# NATIONAL FRAMEWORK ON CANCERS LINKED TO FIREFIGHTING

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# MINISTER'S MESSAGE

I am honoured to introduce the National Framework on Cancers linked to Firefighting (the Framework).

Firefighters work courageously each day to keep Canadians safe, working across the country and abroad to respond to emergencies and protect against the dangers of fire. The recent surge in wildfires in Canada has highlighted the importance of firefighters in keeping our communities safe, and the inherent dangers firefighters face in the line of duty.

Among these dangers is the risk of developing cancer, resulting from occupational exposures from fires, smoke, and even firefighting equipment and materials. The World Health Organization's International Agency for Research on Cancer recently found that exposures as a firefighter are carcinogenic to humans, which complements the long-standing efforts of the fire sector to bring this issue to attention. The repercussions of a cancer diagnosis are far-reaching, impacting not only the health of firefighters, but their identity, livelihood, and the well-being of their loved ones.

All levels of government and all employers of firefighters can help better protect firefighters from occupational cancers. Clinicians, public health experts, researchers, and firefighters have a role to play to help identify and implement the most effective protections.

In August 2021, the Minister of Health and the Minister of Environment and Climate Change announced an Action Plan to protect firefighters from harmful chemicals released during household fires. The plan includes federal actions to address chemical flame retardants as part of the Chemicals Management Plan, a Government of Canada initiative aimed at reducing the risks posed by chemicals to people in Canada and their environment. In 2022, the Government also took steps to strengthen the Canadian Environmental Protection Act, including to strengthen chemicals management for many chemicals to which firefighters are exposed. In 2023, the Government released a Draft State of PFAS Report which proposed that Per- and Poly-fluoroalkyl substances be considered 'toxic' to humans and contained sections that considered the unique risk that PFAS pose to firefighters.

The Framework presents a foundation for collaboration, information exchange, and stewardship to raise awareness and support collective action to address cancers linked to firefighting.

I am thankful to all those who have shared their lived experiences, insights, concerns, and priorities in support of this work.

The Honourable Mark Holland, P.C., M.P.
Minister of Health

# EXECUTIVE SUMMARY

In Canada, the landscape of firefighting is evolving. Canada is seeing warmer, drier, and longer fire seasons with more wildfires—and increasingly calling on the fire sector to respond. In 2023, Canada's wildfire season was the most destructive ever recorded (Natural Resources Canada, 2023). Canada is also seeing different types of fires, such as lithium-ion battery fires and fires at the wildland-urban interface, which represent additional challenges for the fire sector. Medical and weather-related emergencies now make up about 60% of the calls that fire departments respond to (CAFC, 2023).

Cancer accounts for more than 85% of duty-fatality claims, based on workers' compensation claims data, among Canadian firefighters (AlHajj et al. 2024). Firefighters have a 9% higher risk of cancer diagnosis, and a 14% higher risk of dying from cancer than the general public (Daniels et al. 2014). There is sufficient evidence to conclude that firefighting causes mesothelioma and bladder cancer, and limited evidence that it causes colon cancer, prostate cancer, testicular cancer, melanoma of the skin, and non-Hodgkin's lymphoma (IARC 2023).

All orders of government and employers of firefighters can help better protect firefighters from occupational cancers, with important contributions from clinicians, researchers, the fire sector, and industry. The Government of Canada and each Provincial and Territorial Government undertake several activities to help address firefighter health and safety, including through programs that touch on chemicals and cancer. The Framework acknowledges the important work and leadership that Provinces and Territories (PT) undertake to support firefighters across Canada, including in the areas of employment, occupational health and safety, and delivery of health care.

This Framework responds to the requirements set out in the National Framework on Cancers Linked to Firefighting Act (the Act). To inform the development of the Framework, the Minister of Health conducted an engagement process from June 2023 to January 2024 to invite stakeholder views as well as input from representatives from PTs responsible for health and labour. Health Canada published a What We Heard Report in May 2024 to capture the many considerations and experiences shared throughout the consultation process.

This report sets out a Framework to raise awareness of cancers linked to firefighting with the goal of improving access for firefighters to cancer prevention and treatment. The Framework consists of six pillars to support firefighters' health and safety. Each pillar corresponds to an area of interest identified by firefighters and highlights potential opportunities for future work, including research, training and education, diagnostic testing, improving research and data collection, sharing information and knowledge, and strengthening standards on health and safety and workers' compensation. While national in scope, the Framework considers the experiences and realities of Canadian firefighters, whether in Canada or abroad, but does not require specific actions by governments, governing bodies, or other stakeholders. Rather, the Framework presents analysis and opportunities to inspire collective action to better protect firefighters from occupational cancers.

The Government of Canada would like to extend a sincere thank you to the broad range of firefighter organizations and unions, Indigenous governing bodies, Indigenous organizations, scientists, health care professionals and multiple orders of governments for their expertise and time.

# THE NATIONAL FRAMEWORK ON CANCERS LINKED TO FIREFIGHTING ACT

The *National Framework on Cancers Linked to Firefighting Act* (the Act) received Royal Assent in June 2023. The Act compels the Minister of Health to develop a national framework to raise awareness of cancers linked to firefighting to improve access for firefighters to cancer prevention and treatment. The National Framework on Cancers Linked to Firefighting (the Framework) was developed in accordance with the Act, which calls on the Minister of Health to consult with representatives of the provincial and territorial governments responsible for health, municipal governments, Indigenous governing bodies, health care professionals, scientists, and stakeholders in the firefighting community to inform the development of a national framework.

The Act also calls for a report on the effectiveness of the Framework and on the state of the prevention and treatment of cancers linked to firefighting in Canada within five years of the Framework being tabled (i.e., 2029) and designates January as Firefighter Cancer Awareness Month in Canada, beginning in 2024.

# PURPOSE OF THE NATIONAL FRAMEWORK ON CANCERS LINKED TO FIREFIGHTING

The Framework's purpose is to raise awareness of cancers linked to firefighting to improve access for firefighters to cancer prevention and treatment. All orders of government and employers of firefighters can help better protect firefighters from occupational cancers; thus, the Framework recognizes that this is an issue of interest and responsibility to many partners, including governments, clinicians, researchers, the fire sector, and industry.

This Framework is designed to raise awareness of cancers linked to firefighting, with the goal of improving access for all firefighters to cancer prevention and treatment. Opportunities identified through the Framework were informed by consultation with a wide range of stakeholders and are intended to inspire action and collaboration.

Federal actions to support the Framework correspond to the Government of Canada's (GOC) role as a national convenor, funder, and conductor of research, as well as its responsibility as an employer of federal firefighters. The Framework acknowledges the important work and leadership that PTs undertake to support firefighters across Canada, including in the areas of employment, occupational health and safety, and delivery of health care. Similarly, the Framework recognizes the critical role that Indigenous governing bodies and organizations take on to provide firefighting services in their communities and beyond.

## DEVELOPING THE NATIONAL FRAMEWORK—ENGAGEMENT APPROACH

Health Canada launched an engagement strategy to consult firefighters, firefighter unions and employers, scientists, clinicians, and all orders of government. Stakeholders and partners were invited to share their views, experiences, and perspectives through a variety of avenues, including key informant interviews, dedicated workshops, and bilateral discussions, from June 2023 to January 2024.

Further, Health Canada undertook an examination and analysis of the landscape of firefighter cancer awareness, research, prevention and treatment to inform the development of the Framework. This assessment included scanning and analysis of domestic and international best practices on this issue, including workshop reports prepared by the International Association of Fire Fighters (IAFF), the Canadian Association of Fire Chiefs (CAFC), and the Occupational Cancer Research Centre.

The What We Heard Report provides an in-depth summary of the engagement process and results. As outlined in the report, participants raised a range of issues, including:

- Diversity of Firefighters Across Canada;
- Awareness and Information Sharing;
- Challenges and Innovations in Firefighter Equipment;
- Research and Data Collection;
- Challenges in Accessing Screening and Diagnostic Testing;
- Workers' Compensation Coverage; and,
- Growing need for action on cancers linked to firefighting.

# FIREFIGHTERS IN CANADA

## THE FIRE SECTOR

There are many types of firefighting services in Canada, including municipal fire departments, volunteer fire departments, Indigenous fire services, wildland fire agencies, industrial/resource sector departments, specialized response teams, and training/education providers. Among structural firefighters, these services can be grouped into types of fire departments: career/full-time fire departments, composite (career and volunteer) fire departments, and volunteer/part-time fire departments. These different types of firefighters often work shoulder-to-shoulder to protect communities across Canada, including when responding to wildfires or other emergencies.

Firefighters in Canada serve communities across the country by raising awareness of fire safety, providing educational programming, and responding to all types of emergencies. They face hazards on the job from direct exposure to heat, smoke, and combustible materials, as well as contact with particulate matter, volatile pollutants, asbestos, flame retardants, and other carcinogenic compounds. Firefighters also face other hazards that have been linked to cancer, including shift work, ultraviolet radiation, and diesel exhaust fumes (OCRC, 2024). Occupational exposures are not uniform across the sector and can change based on type of emergency or fire.

Other staff involved in firefighting include fire line staff, investigators, inspectors, educators, training staff, independent service providers for gear, and others. While occupational exposures may vary across these groups, efforts to improve access to cancer prevention and treatment for firefighters may also inform health considerations of these important members of the fire sector.

## FIRE SECTOR BY STATISTICS

There are approximately 3,200 fire departments in Canada, according to the CAFC's 2023 Great Canadian Fire Census of fire departments, across all types (volunteer, composite, and career). The CAFC census was conducted from May 1, 2022 to April 30, 2023 and excludes firefighters directly employed by the federal government and PTs, including most wildland firefighters. The census estimates that there are:

- **126,000 firefighters in Canadian fire departments, of which**
  - 71% were volunteer (88,600)
  - 29% were career (37,400, of which roughly 30,000 are full-time)
  - 11% self-identified as female (14,100)
  - 30% were over the age of 50 (38,200)
- **Approximately 2 million calls made to fire departments, of which**
  - 10% were related to fire suppression
  - 10% were related to extreme weather
  - 30% were related to all-hazard response
  - 50% were related to medical emergencies

- **Expenditures of $5.8 billion across the fire sector, however**
  - » 54% of departments deferred purchases
  - » 23% of departments deferred trainings
  - » 28% of departments had firefighters pay for expenses out of pocket

The Canadian Interagency Forest Fire Centre (CIFFC) releases statistics on each year's wildfire season, noting that 2023 was the busiest wildfire season since the Centre's inception in 1982 (CIFFC, 2023). CIFFC reports that more than 17,203,625 hectares burned last year, noting that every Canadian forestry agency played a crucial role in responding to the unprecedented scale of wildfires. In 2023, 7,311 personnel (i.e., firefighters, supervisors, support resources) were mobilized across the country, including from 12 countries that joined Canadians to fight fires: the United States, Mexico, Australia, New Zealand, South Africa, Costa Rica, Chile, France, Portugal, Spain, South Korea, and Brazil.

# DIVERSITY WITHIN THE FIRE SECTOR

The Canadian fire sector is diverse, with firefighters that represent the country's geographic, demographic, and industrial realities. Individuals may work for a single fire season in Canada, work abroad in international settings, or spend their entire careers in firefighting roles. While firefighting remains a male-dominated sector, the proportion of firefighters that self-identify as female has increased over time and is estimated to be 11% in 2023 (CAFC, 2023), which reflects the fire sector's progress in recruiting and retaining a more diverse workforce. While there is limited data on Indigenous firefighters, it is recognized that they play a key role in wildland fire management and protecting Indigenous communities.

There are data gaps on the numbers and distribution of racialized firefighters, Indigenous firefighters, veterans and active military firefighters, as well as wildland firefighters, which makes it challenging to understand the impacts that health effects, including cancer, can have on different populations of firefighters.

# CANCERS LINKED TO FIREFIGHTING

Through the engagement process to inform the Framework, firefighters consistently raised personal experiences with cancer, whether they were their own stories or those of their colleagues. Cancer is the leading cause of job-related deaths for firefighters in Canada (Ramsden et al. 2018).

## OCCUPATIONAL EXPOSURES AND CANCER RISK AMONG FIREFIGHTERS

Firefighters are repeatedly exposed to significantly elevated levels of harmful combustible chemicals and materials, often in uncontrolled and hazardous environments over many years. While engaged in fire suppression, training exercises, and rescue activities, firefighters are repeatedly exposed to complex mixtures of cancer-causing chemicals, known as carcinogens. These carcinogens can be inhaled through the lungs, inadvertently swallowed via the upper aerodigestive tract, or absorbed directly through the skin. While firefighters, unions, and employers have reported taking steps to eliminate or reduce workplace hazards via the hierarchy of controls, and have taken action on different levels—from reducing exposures (i.e., preventing fires, preventing chemicals from entering products, improving flammability requirements) to providing better personal protective equipment (PPE), firefighters may nevertheless be exposed to persistent contamination of their PPE and the interiors of fire stations. In some cases, firefighters report facing the equivalent of a lifetime of exposure to certain carcinogens in a short period during catastrophic and extreme fires.

Workers' compensation claim data suggests that cancer is a main cause of occupational mortality among firefighters. The BC Injury Research and Prevention Unit determined that nearly 85% of work-related fatality claims of firefighters in Canada were cancer-related between 2007 and 2021 (AlHajj et al. 2024). Similarly, the International Association of Fire Fighters reported that 94% of line-of-duty deaths among Canadian IAFF member career firefighters were cancer-related (IAFF, 2024). It should be noted that these statistics are based on workers' compensation claims and therefore reflect the legislated presumptions of occupational disease recognition for cancers and firefighters across Canada. Currently, there is no comprehensive national data on firefighter cancer.

In 2014, a study using surveillance data in the United States found that nearly 30,000 career structural firefighters had a 9% higher risk of developing cancer and a 14% higher risk of mortality from cancer as compared to the general population (Daniels et al. 2014). In a study of Ontario firefighters in March 2022, the Occupational Cancer Research Centre at Ontario Health found that when compared to other workers, firefighters had an increased risk of developing various cancers, notably testicular cancer, melanoma, prostate cancer, colon cancer, and non-Hodgkin lymphoma (Sritharan et al. 2022).

The extent to which these findings can be applied to all sub-populations of firefighters in Canada is limited. While there is minimal data on health outcomes or claims data on other types of firefighters, including wildland, volunteer, and Indigenous firefighters, their exposures, and long-term health effects associated with firefighting, there are reports from firefighters themselves that underscore cancer's toll on their health, their families, and their communities.

In July 2022, the International Agency for Research on Cancer (IARC) reviewed the latest scientific evidence on "occupational exposures as a firefighter" globally and found that they are **carcinogenic to humans** (classified as "Group 1", i.e., there is enough evidence to conclude that these exposures cause cancer in humans) (IARC 2022, Demers et al. 2022). IARC concluded there is sufficient evidence to link firefighting with an increased incidence of mesothelioma, where firefighters face a 58% higher risk, and bladder cancer, with a 16% higher risk. Additionally, IARC identified limited evidence suggesting elevated risks for several other cancers among firefighters: colon cancer (19% higher incidence risk), prostate cancer (21% higher incidence risk), testicular cancer (37% higher incidence risk), melanoma of the skin (36% higher incidence risk), and non-Hodgkin's lymphoma (12% higher incidence risk). The IARC evaluation was primarily based on studies of career structural firefighters, as studies on other firefighter groups are limited.

According to the IARC report, occupational exposures as a firefighter have changed due to the number and intensity of wildland fires associated with climate change (Ellis et al. 2022). The IARC report notes "*wildland fires alone will engage more people in firefighting in the coming years, increasing the number of exposed firefighters and their subsequent cancer burden*" (IARC, 2023).

# GOVERNMENT OF CANADA ACTIONS TO SUPPORT FIREFIGHTER HEALTH

The GOC acknowledges that cancers linked to firefighting represent an area of ongoing and sustained focus across various federal programs and initiatives. Presently, the GOC undertakes several activities to help address firefighter health and safety, including through programs that aim to reduce carcinogenic exposures and ban harmful chemicals. The GOC continues to collaborate with all orders of governments to advance efforts to support firefighter health.

## PROTECTING FIREFIGHTERS FROM HARMFUL CHEMICALS

In 2021, Health Canada and Environment and Climate Change Canada launched a comprehensive Action Plan to protect firefighters from harmful chemicals released during household fires. This work is delivered under the Chemicals Management Plan and is designed to prioritize the assessment and regulation of harmful chemicals of particular interest to firefighters, through research, risk management, and communications. Since the launch of the Action Plan, Health Canada has prioritized assessing and managing flame retardants and other chemicals of concern, such as per- and polyfluoroalkyl substances (PFAS).

In 2022, the GOC took steps to strengthen the *Canadian Environmental Protection Act*, with the intent to protect populations that are disproportionately impacted by chemicals, assessing real-life exposures, developing a new plan of Priorities under the Chemicals Management Plan, and supporting the shift to safer chemicals, among other key priority areas.

In 2023, a Draft State of PFAS report was released which proposed that PFAS be considered ‘toxic’ to humans and contained sections that considered the unique risk that PFAS pose to firefighters.

## ADVANCING EFFORTS ON HEALTH & CANCER

At the general population level, Health Canada provides contribution funding to the Canadian Partnership Against Cancer to mobilize federal and PT partners across Canada to reduce the burden of cancer through coordinated, system-level change. The Public Health Agency of Canada similarly supports cancer surveillance for the general population.

In addition to these broad activities related to cancers affecting people in Canada, the federal Health Portfolio also undertakes research that has advanced the understanding of exposures faced by firefighters, including research on dermal decontamination and PFAS in firefighting gear. The Canadian Institutes of Health Research (CIHR) also provide funding to generate knowledge on issues of importance to firefighters, such as research on health effects related to major wildfire events (e.g., Fort McMurray/Horse River, Alberta) and on cancer prevention among firefighters.

## CAPACITY BUILDING AMONG THE FIRE SECTOR

The GOC provides contribution funding to support key training and capacity building in the fire sector. Funds are granted to organizations focused on building capacity to respond to wildfires and improving hazardous materials response training. The GOC, alongside PT governments, owns and operates the not-for-profit Canadian Interagency Forest Fire Centre (CIFFC) through its agencies responsible for wildland fire management. Among many other programs, CIFFC provides operational support to member agencies, manages mutual aid resource sharing, and coordinates prevention and mitigation efforts.

## PROVIDING SUPPORT TO INDIGENOUS COMMUNITIES

Indigenous Services Canada (ISC) provides $16.5 million in annual funding for wildfire management services and provides funding to support First Nations wildfire prevention and mitigation activities across the country. Budget 2019 announced $47.7 million over 5 years, starting in 2019–20, to expand the on-reserve FireSmart programs and support First Nations capacity around wildfire management. More recently, Budget 2024 proposes $145.2 million over five years, starting in 2024–25, to work with First Nations to develop greater climate resiliency and deploy structural mitigation strategies that protect communities, homes, and essential infrastructure from climate disasters, including $10.4 million for Modern Treaty and Self-Governing First Nations.

Between 2016 and 2023, ISC provided an average of $48.3 million annually to First Nations for fire protection. This included annual averages of:

- $11.9 million for capital investments, including fire trucks, fire halls, etc.
- $15.4 million for operations and maintenance of assets
- $4.9 million for firefighter training
- $16.1 million in targeted funding from Budgets 2013, 2016, 2017 and 2022 and the Canada Community-Building Fund

Further, ISC and the Assembly of First Nations (AFN) have co-developed the First Nations Fire Protection Strategy 2023–2028, which was introduced at the inaugural AFN First Nations First Responders Gathering in May 2023.

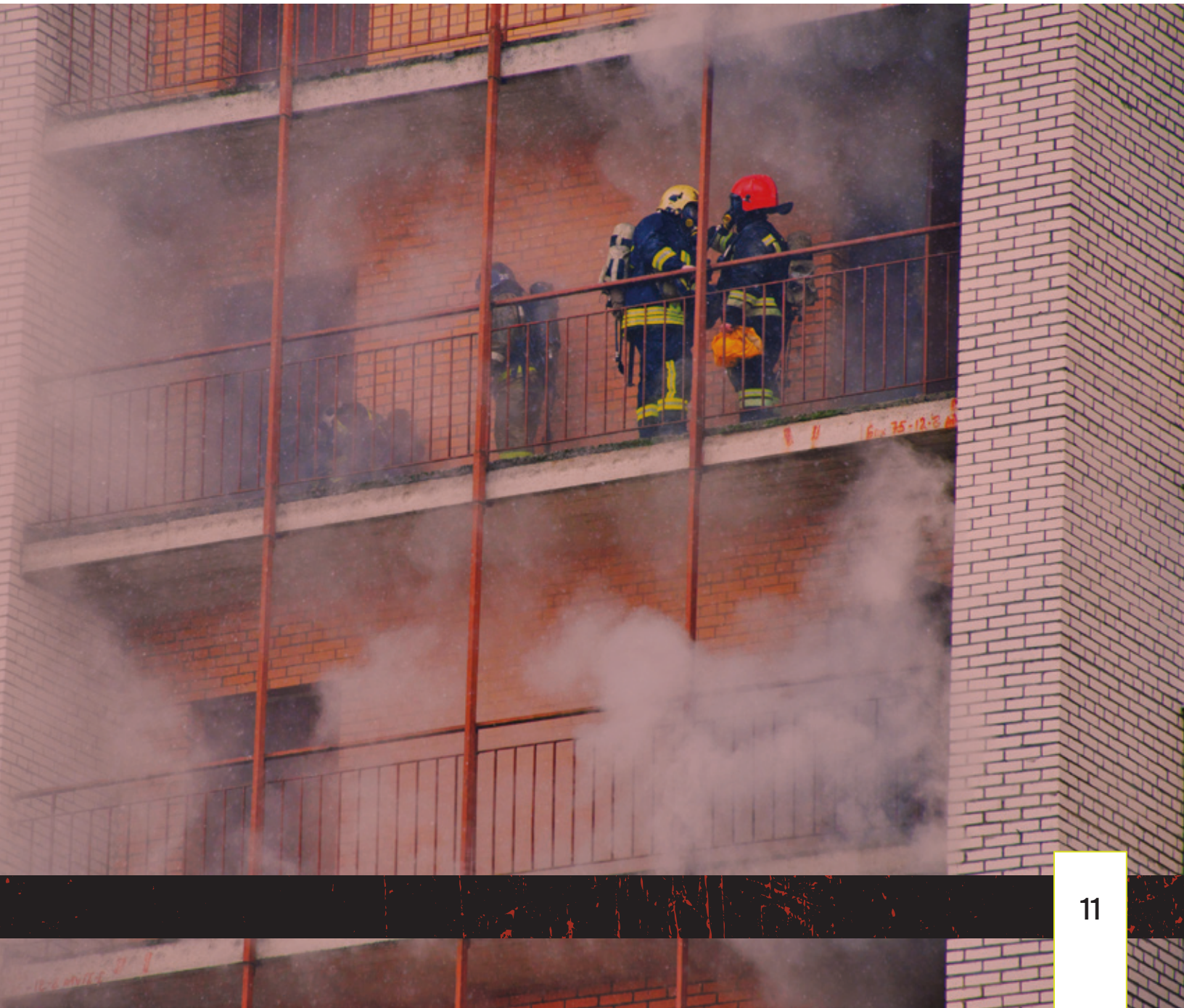
## EMPLOYER OF FIREFIGHTERS

The GOC employs approximately 1,000 firefighters, who work on federal lands and in defence settings. These firefighters may also work overseas, in wildland settings, and as surge capacity during emergencies in civilian or military capacities. With respect to the health of federal firefighters, the GOC is responsible for maintaining federal occupational health and safety regulations and providing health evaluations to assess fitness against job requirements.

## PROVIDING RECOGNITION, WORKERS' COMPENSATION, AND DISABILITY BENEFITS

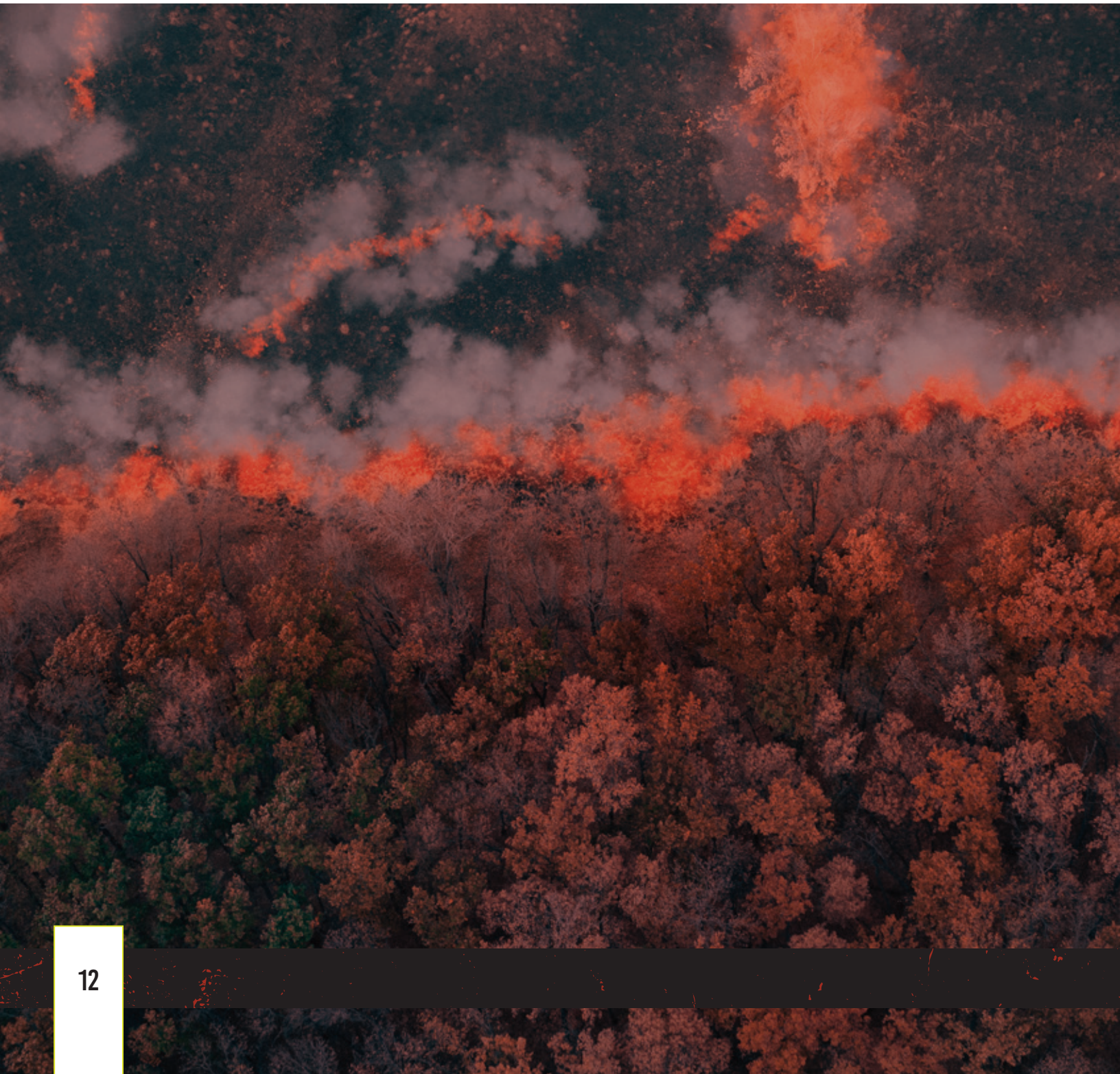
The GOC also established the Memorial Grant Program (MGP) in recognition of the critical role of first responders in protecting Canadians. The program provides a one-time lump sum, federal tax-free payment of $300,000 to eligible families of first responders who have died as a result of their duties, including for firefighters who have died due to cancer. The MGP uses the most inclusive presumptive occupational illness list, based on all illnesses covered across PTs, and the fewest years of service required by any of the workers' compensation boards across Canada to render an eligibility decision. The MGP updates its eligibility requirements regularly based on scientific evidence.

The GOC has bilateral agreements with all provincial workers' compensation boards to adjudicate and administer workers' compensation under the *Government Employees Compensation Act* for current federal firefighters. The GOC also administers disability benefits for veterans who develop occupationally related illnesses, including cancer.



# FRAMEWORK PILLARS

The Framework proposes opportunities across six pillars to guide collaboration and collective action, by all orders of government and stakeholders, to support firefighters' health and safety, but does not prescribe particular actions. Each pillar provides a brief analysis and a short list of opportunities for areas of future work to raise awareness and inspire action and collaboration on the issue of cancers linked to firefighting.



## PILLAR #1—RESEARCH ON CANCERS LINKED TO FIREFIGHTING

A considerable number of scientific articles have been published that investigate the relationship between firefighting, occupational exposures, and health effects such as cancer; however, most studies are not able to describe cancer risks across the entire fire sector.

In Canada, cancer research on firefighters has largely focused on career or full-time structural firefighters who work in urban metropolitan environments (OCRC 2024), making it difficult to generalize conclusions to firefighters who work in other capacities, such as those who work in wildland settings, rural and remote communities, military settings, or firefighters who work part-time or on a volunteer basis. Most research has also focused on white men in the fire sector, which may limit scientists' ability to understand how cancer is impacting other demographics, including female, racialized, and Indigenous firefighters.

While often the last part of a research study, knowledge mobilization is important for firefighters' awareness of their risks and their ability to adjust day-to-day operations to account for these risks. Knowledge translation and mobilization is iterative, and involves synthesizing information, disseminating, exchanging, and applying knowledge in an ethically-sound manner. In the context of cancers linked to firefighting, knowledge translation may serve as a mechanism to make research relevant, accurate, and actionable for firefighters. Involving firefighters in designing research is also an important way to improve the potential for research to add value in the short- and long-term.

Canada has several research-intensive institutions, many of which have ongoing work and interest in cancer research and occupational health, as well as researchers with access and skills needed to conduct research on the links between firefighting and cancer. Members of the fire sector have expressed a keen interest in leading and participating in research.

### Opportunities for collective action:

- Encourage research to qualify and/or quantify the linkages between individual types of cancers across various sub-populations and types of firefighters to inform policies, programs, and prevention.
- Analyze under-studied firefighter groups, such as volunteers, wildland firefighters, women, and Indigenous firefighters, to better understand their cancer risks.
- Improve understanding of biological mechanisms of cancer development, dose-response, biological plausibility, and assess exposures to build evidence to support clinical decision making.
- Recruit firefighters and leaders within the firefighting community to participate and inform research projects to align research with the needs of firefighters.
- Encourage knowledge translation of research.

## PILLAR #2—RESEARCH ON CANCER PREVENTION & DATA COLLECTION

More inclusive and actionable research on prevention of cancers linked to firefighting is needed to allow firefighter groups in Canada to effectively protect themselves from occupational exposures. Building on research that focuses on the relationship between cancers and firefighting, the broad application of evidence-based practices and standard operating procedures would help to reduce harmful exposures and to prevent cancers among firefighters.

Best practices in primary prevention (i.e., keeping cancerous processes from ever developing, for example, by preventing exposures to carcinogens) and best practices in secondary prevention (i.e., discovering and controlling cancerous or precancerous processes while localized) requires evidence building and synthesis to inform and validate their development (Spratt 1981).

To build the evidence and support the development of any best practices or procedures, researchers, firefighters, employers, and knowledge mobilization experts should all be involved throughout the process. Developing evidence-based interventions requires comprehensive data on firefighter health and occupational exposures during fire suppression activities, during training and in fire departments; however, Canada currently lacks the ability to systematically track and analyze cancer and other health outcomes of firefighters across the country. This data gap has been recognized internationally, and the United States recently launched a National Firefighter Registry to collect comprehensive data to study the relationship between firefighting and cancer (NIOSH 2023). An inclusive national firefighter cancer registry allows for large-scale studies of firefighter cancer, enabling the study of underrepresented groups in the firefighting community, including volunteer, racialized, Indigenous, female, and wildland firefighters, the long-term health implications of firefighting and the impact of interventions.

### Opportunities for collective action:

- Enhance data collection on firefighter health, occupational exposures and cancer, with a focus on recognized data gaps in firefighter groups, such as volunteer, wildland, female, racialized and Indigenous firefighters, and in fire scene exposures.
- Enable data linkages among governments, governing bodies, and stakeholders with firefighter and/or health-related information.
- Promote research into effective cancer prevention strategies and best practices for firefighters, such as decontamination, equipment, behaviours and occupational procedures.
- Leverage existing occupational health specialists and clinician-scientists in occupational health to recruit and train the next generation of scientists and providers.
- Encourage knowledge translation and application of practical research.

## PILLAR #3—TRAINING AND EDUCATION IN HEALTH CARE SETTINGS

Cancer is a complex disease for which interdisciplinary teams of health care professionals are involved in providing patient care. Health care providers play an integral role in recognizing, assessing, preventing, and managing work-related injuries and illnesses, including cancer, and often play a role in the workers' compensation process.

Firefighters have expressed concerns that their health care providers may not always be aware of the unique risks that firefighters face nor how to best provide appropriate care, given that firefighters may be perceived as healthy, too young, or otherwise not at risk of developing particular cancers. Some health care providers have also expressed concerns that they may not know how to best provide care to firefighters, as they may not have access to digestible evidence-based material to inform their practice or they may not have expertise or awareness on occupational diseases overall.

Training and education of health care providers involves many partners, including schools, national associations such as the Royal College of Physicians and Surgeons and the College of Family Physicians of Canada, including PT regulatory colleges and chapters, and in Quebec, the Collège des médecins du Québec. These regulatory authorities are the experts in training and continuing education for physicians and surgeons, including primary care providers and oncologists. PT Colleges of Nursing and Colleges of Pharmacy also play integral roles in continuing education of key partners in health care, as do occupational medicine and Occupational Health professional societies and associations.

### Opportunities for collective action:

- Develop evidence-based continuing education programs on firefighter occupational exposures and health risks.
- Develop materials to support health care professionals' ongoing learning on cancers linked to firefighting and explain their role in the workers' compensation process.
- Develop targeted awareness campaigns for health care professionals during Firefighter Cancer Awareness Month.
- Compile training needs for health and other professionals pertaining to cancers linked to firefighting and cancer prevention.

## PILLAR #4—DIAGNOSTIC TESTING FOR FIREFIGHTERS

Receiving appropriate screening and diagnostic testing for cancers can be a challenge for many firefighters due to the complexity of these diseases, uneven levels of knowledge among individual health care providers regarding the risks associated with firefighting, differences in eligibility for cancer screening programs (i.e., proactively testing individuals who are not exhibiting symptoms), and availability of diagnostic tests for different types of cancer. Furthermore, geography or access to primary care may also affect access to appropriate health services for firefighters who reside in remote communities, Indigenous communities, or northern areas.

In Canada, there are no current evidence-based and widely accepted clinical guidelines focused on screenings or diagnostic testing of firefighters for cancers; rather, recommendations from unions and some medical professionals have been developed to share expertise where available (IAFF, 2023; Fire Chiefs Association of BC, 2014). Firefighters reported being told they are not eligible under normal criteria for screening or diagnostic testing for certain cancers, as they are considered either too young or otherwise not at an increased risk for developing these particular cancers. Additionally, to justify early screening, evidence is needed to show that screening is effective in decreasing complications and mortality prior to widespread adoption. Many of the cancers linked to firefighting (e.g., mesothelioma, bladder cancer, testicular cancer, melanoma, and non-Hodgkin lymphoma) do not have established screening programs in Canada.

Clinicians have also expressed concerns that they may not have the most current evidence-based information on cancers linked to firefighting to inform decision-making, nor how to assess occupational exposure history to inform their care. Translating science into broad usable guidance documents can be a challenging and lengthy process, and requires that the scientific evidence base is robust, peer-reviewed, and accessible. The development, sharing, implementation, and maintenance of clinical practice guidelines requires collaboration of several stakeholders and partners.

### Opportunities for collective action:

- Increase awareness of the occupational exposures and risks faced by firefighters, and their impacts on the health of firefighters.
- Support patient-provider interactions, such as through letters to physicians or other health care practitioners that firefighters can bring to medical appointments.
- Research diagnostic and screening practices.
- Develop and disseminate evidence-based diagnostic guidance on cancers linked to firefighting.
- Collaborate nationally with cancer agencies and specialists.

## PILLAR #5—INFORMATION & KNOWLEDGE SHARING

Firefighters have identified key informational gaps and have called for more awareness among specific stakeholders and the general public on issues such as:

- Health risks associated with firefighting, across different types of firefighters;
- Fire prevention and fire safety, including as an upstream contributor to preventing occupational exposures that may lead to cancers;
- The implications for firefighter health from programs, regulations, codes, and policies related to the built environment and wildland areas;
- Best practices to reduce harmful exposures that can cause cancer;
- Barriers faced by firefighters and their families when navigating the health care system;
- Access to supports for firefighters in the event of a cancer diagnosis; and,
- Availability of reliable, up to date, and evidence-based information on firefighter demographics, firefighter health, training materials, and best practices to implement.

Improving prevention and treatment of cancers linked to firefighting is a complex undertaking that may involve all orders of government, unions, employers, firefighters, and the general public. Based on the views expressed by firefighters and other stakeholders during consultations to develop the Framework, information currently available on best practices to reduce or prevent harmful occupational exposures for firefighters is fragmented, which makes sharing of information challenging.

Efforts to raise awareness of prevention and treatment of cancers among firefighters may involve reviewing the information made available through fire schools and continuing education courses to ascertain whether training materials reflect the latest evidence on cancer risk. Knowledge sharing among senior leaders in the fire sector may also contribute to fostering a culture of awareness and risk mitigation among firefighters.

### Opportunities for collective action:

» Encourage and facilitate sharing of evidence-based best practices between jurisdictions and stakeholders, including through occupational health and safety groups and associations.

» Create opportunities for collaboration between stakeholders to promote information and knowledge sharing.

» Develop informational materials to broaden understanding of occupational exposures and risks, and best practices to prevent or mitigate exposures.

» Highlight actions to prevent fire and improve fire safety during Firefighter Cancer Awareness Month.

# PILLAR #6—STANDARDS ON HEALTH AND SAFETY AND WORKERS' COMPENSATION

Existing standards that recognize cancers linked to firefighting as occupational diseases are diverse across Canada. Importantly, occupational health and safety legislation, regulations, and standards aim to protect workers from on-the-job hazards, as defined in respective Federal/Provincial/Territorial legislations. Workers' compensation aims to provide compensation to workers who are injured due to their work, as outlined in their respective workers' compensation legislation.

## Occupational Health and Safety

Health and safety standards are not consistent across the country and may not always capture the unique and added hazards faced by firefighters. The federal government and each PT government operate under their respective occupational health and safety legislation, enacting and enforcing regulations. Occupational health and safety standards may or may not extend to volunteer firefighters, based on jurisdiction.

Each PT enforces its own occupational health and safety regulations, which, in most cases, cover protective equipment standards based on those developed by the US-based National Fire Protection Association, the CSA Group, or the Standards Council of Canada. These standards and regulations also cover training requirements, inspections, and transportation. Ensuring that occupational health and safety, and associated responsibility, are well understood by workers, management, and employers at all levels is important to protecting the health of all involved.

Federal occupational health and safety in federally regulated workplaces is governed by Part II of the *Canada Labour Code,* which outlines the rights and responsibilities of employees and employers. Canada Occupational Health and Safety Regulations outline many specific standards, including on training and operation of fire protection equipment.

Occupational health and safety standards for firefighters across both federal and PT jurisdictions often reference US-based standards which can be challenging to implement in Canada. Firefighters have reported gaps in equipment standards and occupational health and safety standards, with Indigenous firefighters identifying additional challenges due to lack of occupational health and safety guidelines and enforcement.

## Workers' Compensation and Disability Benefits

Each PT also operates a workers' compensation board (WCB)—with the exception of Nunavut and Northwest Territories that operate a shared WCB—which adjudicates claims for occupational illnesses for injured workers as defined by respective workers' compensation acts or policies or regulations. In each jurisdiction in Canada, there is distinct recognition that cancers linked to firefighting are occupational diseases. Notably, however, each jurisdiction may or may not extend presumptive coverage to all types of firefighters, and each jurisdiction defines firefighters slightly differently. As a result, volunteers and/or wildland firefighters may or may not be covered by workers' compensation acts or policies, depending on the jurisdiction.

The WCBs of each PT set and apply their respective operational policies for various occupational groups, including firefighters, in accordance with their respective jurisdiction's applicable legislation and regulations. WCBs administer benefits and services to eligible claimants in their respective jurisdictions. The governing legislation/regulations/policies articulate the eligibility requirements, which may include exclusionary clauses (e.g., age restrictions) or other criteria (e.g., minimum employment duration). For firefighters, WCB policies include those for presumptive coverage of cancers, where presumptive coverage refers to the decision of the WCB to *presume* that a firefighter's occupation is the direct cause of a particular cancer diagnosis, which allows the firefighter to apply for workers' compensation benefits without the need to provide further evidence of a causal relationship between their occupation and the diagnosis. To qualify for presumptive benefits, a firefighter must be diagnosed with a prescribed cancer from their PT of usual employment and meet all other applicable eligibility criteria. Firefighters may also qualify for and receive benefits following a cancer diagnosis even if a presumption does not apply, though the process to do so may be lengthier and require additional documentation, proofs, notes from physicians, etc. The process to receive workers' compensation beyond the cancers listed on the individual jurisdiction presumptive cancer list may be difficult to navigate for individuals seeking compensation in the wake of a cancer diagnosis.

The cancers captured in presumptive clauses by WCBs vary across PT jurisdictions, with the number of eligible cancers ranging from 9 to 22 (as of June 2024). In all cases, WCBs offer presumptive coverage for a greater number of cancers than have been identified by IARC (i.e., bladder, mesothelioma, colon cancer, prostate cancer, testicular cancer, melanoma of the skin, and non-Hodgkin's lymphoma). Of the seven identified cancers by IARC, each PT offers presumptive coverage for bladder cancer and non-Hodgkin's lymphoma after 15 or 20 years of service, while coverage for the other five cancers varies and is not offered by all jurisdictions. The scope of coverage varies in accordance with differences in the methods used to assess and develop presumption clauses, such as systematic reviews, epidemiologic evidence, claims trends, and legal proceedings. Each jurisdiction may have different requirements for what evidence is needed to add a cancer to the presumptive coverage lists.

Federal workers' compensation is governed by the *Government Employees Compensation Act* (GECA) which provides benefits to federal employees (or their dependents) who suffer an occupational injury or illness arising out of or in the course of their employment, or who are killed on duty. GECA is administered by the Labour Program in partnership with provincial WCBs. WCBs adjudicate GECA claims on behalf of the federal government, according to the rates and conditions established by each WCB for all employees in a given jurisdiction. The federal role also extends to veterans through the disability benefits program, which provides services and compensation for veterans who develop occupational illnesses, including for former military firefighters who develop cancer, due to their service in the Canadian Armed Forces.

Firefighters often work across jurisdictional lines when responding to emergencies. Due to the structure of GECA, federal firefighters are subject to differences in workers' compensation benefits in accordance with their jurisdiction of usual employment.

## Opportunities for collective action:

**Occupational Health and Safety**

- Share information between jurisdictions on occupational health and safety regulations and standards.
- Address identified gaps in occupational health and safety standards for different firefighting populations, including wildland and Indigenous firefighters, to offer improved protection for all types of firefighters.

**Workers' Compensation and Disability Benefits**

- Compile and maintain a current list of presumptive legislation clauses for firefighters, and veteran firefighters.
- Develop, disseminate, and share information to support WCB decision-making processes.
- Strengthen research and sharing of information on current processes to add or update presumptive cancers lists and inform WCB policy and disability benefits administration.

# MOVING FORWARD

Addressing cancers linked to firefighting is an issue of importance for people in Canada, including the fire sector, their families, and their communities. This is an issue that involves firefighters, clinicians, researchers, stakeholder groups, and all orders of governments. The challenges in this document will need ongoing efforts by all partners involved. The GOC will work alongside all orders of government and stakeholders.

All those with an interest in improving the health and safety of firefighters are encouraged to use the Framework to address challenges and advance opportunities in ways that correspond to their respective mandates, objectives, priorities and contexts.

Health Canada will continue to advance work with practical applications for firefighters where possible, including through the ongoing implementation of the Action Plan to protect firefighters from harmful chemicals released during household fires. Furthermore, the Minister of Health will table in Parliament a progress report in 2029 on the effectiveness of the Framework.

Health Canada would like to acknowledge and thank all participants who took time to share their expertise, lived experiences, and advice on this topic. Our hope is that these relationships will continue to grow and strengthen as we collectively work to extinguish cancer in the fire sector.

# APPENDICES

## GLOSSARY

**Action Plan:** The Government of Canada's Action Plan to protect firefighters from harmful chemicals released during household fires. The firefighter action plan aims to protect firefighters from harmful chemicals released during fire suppression through support research and monitoring to assess levels of exposure, identifying practices for firefighters to reduce harm and improve personal protective equipment, sharing information, and raising awareness.

**Cancer:** A disease caused by the uncontrolled growth and spread of abnormal cells in the body. Firefighters are disproportionately exposed to a higher level of harmful chemicals, smoke, soot, hazardous materials, and carcinogens present in firefighting environments, which fundamentally increases their risk of developing and dying from cancer.

**Cancer Incidence:** The number of new cases of cancer diagnosed in a specific population during a given period of time. Cancer incidence data is crucial for healthcare planning, resource allocation, and research efforts aimed at prevention, early detection, and treatment.

**Cancer Prevalence:** The total number of people in a population who have been diagnosed with cancer and are still alive at a specific point in time, including both newly diagnosed cases (incidence) and individuals who were diagnosed in the past and still living with the disease. Prevalence provides a snapshot of the total burden of cancer in a population and is influenced by factors such as incidence, survival rates, and treatment effectiveness.

**Cancer Morbidity:** The state of being diseased or unhealthy due to cancer. It encompasses the physical and psychological effects, symptoms, and complications experienced by individuals diagnosed with cancer. Cancer morbidity can vary widely depending on factors such as the type of cancer, stage of disease, treatment received, and individual characteristics.

**Cancer Mortality:** The number of deaths caused by cancer within a specific population during a given period of time. It is an important measure used to assess the impact of cancer on a population and to track changes in cancer-related deaths over time.

**Carcinogen:** A substance or agent that has the potential to cause cancer in living tissues or cells.

**CIFFC:** The Canadian Interagency Forest Fire Centre—a not-for-profit coordinating body that facilitates cooperation and information sharing among various governmental agencies involved in wildland fire management (at both the federal and PT levels).

**Chemicals Management Plan:** Chemicals Management Plan (CMP) is a Government of Canada initiative aimed at reducing the risks posed by chemical substances to Canadians and the environment.

**Diagnostic Tests:** A diagnostic test is performed when a person is showing symptoms of a particular condition, whereas screening is used in asymptomatic individuals who do not have any signs or symptoms of a particular condition.

**Draft State of PFAS Report:** A preliminary document that provides an assessment of the current situation regarding per- and polyfluoroalkyl substances (PFAS), which are a group of man-made chemicals that have been widely used in firefighting textiles and equipment (among other applications). This report was published for public comment on May 20, 2023; it includes information on the sources of PFAS contamination for firefighters, the extent of PFAS contamination in a firefighting environment, potential human health and environmental impacts, regulatory actions, ongoing research and monitoring efforts, and recommendations for mitigating PFAS contamination in a firefighting setting. The draft status indicates the report is not yet finalized.

**IARC:** International Agency of Research on Cancer (IARC) is an intergovernmental agency forming part of the World Health Organization. Its mission is to conduct research on the causes of cancer. In June 2022, the IARC updated firefighting classification from Group 2A 'possibly carcinogenic to humans' to Group 1 'carcinogenic to humans.'

**Firefighter:** A trained individual whose primary responsibility is to respond to fires, emergencies, and other incidents to protect life, property, and the environment. Firefighters work in various settings, such as municipal fire departments, industrial facilities, airports, military bases, naval ships, and wildland areas, to extinguish fires, conduct rescues, provide emergency medical care, and perform other critical tasks to ensure public safety.

**Fire Inspector:** A trained individual responsible for inspecting building, structures, and properties to ensure compliance with fire codes, regulations, safety standards, and investigating fire incidents.

**Fire Chief:** The highest-ranking officer in a fire department or firefighting organization, responsible for overseeing and managing all aspects of fire protection, emergency response, and fire department operations.

**Fire Commissioner:** A public official responsible for overseeing and managing a fire department or firefighting organization within a municipality or other jurisdiction. The Fire Commissioner is responsible for the administration and enforcement of Treasury Board policy, standards and those codes and regulations that cover fire protection under the Labour Code.

**Fire Marshal:** A senior official who is the technical authority on fire protection.

**GOC:** Government of Canada

**Occupational Exposures:** Contact or interactions that occur while on duty; for firefighters, these can include various physical, chemical, biological, or psychosocial hazards that may pose a risk to their health and safety. These exposures can occur through inhalation, ingestion, skin contact, or other means while performing firefighting duties.

**PFAS:** Per- and Polyfluoroalkyl Substances (PFAS) are a group of chemicals used to make fluoropolymer coatings that resist heat, oil, stains, grease and water. PFAS have been classified as a Group 2B carcinogen, *possibly carcinogenic to humans.*

**PT:** Provinces and Territories

**Presumptive Legislation for firefighters:** A legal measure that establishes a presumption that certain conditions, illnesses, or injuries are work-related for a specific group of individuals, typically for the purpose of workers' compensation benefits. In the context of presumptive legislation for firefighters, certain laws or regulations may establish a presumption that certain types of cancer or other health conditions are considered to have been caused by the inherent risks of firefighting. This means that if a firefighter is diagnosed with a specified condition covered under the presumptive legislation, it is presumed that the condition is work-related unless proven otherwise. This can simplify the process for firefighters to access compensation, benefits, and/or medical care for specific conditions.

**PPE:** Personal protective equipment (PPE) refers to any equipment worn by an individual to protect themself from potential hazard or environmental risks. It is designed to minimize exposure to chemicals, biological, and airborne risks. PPE may refer to gloves, goggles, masks, face shields, and/or safety footwear.

**Workers' Compensation:** A form of insurance that provides wage replacement and medical benefits to employees who are injured or become ill as a result of their job. Workers' compensation boards (WCBs) operate independently from direct government control or interference, maintaining a certain degree of autonomy in decision-making and operations. This independence allows WCBs to make decisions based on established rules, regulations, and guidelines, without undue influence from government officials and political considerations. By being arm's-length, the intent of WCBs is to promote accountability, efficiency, and fair treatment of injured workers while upholding the principles of justice and equity in providing compensation for work-related injuries, illnesses, or disabilities.

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