, indigenous fire fighters, wildland fire fighters, etc. is severely lacking, which impacts our understanding of the true scope of the cancer problem within the entire fire service population. Present research shows that 15–20% of women fire fighter remove “sometimes” or “always” essential elements of their fire fighting PPE at emergency scenes due to poor fit/function. Stakeholders are requesting government to incentivise industry to produce proper anthropomorphically suitable PPE to all fire fighters within the Canadian fire service. It was also noted that a Canadian fire fighter cancer registry, such as the one developed in the United States, would be immensely helpful in understanding fire fighter cancer trends in the past, present and for the future. Additional emphasis was place on the benefit of linking intervention to disease prevention within the scope of a national fire fighter cancer registry.

### **Stakeholder Views**

Stakeholders expressed views on a wide range of issues pertaining to fire fighter cancers. These views were often well beyond the exposure mitigation, which was the scope of the workshop, but are helpful to illustrate the spectrum of activities and organizations that have a role in fire fighter cancer, from awareness, research, and protection, to screening, prevention, treatment, and compensation.





## **Prevention and Awareness**

1. Stakeholders voiced the importance of career education of cancer and cancer risk throughout municipalities, department physicians, fire department trainees, fire fighters, and leadership in order to effectively change the culture and behaviour in the fire service.
2. One of the main concerns regarding awareness was not having primary care physicians who are aware of the increased risk of cancer that fire fighters face as a result of the job.
3. Early detection with the use of screenings is crucial in protecting fire fighters
  - It is important to have physicians that are aware of the risks fire fighters face and can recommend earlier screenings for fire fighters for certain cancers.
  - It is equally important for fire service employers to fund screening/ detection programs and services and promote participation by their fire fighters in those programs.
4. Stakeholder comments and suggestions also focused on the absence in understanding by primary care practitioners to the specific risk fire fighters face regarding many cancers. This was voiced as an absolute barrier to proper and appropriate medical care.
5. Recommendations from Stakeholders included forming relationships with your community health providers, and the development of clinician guidelines for education primary care doctors as to the risk and realities that place fire fighters in a high-risk cohort for a number of cancers.
6. Building off that recommendation is a scheme or structure that would allow for continual medical education that increases awareness, and up to date information for practitioners to use to guide fire fighter cancer screenings and risk-reduction interventions.
7. Properly funded and accredited (Pro Broad, etc.) Awareness training modules were identified as being necessary. The intent would be to allow for mandated fire fighter trainees cancer awareness and prevention education.
8. Fire Service management/leadership must be mandated to provide for, and facilitate fire fighter cancer education for every level for departmental staff access.
9. In order to mitigate exposures, awareness of these exposures must be raised among both the fire service population, as well as communities.



## **Protection**

One of the major needs mentioned among stakeholders was the gap in technology that meets present NFPA 1851 standards for the cleaning, and decontamination of fire fighter PPE. Technology gaps were also identified for general protection needs against low-molecular weight PAH, particulate, and dermal absorption. These discussions regarding protection for fire fighters emphasized the need to eliminate the forever chemical PFAS (per- and polyfluoroalkyl substances) from fire fighters' protective gear and from firefighting foams. With many of the topics discussed during the workshop, one of the common themes was that more supports were needed to assist with mitigating and prevention fire ground and workplace exposure, as well as research to evaluate how interventions may or may not equate to lower instances of related illnesses and disease. However, when it comes to the negative health effects associated with PFAS, the science is well-established. Studies show PFAS exposure causes cancers and other health effects which are suffered by fire fighters at rates in excess of that of the general public. PFAS have also been shown to impact behavioural development, metabolism, and the circulatory, digestive, endocrine, immune, neurological, and reproductive systems. The manufacture, importation, and use of PFAS in fire fighting protective gear needs to be prohibited at the federal government level through CEPA, and additional support regulatory requirements for the safe reclamation and disposal of fire fighting gear that contains PFAS is was identified by the stakeholders.

Not only is PFAS a concern when it comes to fire fighting gear, but it is also found in fire fighting foams, or aqueous film forming foams (AFFF). Military fire fighter stakeholders during the workshop raised the concern that most military based in Canada are contaminated with PFAS, and transitions away from fluorinated AFFF products are not occurring fast enough.

## **Prevention**

- Exposure profiling assessments at a fire event, not limited by the typical EPA TSCA 16 PAH sampling method.
- Wildland fire lacking equipment, equity, respiratory equipment.
- PFAS (foams, gear, military bases and airport authority property are the most contaminated, and serve as the contaminant source for most Canadian fresh water and communal contamination sites).

## **Treatment**

- Practitioner education and guidelines for treating fire fighters
- Increased and early cancer screening programs
- Mental health support for fire fighters diagnosed with cancer

### **Compensation**

Another priority among stakeholders was fair and equitable compensation and benefits for fire fighters through expanded presumptive legislation, regardless of province of employment. A gap that requires attentions is the delay in presumptive cancer coverage legislation for fire fighters in keeping pace with the state of science that support the causal relationship between fire fighting and cancers yet to be included in regulations governing presumption in many provinces. Organizations like the IAFF and the Canadian Association of Fire Chiefs (CAFC) noted the inequalities that exist when it comes to presumptive legislation across Canada and North America. Many stakeholders mentioned that there should be consistency across provinces and territories regarding specific cancer coverage. It was also mentioned that these presumptive laws should focus on the fire fighters and their families and require a coherent collaboration across all levels of governments to be successful.

Stakeholders stated that the choices made through the implementation of the National Framework should focus on:

- Providing the opportunity for Canada to be a leader in the realm of occupational cancer action plans
- Including indigenous fire fighters research projects to capture the nature of risk and outcomes for this sub-group of the fire service, which is accepted as being behind on all metrics (data collection/research, awareness (cancer and OHS protocol, access to gear and equipment) regarding fire fighter cancer-related topics.
- Increasing awareness and preventions measure that can be adopted by volunteer and composite fire services to positively impact recruitment and retention.

### **Best Practices**

Best practices evolve with emerging science, innovations in personal protective equipment (PPE), fire apparatus, and station design. It is important to ensure that such hard assets are appropriately modified and acquired to suit cultural and operational realities specific of each fire fighting locale. These best practices can be categorized as high reward/low effort to high reward/high effort and may not be attainable for every fire department or local, such as having two sets of turnout gear, however having replacement gear (shared spare gear or otherwise) will be a requirement under the new consolidated NFPA 1970/1850. Attendees discussed that fire fighters within Canada still struggle to be issued with the proper PPE, and many departments have an inability to correctly size and fit life-safety PPE including respiratory protection for use in IDLH environments for their fire fighters. Proper use of PPE, equipment and exposure mitigation practices are poorly defined by many fire services though the absence of proper, thorough standard operating procedures (SOP) and general orders (GO).

## BEST PRACTICES

TO REDUCE CANCER IN THE FIRE SERVICE



### LOW EFFORT

- Safety Committee
- Annual Training
- Signage
- Senior fire fighters as champions for safety and cultural change
- Healthy behavior (physical activity, nutrition)



### MEDIUM EFFORT

- Decontamination
- Cleaning Program (gear cleaning/requires multiple sets or exchanges)
- Equipment decontamination
- Institutional leadership and systemic change to support healthy behaviors



### HIGH EFFORT

- Infrastructure changes
- Firehouse decontamination space, cleaning and washing facilities
- Fire trucks - in-cab filtration and washing stations

### **Knowledge Translation**

Attendees discussed that little is known about the best methods for the wide range of physical and chemical exposures fire fighters are subjected to at emergency scenes as well as within the workplace itself. Challenges with communicating best practices within an operational context exist, as operational needs are often difficult to adapt without the requirement for increased staffing and resources that necessitate a financial commitment from the fire service to achieve. Many best practices and resources exist, but there is a need for standardization of these best practices and resources in order to widely share them, and for them to be widely accepted and be implementable at multijurisdictional incidents. The fire service Stakeholders also stressed the importance of continued involvement and engagement throughout research processes specific to the fire fighter population, i.e., from inception through to development of recommendations and dissemination. This knowledge translation emphasized adherence to gear wearing removal, preliminary exposure reduction and personal decontamination requirements, as well as safety protocols in order to foster a safer culture within the fire service where solutions are sought by end users for the remediation and reduction of exposure occurrences within the workplace and on the fire scene.

### **Fire Ground Infrastructure and Resources**

Best practices on the fireground can be seen in existing programs throughout various fire departments. These programs include in-depth decontamination processes SOP use in decontamination (personal and equipment) as well as efficacious PPE doffing, securing, cleaning and exchange. In addition to having SOPs in place, the resources within the departments must also be available for fire fighters to adhere to these standards. Workplace exposure reduction strategies that include decontamination and gear exchange programs, institutional resources and logistical assistance that allows for near impossible cross-contamination of fire fighters as well as fire station living and work quarters. Further supports and are required to allow for fire service specific hazard assessments to allow for tailored measures to be implemented in allowing for a reduction in the likelihood of both initial and secondary exposures and cross-contamination.

- Decontamination program example:
  - Post-fire preliminary exposure reduction performed by a staffed crew
  - Personal scene Wipes, hand washing; proper infrastructure for all seasons PPE doffing; decontamination trucks that can respond to emergency scenes
  - Prevent cross-contamination (shower before entering station living quarters) station
  - PPE extractors and separate uniform washers.

### **Personal Protective Equipment (PPE)**

Best practices for PPE use identified throughout the workshop included adherence to gear wearing and removal requirements and safety protocols.

- Multiple sets of gear or robust gear exchange program
- Decontamination and cleaning of gear and equipment
- PPE without flame retardant and PFAS coatings

### **Personal Behaviors**

Personal best practices for exposure reduction include getting regular early cancer screenings in accordance with NFPA 1582. Screening and early detection are vital in

- Screening and early detection.
- Awareness and adherence to protocols (gear wearing, removing and cleaning).
- Efforts, and departmental support to maintain a healthy weight, regular physical activity and eat nutritious food, sufficient sleep, and sleep hygiene programs.

### **Wildland Fireground**

Research gaps exist regarding both wildfire exposure, and exposures associated with complex and dynamic wildland/urban interface fires that often involve many structures from the build environment with modern synthetic components. Stakeholders identified lessons learned from not only the World Trade Center Health Program, but from case studies of the St. Catharines, ON, Horticultural Technologies buildings, the Hamilton ON, Plastimet fire, and the Fort McMurray wildland/urban interface fire, as justification for research regarding acute catastrophic exposures that can result in shortened latencies periods for cancer developments.

- Protracted exposure periods and inability to access uncontaminated atmospheres requires addressing.
- Single layer equipment, without proper female sizing, lack of adequate respiratory protection, little opportunities for PPE and personal
- In fire camp, logistics and resources are required to organize preventative activities and to prevent cross-contamination (clean up zone prior to entry, laundry, showers, etc.)



### **Knowledge Gaps to Inform Research Priorities**

- How to mobilize collaborations across all levels of government, and allow for funding that can allow Research Ethics Board approval for cross-province research projects and participant enrollment?
- What funding sources can be made available to address the identified gaps in research regarding fire fighter exposure?
- What are the most effective strategies for educating fire fighters and the medical community about firefighter cancer risks?
- Quantification of fire scene contaminants is a gap. The biomass, the wildland urban interface and the built environment generate gases, aerosols, and particulates that fire fighters are exposed to. Comparative exposures to safe health limits is needed to better measure the severity of both acute and chronic fire exposures.
- Fire fighter and Physician Relationship – spoke significantly on access to care, awareness, and how fire fighter’s need a medical team/ facility/ support that understands the unique occupational components of firefighting, specifically the exposures, hazards, risks, etc., related and provide care that will treat the fire fighters more effectively because that population is not the general public and shouldn’t be treated as such given the potential for incorrectly underestimating risk for cancers, reproductive health concerns, and other diseases.
- Understanding exposure risk, and the effectiveness of current PPE from immersing fire ground hazards such as those associated with mobile and fixed energy storage systems.

### **Personal Protective Equipment (PPE)/Gear**

The knowledge gaps among PPE and gear that were identified during the workshop include development, and cleaning and decontamination, as well as the requirement for the removal of chemicals of concern, such as PFAS and flame retardants from being incorporated and engineered into fire fighting garments, and related PPE. As new chemicals enter the market and new knowledge of toxic chemicals emerge, it is important to determine how fire fighter PPE will need to evolve in order to protect fire fighters from the most significant risks that they face in the performance of their duties. Additionally, there are gear fit issues that need to be addressed. The lack of availability of well-fitting gear for women and those of smaller frames can cause injuries among these populations of fire fighters. Workshop attendees also emphasized that there is a lot of focus on the turnout coats and pants, and more focus is needed for the hoods, and addressing areas of exposure such as PPE interfaces at the neck, waist, ankles and wrists, as well as methods for decontaminating fire fighting gloves, helmets and boots. The timeframe, and conditions for when turnout gear should be retired was another topic of discussion regarding the development of garment inspection standards. Turnout gear is currently tested at 40 washes and has a recommended 10-year duration by the National Fire Protection Association (NFPA), however mandated inspections and hazard assessments of that would trigger immediate disposal of gear contaminated by things such as asbestos and others.

When considering the cleaning and decontamination of PPE and gear, there are several knowledge gaps that were identified. These include potential environmental impacts of on-site decontamination, the timeframe for when decontamination needs to take place in order to be the most effective, and the effectiveness and possible improvement of decontamination wipes as well as which wipes may be the best option to use. Discussion on sauna use as part of the decontamination process was also included, though research shows saunas were statistically non-significant for geometric means. Attendees also voiced concerns on how to avoid cross-contamination while cleaning and storing turnout gear and fire service equipment. Additionally, requests were voiced regarding the need for specific cleaning procedures for different types of fire ground exposures.

### **Wildland Priorities**

- How can we better protect these fire fighters from exposures?
- How can we help fire fighters better understand their exposures?
- Logistical support and ability to provide for personal cleaning, and contamination reduction.
- Cleaning procedures that are effective and maintain the integrity for wildland equipment.
- Wildland fire fighter adherence/ability to adhere to exposure reduction SOPs.
- Research priorities regarding exposure - (length, type) and cancer outcomes, specific to these FF and sub-groups (female).
- Options for respiratory protection and better protection overall?
- Importance of FF Registry (sub-populations, long time, large data, post-fire scene data, help to understand specific cancers and populations)





### **Knowledge Gaps: Exposure**

- Exposure assessments to better understand special circumstance (Indigenous, retiree, wildland (catastrophic exposure events)
  - Causal links between these exposures and fire fighter cancer
  - Physician guided interventions to reduce body burdens of metals, SVOC, PFAS, etc.
- Measuring internal doses of contaminants within fire fighters beyond the metabolites of the 16 EPA PAH. Measurements of high molecular weight PAH and chemicals through faecal sampling, and tissue biopsies to measure contaminants that partition away from blood and have bonding affinities to other tissues.
- “Ever employed or volunteered as Fire Fighter” must be included in cancer reporting documentation and provincial death certificates.



# BREAKOUT SESSIONS

Targeted breakout sessions were included in this workshop to discuss best practices, harmonised approaches, and knowledge gaps pertaining to exposure mitigation. The following questions were posed to the breakout groups:

## 1. What are the most important knowledge gaps that have been identified?

*Answers included:*

- From a technology standpoint PPE must consist of materials which are safe and free of toxic chemicals.
- Research is desperately needed regarding the negative reproductive, birth and offspring outcomes that result from occupational exposures to PAH, particulate, phthalates, phenols, PFAS, etc.
- PPE for women- ensuring they have the right PPE and appropriate sizes to ensure they are protected from carcinogens and are able to perform their jobs appropriately.
- Respiratory for Wildland and Urban Interface (WUI) fire fighters – there is no current respiratory protection. Support research around WUI to identify appropriate protection and taking into account comfort, fit, and breathability.
- Education and training for fire fighters when they start out their careers and throughout their careers to identify current and emerging best practices
- Differing perspectives from agencies that are making policies or legislation without understanding the barriers for fire responders- ie. That PPE on the hierarchy of control is the lowest level of protection and that is where agencies typically address. Where we also want them to address the other levels of the hierarchy of control to try and make the fire environment safer from toxic chemicals for structural fire fighters.
- Many of the target gaps in this report would be helped by the implementation of a National Fire Fighter Cancer Registry, and the data that would be generated from it.
- Recommendations and a pathway should be established to evaluate the efficacy of interventions and prevention strategies.
- Exposure tracking is a gap that limits the capture of exposure data within the fire service. Accessible and available exposure tracking and reporting digital platforms must be adopted and proliferated within the Canadian Fire Service.
- Accessible and updated curricula on awareness and the prevention of occupational exposure, and the implementation of such curricula as mandatory education in recruit/cadet programs.
- There is a need for medical facility and healthcare education partnerships to serve as a nexus for research and reporting being done across the nation.

# BREAKOUT SESSIONS

## 2. What are the highest priorities for development and implementation of best practices, harmonised approaches, and interventions?

*Answers included:*

- Every department is different- size, budget, support: It is important to build recommendations that can be adopted by every department.
- Solutions should be simple and easy to adopt
- Dissemination of information should be streamlined and easy to understand (simple explanations)
- Support from leadership (buy in) to implement best practices
- Training and education to ensure all levels of a departments are educated and aware of cancer prevention techniques and best practices
- Legislative efforts to protect fire fighters from occupational exposures, as well as funding mechanisms such as grants and funds which can be used by researchers to better understand and prevent fire fighter cancer.
- Promoting and funding a rapid transition away from PFAS-containing suppression foam concentrates from Department of National Defence bases, airfields, ships, mobile and fixed extinguishing systems.
- Federal Health Guidelines for healthcare practitioners is vital for equitable access to medical observation and treatment.
- Consultation and resources should exist to allow for the harmonization of provincial fire fighter presumptive illnesses legislation across Canada.

# BREAKOUT SESSIONS

## 3. In terms of expertise and resources, which of the identified gaps and priorities is Canada best positioned to fill?

*Answers included:*

- Early cancer screenings and detection programs must be available and promoted across the Canadian fire service.
- Interventions and the promotion of modifiable risk factors must be prioritised specific to healthy lifestyle, diet, exercise, and sleep hygiene, to reduce the effects of occupational exposures that lead to illnesses and disease.
- Representation, resources and supports for fire services protecting indigenous communities is needed
- Prioritization should be made on the elimination of unnecessary workplace exposures due to the fact that fire scene exposures are in large part unavoidable with the current state of protective ensembles available to fire fighters.
- Oversight and accountability is required to ensure that employers and fire service leadership provide for exposure reductions PPE, cleaning and disinfecting resources, policies compliance and personal hygiene and health supports to mitigate the effects of occupational exposures.
- Follow-up fire fighter exposure and illnesses workshops with governmental partnerships is required to assist with awareness, and updating of research findings to end user fire fighters.



A photograph of firefighters at a fire scene at night. The scene is illuminated by the bright orange and yellow flames of a fire. In the foreground, the silhouettes of firefighters in dark gear are visible. One firefighter in the background is wearing a helmet with the number '7' on it. Sparks are falling from the fire, creating a shower of bright orange particles. The overall atmosphere is dark and intense, with the fire providing the primary light source.

## WORKSHOP CONCLUSIONS

It is well recognized that fire fighters are exposed to a wide range of known and suspected carcinogens and, despite current best practices and available information on how to prevent occupational exposures, continue to face an increased risk of developing and dying from cancer. The goal of this workshop was to bring together various researcher and stakeholder groups to discuss the state of knowledge and identify best practices on exposure reduction and mitigation, research gaps and priorities related to cancer risk among all types of fire fighters to inform future research directions, to build and strengthen relationships, and to facilitate future collaborations. A wide range of knowledge gaps and research priorities were noted that will require sustained efforts to address.

# ***MOVING FORWARD***



**WHAT DO FIRE FIGHTERS NEED TO KNOW?**

**WHAT DO RESEARCHERS NEED TO KNOW?**

**WHAT DO GOVERNMENTS NEED TO KNOW?**

# NEXT STEPS

**The next steps to suitably advance best practices and interventions to reduce and prevent fire fighters' exposures to toxicants of concern include:**

- Promotion of exposure-related research
- Collaborations between fire fighter stakeholders and exposure scientists
- Continued engagement for the purpose of fire fighter exposure reduction between fire service stakeholders and all three levels of government
- Investment in fire fighter exposure awareness and education
- Establish funding mechanisms for fire fighter exposure prevention, including infrastructure, emerging technologies, policies, and exposure mitigation strategies.

# APPENDICES

## BILL C-224

First Session, Forty-fourth Parliament,  
70 Elizabeth II, 2021-2022

Première session, quarante-quatrième législature,  
70 Elizabeth II, 2021-2022

HOUSE OF COMMONS OF CANADA

CHAMBRE DES COMMUNES DU CANADA

### BILL C-224

### PROJET DE LOI C-224

An Act to establish a national framework for  
the prevention and treatment of cancers  
linked to firefighting

Loi concernant l'élaboration d'un cadre  
national sur la prévention et le traitement de  
cancers liés à la lutte contre les incendies

FIRST READING, JANUARY 31, 2022

PREMIÈRE LECTURE LE 31 JANVIER 2022

Mrs. ROMANADO

M<sup>ME</sup> ROMANADO

441103

#### SUMMARY

This enactment provides for the development of a national framework designed to raise awareness of cancers linked to firefighting and to support improved access for firefighters to cancer prevention and treatment.

The enactment also designates the month of January, in each year, as "Firefighter Cancer Awareness Month".

#### SOMMAIRE

Le texte prévoit l'élaboration d'un cadre national visant à mieux faire connaître les cancers liés à la lutte contre les incendies et à favoriser un meilleur accès à la prévention et au traitement du cancer pour les pompiers.

Le texte désigne aussi le mois de janvier « Mois de la sensibilisation au cancer chez les pompiers ».

Available on the House of Commons website at the following address:  
[www.ourcommons.ca](http://www.ourcommons.ca)

Disponible sur le site Web de la Chambre des communes à l'adresse suivante :  
[www.noscommunes.ca](http://www.noscommunes.ca)

2021-2022

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1st Session, 44th Parliament,  
70 Elizabeth II, 2021-2022

HOUSE OF COMMONS OF CANADA

## BILL C-224

An Act to establish a national framework for the prevention and treatment of cancers linked to firefighting

### Preamble

Whereas firefighters play a critical role in keeping Canadians and their communities safe;

Whereas Canadians have a profound appreciation of and respect for the dedicated firefighters who put themselves in harm's way to provide an essential service;

Whereas firefighters face numerous occupational hazards in performing their duties, including exposure to toxic chemicals;

Whereas research has shown that exposure to some of these chemicals may lead to the development of various cancers;

Whereas awareness and education are crucial to helping firefighters identify early signs of occupational cancers so that they can seek testing and treatment;

Whereas federal and provincial collaboration and information sharing can facilitate the prevention and early detection of cancers linked to firefighting;

Whereas establishing national standards on occupational cancers linked to firefighting could help provide greater consistency across Canada;

And whereas the Government of Canada, through the Memorial Grant Program for First Responders, recognizes the service and sacrifice of first responders who have died as a result of their duties, including firefighters who succumb to cancers brought about by their employment, by providing a benefit to the beneficiaries of those first responders;

441103

2021-2022

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1<sup>re</sup> session, 44<sup>e</sup> législature,  
70 Elizabeth II, 2021-2022

CHAMBRE DES COMMUNES DU CANADA

## PROJET DE LOI C-224

Loi concernant l'élaboration d'un cadre national sur la prévention et le traitement de cancers liés à la lutte contre les incendies

### Préambule

Attendu :

que les pompiers jouent un rôle crucial pour assurer la sécurité des Canadiens et de leurs communautés;

que les Canadiens apprécient et respectent profondément les pompiers, qui risquent leur vie en fournissant un service essentiel;

que le travail des pompiers comporte de nombreux risques professionnels, notamment l'exposition à des produits chimiques toxiques;

que, selon les études, l'exposition à certains de ces produits chimiques peut entraîner différents types de cancer;

que la sensibilisation et l'éducation sont essentielles pour aider les pompiers à détecter les signes précoces de cancers professionnels afin qu'ils puissent obtenir un dépistage et des traitements;

que la collaboration et les échanges entre le gouvernement fédéral et les provinces peuvent faciliter la prévention et la détection précoce de cancers liés à la lutte contre les incendies;

que l'établissement de normes nationales sur les cancers professionnels liés à la lutte contre les incendies favoriserait une uniformité accrue dans l'ensemble du Canada;

que le gouvernement du Canada, au moyen du Programme de subvention commémoratif pour les premiers répondants, reconnaît l'apport et les sacrifices des premiers répondants décédés dans le cadre de leur travail, y compris les pompiers emportés par un cancer lié à leur emploi, en offrant des prestations à leurs bénéficiaires;

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National Framework on Cancers Linked to Firefighting Act  
Short Title  
Preamble – Sections 1-3

Now, therefore, Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

## Short Title

### Short title

**1** This Act may be cited as the *National Framework on Cancers Linked to Firefighting Act*.

## Interpretation

### Definitions

**2** The following definitions apply in this Act.

**Indigenous governing body** means a council, government or other entity that is authorized to act on behalf of an Indigenous group, community or people that holds rights recognized and affirmed by section 35 of the *Constitution Act, 1982*. (*corps dirigeant autochtone*)

**Minister** means the Minister of Health. (*ministre*)

## National Framework for the Prevention and Treatment of Cancers Linked to Firefighting

### Development

**3 (1)** The Minister must develop a national framework designed to raise awareness of cancers linked to firefighting and to support improved access for firefighters to cancer prevention and treatment.

### Consultation

**(2)** In developing the strategy, the Minister must consult with the representatives of the provincial governments responsible for health, with municipal governments, with Indigenous governing bodies and with stakeholders in the firefighting community.

### Content

**(3)** The national framework must include measures to

**(a)** explain the link between firefighting and certain types of cancer;

**(b)** identify the training, education and guidance needs of health care and other professionals related to the prevention and treatment of cancers linked to firefighting, including clinical practice guidelines;

2021-2022

Loi relative au cadre national sur les cancers liés à la lutte contre les incendies  
Titre abrégé  
Préambule – articles 1-3

Sa Majesté, sur l'avis et avec le consentement du Sénat et de la Chambre des communes du Canada, édicte :

## Titre abrégé

### Titre abrégé

**1** *Loi relative au cadre national sur les cancers liés à la lutte contre les incendies*.

## Définitions

### Définitions

**2** Les définitions qui suivent s'appliquent à la présente loi.

**corps dirigeant autochtone** Conseil, gouvernement ou autre entité autorisé à agir pour le compte d'un groupe, d'une collectivité ou d'un peuple autochtones titulaires de droits reconnus et confirmés par l'article 35 de la *Loi constitutionnelle de 1982*. (*Indigenous governing body*)

**ministre** Le ministre de la Santé. (*Minister*)

## Cadre national sur la prévention et le traitement de cancers liés à la lutte contre les incendies

### Élaboration

**3 (1)** Le ministre élabore un cadre national visant à mieux faire connaître les cancers liés à la lutte contre les incendies et à favoriser un meilleur accès à la prévention et au traitement du cancer pour les pompiers.

### Consultation

**(2)** En élaborant la stratégie, le ministre consulte les représentants des gouvernements provinciaux responsables de la santé, les administrations municipales, les corps dirigeants autochtones et des intervenants des services des incendies.

### Contenu

**(3)** Le cadre national prévoit des mesures visant à :

**a)** expliquer le lien entre la lutte contre les incendies et certains types de cancer;

**b)** cibler les besoins des professionnels de la santé et d'autres professionnels en matière de formation et d'orientation sur la prévention et le traitement de

70 Eliz. II

- (c) provide for firefighters across Canada to be regularly screened for cancers linked to firefighting;
- (d) promote research and improve data collection on the prevention and treatment of cancers linked to firefighting; 5
- (e) promote information and knowledge sharing in relation to the prevention and treatment of cancers linked to firefighting; and
- (f) establish national standards to recognize cancers linked to firefighting as occupational diseases. 10

- cancers liés à la lutte contre les incendies, y compris des lignes directrices de pratique clinique;
- e) permettre aux pompiers à l'échelle du Canada de se soumettre au dépistage périodique de cancers liés à la lutte contre les incendies; 5
- d) promouvoir la recherche et améliorer la collecte de données sur la prévention et le traitement de cancers liés à la lutte contre les incendies;
- e) promouvoir l'échange de renseignements et de connaissances sur la prévention et le traitement de cancers liés à la lutte contre les incendies; 10
- f) établir des normes nationales visant à faire reconnaître les cancers liés à la lutte contre les incendies au titre de maladies professionnelles.

## Reports to Parliament

### Tabling of framework

**4 (1)** Within one year after the day on which this Act comes into force, the Minister must prepare a report setting out the national framework for the prevention and treatment of cancers linked to firefighting and cause the report to be tabled before each House of Parliament on any of the first 15 days on which that House is sitting after the report is completed. 15

### Publication

**(2)** The Minister must publish the report on the website of the Department of Health within 10 days after the day on which the report is tabled in both Houses of Parliament. 20

### Report

**5 (1)** Within five years after the day on which the report referred to in section 4 is tabled, the Minister must prepare a report on the effectiveness of the national framework and on the state of the prevention and treatment of cancers linked to firefighting. 25

### Tabling of report

**(2)** The Minister must cause the report to be tabled before each House of Parliament on any of the first 15 days on which that House is sitting after the report is completed. 30

## Rapports au Parlement

### Dépôt du cadre

**4 (1)** Dans l'année suivant la date d'entrée en vigueur de la présente loi, le ministre établit un rapport énonçant le cadre national sur la prévention et le traitement de cancers liés à la lutte contre les incendies et le fait déposer devant chaque chambre du Parlement dans les quinze premiers jours de séance de celle-ci suivant son établissement. 15

### Publication

**(2)** Le ministre publie le rapport sur le site Web du ministère de la Santé dans les dix jours suivant la date de son dépôt devant les deux chambres du Parlement.

### Rapport

**5 (1)** Dans les cinq ans suivant la date du dépôt du rapport visé à l'article 4, le ministre établit un rapport sur l'efficacité du cadre national et sur l'état de la prévention et du traitement des cancers liés à la lutte contre les incendies. 25

### Dépôt du rapport

**(2)** Le ministre fait déposer le rapport devant chaque chambre du Parlement dans les quinze premiers jours de séance de celle-ci suivant son établissement. 30

## Firefighter Cancer Awareness Month

### Designation

**6** Throughout Canada, in each year, the month of January is to be known as "Firefighter Cancer Awareness Month".

## Mois de la sensibilisation au cancer chez les pompiers

### Désignation

**6** Le mois de janvier est, dans tout le Canada, désigné comme « Mois de la sensibilisation au cancer chez les pompiers ».

# AGENDA - DAY ONE & DAY TWO



Santé Health  
Canada Canada

## Day One - Presentations on Best Practices for Exposure Reduction

All times in EST 8:30 a.m.	Registration and Breakfast
9:00 a.m.	Welcome and Introductions – the Honourable Mark Holland, Minister of Health; Sherry Romanado, Parliamentary Secretary to the President of the King's Privy Council for Canada and Minister of Emergency Preparedness; Pat Morrison, IAFF Chief of Field Service; Sean McManus, IAFF Assistant to the General President for Canada; Paul White, Health Canada Researcher; and Neil McMillan, IAFF Director of Science and Research
9:30 a.m.	The Scope of the Problem - Occupational Exposure Reduction, Best Practices, and Interventions - Keven Rojecki, President of IAFF Local 1747 and Chairman of the WSCFF Health & Safety Committee
10:00 a.m.	Limitations of Currently Used PPE - Amanda Newsom, Principal Engineer at Underwriters Laboratories and Project Manager - PPE and Rescue Equipment
10:30 a.m.	Break
11:00 a.m.	Innovations in PPE Design - Amanda Newsom, Principal Engineer at Underwriters Laboratories and Project Manager - PPE and Rescue Equipment
11:30 a.m.	Fire Ground - Best Practices for Use of Infrastructure and Resources - Dixon Phillips Executive Board Member & Dist. 3 Representative IAFF Local 4420 Pasco County Florida / John Schmidt, CFO, Division Chief of Health Safety & Wellness Pasco County Florida
12:00 p.m.	Lunch
1:00 p.m.	Fire Ground - Best Practices for Limiting and Remediating Exposure on the Scene - Lieutenant Kevin Tomyk, Vancouver Fire & Rescue Services
1:30 p.m.	Wildland Fires & Wildland-Urban Interface - Rick Swan, Wildfire Conservancy, Chair of ISO/TC94 Wildland Firefighting PPE, Chair of NFPA 1977 Wildland PPE and Chair of NFPA 1141 Wildland Operations
2:00 p.m.	Personal Best Practices - Dr. Sara Jahnke, Senior Principal Investigator at NDRI-USA
2:30 p.m.	Break
3:00 p.m.	Exposure Reduction in the Workplace - Brick and Mortar - Christopher Kehde, Principal & Managing Director at FGM Architects
3:30 p.m.	Exposure Reduction in the Workplace – Behaviour and Use of Hard Assets – Dr. David Frost, Associate Professor at the University of Toronto
4:00 p.m.	Wrap-Up and Discussion of Day 2 Agenda - Paul White (Health Canada) and Neil McMillan (IAFF)
4:30 p.m.	End of Day One

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Santé Health  
Canada Canada

## Day Two - Discussion of Best Practices, Harmonised Approaches & Knowledge Gaps

All times in EST 8:30 a.m.	Breakfast and Networking
9:00 a.m.	Stakeholder views on best practices, harmonised approaches and knowledge gaps - brief statements and open discussion
10:30 a.m.	Break
11:00 a.m.	Targeted Breakout sessions to discuss best practices, harmonised approaches, and knowledge gaps pertaining to exposure mitigation  1. What are the most important knowledge gaps that have been identified? 2. What are the highest priorities for development and implementation of best practices, harmonised approaches, and interventions? 3. In terms of expertise and resources, which of the identified gaps and priorities is Canada best positioned to fill?
12:00 p.m.	Lunch
1:00 p.m.	Brief Summaries by table chairs, i.e., identified best practices and knowledge gaps for exposure mitigation
2:00 p.m.	Open discussion to finalize statements on best practices, harmonised approaches, and knowledge gaps pertaining to exposure mitigation - action items and next steps
3:00 p.m.	Break
3:30 p.m.	Open discussion on resources needed to address stakeholder priorities; potential funding mechanisms
4:00 p.m.	Summary of Workshop Deliverables; Closing and Next Steps – Paul White and Neil McMillan
4:30 p.m.	End of Day Two

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# APPENDICES



Santé  
Canada Health  
Canada

## Première Journée : Présentations sur les meilleures pratiques pour la réduction de l'exposition

HNE

8 h 30	Inscription
9 h 00	Bienvenue et présentations – l'honorable Mark Holland, ministre de la Santé; Sherry Romanado, secrétaire parlementaire du président du Conseil privé du Roi pour le Canada et ministre de la Protection civile; Pat Morrison, chef du service sur le terrain de l'AIP; Sean McManus, adjoint du président général de l'AIP pour le Canada; Paul White, chercheur à Santé Canada; et Neil McMillan, directeur de la science et de la recherche de l'IAFF
9 h 30	L'étendue du problème - Réduction de l'exposition professionnelle, meilleures pratiques et interventions - Keven Rojecki, président de la section locale 1747 de l'IAFF et président du comité de santé et de sécurité du WSCFF
10 h 00	Limites des équipements de protection individuelle (EPI) actuellement utilisés - Amanda Newsom, ingénieure principale chez Underwriters Laboratories et chef de projet - EPI et équipement de sauvetage
10 h 30	Pause
11 h 00	Innovations dans la conception des EPI - Amanda Newsom, ingénieure principale chez Underwriters Laboratories et chef de projet - EPI et équipement de sauvetage
11 h 30	Terrain d'incendie - Meilleures pratiques d'utilisation des infrastructures et des ressources - Membre du conseil d'administration de Dixon Phillips et Dist. 3 Représentant de la section locale 4420 de l'AIP Comté de Pasco en Floride / John Schmidt, directeur financier, chef de division de la santé, de la sécurité et du bien-être du comté de Pasco en Floride
12 h 00	Dîner
13 h 00	Terrain d'incendie – Meilleures pratiques pour limiter et remédier à l'exposition sur les lieux - Lieutenant Kevin Tomyk, Services d'incendie et de sauvetage de Vancouver
13 h 30	Feux de forêt et interface forêt-urbain - Meilleures pratiques, conception et utilisation des EPI - Rick Swan, Wildfire Conservancy, Chair of ISO/TC94 Wildland Firefighting PPE, Chair of NFPA 1977 Wildland PPE and Chair of NFPA 1141 Wildland Operations
14 h 00	Meilleures pratiques personnelles – Douche, lavage des mains, utilisation et entretien de l'équipement et des EPI - Dr. Sara Jahnke, Senior Principal Investigator at NDRI-USA
14 h 30	Pause
15 h 00	Réduction de l'exposition sur le lieu de travail - Brique et Mortier - Christopher Kehde, Principal & Managing Director at FGM Architects
15 h 30	Réduction de l'exposition sur le lieu de travail - Comportement et utilisation des actifs matériels - Dr David Frost, Professeur agrégé à l'Université de Toronto
16 h 00	Récapitulation et discussion de l'ordre du jour de la deuxième journée - Paul White (Santé Canada) et Neil McMillan (L'AIP)
16 h 30	Fin de la journée

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## Deuxième Journée : Discussion sur les meilleures pratiques, les approches harmonisées et les lacunes dans les connaissances

HNE

8 h 30	Réseautage
9 h 00	Points de vue des parties prenantes sur les meilleures pratiques, les approches harmonisées et les lacunes en matière de connaissances - brèves déclarations et discussion ouverte
10 h 30	Pause
11 h 00	Séances en petits groupes ciblées pour discuter des meilleures pratiques, des approches harmonisées et des lacunes dans les connaissances relatives à l'atténuation de l'exposition. 1. Quelles sont les lacunes de connaissances les plus importantes qui ont été identifiées ? 2. Quelles sont les plus grandes priorités en matière de développement et de mise en œuvre de meilleures pratiques, d'approches harmonisées et d'interventions ? 3. En termes d'expertise et de ressources, quelles lacunes et priorités identifiées le Canada est-il le mieux placé pour combler ? 4. Quelles sont les bonnes pratiques identifiées ? Comment peuvent-ils être appliqués plus largement ?
12 h 00	Dîner
13 h 00	Brefs résumés par table, c'est-à-dire identification des meilleures pratiques et des lacunes dans les connaissances en matière d'atténuation de l'exposition
14 h 00	Discussion ouverte pour finaliser les déclarations sur les meilleures pratiques, les approches harmonisées et les lacunes dans les connaissances relatives à l'atténuation de l'exposition - mesures à prendre et prochaines étapes
15 h 00	Pause
15 h 30	Discussion ouverte sur les ressources nécessaires pour répondre aux priorités des parties prenantes ; mécanismes de financement potentiels
16 h 00	Résumé des livrables de l'atelier ; Clôture et prochaines étapes – Paul White et Neil McMillan
16 h 30	Fin de l'atelier

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