



**Lions River Fire Protection Association**  
By Landowners - For Landowners

## **FIRE SAFETY & FIRE HAZARDS**

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### **FIRE SAFETY**

#### **Taking Refuge**

Taking refuge is the last resort. Your highest priority is to avoid being placed in a life threatening situation. You should ensure that you take all necessary actions to avoid life threatening situations where you may need to take refuge while on foot, in a vehicle or on a tanker. Your chance of survival is significantly reduced if entrapped in a grass fire, and extremely low if entrapped in a forest fire. You need to know the actions to take to improve your chances of survival if for reasons outside your control you find yourself in a critical situation.

Remember, you must wear appropriate protective clothing, worn and fitted correctly, at all times on the fire ground.

The following pages will cover:

- taking refuge from radiant heat;
- taking refuge on foot;
- taking refuge in a structure; and
- taking refuge in a vehicle.

#### **Taking refuge from radiant heat**

Even during normal fire fighting activities, radiant heat is a potential killer. You are in real trouble if radiant heat enters your body faster than you can maintain your core body temperature by sweating. Personal protective clothing and equipment is designed to offer some protection against radiant heat. If you are too close to the fire, your core body temperature will still rise. To overcome this you need to move further away from the heat source (i.e. the flame) to a more comfortable distance. Four times the flame height is the accepted comfortable distance. As flame height increases so does radiant heat. In cases of sudden flare ups, you may collapse and die within minutes, if you do not find shelter.

As radiant heat only travels in straight lines from its source, taking refuge behind a solid object will shield you from the radiant heat. Keep as low as possible, lay face down and cover up all exposed skin until the flare up subsides.

Objects that may shield you from radiated heat include:

- heavy machinery (e.g. a bulldozer);
- a large log;
- a stone wall;
- a structure;
- an earth mound;
- a large rock; and a tree.

It is worth reiterating that your priority should be to avoid being placed in a life threatening situation. The following actions should be considered as a last resort when entrapped in a fire.

## Taking refuge when on foot in a fire

If you are on foot and are not in the vicinity of a vehicle or structure, you should consider the following actions:

- remain calm and do not panic – do not run blindly from the fire as exhaustion makes you prone to heat-related illnesses and collapse;
- if you are in grave and imminent danger, to gain immediate radio attention send a “Mayday” message;
- look after fellow fire fighters;
- as fires travel faster uphill, try to cut across a slope out of the path of the head of the fire – do not try to outrun the fire uphill unless you are certain a safe refuge is close by;
- try to reach bare or unburnt ground towards the back of the fire;
- do not run through flames unless you are able to see the ground on the other side and they are low enough for you to safely cross (breaks may occur where there is less fuel);
- as a last resort, clear a survival area by removing fuel and sheltering behind a solid object if possible (such as listed opposite) or lay in a depression, stump hole or in a drain face down; and
- lay face down, ensuring all exposed skin is covered (completely cover yourself with a woollen blanket if available).

## Taking refuge in a structure threatened by fire

In a fire situation, a house or structure of a similar size can provide you with adequate shelter from sparks, embers, radiant heat and flames. Such a building might eventually burn, but it can protect you until the main fire danger passes. It is important to remain outside the building for as long as possible. In the early stages of the fire, there may be a shower of sparks and embers blown towards the building.

By remaining outside for as long as possible you can:

- extinguish any small outbreaks;
- wet down the immediate area;
- remove or protect any fuels that may be adjacent to the building (e.g. gas cylinders, firewood and awnings); and
- if time permits, fill gutters with water (block down pipes).

When you are forced to take refuge indoors:

- if you are in grave and imminent danger, to gain immediate radio attention send a “Mayday”
- take in a hose and fittings if you know that the fitting attached to the end of the hose can be coupled to an internal tap (e.g. the washing machine tap in the laundry if applicable);
- shut all windows and doors (be aware that sparks and embers can also enter buildings through ventilation covers, sub-floor spaces and under doors and eaves);
- soak towels and rags with water, in case you need to extinguish small fires and fill available containers, buckets and baths (if applicable);
- watch for and extinguish any outbreaks of fire, especially in the roof, ceiling, windowsills and verandas or timber decks (the heat will dry out timber surfaces making them more likely to ignite from ember attack); and
- if the building should catch fire and the main fire has passed, wrap yourself in a woollen blanket and leave.

Finally, when the fire front passes (it will generally pass quickly, depending on the fuel available) it should be safe enough to move outside and quickly extinguish any outbreaks and wet down any smouldering materials. This will help to prevent the house or building burning down, you should remain alert to any possible outbreaks.

## Taking refuge in a vehicle threatened by fire

Vehicles provide an increased level of protection from flames and radiant heat compared to being caught on foot in the open.

Emergency personal protection procedure – cabin of any vehicle

- if you are in grave and imminent danger, to gain immediate radio attention send a "Mayday"
- give continuous blasts on the horn as a warning signal
- ensure others are aware of the nature of the impending danger;
- park your vehicle in an area of least combustible fuel, preferably on burnt or bare ground, in a quarry pit, wet gully or cutting and away from surrounding or overhanging trees or other vegetation;
- ensure the off-side (driver's side) of the vehicle is facing away from the fire to reduce the main impact of radiant heat to you and provide further protection for the pump area (if applicable);
- wind up all windows, close vents, turn on headlights and hazard lights, and leave/start engine running;
- ensure all personal protective clothing is worn and properly adjusted, and all areas of exposed skin are covered;
- get down as low as possible in the well of the cabin and cover yourself fully with a woollen blanket, keeping below the bottom of the windscreen;
- when the fire front has passed, extinguish any fires on or around the vehicle that may be a threat to your safety; and
- advise someone from the emergency services at the fire when the danger has passed.

## FIRE HAZARDS

### "Safety First"

**Safety must be given priority over all other fire suppression considerations and activities.**

When working at an incident, you must avoid putting yourself at risk unnecessarily. By following safe work practices you can minimise the risk of injury.

#### General hazards

There are a range of potential hazards that can arise from the use or misuse of vehicles and machinery during fire suppression operations. At night, these hazards pose an even greater risk.

When working around **any** machinery such as a chainsaws, bulldozers, graders, farm machinery or aircraft you must ensure the operator is aware of your location at all times – day or night. If you need to approach an operator, do so only when you have made eye contact and signalled your need to communicate. Only approach when you receive the signal it is safe to do so, remain in the line of sight of the operator at all times.

At night you should carry a torch or remain in a well lit area. In all cases you must follow the operators instructions.

#### Working near power lines

Electrical hazards may be encountered at fires or other incidents. These hazards may be caused by:

- high winds bringing down power lines;
- falling trees or branches bringing down power lines;
- burnt power poles falling and bringing down power lines; or
- motor vehicle impact bringing down power lines.

You must **always** consider downed electrical wires as **live** until informed otherwise by a power company representative. A downed live power line will result in electricity being on the ground surface for several metres around the area where the wire is making contact.

If it is in contact with an object such as a fence or a vehicle, the whole object should be considered as live. You should also be aware that overhead high voltage power or transmission lines can short circuit to ground through smoke **without** making direct ground contact.

#### Precautions

- Do not approach within 8 m of an area where there are downed wires, power lines or towers that are covered in smoke (this distance will increase if the ground is wet or water is present);
- notify the power supply company to cut power and follow their advice regarding safe work practices;
- cordon off the area with tape, rope or by other suitable means;
- do not work directly under high voltage or transmission lines where smoke is present;
- do not park your vehicle near loose dang ling electrical wires;
- avoid applying a direct stream of water onto electrical equipment or making contact between electrical equipment and wet hose lines as water conducts electricity;
- take special care at night, use a torch or your vehicle's lights to locate the ends of fallen wires; and
- ensure people working in the area are warned of the danger.

## Vehicles

Vehicles at, or travelling to or from a fire, are a potential hazard to emergency personnel and other road users.

When working on or around vehicles at an incident:

- know the dimensions of your vehicle;
- always wear a seat belt where fitted;
- ensure any items of equipment carried in the vehicle are stowed away, locker doors are closed and secured, and exterior equipment on the vehicle is secured;
- do not ride on the back of a vehicle unless it is designed for this purpose;
- when working on the rear of a vehicle, be aware that there is a potential for slipping, falling or being thrown, especially if the vehicle is moving over a rough or steep terrain;
- park properly – a vehicle that is not properly parked (due to haste or panic) can be a hazard as it may move without warning;
- park safely – both the vehicle and crew are at risk of injury from falling branches or building components if the vehicle is parked too close to unstable trees or buildings;
- mount and dismount the vehicle using the steps and rails provided to the crew area and cabin to avoid injury – **do not jump from any vehicle**;
- be cautious when stepping onto uneven or broken ground;
- whenever possible get someone to guide you when reversing;
- do not stand behind a vehicle – if the vehicle is reversing, the driver may not see you and you could be injured; and
- always be alert for hazards created by other vehicles such as vehicles being driven carelessly in conditions of poor visibility, and if alighting on the driver's side of the vehicle, be cautious of passing traffic.

## Heavy machinery

Machinery, such as bulldozers, graders, farm machinery, tractors, ploughs and bobcats create their own unique set of hazards. Personnel working near any machinery, in a vehicle or on foot, risk being crushed if the machine operator is not aware of them. All machine operators have restricted fields of vision to the front and rear due to the engine and roll over protection systems. Dust, smoke and darkness may further impede the operators view.

### *Approaching heavy machinery*

Do not approach machinery until you have established eye contact and received acknowledgement from the operator. Operators will have extreme difficulty hearing over the noise of the machine. Only approach when directed by the operator. Heavy machinery can slew or turn quickly and without warning. You should never attempt to hitch a ride as the moving tracks, or wheels, can be hazardous.

### *Dust and poor visibility*

Vehicles and earth moving equipment create intense dust. This is a hazard to personnel and traffic due to reduced visibility and the possibility of inhaling dust particles.

If dust is present, or visibility poor:

- try to work into the wind;
- make an exclusion zone around the machine;
- close off road or track; and
- turn on vehicle or machinery lights.

## Trees and rocks

Fires are often associated with strong winds which can break away or dislodge previously broken branches that have been supported by other branches (widow makers). Falling or rolling trees, logs, rocks and branches can cause serious injury or even death. It is possible for living or dead trees to catch fire, fall to the ground, or drop branches with little or no warning. Burning stags (dead trees) are particularly dangerous. Rocks, trees or logs that are dislodged by heavy machinery working on slopes have the potential to roll downhill.

A tree or rock pushed by a machine may dislodge other trees or rocks. This combination creates a domino effect and creates the risk of a severe impact injury at some distance from the machine. Therefore, always stay more than two tree lengths from heavy machinery and never work down slope.

Also be aware that trees that are being pushed by a machine may suddenly snap and spring back in the opposite direction, in a whiplash effect.

To reduce the likelihood of injury:

- always wear your safety helmet;
- do not park vehicles near or under burning trees or branches; and
- keep a look out for hazards created by trees, branches and rocks.

## Chainsaws

Chainsaws are used at fire s to cut open burning logs, cut trees and branches which have fallen on roads and to cut firebreaks. They are a useful, but a potentially dangerous tool. If you have not been trained and endorsed to use a chainsaw, do **not** operate one.

A qualified chainsaw operator should always wear the correct protective clothing:

- helmet;
- face shield/eye protection;
- ear protection;
- gloves;
- chainsaw trousers (or chaps);
- high visibility clothing; and
- safety boots (steel cap).

## Safe Work Practices Around Aircraft

Aircraft are used for a number of activities in fire operations including the following.

- fire command and control;
- detecting fires;
- applying water or aerial retardants (firebombing);
- aerial ignition of unburnt areas within the fire perimeter;
- transporting crews and equipment;
- observing and mapping fires; and
- fire bomber coordination.

## Safety precautions

There are general safety principles that apply when working around aircraft:

- always follow the directions given by the pilot, flight crew or aircraft coordinator;
- wear correct eye, ear and head protection – do not wear loose headgear such as baseball caps;
- stand clear of landing and take-off areas and do not smoke within 30 metres of an aircraft or re-fuelling equipment;
- be aware of propellers, and rotors, particularly when engines are idling during warm up and brief stops. Never lean on them as this may cause the engine to turn over and cause injury;
- do not handle moving parts such as flaps, aerals, and airspeed sensing tubes as these can be easily damaged; and
- assist with loading and unloading only under the supervision of the pilot.

### *Working around helicopters*

Observe the following procedures when working around helicopters:

- stay in the pilot's field of view at all times;
- stay away from spinning main and tail rotors;
- stand outside the main rotor disc area and await pilot's signal before approaching the helicopter in a crouched position;
- do not approach the helicopter unless the rotors have stopped or are spinning at operating speed – a slowing rotor can tilt downwards, in windy weather reducing head height;
- be aware of ground irregularities on uneven, sloping terrain. Approach and leave the helicopter from the lowest down slope side and within the pilot's view;
- carry long objects, stretchers, and hand tools horizontally; and
- if the helicopter is creating dust, cover your eyes and crouch down with your back to the helicopter until the dust clears.

### *Firebombing*

Firebombing is the term used to describe the dropping of water, foam or retardants in aerial fire suppression activities. Helicopters or fixed wing, agricultural type aircraft can carry out firebombing.

If caught in a firebombing zone:

- move away from the fire line;
- do not run or panic;
- watch out for dead or suspended branches;
- place hand tools well clear of you;
- hold your helmet on or protect your head with your arms;
- watch your footing; and
- wash with cold water if hit with foam or retardant.