

Occupations and Workplaces

Wildland Firefighter

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What does a wildland firefighter do?

Wildland firefighters work in natural areas, such as forests, grasslands and other similar environments to prevent and suppress fires, both nationally and internationally. Wildland firefighting is a physically demanding job which requires diverse skills, from operating machinery to managing complex fire operations in remote areas. Wildland firefighters spend prolonged periods in remote, rugged environments, often camping out in the field for extended durations. The role involves significant teamwork, technical knowledge, and the ability to adapt to ever-changing environments.

Wildland firefighters perform a variety of activities to contain and mitigate fire risks. Some duties may include:

- Create a fireline (a break in the fire's path) by cutting, scraping, or digging vegetation.
- Use drip torches to conduct planned, controlled burns during burnout operations.
- Locate and extinguish residual fire activity along a fire's edge in mop-up operations.
- Use and maintain various equipment to perform firefighting activities, including shovels, chainsaws, water pumps, chemical extinguishers, and pumps.
- Rescue hikers and others who may be caught in the fire.

- Assist in aerial firefighting operations by coordinating with aircraft, such as helicopters and fixed-wing planes, for water drops and fireline support.
- Drive specialized vehicles, including fire trucks and all-terrain vehicles, to access fire areas and transport personnel and equipment.
- Use radios and other communication devices to coordinate within the team and with command units.
- Maintain physical readiness through regular fitness testing and meeting physical standards.
- Undergo routine medical assessments to ensure fitness for duty and to monitor health risks associated with the physical and environmental stresses of wildland firefighting.
- Participate in continuous training programs to stay current on firefighting techniques, equipment, safety protocols, and incident management.

For more general information related to firefighters, please see our OSH Answers [Fire Fighter](#).

What are some health and safety hazards associated with being a wildland firefighter?

Wildland firefighters are exposed to many hazards, including biological, chemical, physical, ergonomic, and psychosocial hazards.

Biological hazards

- Exposure to zoonotic diseases (infectious diseases transmitted between animals and people), including those transmitted by [ticks](#), [mosquitoes](#), and [wildlife](#).
- [Insect stings](#), including those from bees, wasps, hornets, and ants.

Chemical hazards

- Exposure to [wildland fire smoke](#), which may contain fine particulate matter, carbon monoxide, carbon dioxide, nitrogen oxides, and other harmful chemicals.
- Exposure to [diesel exhaust](#), gasoline, and aviation fuel.
- Exposure to contaminated equipment or surfaces.
- Chemicals in firefighting foams and retardants.
- [Asbestos](#), [silica](#), and other building materials that may burn in the vicinity.

Ergonomic hazards

- Night and [shift work](#).

- Excessive digging, [shovelling](#), and heavy lifting.
- Carrying heavy loads and other [manual materials handling](#).

Physical hazards

- [Ultraviolet radiation](#).
- [Hot temperatures](#) and other extreme environmental conditions, such as [lightning](#) and [strong winds](#).
- [Noise](#).

Psychosocial hazards

- [Fatigue](#) due to long hours and physical demands.
- [Workplace stress](#), especially in high-pressure situations.
- Witnessing traumatic events, such as fire-related fatalities.
- Isolation when working in remote areas.
- Long periods away from home, which can lead to potential emotional strain and difficulty in maintaining personal relationships.

Safety Hazards

- Tools, such as [chainsaws](#), torches, and chippers.
- Heavy equipment, such as bulldozers and excavators.
- Radiant heat.
- Falling trees and branches.
- Uneven surfaces resulting in [slips, trips, or falls](#).
- Vehicle rollovers, including the use of [off-road vehicles](#).
- Aviation incidents involving aircraft used for air support or fire suppression activities.
- [Wildlife](#) encounters, including attacks or aggressive behaviour from animals, such as bears or snakes.

What are the health effects associated with being a wildland firefighter?

The International Agency for Research on Cancer (IARC) classifies the occupational exposure as a firefighter as carcinogenic to humans (Group 1) based on sufficient evidence for cancer in humans. Occupational exposure as a firefighter causes:

- Mesothelioma (cancer that forms in the tissue that lines your lungs or abdomen)
- Bladder cancer

The International Agency for Research on Cancer also concluded there is limited evidence of an association between occupational exposure as a firefighter and the following cancers:

- Blood cancer (non-Hodgkin lymphoma)
- Colon cancer
- Prostate cancer
- Skin cancer (melanoma)
- Testicular cancer

While studies on the long-term health risks specifically for wildland firefighters are limited, some studies suggest that wildland firefighters are at an increased risk of:

- High blood pressure,
- Irregular heartbeat,
- Lung cancer and other respiratory issues, and
- Cardiovascular disease.

What are some control measures workplaces can implement for wildland firefighters?

Biological hazards

- Encourage vaccination, such as the [rabies](#) vaccine, if available and appropriate.
- Have procedures in place to respond swiftly to insect stings and potential allergic reactions.
- Provide insect repellent containing DEET or Icaridin.
- Provide mosquito nets when spending time in unscreened outdoor structures, such as tents.
- Ensure full body tick checks are completed after working outdoors, concentrating on feet, armpits, back of knees, elbows, hair, and behind ears, waist, and groin areas.

Chemical hazards

- Purchase per- and polyfluoroalkyl (PFAS)-free personal protective equipment for firefighters where possible.

- Use the air recirculation mode in vehicles to minimize the intake of outside air during heavy smoke conditions.
- Use air scrubbers (air filtration units) where possible, such as in incident base camps.
- Establish decontamination zoning using a red, yellow and green (or hot, warm and cold) system to prevent harmful chemicals from travelling to clean areas.
- Rotate crews out of areas with heavy smoke.
- Avoid positions downwind when firefighting.
- Avoid travelling deep into the active burn area when not required.
- Minimize mop-up operations, where possible, by using roads or other natural features, such as rock bands, as indirect firelines to reduce the amount of time spent near the active fire's edge.
- Locate camps and staging areas upwind of the fire to limit smoke exposure.
- Clean vehicle and aircraft cabins once they have returned to a base post-shift.
- Avoid transporting contaminated gear in personal vehicles.
- If transporting contaminated gear in personal vehicles cannot be avoided, personal protective equipment and fireline workwear should be bagged in a waterproof bag, sealed, and isolated from any occupant(s) in the vehicle. Hands should be washed or gloved when handling gear, and vehicles should be cleaned after transport. Fireline workwear should be laundered at the earliest opportunity upon returning to the base.
- Provide workers with showers and clean clothing immediately after returning to base.

Ergonomic hazards

- Optimize shift schedules, including managing work-rest cycles to avoid fatigue.
- Provide breaks to reduce strain from awkward positions or repetitive physical tasks.
- Encourage proper techniques for physical tasks, such as digging and [shovelling](#).

Physical hazards

- Acclimatize workers to hot environments gradually to prevent heat stress. For new and returning workers, increase the duration and level of physical activity gradually.
- Rotate workers throughout the day to minimize heat exposures and exertion.
- Establish work-rest regimens as recommended in health and safety legislation and guidance.
- Implement a [hearing conservation program](#).
- Provide proper clothing, sunglasses, and sunscreen for sun exposure.

Psychosocial hazards

- Train workers to identify and manage [stress](#).
- Provide a debriefing session or counselling after traumatic incidents to help workers process their experiences.

Safety Hazards

- Keep tools and equipment in good working order.
- Ensure vehicles are regularly inspected and encourage safe driving practices.
- Keep camps away from food-rich or wildlife-prone areas.
- Use proper food storage and disposal methods to prevent attracting animals.
- Implement procedures for handling wildlife encounters.
- Ensure aviation operations follow strict safety protocols, such as those from Transport Canada, to minimize the risk of incidents.
- Implement an emergency preparedness and response plan.

What are some general measures wildland firefighters can take?

- Wear seatbelts and adjust to suit road conditions.
- Avoid driving when fatigued or impaired.
- Exercise regularly and maintain a healthy diet.
- Avoid smoking.
- Get plenty of sleep to ensure rest and recovery.
- Rest in cool areas and stay hydrated when possible.
- Maintain situational awareness and be aware of escape routes.
- Wear the appropriate personal protective equipment (PPE).
- Report hazards, injuries, and illnesses to your supervisor.

What should be included in an emergency preparedness and response plan for wildland firefighters?

It is important that fire service organizations have their own emergency response plans, especially since access to emergency services may not be readily available. Emergency response plans help prepare for unforeseen situations that may occur during a response, such as explosions, injuries, medical emergencies, rapidly changing fire conditions, and other crisis situations.

For wildland firefighter organizations, an emergency response plan may include:

- Procedures for alerting workers in case of an emergency.
- Rescue protocols for injured or trapped workers.
- Worker evacuation procedures and designated assembly locations.
- Contact information for key personnel.
- First aid and medical assistance.
- Measures for preventing workplace violence.
- Worker training and drills.

The plan should be tailored to your organization, the unique challenges of a remote environment, and changing fire conditions.

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