

BULLETIN No. 71  
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# SAFETY IN BUSH FIRE CONTROL

Fire Protection Branch  
Department of Conservation and  
Land Management  
Western Australia



# "WATCH OUT" on the Fireline

Eight commandments for firefighting crews

- W—WEATHER** affects fire behaviour, so watch for changes in wind strength and direction.
- A—ACTIONS** must be based on current and expected fire behaviour.
- T—TAKE CARE** by conserving energy and avoiding dehydration. Drink water frequently, even if you don't feel like it.
- C—CONTACT** to be kept at all times with your leader(s) and workmates.
- H—HAZARDS** to watch for are flashy or heavy fuels, dense thickets, steep slopes and burning trees.
- O—OBSERVE** marked changes in fire behaviour, and suitable escape routes.
- U—UNDERSTAND** your instructions and make sure yours are understood.
- T—THINK** clearly, remain alert and act decisively.

Memorize these for your own and your workmates' safety.

# SAFETY IN BUSH FIRE CONTROL

To .....

of .....

Safety on the job is the responsibility of the manager and the employee alike. Be mindful at all times of your own safety and the safety of others about you.

Know and follow the safety rules in this booklet. Read it carefully. Retain it and re-read it from time to time.

*I hereby acknowledge receipt of this booklet and agree to comply with the safety procedures it contains.*

Name .....

Date .....

Please cut along dotted line

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# INTRODUCTION

This booklet deals with the safety measures that are essential to bush fire suppression and prescribed burning activities conducted by the Department of Conservation and Land Management.

Basic safety rules are listed which must be understood by all Departmental personnel likely to become involved in a fire situation. The booklet should be used as a training aid and safety reference for new as well as experienced fire personnel.

Learn these rules by heart. Every person on the job must accept the responsibility for their own safety, as well as the safety of their colleagues.

# **PERSONAL PROTECTION**

## **Protective Clothing**

All Team Leaders must ensure that people under their control conform to safe standards of dress and behaviour.

- Protect against falling objects—wear an approved safety helmet adjusted to fit properly.
- Protect body against radiated heat—long sleeved shirts and long trousers or protective overalls. Don't wear synthetics, use wool, cotton drill, or propane treated cotton.
- Protect feet with safety boots in good condition, preferably calf length.
- Wear safety goggles or glasses to prevent eye injury from smoke irritation, wind blown debris, or chainsaw debris.

**DO NOT WEAR** shorts, singlets, T-shirts, thongs, or sandals in the fire area.

Plastic watch bands should not be worn as they can melt into the skin and cause infection.

## **First Aid Kits**

All fire fighting vehicles must carry a complete, standard first aid kit. Team Leaders and truck operators must check their kits regularly to ensure that the kit is properly stocked with medical supplies.

Each Team should contain at least one qualified first-aider.

# **PRESCRIBED BURNING HAND METHOD**

## **Description**

Most methods of prescribed burning involve strip lighting: spots of fire are lit along parallel lines and at predetermined spaces between the spots and between adjacent lines. This spacing, together with the direction of the lines, is referred to as the lighting pattern and is used to control or influence fire behaviour. Before each burn the Fire Operations Officer or Team Leader will calculate the lighting pattern from the forecasted weather and the "Forest Fire Behaviour Tables".

Lighting is normally done by two or more persons moving in echelon formation, as shown in page 8. Where strip width or dense scrub precludes visual or verbal contact between lighters, a compass or other direction finder, should be used to maintain direction, and the lighter should be accompanied by a compass person. On no account shall the strip length exceed 2 000 metres.

In karri forest or other areas of very dense understorey, it may be necessary for parallel walking lanes to be constructed, by a machine, before burning commences. This will be decided by the officer who prepares the prescription.

Signs warning the public that prescribed burning is in progress, must be erected on all roads associated with the burn. These signs must be removed once patrol work ceases.



## **Inspection before Lighting**

The Fire Operations Officer must carry out a full inspection prior to the burn. A burn prescription must be completed for the area to be burnt. The prescription must include a plan highlighting those features that may affect personnel safety, such as:

- Burn boundaries.
- Roads: trafficable and non-trafficable.
- Swamps, creeks, and other dangerous areas.
- Private property within and adjoining the burn.

The prescription must be given to the Team Leader prior to the burn. The Fire Operations Officer will discuss the burn, explaining aspects of the prescription which will help do the job effectively and safely such as:

- Fuel age and tonnes of fuel per hectare.
- Forest and scrub types
- Fire danger index prescribed for the burn.
- Likely fire behaviour and rate of spread.
- Preferred wind strength and direction.
- Likely pattern to be used.
- Remarks on any dangerous areas or special conditions.
- Departments, organizations or persons it may be necessary to contact on the day of the burn.

## **Instructions for Lighting Teams**

The Fire Operations Officer or Team Leader in charge of lighting must brief all members of the team before starting each strip line ensuring that each person knows exactly what is to be done.

All personnel must be familiar with:

- The area to be burnt which should be shown on the plan and on the ground by way of signs or paint marks.
- The roads and tracks in the vicinity and their point of outlet.
- Features on the plan such as swamps, creeks, and steep slopes.
- Wind direction and the likelihood of changes.
- Direction of strip lines, and whether echelon or line-abreast formation is to be used.
- Spacing and placing of individuals in the formation.
- Action to be taken by individuals if they lose contact with workmates.

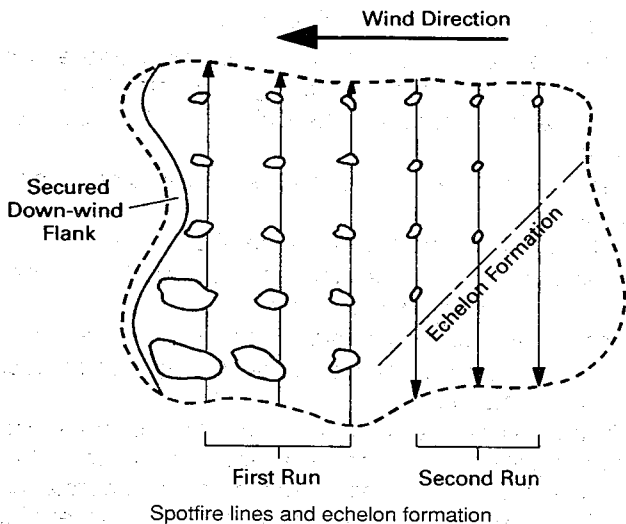
Team Leaders should place the most experienced and competent team member at each end of the formation. It is important that each team member understands the Team Leader's instructions for lighting. If uncertain, they should ask for clearer instructions.

### **Formation for Lighting Teams**

The Team Leader is responsible for seeing that lighters start the strip lines correctly.

After starting lighters on their respective lines the team leader will:

- Check fire behaviour, particularly flame height and rate of spread.
- Contact each lighter on completion of their line.
- Alter spacing for next strips, if fire behaviour warrants a change.



Spotfire lines and echelon formation

If a lighter comes upon a dense thicket, swamp, or other obstruction on the line, which cannot be penetrated with safety, they must immediately:

- Stop lighting and extinguish their torch.
- Move around the obstruction and contact a workmate.
- Regain position and recommence lighting if it is considered safe to do so.
- Report the incident to the Team Leader on completion of the line.

A maximum of five lighters are allowed in any one formation. This implies that only two, three or four may be used in some situations.

# PREScribed BURNING AERIAL IGNITION

The Team Leader will brief each member on the sector to be patrolled and measures needed to secure the edge of the burn, including burning-out of unburnt pockets, suppression of hopovers and mopping up.

No person should enter tracks within the burn after lighting has commenced except with specific approval from the Fire Operations Officer. A patrol within the burn area may be required, prior to lighting, to ensure that no member of the public is unwittingly in the area.

## General Provisions

- Observe safe driving procedures—see *Vehicle Safety* section, page 18.
- On all roads forming burn perimeter, erect signs warning the public that prescribed burning is in progress.
- Wear protective clothing as described on page 4.

## Verey Pistols

Marker vehicle crews must be conversant with the safety rules for firing of verey pistols:

- Verey pistols may be handled only by personnel who have been fully trained and are licensed to use them.
- When firing a pistol, **hearing protection must be worn.** Eye protection is recommended.
- Pistols must not be loaded until the operator is in a position to fire. **Loaded pistols must not be carried in vehicles.**

- The muzzle must be pointed down until ready to fire, and must never be pointed at another person. Do not cock the pistol until ready to fire.
- They must be fired only when standing on the ground and at an elevation and direction which projects the flare above the canopy of the area to be burnt.
- The arm should be slightly bent to absorb recoil.
- If there is a misfire, hold the firing position for 15 seconds then re-cock pistol and fire again. If another misfire occurs hold firing position for further 15 seconds. Facing away from other persons and obstructions such as vehicles, lower pistol and “break” with breech opening away from your body to eject cartridge. Misfires indicate a faulty pistol or cartridges and must be reported to the Fire Operations Officer immediately.
- Vervey pistols must be cleaned, oiled and returned to the pyrotechnics store at the end of each day's burning.
- Flares must be kept in the box provided, and not loose in the vehicle. They should be properly packed to prevent jarring and bumping of the detonator cap.
- All unused flares must be promptly returned to the pyrotechnics store.

## **POWERLINES**

Extreme caution must be exercised when prescribed burning or fire fighting in the vicinity of powerlines. Any accident or incident concerning powerlines must be reported immediately through the Fire Operations Officer to SECWA.

- Ensure safe clearances for radio aerials, overhead conopies etc when operating machines or vehicles under powerlines. Remember powerline “sag” is much greater on very hot days.
- Do not park vehicles or machines under powerlines.
- Do not attempt to extinguish power poles or cross arms unless authorized to do so, and under the direct supervision of an official from SECWA.
- Remember water conducts electricity. Arcing can occur through a jet of water, a fine mist or in extreme cases through dense moisture laden smoke.
- Treat wire fences with caution in a fire area involving powerlines.

## **CLEARING AND REGENERATION BURNS**

These are usually very intense fires, lit in mid-summer or autumn to promote regeneration in cut-over hardwood forests or to dispose of clearing debris for the establishment of plantations.

Different techniques are used in lighting these fires, but hazards common to all include:

- Smoke and ash in eyes.
- Falling limbs and burning debris.

- Uneven ground where it is easy to slip or fall.
- High level of radiant heat.
- Strong indraft winds and fire winds.

### **Safety Measures to be Adopted**

To protect against radiant heat lighters must always wear full protective clothing. Anti-smoke goggles, gloves, helmet flaps and any other safety equipment designated by the Fire Operations Officer must be carried. This additional equipment need not be worn unless instructed to do so by the Fire Operations Officer or Team Leader.

When stripping out across logging tops and debris the following rules should apply:

- Not more than five (5) persons to be used in any one lighting team.
- Lighters should work as a team not more than 30 metres apart while maintaining both visual and audio contact with each other.
- Where greater than 30 metre spacing is required, Fire Operations Officer should consider lighting in pairs.
- Fire Operations Officer or Team Leaders must keep all firelighters under close surveillance during the whole lighting phase.
- Wherever possible, move along snig or dozer tracks in preference to heavy tops. Note the position of open areas such as landings, where temporary refuge can be taken.
- Understand and obey lighting instructions.

# FIRE FIGHTING

## Awareness

- Insist on a prior briefing on all fire suppression jobs.
- Observe and keep in mind local topography—landmarks, location of roads, clearings and likely safe spots.
- Select escape routes before entering the fire zone.
- Avoid steep slopes above a fire.
- Thickets, swamps and creeks can become traps. Keep out of dense vegetation near the fire zone.
- Plan ahead and anticipate changes in the fire due to wind changes, local topography or fuel types.
- Stay on the edge of the fire, don't wander into unburnt country and don't become isolated from your companions.
- Beware of burning limbs and trees.
- Beware of powerlines—refer Powerlines page 11.
- Memorize the eight WATCH OUT rules.

## Individual Survival Measures

**Radiated Heat.** Studies have shown that radiated heat is the main peril leading to exhaustion, collapse and even death. Use any and every means that will shield you from radiated heat—this is important and could save your life. Wear protective clothing as described in page 4.

**Conserve Energy.** Maintain self control under threat situations—panic is infectious, drains physical and nervous energy, and clouds judgment.



Avoid exhaustion from over-exertion or prolonged periods of effort. Don't run unless absolutely necessary.

**Refuge.** If you are trapped in a motor vehicle during a bushfire, stay in it. Look for bare ground; close all windows and vents. Leave the motor running, turn on headlights and hazard lights. Cover yourself as much as possible; and lie on the floor. Remain in the vehicle as long as possible until the fire front has passed (usually a matter of 3-4 minutes).

If you get caught on foot in a bushfire, follow these guidelines:

- Try to stay on bare or burnt ground, e.g. gravel pits, clearings, roads.
- Move across the slope and out of the path of the fire and work your way downslope towards the back of the fire; do not run uphill or away from the fire unless you know a safe refuge is near.
- Do not attempt to run through flames unless you can see clearly behind them.
- Move through flames onto burnt ground where flames are small (less than 1.5 metres high). Select a path that is least obstructed by logs, dense growth or uneven ground.
- Use clothing to best advantage as a shield.
- Beware always of the danger from burning limbs and trees in burnt country.
- Breathe air close to the ground, away from combustion gases.

If conditions become severe, use every possible means to protect yourself from radiation.

- Cover yourself with dirt or sand and use wheel ruts, depressions, large rocks, or logs to give protection. Take refuge in ponds, running streams, or culverts, but avoid elevated water tanks.
- Carry matches and if trapped, light up an area and use burnt country as a refuge. Do this only if there is time for the back-burn to spread sufficiently (20 metres or more) before main fire front reaches the area.

### **Heat Stress**

Heat stress occurs when humidity, air temperature, radiant heat and too little air movement, combine with heavy work and tight clothing to raise the body temperature beyond safe limits. Sweat, as it evaporates, is the body's main line of defence against heat. When water lost through sweating is not replaced, the body's cooling system breaks down and body temperature climbs dangerously, subjecting the body to heat stress. Fire fighters should learn how to recognize and avoid heat stress, and how to give immediate first aid.

### **Recognizing Heat Stress**

Any of the following symptoms and signs may be present:

Symptoms—

- Feeling hot, exhausted, nauseated, short of breath.
- Muscle cramps of limbs or abdomen.
- Thirst.
- Headache.

- Giddiness, lack of co-ordination.

Signs—

- Pale, cool and clammy skin.
- Profuse sweating.
- Rapid breathing and pulse.
- Muscle twitching.
- Vomiting.
- Possible confusion, irritability, aggression.

### **Preventing Heat Stress**

- Aim at keeping fit.
- Adjust to hot weather activity gradually—set a sensible pace and have frequent breaks.
- Cease working when affected by heat cramps or exhaustion.
- Drink water often, and more than your thirst demands.
- Wear loose-fitting, porous clothing made of natural materials.
- Conserve your energy—you may need it later for an all-out effort.
- Replace salt at mealtimes. Avoid salt tablets as excessive salt can lead to distress and illness.

### **First Aid for Heat Stress**

- Keep casualty lying down in a cool place.
- Loosen tight clothing.
- Replace lost fluid and salt—water or lemonade with added glucose and 1/2 teaspoon salt per litre—encourage small quantities frequently.

- Apply icepacks to cramped muscles, but do not massage.
- Seek medical aid if casualty:
  - vomits and cannot keep fluids down;
  - does not recover promptly.

### **First Aid for Burns**

- As soon as possible gently pour clean, cold water onto the injured area to cool it.
- Do not touch the injured area.
- Do not apply lotions of any kind.
- Do not remove burned clothing and do not break blisters.
- Remove the casualty for medical aid as quickly as possible, except where the burn is very small and only superficial.
- Place the casualty in a lying position, dependent on injuries.
- Loosen any tight clothing.
- Cover the injured area with a clean, non-stick dressing and, if necessary, bandage lightly to protect from infection and to minimise fluid loss.
- If thirsty, the casualty should be given sips of tea, water etc., but NOT alcohol.

## VEHICLE SAFETY

This section outlines safety procedures involving vehicles at prescribed burns and in firefighting work.

**All Vehicles** involved in prescribed burns and firefighting should be examined to ensure there are no fuel lines which may melt if subject to heat or flame.

**Parked Vehicles** More often than not, vehicles will be parked for a greater part of the time, and so should be:

- Parked so that they can move directly out of the area on a known, safe route.
- Left with the ignition key in the lock.
- Parked on a cleared or previously burnt area.
- Parked so that other vehicles may pass.
- Left with cab windows closed and all flammable material stowed away.

If a person is left with the vehicle they should know the outline of the whole operation, what other members of the team are doing, any rendezvous with the others, and communication schedules.

**Driving Through Fire and Smoke.** Should it become necessary to drive through a burning area or one heavily covered with smoke, the following procedure should be observed:

- Drive at a safe speed.
- Keep cab windows closed.
- Switch on headlights and sound horn occasionally.
- Remove exposed flammable material from truck.
- Personnel travelling on the truck tray should have water available, through a powered pumper, tank or

knapsack sprays, and must wear all suitable items of protective equipment.

**Caught With No Escape Route.** Should you be trapped in this situation, the vehicle does offer you the best chance of survival, provided you follow these basic rules:

- Park the vehicle on the area that has the least amount of flash fuels. Where possible use road cuttings, large logs or similar objects to protect the vehicle from the oncoming fire. This will also provide you with extra protection against radiant heat.
- use any time available to remove flash fuels immediately adjacent to the vehicle. Do not completely exhaust yourself in doing so.
- Do not attempt to back burn unless you are *absolutely certain* of enough time for success.
- Leave hazard lights on. Leave motor and pump running to avoid vapour lock.
- Ensure all windows, doors and vents are shut to keep out smoke, heat and burning embers. Wait outside, using the vehicle as protection for as long as possible.
- When it becomes impossible to remain outside, enter your vehicle quickly on the lee side and shelter yourself from radiant heat by remaining on the floor and covering the body with rugs, floor carpets, etc.
- Remain in the vehicle for as long as is humanly possible. The flaming or flash period rarely exceeds three to four minutes in a forest fire or 30 seconds in a grass fire.
- Contrary to popular belief fuel tanks do not “just explode”. Even in the worst situation it will be some

minutes before the vehicle catches fire and becomes intolerable. Remember those “few minutes” will probably save your life.

## **MACHINE SAFETY**

This section outlines safety procedures involving machines on prescribed burning and fire suppression operations.

### **Parked Machines**

- Machines are to be parked on cleared or previously burnt areas, a sufficiently safe distance from ignition sources and falling trees.
- Machine to be free of readily flammable material eg: loose leaves around footplates and engine compartment, belly plates clean, doors and windows shut and side curtains secured.
- Parked so that other vehicles may pass easily and safely.
- Left with ignition key in the lock.

### **Operation of Machines near fire and smoke**

- Machine operators must wear full protective clothing (overalls or long trousers, long sleeve shirt, boots and hard hat) and also carry and use where necessary hearing and eye protection.
- Approved fire extinguishers (water and chemical) to be carried or fitted to the machine at all times.
- Machines should always work in reasonable proximity to a fire unit.

- Machines in forest country must be fitted with an approved Falling Objects Protection System (FOPS) and Roll Over Protection System (ROPS) cab.
- Lights must be fitted for night operations.
- Fresh drinking water to be available for the operator.
- First Aid kit to be carried on the machine.

### **Caught in Flare up Situation**

Should you be trapped in this situation, the machine does offer you the best chance of survival, provided you follow these basic rules:

- Never drive a machine blindly through a fire or heavy smoke.
- Clear an area or park on an area that has the least amount of flash fuels.
- In minor flare up situations you can remain in the cab if it is enclosed. Cover exposed skin with rugs or clothes if available to protect yourself from radiant heat. Beware of hot glass and metal.
- In severe situations use the blade or bucket to clear an area at least twice the machine size to mineral earth. (Larger if time permits).
  - Place the machine in the middle of the cleared area facing the oncoming fire with the blade/bucket resting on the ground. Take refuge under the machine.
  - If time permits take several passes with the blade/bucket to make a cutting leaving the heaped earth toward the oncoming fire. With the machine in the cutting and blade/bucket resting on ground take refuge under machine.



- Beware of airconditioned cabs, they can give you a false sense of security. *Don't leave it too late* to seek refuge under the machine.
- Leave machine in neutral with motor running at medium revs to avoid subsequent starting problems and also provide air circulation.
- Remain under the machine for as long as is humanly possible. The flaming or flash period rarely exceeds three to four minutes in a forest fire or 30 seconds in a grass fire. Remember the air is freshest closest to the ground.
- Beware of falling trees and limbs after the fire has passed.

## **FALLING OF BURNING TREES**

Burning trees located near the perimeter of a fire can start new outbreaks. However, before the decision to fall a burning tree is made, the Sector Commander or Team Leader should first consider other options for dealing with this problem. These include:

- Allow limb(s) or bole to burn out while containing and patrolling any outbreaks.
- Burn out small area surrounding the burning tree(s), after first preparing the area to prevent setting further trees alight.
- Push over tree with suitable machine.

If falling becomes the only option it is essential that:

- The Sector Commander or Team Leader carefully inspect and mark each tree to be felled, giving special consideration where multiple burning limbs are involved.
- Only experienced fallers and swampers are to be used.
- The operation is carried out only during daylight hours.
- **The faller reserves the right to refuse to fall any tree.**

Other precautions that must be considered are:

- Chainsaw and associated tools must be appropriate for the task and maintained in top condition.
- Ensure safety equipment is in good condition and is worn at all times.
- Inspect nearby trees (within  $2\frac{1}{2}$  times height of tree) for dangerous condition eg: burning hollow butts and burning crowns.
- Ensure debris is removed from work areas to provide space for safe working conditions and give a firm footing.
- Prepare a suitable escape patch and clear it of obstructions into a safe area. Do not leave equipment on the path.
- Avoid falling directly into the sun when it is low on the horizon.
- Before making back cut, STOP MOTOR, give audible warning to swamper, who must acknowledge area clear before continuing.
- Beware when using hammer and wedges on a tree, as burning limbs may be shaken free.

- When falling is being done near a road or track, prominent signs must be displayed each side of danger zone. Lookouts should be posted on track.
- Refuelling or maintenance of saw must be carried out away from danger zone.
- Check with Sector Commander or Team Leader if you consider rest period necessary .

### **The Swamper**

Should have a good knowledge of falling techniques.

- Must be in reasonable proximity to the faller at all times during falling operations.
- Must be on the lookout for any overhead dangers that may occur during falling operations.
- Give audible warning to any persons entering the danger area.
- Arrange with the faller a method of communication in the case of an emergency during falling operations.
- Must liaise with the lookout when falling is being done near roads or tracks.
- If the faller needs to leave to refuel or maintain the saw, the swamper must remain at the tree. Before returning, acknowledgement that it is safe to do so must be made between swamper and faller.

## PUSHING TREES

Fire management operations can require the removal of trees located near the fireline by pushing over with a machine.

These trees may be already alight in a wild fire situation or expected to catch fire in a prescribed burn.

Before a decision is made to push a tree, other options should be considered such as:

- Clean around the base to prevent tree catching fire.
- Relocate the fireline or burn boundary to keep clear of the problem tree.
- If the tree is alight allow to burn out while patrolling the area.
- Can the tree be extinguished with water?

If pushing becomes the only option trees should be marked by the Sector Commander, Team Leader or OIC burn preparation. Before pushing commences it is essential that:

- Only experienced machine operators are used.
- **The machine operator always reserves the right to refuse to push any tree.**
- Only machines with approved FOPS protection may be used on these operation.
- Do not place machine under large burning limbs when pushing a tree.
- Ensure operating ground is clear with sufficient room to reverse to safety after pushing tree.

- Do not attempt to push trees on steep slopes. If necessary prepare the operating ground and push across the slope.
- Do not attempt to push trees where the main bole or crown are more than 1/3rd burnt through above point of pushing.
- The angle of tree arms, blade or bucket should not exceed 30°.
- Be sure the tree bole is sound at point of contact with machine.
- Beware of other persons or machines in the vicinity and insist that your work area remains clear.
- Avoid pushing trees at night or directly into the sun, low on the horizon.
- Do not "rock" trees. Rip roots of dead trees before pushing.

## CHEMICALS IN FIRE CONTROL

Below is a brief list of chemicals used in fire control, their main risk to health, appropriate precautions and first aid. More comprehensive information is available in Part 18 of the Chemical Users' Manual.

**Glycol** (mono-ethylene glycol)—oily, odourless liquid used for igniting the potassium permanganate in incendiary capsules.

Store away from acids and other reactive chemicals, e.g. potassium permanganate because of risk of ignition.

Avoid contact with skin and eyes. If splashed in eye, flush with water for 15 minutes, cover eye with pad.

**Potassium permanganate** (Condy's Crystals)—dark purple crystalline granules, strongly oxidizing. Used in incendiary capsules to ignite on contact with glycol.

Toxic by ingestion and inhalation and a strong irritant to tissue.

If spilt, clean up and dispose of immediately to prevent possible reaction with other materials. Best deactivated with plain water.

**Amgard** (di-ammonium phosphate)—water soluble, whitish granules. Used dissolved in water as a fire retardant.

Avoid contact with skin and eyes. If splashed in eye, flush with water for 15 minutes, cover eye with pad.

**Sodium hypochlorite**—liquid solution, generally sold at 12.5% strength (of available chlorine) as a water purifier for home swimming pools. Used, greatly diluted, in fire pumpers to kill spores of jarrah dieback in the water.

The undiluted 12.5% solution is highly toxic if swallowed and irritating to the skin. Avoid contact with skin and eyes. If splashed in eye, flush with water for 15 minutes and cover with eye pad.

**Empimin 3-631** (Foam Concentrate)—clear liquid foaming agent for fire fighting.

Low toxicity. If swallowed **DO NOT** induce vomiting. Drink plenty of water or milk and seek **medical attention**.

Avoid contact with skin or eyes. If splashed in eye flush with water for 15 minutes and seek medical attention.

## **EMERGENCIES INVOLVING HAZARDOUS CHEMICALS**

Any incident attended by the Department in which hazardous chemicals have been spilled or are on fire must be treated with the utmost caution. Water can react violently and explosively when it contacts certain chemicals.

A set of HAZCHEM notes has been provided for all Department vehicles equipped for firefighting, to minimize the risk of further danger and injury to firefighters and the public.

A firefighting unit attending an incident should immediately:

- (i) Interpret the HAZCHEM code on the Emergency Information panel of the transport vehicle and act according to the procedures laid down in the HAZCHEM notes.
- (ii) Pass relevant information to the Local Authority.

It cannot be stressed too strongly that Departmental forces should take **NO** action concerning the load itself, or the vehicle, until they have received specialist advice.

# **SNAKE BITE**

## **Remember**

Nearly all bites are by venomous species.

## **Appearance of Bite**

Usually two puncture marks about a centimetre apart with swelling, reddening, bruising.

## **Symptoms and Signs**

First symptoms appear 15 minutes to 2 hours after bite, these may include:

- Double vision.
- Drowsiness.
- Nausea and vomiting.
- Sweating.
- Faintness.
- Diarrhoea.
- Headache.
- Pain in chest or abdomen.
- Breathing difficulties.

## **First Aid for Snake Bite**

Keep the casualty at rest and allay any fear. Apply a broad, firm bandage around the limb, beginning at the bitten area (as much of the limb should be bandaged as possible). Do not bandage so firmly as to restrict blood flow to the limb below the bandage.



Keep the limb as still as possible by splinting it with any rigid material that may be available.

Leave bandage and splint in position until medical aid is reached.

If possible, alert doctor and hospital ahead and have a trained first aid person stay with the victim continually to watch pulse and breathing, and apply resuscitation if necessary.

**Don't** cut or excise bitten area.

**Don't** apply an arterial tourniquet.

**Don't** wash bitten area—the snake involved can be identified by venom on skin.