

Fire Safety, Equipment and Fire Breaks.



What is fire?



The fire triangle

The fire triangle is a model that demonstrates the three elements required for a fire. They are:

- Oxygen
- Heat
- Fuel

Every element of the fire triangle is required for a flame to start and continue burning. Sometimes we call the fire triangle a 'fire tetrahedron.'

A tetrahedron is a 3D fire triangle. The extra point in the tetrahedron is the 'chemical reaction' (combustion) that occurs when the three elements of the fire triangle are present in enough quantity.

A chemical reaction (precisely an “exothermic” reaction) constantly occurs during a fire. The effects of this chemical reaction are the heat and light that we see as ‘fire.’ The stored energy in the fuel reacts with the oxygen and heat to let off excess heat and light.

Fire Safety

1. Never enter a fire zone alone! Always work in a team of two or more.
2. Never approach a fire from the front. This means the wind must not be in your face and the fire in front of you.
3. The wind must always be behind you, and the fire in front of you.
4. Don't park vehicles in areas that can still burn.
5. Always leave your keys in the vehicle or with someone that will stay with the vehicles.
6. Don't wear jewellery or have a cell phone on your person. The metal can get extremely hot and burn you.
7. Wear protective clothing. Clothing should be fireproof where possible. Try not to wear synthetic materials. Wear long, woollen or heavy cotton clothing, solid boots or shoes, a hat , face shield or woollen balaclava, and gloves.
8. Try not to inhale smoke if possible.

Fire fighting equipment

1. Fire beaters: A good smack with a fire beater will deprive the combustion of oxygen and will put the fire out.
2. Water backpack: (same as used for administering pest control substances - If you are using the same backpack you use for pesticides ensure it is thoroughly rinsed out first). The water will cause the combustion to lose heat as well as oxygen and put the flames out. Although to a lesser extent, the water will deprive the combustion of burnable fuel.
3. Blowers: The blower will deprive the combustion of heat but primarily will cause imbalance to the combustion requirements by adding too much oxygen.
4. Water car with pressure pump: Similar to the water pack.
5. Good fire lighter: To assist in starting back burns.

Personal Protection

1. Face Visor or balaclava. A buff also works.
2. Gloves.
3. Good shoes or boots.
4. Hat.
5. Long woollen or cotton clothes.

Fire fighting methods

Each fire is unique due to varying conditions and must be assessed before attempting to put it out. The following should be taken into consideration:

1. The fuel / veld type.
2. Direction of the wind.
3. Strength of the wind.
4. How big is the burn front?
5. How many firefighters are available?
6. What equipment is available?
7. What infrastructures are near or in danger?
8. Are there any animals or people in danger?

Blowers:

The most effective tools by far, for fighting veld fires, are blowers. Employ one person with a blower and one with a water pack or fire beater in each team. The blower will approach the fire from one end of the burn and work its way towards the head of the fire. The best position to start in, is the end of the fire which is burning with the wind from directly behind the burn. This will also be the side that moves the fastest forward. The member with the fire beater will follow and make sure that there are no flare-ups and that all fire is extinguished.

Fire Beaters:

If there are no blowers, then fire beaters are the next best thing. Two people team together, each armed with a beater. The same approach is used as with the blowers. One member will lead and beat the fire 5 to 10 times while the second member follows behind in a secondary position and extinguishes any remaining flames. After the 5 to 10 times, the member in front steps back and lets the second member take the lead. The first member moves to the secondary position. This method allows the team members to take a breather from inhaling smoke and have a rest from the lead position.

Water Packs:

Water, when used correctly can be very effective in fighting fires. Even a small amount of water can put out fires. The member with the water pack will again approach the fire in the same manner as described for the blower teams. The water pack team will also have a fire beater as the second member. The water jet is set to have a very small spread but not a solid beam of water. The water is sprayed towards the base of the flames and preferably just in front of the flames. The beater will follow and extinguish any flare-ups.

Back burning – a last resort:

To reduce the element of fuel.

Fire fighters can usually extinguish a fire when a wildfire is out of control. However, if the fire has too much heat, oxygen, and fuel, it will keep going and we may be in a position where we do not have adequate tools and manpower to extinguish it.

Back burning is a strategy that involves moving ahead of the fire and removing the fuels that are in the fire's path. Usually, this will include running controlled burns ahead of the primary fire to burn away any potential fuels. Firefighters extinguish these smaller fires before the primary and out-of-control one arrives. All firefighters fighting the primary fire should be withdrawn and used to assist with the backburn.

When the primary fire arrives, it finds no fuel to burn, and is stopped in its tracks.

Back burns can only be done with the wind and the fire from the front. Care must be taken to only light a small section at a time in order to control the burn. The leading front of the back burn is extinguished and the rest is left to slowly burn towards the approaching runaway fire.

Backburns should preferably be initiated or overseen by a team member with the correct training and experience.