

**DEPARTMENT OF EDUCATION  
AND CHILDREN'S SERVICES**

**OCCUPATIONAL HEALTH, SAFETY AND WELFARE  
IN THE DEPARTMENT'S WORKPLACES**

**AGRICULTURAL  
EDUCATION**

**OHS&W GUIDELINES**

## **AGRICULTURAL EDUCATION OHS&W GUIDELINES WRITING AND VALIDATION**

These Guidelines were originally prepared for the 1995 Edition by the Team listed below; revised in 1998, and reviewed and revised for the current edition in 2002/3 by Mark Innes, Urrbrae Agricultural High School (on behalf of the Executive Committee of the Agricultural Education Teachers Association), and John Gladwell, Project Officer, OHS&W Unit. Extra assistance was given by the South Australian Farmers' Federation through Ann Price, and Lin Morris of Farmsafe SA.

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# 1. HEALTH AND SAFETY ISSUES

## 1.1 Introduction

An integral and ongoing part of the learning experience in Agricultural Education must be the development of responsible, alert and caring attitudes towards safety. The main aim is to help provide a safe teaching/learning/work environment — an environment in which the hazards inevitably associated with practical activities are reduced to a minimum.

A further aim is to develop in students safety attitudes, knowledge and skills, which are relevant to all areas of Agricultural Education they may undertake. The principles learned form the basis for the precautions they will learn to observe in using more sophisticated and complex techniques and equipment.

The following guidelines set down information and general recommendations relating to the wide variety of facilities, equipment and materials provided to cater for these activities, in the key areas of personal safety, safe use of equipment and materials, safe practices in the handling of animals and potentially harmful processes and substances, and fire and emergency.

*These guidelines do not provide the answers to all safety problems;* of necessity they are broad in intention and do not provide detailed information on specific standards required for all aspects of the work area. Information of that kind can be found in the relevant State legislation and related Australian Standards. It can also be obtained from workplace health and safety representatives, District health and safety advisers, curriculum advisers attached to the Curriculum Division and officers of the department's Facility Office. Help is also available outside DECS from Workplace Services/DAIS.

The hidden curriculum is very important in relation to health and safety. It is that part of the curriculum, which depends on the attitude, atmosphere and environment, created by the individual employee and the workspace conditions. It has as much to do with role modelling for students and colleagues as anything else.

Employees must therefore ensure their own practices and attitudes to health, safety and welfare meet the requirements of the Department — as stated in this manual, specific curriculum statements, Administrative Instructions and Guidelines etc. — and OHS&W legislation, both during lessons and preparation time.

*The task of overcoming the “it can't happen to me” attitude is a major one.* It must be confronted in the workplace context with the aim of not only enhancing safety but also *fostering the awareness, attitudes and actions* which will be transferred into the home, employment, leisure activities and the community at large through proper training procedures.

*It is emphasised that safety will not stem merely from codes and regulations but from the awareness, attitude and actions of people.*

## 1.2 All Workspace Users

1. Agricultural Education area/facilities users must incorporate safety procedures into their activities by ensuring that:
  - \* they are familiar with safe work practices and use these on all occasions;
  - \* appropriate protective clothing is worn;
  - \* eye, hearing and respiratory protective equipment appropriate to various tasks is worn when necessary;
  - \* footwear, clothing, hairstyles and jewellery do not compromise personal safety;
  - \* clear instructions are given concerning the use of equipment or techniques and possible hazards associated with an activity;
  - \* they are familiar with the safety rules.
  
2. Support staff working in Agricultural Education areas, and voluntary workers, must receive training in the principles of Agricultural Education area management techniques and safety procedures. This may involve:
  - \* enrolling in appropriate part-time courses;
  - \* other employees providing assistance with techniques;
  - \* the development of an in-service Agricultural Education area management and training program for support staff;
  - \* primary school employees enlisting local secondary school support, e.g. for processes requiring specialised equipment;
  - \* being provided with a voluntary workers' information brochure (to be developed by the workplace).
  
- 3 All Agricultural Education area/facilities users are responsible for following oral or written instruction given by employees. This may involve:
  - \* being provided with a copy of the current Agricultural Education safety rules;
  - \* listening to all instructions concerning the use of equipment and possible hazards;
  - being aware of the consequences of misbehaviour compromising their own or others' safety.
  
4. Before approval is granted for use or access, employees **must be** trained to operate any equipment, machinery, and vehicle correctly and safely. *Unless a person has received this training, approval **must not** be given for use of a machine, vehicle, or item of equipment.*
  
5. Any accident/incident **must be** reported by use of form 155 Accident/Incident Report.



### 1.3 Working Alone

*If Agricultural Education workspaces are used after hours, a telephone must be readily available in case of an emergency.*

When persons are working alone using machinery, equipment or hazardous substances, procedures must be in place and followed, and any necessary facilities provided, to ensure that emergency assistance can be obtained if required. OHS&W regulations require that an adequate and reliable system for ensuring regular communication must be provided and maintained.

## 2. PRACTICAL ACTIVITIES AND SAFETY

While Agricultural Education work practices endeavour to minimise risks to users' health, safety and welfare, protective clothing and equipment must be utilised by all workspace users for those activities where it is appropriate. This equipment will vary according to the nature of the duties to be performed but must include eye, hearing, body and skin protection. ***Only undertake activities when appropriate facilities and equipment are readily accessible and health and safety precautions have been taken.***

Employees must be familiar with the correct Australian Standards and proper use and maintenance of all relevant protective and safety equipment. Copies of these can be obtained from Standards Australia, 63 Greenhill Road, Wayville SA 5034.

### 2.1 Goggles

Goggles provide good eye protection when mixing and spraying. They differ from dust goggles in that, instead of gauze inserts for ventilation, they have a valve designed to prevent mist and droplets from reaching the inside of the goggles. While a face shield protects the whole face, it is difficult to wear with the conventional half-mask respirator. Goggles and safety glasses protect the eyes and can be worn with a respirator. Goggles must comply with the AS 1337—1992, "Eye protectors for industrial applications". Non-fogging goggles are best.

### 2.2 Eyewash Facilities

Facilities for quick and safe washing of eyes with fresh running water should be readily accessible to areas where splashes of hazardous materials may occur or where fumes or particles may enter the user's eyes. ***Eyewash bottles should only be used if filled with fresh running water immediately prior to use because stored water can accumulate harmful bacterial growth.*** The bottles could be stored conveniently on a wall-mounted rack, available from the Secondary Science Catalogue.

#### Interim Measure

- \* A tap fitted with a piece of flexible plastic hose approximately 400 mm long should be specially set up for such use.
- \* Water pressure from the tap should be controlled by fitting a mechanical restraint to the tap to limit movement or by a restrictive device, clamp or valve placed in/on the plastic hose.
- \* The pressure should be such that water can only be ***trickled*** onto the eye as mains pressure can cause severe eye damage.

#### Ideal Standard

- \* The ideal standard is a special eyewash basin facility or sterile sodium chloride disposable irrigation packs.

***Always follow up an eye accident with a visit to a qualified medical practitioner.***

## 2.3 Respirator Types

1. Two types of respiratory protective devices are in general use; chemical cartridge respirators and gas masks. Most respirators are designed as half-face masks that cover the nose and mouth but do not protect the eyes. They have one or two cartridges attached to the face-piece by a clamp or secured in a holder. The respirator face-piece is equipped with one-way valves, which allow inhaled air to pass through the cartridge while diverting exhaled, moist air.
2. Gas masks usually cover the whole face. Their face-pieces are made to hold a canister directly or to connect to the canister with a flexible hose. The hose-type canister is carried on the chest or back by means of straps. Respirator cartridges usually contain an absorbent material such as activated charcoal in conjunction with a filtering system, which removes dust and spray particles from the inhaled air. Gas mask canisters contain more absorbent material and filters than respirator cartridges and therefore last longer.
3. The volume of chemical-absorbing cartridges and gas mask canisters ranges from 50 to 100ml for cartridges and 750 to 1000ml for chest-type canisters. The absorption capacity of cartridges or canisters is affected by humidity, temperature and volume of breathing. High humidity shortens the life of cartridges. Mist, sprays of water and rain also reduce the effective life of the units.

### Suitability

1. A half-face respirator satisfies most broad-acre spraying requirements. Proper facial fit is a prime factor in obtaining good protection and some brands come in three sizes to suit various face shapes. To ensure good fit, refer to the following section on testing respirator fit. Make sure the respirator has a low breathing resistance, is easy to adjust and feels comfortable.
2. Ensure that the respirator seals well. Men with beards, long sideburns, moustaches or any amount of stubble on their face will not be able to obtain a good seal. The leakage of air into a respirator is up to 200 times greater for men with beards. For men, respirators will only provide the best seal on a cleanly shaven face.
3. Hoods, which incorporate visor and filters, provide eye, face and respiratory protection. They should be used when handling the more toxic\* pesticides or when there is a risk of becoming wet from spray or mist. Hoods are available in PVC or 'Tyvek' material. (*\*See 6.4.2 "Poisons Schedule" note regarding avoidance of Schedule 7–8 poisons*). If a situation requires the use of such hoods **it is strongly recommended** that a full body suit be used to provide maximum protection, especially to prevent absorption of toxic substances through the skin.
4. When choosing a respirator filter for general spraying conditions, be sure it contains both particle and organic vapour filter elements. The particle filter may consist of cotton, paper or plastic foam. Medium efficiency (Class M particulate filters) are suitable for most situations. Cotton and paper masks are satisfactory for filtering dusts, such as sawdust or soil, but are not suitable for use with organic solvents. Only organic vapour filters consisting of activated charcoal will remove these vapours. With both particle and vapour filter elements present, dust, droplets and organic vapours are removed.

5. For hazardous situations — such as mixing highly toxic and volatile pesticides in confined areas, dusting or spraying on a hot, calm day, or spraying in a glasshouse — a full-face mask with high efficiency vapour and particulate filters is recommended. There may be rare situations where the concentration of pesticides in the air, even for pesticides of low toxicity, requires a supplied-air device to be worn. Contact the pesticide manufacturer, protective clothing suppliers or the Department of Primary Industry for more information.

### Testing Respirator Fit

Respirator fit can be tested using a positive or negative pressure test.

#### Negative Pressure Test

- \* While wearing the respirator, completely seal over the flat exposed surface of the filters with the palms of the hands. Inhale gently so the face-piece collapses slightly, and hold the breath for 10 seconds.

If the face-piece remains collapsed and no inward leakage of air is detected, the fit is suitable. If not, readjust the face-piece, ensuring that it is still comfortable and repeat the test. If there is still leakage, try a different size or shaped face-piece.

#### Positive Pressure Test

- \* Seal over the outlet valve(s), put on the respirator and exhale gently. A slight pressure should build up inside the face-piece without any outward leakage of air. If not, readjust the face-piece comfortably and repeat the test. If there is still leakage, try a different size or shaped face-piece.

### Precautions

When respirators are used, the following precautions are necessary:

1. As soon as the respirator is in place, check to see that it provides an airtight seal around the face. To do this, cover the air inlet with the palm of the hand and breathe in. No air should enter.
2. Change filters twice a day or whenever breathing becomes difficult.
3. Change cartridge after eight hours' use or more often if any pesticide odour is detected.
4. After use, remove filters and cartridges and wash the face-piece with soap and water. After washing, the face-piece should be rinsed and dried.
5. Respirators should be stored in a clean, dry place — preferably in a tightly closed paper or plastic bag.

### Respirators and Filters

Note that cartridges absorb and neutralise poisons and have a limited useful life — from two hours in extreme conditions to about two weeks under normal use. They must be changed when their neutralising ability is used up. ***Any smell of pesticide coming through a respirator means either the cartridge is exhausted or the respirator is leaking.***

After use, remove filters and set aside. Wash face-piece with soap and warm water. If possible, valves should be removed and washed also. Valve seats may need to be scrubbed with a soft brush. Rinse well, dry with a clean cloth, and leave to air in a well-ventilated

area away from sunlight and extreme temperatures. If the respirator is not able to be cleaned, then it must be disposed of. Store cleaned respirator in a sealed plastic bag or box, away from direct sunlight and extreme temperatures.

The outside surface of respirator filters can be wiped with a damp cloth, but do not allow water to enter the filter. Activated charcoal filters need to be carefully stored to maximise their useful life. They continually absorb organic vapours, even petrol and diesel. After use, also store them in a well-sealed plastic box or bag.

Periodically check the one-way valves on the respirator to make sure they are still soft, pliable and functioning. Also, check that the face-piece of the respirator has not deteriorated and is soft, comfortable and maintains a good face seal.

Make sure that filters are changed and used in accordance with the manufacturer's recommendations. Charcoal filters can be tested by determining if a strong odour can be smelt while wearing the respirator. (This is assuming that the respirator is a good fit and there is no leakage). If there is an odour, filters must be replaced. Dust filters must also be replaced when it becomes hard to breathe or draw air through them.

## **3. THE WORKSPACE ENVIRONMENT**

### **3.1 Improving Safety in the Workshop — Machines, Equipment and Substances**

1. Projecting equipment, such as bench vices, must be painted yellow (ideal safety colour) to alert workspace users to pass cautiously.
2. Ensure that machine safety guards are always in place and well maintained.
3. Rack sharp and heavy tools and other items at a low level.
4. Store heavy materials at a low level (ideally between knee and waist height).
5. Fit safety operating instructions prominently on all relevant machines and equipment.
6. Display appropriate safety posters near machines.
7. Reduce noise levels from machines; consider the use of anti-vibration mounts.
8. Clearly label all containers in use and in storage.
9. Do not allow work areas to become cluttered.
10. Only use equipment that has been well maintained.
11. Cover all wounds when handling substances, preferably using disposal gloves.
12. Clean the work area and equipment thoroughly after use.
13. Return equipment and substances to designated storage places.
14. Minimise dust hazards when working with large quantities of light powders.
15. Remove rubbish regularly, especially flammable waste — do not allow it to accumulate.
16. Food and drink preparation/consumption/storage is prohibited in areas where hazardous substances are stored and used.
17. Wash hands after activities and before leaving the Agricultural Education area, particularly when work has involved handling substances and animals.
18. The last person to leave the Agricultural Education area should check that equipment and running water is turned off.

### **3.2 External Environment**

1. Fencing must be maintained in good condition, regardless of its type or location, to minimise hazard and injury.
2. Electric fencing should be clearly identified by warning signs placed on the fence at instances not exceeding 50m.
3. Piles of decomposing organic matter, e.g. compost heaps, should be sited and controlled to minimise offensive odours and discourage vermin.
4. Animal pens and shelters should be cleaned regularly to minimise the possibility of spread of diseases and breeding of flies.
5. Shed arrangement should enable quick and efficient exit in an emergency.

## 4. MACHINERY, EQUIPMENT AND VEHICLES — SAFETY AND MAINTENANCE

The department's policy vests the responsibility and authority for the use of machinery, equipment and vehicles with the most senior Agricultural Education teacher, through the principal/manager. Before approval is granted for use or access, employees must be trained to operate any equipment, machinery and vehicles correctly and safely. *Unless a person has received this training, approval must not be given for use of a machine, vehicle or item of equipment.*

*Statistics show that farm machinery, equipment and vehicles have the capacity to both seriously maim and kill. Care and attention to the operation and use of equipment and machinery will reduce the likelihood of injuries.*

### 4.1 Responsibility for Equipment Use

#### Employer

The employer must ensure that:

1. Machines and equipment are correctly installed and connected.
2. No modifications are made to vehicles and equipment unless such modifications comply with the manufacturer's specifications and/or relevant Australian Standards.
3. Machines are fitted with appropriate guarding and extraction equipment and safety cut-off switches where necessary.
4. All machines and equipment are regularly serviced and maintained in a safe condition.
5. Machines designed to be operated in a fixed position are adequately secured to a stable supporting medium to prevent inadvertent movement when power is applied or the machine is operated.
6. Safety operating instructions are fitted to all fixed machines and near where portable equipment is stored.
7. Operators have been trained in the use of particular machines and are physically capable of handling them. Training must include the following:
  - \* the method of use;
  - \* known hazards which arise in the course of normal work;
  - \* hazards arising from bad practices, inattention and misuse;
  - \* the need to wear eye, hearing and respiratory protection when necessary;
  - \* the need to ensure that dust and fume extraction equipment is functioning correctly.

**\*\*\* Inexperienced operators must be directly supervised. \*\*\***

#### Employees

Employees must ensure safe work practices are adopted — in particular that:

1. Students do not use machinery, equipment and vehicles unless they have been trained and judged competent in its safe use. A student must not operate any vehicle on a public road unless she/he holds a valid South Australian driver's permit/licence.

2. Keys to equipment, machinery and vehicles are stored in a secure, centrally located cabinet.
3. When used on public roads, all vehicles comply with the State laws regulating motor transport. Particular attention must be paid to the width of towed equipment.
4. Safety guards fitted to machines are always in place. If a guard is interlocked with a machine, the machine should be constructed so that if the locking mechanism fails to function properly, the machine will stop and cannot be restarted until the interlocking mechanism is functioning correctly.
5. Appropriate guarding, fencing or isolation methods are in place to prevent any unauthorised entry into the danger zone of any operating machinery.
6. Dust and fume extraction equipment is operating as necessary.
7. When working in situations or areas which are potentially hazardous, all Agricultural Education employees and support staff are required to use safety spectacles, hearing protection or any other necessary equipment or clothing supplied.

*Persons from outside the Agricultural Education faculty must gain approval from the senior Agricultural Education teacher before using facilities or equipment.*

*Employees should avoid working alone with potentially dangerous equipment.*

## 4.2 Power Machinery

Before employees are permitted to operate a machine, **must have had** appropriate training to use the machine, and be conversant with the following :-

### Functions

1. The capabilities of the machine.
2. Starting and stopping procedures.
3. Operation of the guards and safety devices, especially emergency stop mechanisms, and the need for ensuring they are kept in good condition, properly mounted, and in correct adjustment.
4. How to recognise, as far as possible, faults which may occur in a machine, guard or safety device; how to recognise those of a minor nature, and the need for reporting to the person in charge those faults which are beyond the user's authority or competence to rectify.

### Operation

1. Machines should not be operated unless all shields and safety guards are in place.
2. Safety grilles must be used to prevent hands accidentally entering the moving parts of machinery, e.g. over the mouth of hammer mills and the feed-end of grain augers.
3. Care must be taken to avoid burns from contacting hot components.
4. Ensure that machines come to rest before making adjustments or during manual removal of waste or blockages, e.g. a baler.

**\*\* Never attempt to lubricate or adjust machinery which is turned on or in motion. \*\***



**\*\*\* Don't use bare hands or fingers to clear choked cutters, eg. cutter bar of a mower or shearing knives of a baler. \*\*\***

5. Always turn off the power before leaving machines.
6. Know the hazards which arise in the course of normal work.
7. Be aware of hazards that arise from bad practices, inattention and misuse.
8. Know the dangers that arise when more than one person at a time operates a machine.
9. Where machines are fitted with table or feed controls, always select the neutral position before starting.
10. Wear appropriate eye and hearing protectors and/or respirators when there are dangers of dust, flying chips or harmful noise.
11. Ensure that dust and fume extraction equipment is functioning correctly.
12. Do not reach over a saw or other cutting tools for any purpose.
13. Watch for sparks in open pockets and cuffs of clothing when welding.
14. Don't wear jewellery that can snare in moving parts of machinery.
15. Take care that work gloves do not become caught in moving parts.
16. Follow recommended instructions for fuelling machinery and storing fuel. Never refuel when a machine is hot.
17. Clean machinery after use and store in dry facilities.
18. Never leave hydraulically operated implements in the elevated position. If it is necessary to work under elevated implements, provide safety blocks in case of hydraulic failure.

### **Work Area**

1. The machine and work area must be kept free of an accumulation of materials, hand tools, trade waste, oil, grease, sawdust and obstructions of any kind.
2. Check terrain for hidden obstacles, e.g. stones, wire, stumps.
3. Keep a proper footing and balance at all times.
4. Work around slopes rather than up and down, except for ride-on mowers.
5. People must be kept clear of machinery or parts of machines which throw materials, eg. a slasher or the mouth of a forage harvester.
6. Maintain a safe distance from others when working — e.g. keep others clear of cable under tension when straining a wire fence or using a towing cable.

### **Controls**

Wherever practicable, controls for a power-driven machine must be located in visible positions where a person operating the machine can readily and conveniently reach them, and in particular:

1. Starting controls must be designed and located to minimise the risk of inadvertent, mistaken or incorrect starting.
2. Start buttons must be shrouded or recessed and coloured green.
3. Where tumbler switches are used, they must be shielded from inadvertent contact and have the "Off" position clearly marked "Stop".
4. Starting levers and handles that could be inadvertently moved must have provision for automatic latching when in the "Off" position.
5. Pedal controls must be located in a position or protected in a manner that prevents the pedals being inadvertently struck or operated.

6. A stopping control(s) capable of disconnecting the driving power of the machines must be provided.
7. Stopping controls must be readily and safely accessible to a person operating the machine. Assessment of this situation should be addressed if intending to involve students with special needs.
8. Stop buttons must protrude in both initial and operating positions, must be easy to locate, be coloured red and clearly marked “Stop”, either on the button or as near to it as practicable.
9. Stop levers and handles must have the stop position clearly marked in an appropriate position on the machine.
10. Where a machine is designed to be operated or attended by more than one person, the multiple controls must be of the “stop and lock-off” type so the machine cannot be restarted after a stop control has been used, unless the stop control is reset.
11. The dangerous working parts of power-driven machinery and equipment must be safeguarded in accordance with the appropriate requirements of relevant standards issued by Standards Australia, including the following:

<b>Machine Safeguards</b>	
<b>Grinding Machines and Abrasive Wheels:</b>	AS 1788—1987, “Abrasive wheels”.
<b>Guillotines (paper cutting and metal cutting):</b>	AS 1893—1977, “Code of practice for the guarding and safe use of metal and paper cutting guillotines”.

### **Safe Operating Space.**

1. Sufficient space must be kept clear in the vicinity of any machine or power transmission machinery to enable any person to work, attend to, and clean it without risk of injury to himself or herself, or any other person.
2. No traversing part of any machine and no material carried on any traversing part of any machine, or any protruding and rotating material held in any machine may, if the space over which it runs or protrudes is a space over which any person is likely to pass, be allowed to run or protrude closer than 600mm from any fixed structure.
3. A person must not work between the fixed and traversing part of any machinery or protruding material while the machine is in motion by the action of mechanical power.
4. Any person who is required or permitted to work, move or pass in close proximity to the moving parts of any machinery must not wear any clothing or accessories likely to become easily entangled in those moving parts.
5. Any person with flowing, unconfined hair must not work, move or pass in close proximity to the moving parts of any machinery unless the hair is securely fixed and confined close to the head.
6. Workshops which cater for students with special needs should have a key-operated isolating switch that can isolate power to the complete workshop (excluding lighting)

### 4.3 RCD and testing of electrical equipment

All electrical equipment used in Agricultural Education must be tested annually and recorded on the Electrical Testing Register---**Refer:-**Electrical Testing Procedure, DECS website at <http://www.decs.sa.gov.au/OHSW> Then click Resources>policies/procedures Frequently asked questions.....see <http://ww2.decs.sa.gov.au/OHSW> Then click Bulletin>FAQ>ElecTesting

### 4.4 Welding

Good ventilation is essential and all fumes generated during welding operations shall be dispersed to the outside atmosphere in accordance with Workplace Services' General Safety Series GS 33 "Welding – Metal Fumes"(Revised) and the series GS 32 /1,2,3/ dealing with welding safety issues.

All welding processes require a suitable assessment to be carried out as specified in the hazardous substances regulations and code of practice.

*(See Technology Studies OHS&W Guidelines for further information.)*

### 4.5 Ride-On Equipment

#### 4.5.1 Tractors

*Statistics show that the farm tractor kills and the majority of accidents are caused by operator error. Operators must therefore be vigilant about raising their awareness of risk factors and ensuring they follow safe practice.*

*All operators must be conversant with the tractor operators' manual prior to using a tractor.*

#### General Precautions

*Hearing protection must be worn.*

1. Be sure that tractors and implements comply with road traffic laws when travelling on public roads. Particular attention should be paid to the safe width of towed equipment and lighting.
2. Drivers must adjust the seat so that all controls can be comfortably reached and operated. Ensure all power takeoff (PTO) attachments and safety guards are in place before commencing operation.
3. The trip rope, which operates some implements, must not obstruct the driver when alighting from the tractor. Tie the rope to a convenient part of the tractor — never to the operator.
4. Where practicable and appropriate, independent brakes should be fitted to trailers and other towed equipment. Hitches must be sturdy and safety chains connected.

5. Schools must not use tractors without an approved rollover protective structure (ROPS) satisfying the requirements of AS 1636—1984, “Agricultural wheeled tractors — Rollover protective structures — Criteria and tests” and other protective devices in place as specified in the OHS&W Act and Regulations, eg. PTO shaft covers.
6. Drivers should wear a seat belt.

### Passengers

1. Passengers must not ride on tractors or towed implements not designed for this purpose — ie. feature an extra seat with back rest, handhold and foothold. The seat must be sufficiently within the ROPS to protect the passenger ***who will only be the trainer or trainee in a learning situation.*** Contact your health and safety adviser for further advice.
2. Under no circumstances should passengers attempt to ride upon the A-frame of trailed or three-point linkage implements.
3. If students, or others, are being transported by trailer to distant locations, the trailer **must be** enclosed, and no part of the passengers’ body is to protrude from the trailer.

### Pre-Starting

1. Check the coolant, oil, battery and fuel levels and the tyre pressures.
2. Remove other people from the immediate vicinity.
3. Make certain the gear shift, hydraulic, three point linkage and power take off, levers are in the neutral position before starting.
4. Check the position of the choke or throttle levers prior to starting.

### Starting

- Always operate the self-starter from the driving position.
- Never run the engine in a closed shed — the exhaust gases can be fatal.

### Travelling

1. When operating a tractor, maintain a position that enables it to be stopped instantly.
2. When driving on roadways or operating in high gears, lock both brake pedals together so they can be applied simultaneously.
3. Always drive at a speed slow enough to ensure complete control, especially over rough ground and in the vicinity of gullies and buildings.
4. Never dismount from a tractor while it is still in motion.
5. Reduce speed before making sharp turns or before applying turning brakes.
6. Keep the tractor in gear when going down steep hills or grades.
7. The clutch should be engaged gently. Particular care should be taken when going up hills or pulling out of ditches.

### **Hitching Implements and Towing**

1. When towing, hitch the towline as low as possible on the drawbar. Hitching any point above the axle height can result in the tractor overturning backwards.
2. Always hitch a heavy load directly to the drawbar. Never use a temporary sling around the axle housing.
3. When a power implement is attached to the tractor be sure that all power guards are in place.
4. Never permit anyone to stand between the tractor and a drawn implement when hitching, unless the tractor is in neutral gear.
5. Always take up the slack of a towline smoothly. The tractor may overturn backwards in less than half a second if jerked under tow.
6. During towing operations, take special care when making sharp turns.

### **Hillsides and Slopes**

1. The wheels of the tractor should be set to the widest setting possible for the operation to be undertaken.
2. Extra care should be taken when operating on hillsides to avoid holes, stumps, soft ground and stones which may easily cause overturning.
3. Engage the clutch gently when going up hill or pulling out of a ditch.
4. Never attempt to change gear when going down a steep slope. Select a low gear before beginning the descent.
5. Avoid driving close to embankments, ditches, gullies with soft edges and depressions. Great care should be exercised when operating on silage stacks.
6. Always cross contour banks at right angles. Cross in low gears keeping firm control of the steering wheel.

### **Stopping and Parking**

1. Wait until the tractor has completely stopped before dismounting.
2. When hauling a trailer not fitted with independent brakes, do not disengage the clutch until the tractor is almost stopped. Remember that the two braking wheels have to stop six or eight wheels.
3. Apply the parking brake and lower implements before leaving the tractor.
4. Stop the power take-off before dismounting.
5. Should it be necessary to dismount while the engine is running, apply and fasten the brakes and leave the gear lever in the neutral position.
6. Avoid parking a tractor on a steep slope. If unavoidable, park the tractor side-on to the slope, stop the engine and leave the tractor in reverse gear.
7. Remove the ignition or starter key when the tractor is not in use.

### **Stationary Operation**

1. Only operate the clutch and power take-off while seated on the tractor.
2. Never attempt to put on or remove a belt from a pulley while the pulley is still in motion.

3. Ensure that all safety guards are in place and all people are well clear before the power take-off is engaged.

### **Maintenance**

***Follow maintenance and servicing schedule and recommendations as stated in the tractor operators' manual, and maintain servicing and maintenance records..***

1. Brakes must be correctly adjusted so that both wheels brake evenly.
2. The fitting and removal of tyres from rims should only be undertaken by people trained in correct procedures and using all relevant safety tools and facilities.
3. Should the engine overheat, extreme caution should be taken when refilling the radiator. The motor should be idling while refilling.
4. Keep a fully charged fire extinguisher on the tractor. Your supplier will advise you of the type most suitable for your purposes.
5. Never check the liquid level in the battery with the aid of a naked flame.

### **Jacking**

1. chock the wheels first
2. only use a jack large enough for the tractor concerned
3. makeshift lifting devices must not be used
4. never go under the machine until approved safety supports are securely placed to prevent the jack slipping.

### **Refuelling**

1. refuel only when the engine is cool
2. check for fuel leaks and have them repaired
3. don't let a fuel can touch the battery
4. avoid spilling fuel when filling the tank
5. don't allow naked lights or fire near fuel
6. no smoking!

## **4.5.2 Tractor-Mounted, Trailed and Power Take-Off (PTO) Equipment**

***It is the operator's responsibility to know and abide by local and state regulations when transporting equipment on a road or highway. Operators must also follow the fundamental rules of safety for operation and transport of equipment.***

### **Transport and Safety**

1. Ensure that sufficient front-end weight (ballast) is provided for safe, stable operation and transport. It is recommended that a least 55% of the static tractor front end weight be retained on the front wheels when three-point linkage mounted equipment is raised for transport.

2. Stand with both feet on the same side of the tractor's drawbar when hitching or unhitching. Use a jack or block to hold the implement's drawbar to one side.
3. Ensure that sway chains, bars or stays are tightened to prevent excessive lateral movement of three-point-mounted equipment. These are usually located on the draft links.
4. Take great care when reversing large machines where vision is restricted.
5. Reduce the implement to the narrowest possible width for transport on roads or highways. Use tractor lights and any signs required by law.
6. Do not depend on the tractor hydraulic pressure to hold machines in the raised position. Use the safety lock or flow valve and relieve pressure in implement cylinders where possible.
7. Ensure that wings or folded sections are locked securely in place before transporting equipment. Stand clear of wings during folding or unfolding.
8. Ensure the tractor drawbar is locked in a fixed position when transporting wheeled instruments.
9. Drive slowly on rough or uneven terrain.
10. Never make sharp turns at high speed.
11. Don't allow anyone to ride on the tractor drawbar or implement frame when transporting implements or during field operations.
12. Implement and tractor engines must be stopped when adjusting, repairing or lubricating. Check also that implements are lowered to the ground before servicing, repairing or at times when they are left unattended. If machines must be raised for repairs, securely block (support) the frame to prevent accidental lowering.
13. Ensure that children/students are not allowed to play on or near machinery when it is in operation, transport or storage.
14. Obtain immediate medical attention if injured by escaping hydraulic fluid or if oil has penetrated the skin. Hydraulic fluid escaping under pressure can penetrate the skin and cause serious infection or reaction. Never use hands to locate the source of hard-to-detect leaks.
15. When pulling heavy trailed implements during field work allow the drawbar to swing freely to reduce turning effort.
16. No person should be allowed to stand or walk beside a machine when it is being operated. An imbalance of forces can cause a sudden movement — e.g. the rear wheel of a disc plough can move to the left.
17. Ensure that all raised equipment will safely pass under power and telephone lines.
18. Lower machines or install safety locks when storing tillage equipment. Park and block implements when they are disconnected from the tractor.
19. Special care must be taken when lowering discs as they are extremely sharp.
20. Tillage implements should not be stored with their wings or outriggers in the raised position. These must be lowered before unhitching implements from the tractor.
21. Hands must never be placed in seed or fertiliser boxes of implements when operating because fingers can be caught in distributors and star wheels.
22. Follow the safety suggestions and the specific precautions in the operator's manual.

### 4.5.3 Motorcycles, Trikes and Quads

***Approved motorcycle helmet and protective footwear and gloves must be worn.***

1. Riders must ensure they are wearing proper protective clothing: approved helmet, gloves, closed (solid) footwear, eye protection.
2. Riders must ensure they are holders of the appropriate licence.
3. Pillion passengers should not be permitted.
4. Riders should maintain defined speed limits (including within the grounds) — a 25kph maximum is recommended.

### 4.5.4 Ride-On Mowers

***Hearing, eye, leg and foot protection must be worn.***

1. Check area for hazards prior to commencing mowing.
2. Passengers must not be carried.
3. Ensure that others are well clear, especially when accelerating. Do not speed.
4. Mow up and down slopes rather than across to avoid tipping over.
5. Operate mowers from the operator's seat only.
6. Wait for blades to stop rotating before alighting from the mower.

## 4.6 Harvesters/Headers and Balers

***Only responsible, trained persons will operate this equipment.***

### Harvester/Header

1. Ensure that all persons are kept clear of machines before starting the engine or engaging the clutch. This is necessary to prevent striking injuries or injuries caused from being caught in moving parts, belts or chains.
2. The PTO must be disengaged and the engine must be turned off before the operator dismounts from the tractor and before commencing to service, adjust, repair, oil or clean any part.
3. No doors or shields shall be opened until all moving parts are stationary.
4. Ensure that all drive belt and PTO shields are in good condition and properly secured on machinery before engaging the PTO.
5. Avoid the risk of personal injury and machine damage by only operating at the correct machinery speed (or PTO rpm) as recommended by the manufacturer.
6. All shields must be kept in place to reduce injury from flying stones and other objects, which may be ejected by the machine during operation. Never permit anyone to stand or walk alongside or behind machinery when it is in operation.
7. When knives are being adjusted use a wooden block to prevent cutter bars and cutter heads from turning.
8. Never stand under the discharge spout or in the path of chopped forage while the harvester is operating.
9. Cutter bars, fingers and comb should be covered during storage to reduce possibility of injury.
10. Never stand close to header reels as clothing can be caught and the operator dragged into the cutter bar.



11. The only parts of the combine harvester that can be opened when it is in operation are the inspection points specifically mentioned in the operator's manual.
12. Ensure the safety locks/stops are in place on the comb lift when the machine is parked.
13. Care should be taken when cleaning stationary augers as fingers can be caught by the flights.
14. Adequate fire protection devices must be available when working with headers.
15. Guards must be fitted over belts, shafts and hopper of grain augers.
16. Ensure grain augers are folded for transport and be careful of overhead power lines.
17. Take care when using the lift crank on the winch used to fold the grain augers.
18. No person should walk or ride on hay elevators.

### **Baler**

1. Hay must not be pulled from the pickup when the baler is running.
2. Ensure the flywheel of a baler is not moved while anyone is working on the knives.
3. Never kick hay into the pickup or stand close to the pickup and feed hay into the baler by hand as limbs or clothing can be caught in the moving parts.
4. Ensure that all persons are kept away from:
  - \* the gate when it is being raised or lowered for round bales.
  - \* the rear of the baler during unloading.
5. Block the gate of a round baler before working under it or use safety locks/stops for the gate-lift cylinders.

## **4.7 Spraying Equipment**

***Spraying equipment may only be used by operators who have completed the requirements of Chemalert.***

### **4.7.1 Boom Sprays**

1. Make sure the drive components are suitably guarded and kept in position.
2. Keep fingers and other parts of the body out of harm's way and away from nip points when folding or unfolding booms.
3. Regularly test pressure gauges for accuracy.
4. Prepare a nozzle cleaning kit before commencing operation and wear required protective clothing when using it.
5. Observe all safety precautions relating to the spraying of chemicals. Read and follow all instructions carefully.
6. Be particularly careful when handling concentrated spray material especially when preparing fresh stock and when loading into tank.
7. Wear protective clothing at all times when working with chemicals.
8. Keep an emergency treatment kit (soap, eye irrigation bottle, atropine syrup of ipecac and/or other appropriate treatments) on the tractor or spray vehicle when spraying.
9. Ensure guidelines in the agricultural chemical use section of this manual are consulted before operating machinery.

### 4.7.2 Misting Machines

1. Ensure that all driving and moving parts are guarded to prevent operator injury.
2. Apply all protective measures and use appropriate protective equipment applicable to the handling of the toxic chemicals involved.
3. Prevent leakage of fuel and chemicals to minimise danger of fire and contamination of operator.
4. Ensure a comfortable fit and ample padding of backrest and shoulder pads to reduce fatigue and effects of vibration from back-pack units.
5. Shield heat sources such as exhaust systems to prevent contact with operator resulting in burns.
6. When using a back-pack unit, choose the safest route for firm footing. This will minimise movement and risk of falls causing injury.
7. When using misting machines to spray toxic chemicals, full-face respirators must be used.
8. Ensure mixing and application guidelines detailed in the agricultural chemical use section of this manual are consulted before operating machinery.
9. Follow safety precautions described in the agricultural chemical use section including washing of exposed body parts and clothing.
10. Wear earmuffs or plugs to minimise the risk of hearing loss through the high noise level generated by misting machines.

### 4.7.3 High Pressure Air, Water and Painting Equipment

*Hearing, eye and respiratory protection must be worn.*

***Compressed air must be used with caution. A blast of compressed air held close to the body can enter the bloodstream and intestines through the skin (25kPa can rupture) and cause agonising death. All body orifices and skin punctures are particularly vulnerable.***

- Use extreme care when using compressed air in applications such as high-pressure water cleaners or spray-painting.
- Never use high-pressure air to clean any part of your clothes or body. (It also can rupture eardrums, eyes and peel off skin).

### 4.8 Hammer Mills/Chaff Cutters

1. Make sure the belt drives on the hammer mill are suitably guarded.
2. Be sure all power drive guards are in place when the unit is operated by PTO drive.
3. Make frequent checks to see that the hammer retaining shaft and locking pins are properly secured.
4. A protective grille should be fitted over the mouth of the machine to prevent hands from entering.
5. Make sure that operators are trained and capable of handling the mill and power unit and understand the dangers.
6. Wear close-fitting safety goggles to protect your eyes from dust and flying particles.
7. Wear a dust mask or respirator for protection against inhalation of dust.

8. Wear ear muffs or plugs to reduce the risk of hearing loss.
9. Stand slightly to one side of the machine when feeding in material to avoid being injured by cast-off stones and particles.
10. Don't remove guards or protective covers while the machine is running.
11. Always stop the machine and wait for moving parts to become stationary before attempting to clear a blockage.
12. Also stop and immobilise the unit before inspecting or attending to hammers and screens.

## 4.9 Trailers and Trucks

1. Never overload trailers or trucks.
2. Allow extra distance for stopping, especially when loaded.
3. Ensure loads are securely fastened.
4. Trailer couplings, lights and safety chains must be in good order and correctly connected.
5. Load trailers with approximately 60% in front of the axle centreline and 40% at the rear so that weight is on the towbar.
6. Ensure the towing vehicle is the correct size. (In general trailer and load should not exceed mass of towing vehicle.)
7. Carrying people in trailer on a public road is illegal and it is not recommended on private property. If, however, there is a need to transport students, or others, on private property by trailer to or from distant locations, then the trailer **must be** enclosed, and no part of the passengers' body is to protrude from the trailer.

## 4.10 Hand-Operated Power Equipment

This equipment has the potential to inflict injuries and/or create hazardous situations. The major causes of accidents are ignorance of the hazards and operators' apathy to commonsense safety procedures. The main precautions include:

- \* check terrain for hidden obstacles, e.g. wire and rocks
- \* maintain a safe working distance from others
- \* keep a firm footing and good balance
- \* take rest breaks to reduce risk of vibration fatigue
- \* avoid burns from hot components.

*All lawn mowing and slashing work **must** be carried out by groundspersons at times when students or other persons are not in the vicinity.*

### 4.10.1 Mowers and Cutters/Slashers

*(See also 4.4.4 for ride-on mowers)*

#### **Mowers**

***Hearing, eye, leg and foot protection must be worn.***

- Never pull a running mower towards your feet.
- Keep the mower flat on the ground — never tilt it up while it is running.
- In addition, observe the following for electric mowers:

- \* use a recommended extension cord (eg. heavy duty) and regularly check it for damage. An RCD (ELCB) must be used;
- \* shut off and unplug cords whenever the electric mower is stopped
- \* mow away from the cord and take care of it
- \* never use an electric mower in damp weather or on wet grass.

### **Brush Cutters and Whipper Snippers**

***Head, hearing, eye, leg, foot and hand protection must be worn.***

1. Ensure that harnesses are fitted correctly.
2. Run blade at full speed before starting a cut.
3. Ensure blades and cord are appropriate and fitted correctly.
4. Do not touch sawn-off ends.

### **4.10.2 Rotary Hoes**

***Hearing, eye, leg, foot and hand protection must be worn.***

1. Ensure that all drive components are covered and suitably guarded.
2. Regularly check attachment of hoes to spindle for security.
3. When operating hand-controlled units, wear protective footwear to guard against injury from flying soil and stones.
4. Keep soil deflectors properly adjusted.
5. Don't stand directly behind an elevated unit when the hoes are rotating as flying particles can cause injury and you can be struck and caught by the blades.
6. Disengage the drive and stop the unit when clearing chokes and blockages.
7. Students not involved in hoeing must stay clear of the immediate area to avoid injury.

### **4.10.3 Chainsaws**

**{Refer to:-**

**WorkCover Guide to the Safe Use of  
Chainsaws..... At [www.nohsc.gov.au](http://www.nohsc.gov.au) )**

**Head, hearing, eye, leg, foot and hand protection must be worn.**

- The chainsaw should be equipped with the following items:
  1. a chain brake (preferably automatic) to prevent injury in the event of kickback;
  2. interlock throttle system to uncontrolled activation of the throttle;
  3. chain catcher and rear hand protector to protect the saw and operator in the event of chain breakage;
  4. anti-vibration system to reduce exposure to vibration;
  5. a low-kick chain (safety chain) to provide protection from kickback.
- Before attempting any chainsaw operation the operator must be aware of the following guidelines:
  1. read the manufacturers/operators manual thoroughly;
  2. ensure that all safety features are fitted and operational before starting to saw — check that all nuts, covers, etc. are secure;
  3. ensure the operator understands 'kickback' and how to prevent it;

4. avoid the use of the saw above the shoulders and always keep it in front of the body;
5. don't use a chainsaw while working from a ladder, tree or any other insecure support;
6. place saw on the ground to start, with foot through the rear hand guard to steady it;
7. when cross-cutting or pruning, check if any branches are under tension before cutting;
8. seek advice and/or training in the use of the chainsaw — many accidents are the result of ignorance;
9. be aware that chainsaws can easily start fires. The following precautions should be taken:
  - ensure the muffler is in good condition and fitted with a spark arrester screen.
  - keep muffler clean of carbon build up and deposit.
  - ensure the saw is correctly tuned.
  - **do not** use on extreme fire danger days.
  - **do not** spill fuel over saw when refuelling.

#### 4.10.4 Pneumatic Secateurs

*Head, eye, leg, foot and hand protection must be worn.*

- Check for obstacles that can trigger secateurs
- Operate at safe working distance from appendages.

#### 4.10.5 Shears / Hand Pieces

1. Avoid wearing loose fitting clothing.
2. Keep shearing board clean and free from obstructions.
3. Check ready access to on/off switch for overhead gear.
4. Ensure correct positioning of sheep and shearer before commencing.
5. Make sure the shearing handpiece is in good condition. Comb and cutters should be sharp and the retaining screws securing the comb should be tight.
6. Check for correct tension of the cutter before engaging the handpiece.
7. Ensure the handpiece ferrule is tight.
8. Disengage the handpiece before placing it on the floor.
9. Keep the handpiece lubricated, well maintained and clear of fibre.
10. Safety guards must be placed on pedestal grinders.
11. The use of a 'back-aid' is recommended.

### 4.11 Electrical Hazards

#### 4.11.1 Power Lines

1. Employees and students must keep clear of power lines at all times as contact usually results in electrocution.
2. Fallen power lines are a serious hazard, since they must be treated as live. In such circumstances an employee should stand guard to prevent other people coming in contact with the lines and immediately have someone notify the electricity authority.

3. Ensure that high equipment such as harvesters and bale loaders is kept well clear of power lines.
4. No person should ride on top of high loads such as a trailer load of hay because of the risk of contacting power lines.
5. Care should be exercised when handling irrigation pipes in the vicinity of power lines since their lengths are usually in excess of clearances available, especially in hilly country.
6. It is possible for a snapping fence wire to spring into the air and contact power lines, rendering the whole fence live. If this occurs, keep everyone clear and notify the electricity authority immediately.
7. Should crop dusting or aerial operations of any other kind be contemplated, ensure the pilot is made aware of all power lines in the vicinity.
8. Avoid planting trees, wind breaks, shelter belts etc. directly under or in the vicinity of power lines. Vegetation becoming entangled in power lines and causing them to arc, particularly in windy weather, is a cause of fires.

#### **4.11.2 Electric Fences**

1. Only fences which conform to AS 3014—1991, “Electrical installations: electric fences” should be used. Barbed wire must not be electrified.
2. Electric fences can be fatal if not properly constructed.
3. Where the controller is battery operated, always disconnect the battery before re-charging it.
4. Never use a battery charger to supply the current in place of the battery.
5. Always erect a warning notice when an electric fence adjoins private properties and public access ways. Signs stating “Danger — Electric Fence” in 5cm high red letters on a white background should be placed at intervals of at least every 40m. Electric fences represent a risk, particularly to people with heart complaints.

#### **4.12 Small Power and Hand Tools**

*(See Technology Studies OHS&W Guidelines for detailed information about workshop hand tools and portable power tools.)*

##### **General**

1. Power tools, which are not double insulated, must be connected to an electrical protective device (e.g. a core-balance earth-lead power outlet) or to an outlet using a double adaptor.
2. Before use, examine the tool and its cord, extension lead, plugs, sockets and power outlet for damage. Look for cracked or damaged casing, core wires, loose connections, damage to cord sheathing, loose or missing screws, or blocked ventilation slots.
3. Never make adjustments while a power tool is running.
4. Do not switch off the tool when it is under load, except in an emergency.
5. Switch off at the power outlet and remove the plug when a machine/power tool is not being used.
6. Do not strain power cords and extension leads, especially by lifting or dragging tools by the cords, or by pulling on the cord to remove the plug from the power outlet.
7. Do not walk on, wheel objects over, or drop material or tools on, power cords.

8. Keep power cords clear of oil, grease, machines and sources of heat.
9. Position power cords with care to avoid a trip hazard and to prevent damage to the cord or extension lead.
10. Where possible, work near a power outlet in order to avoid using an extension lead.

### 4.13 Windmills

Even the most experienced contractors in the windmill industry acknowledge the danger of working both on and below a windmill tower. Any number of accidents are possible:

- \* being hit by falling tools
- \* getting caught in the rotating fan
- \* having fingers caught in moving parts
- \* falling off the tower
- \* having the tower fall on you or fall down with you on it.

To reduce the hazards associated with working around a windmill, careful attention should be given to the following guidelines:

1. Ensure the windmill is out of gear and the fan is secured to stop rotation.
2. Wear close-fitting clothing, i.e. overalls which do not have loose fabric to become caught in rotating parts.
3. Wear a safety helmet even if you are the only person working on the site, it might be you who leaves a spanner carelessly on the work platform.
4. Use a safety belt/ harness when working from the platform.
5. Wear non-skid shoes as most falls start with a slip
6. Avoid working in windy or wet conditions.
7. Check ropes and pulleys carefully as most accidents are caused when lines fail.
8. Be aware of hazards of working alone.

### 4.14 Ladders, Scaffolds and Platforms

1. Do not use aluminium ladders or steel wire reinforced ladders where there is a chance they may come into contact with live electrical wires or parts. (These ladders are not suitable for electrical work.)
2. Ensure the ladder is in good condition, on a firm footing and secured to prevent outward or sideways movement.
3. Check correct ladder positioning — to an angle of 1 in 4, i.e. one metre out for every four metres of length of ladder.
4. The ladder should extend at least one metre above any platform to be reached.
5. Stand at least one metre below the top of the ladder when in a working position.
6. Never lean outwards — keep hips within the boundary of ladder uprights.
7. Scaffolds and platforms two metres or more above ground level should have guards and toe boards.

## 4.15 Garden Tools

*Adequate working space must be allocated for students to safely use garden tools and they must receive prior instruction on correct tool use.*

1. Have a place for every tool whether it be a tool box, rack or shadow board, and keep the tools there when not in use.
2. All hand and small garden tools, which could reasonably be expected to be misused, should be kept in a locked cupboard. Larger garden tools may also be dangerous if misused. They should be stored in an area not generally available to anyone unless directed to work with them.
3. Select the correct tools for the job and make sure they are in good condition.
4. Clean hands before using tools.
5. Keep tools regularly serviced and sheltered from weather to prevent warping and rusting.
6. Maintain cutting tools in a sharp condition.
7. Sharp tools must be secured during transportation and never carried in pockets or belts.
8. Don't place tools where they may be accidentally dislodged, particularly if they are being used above head level.
9. Be careful when passing tools with sharp edges or points — pass them 'handles first'.
10. When using secateurs, grasp the handles at the ends as they may pinch when gripped close to the hinge.
11. Wear protective clothing and equipment, e.g. overalls, leather gloves, sturdy fully covered shoes or boots with solid soles and preferably leather uppers, protective glasses etc. when required.
12. Don't leave tools lying around on the ground.
13. Clean tools prior to storing.

## 4.16 Hoses

Worksites are advised to develop strategies for the safe handling of large industrial hoses by using the principles of manual handling. (*See General Guidelines 8*) The following points may be useful:

1. Plan the worksite in a way that reduces the need to move hoses if possible.
2. Introduce mechanical handling systems.

A number of manual handling injuries will be avoided if worksites provide their own reel-trolleys for large hoses. Wheel-trolleys may be found at your local hardware store.

## 4.17 Responding To Farm Accidents

(Abstracted from "Rescuing Farm Accident Victims"  
...Bobby L. Tyson. University of GEORGIA July 1994)



## **THINGS TO CONSIDER AT THE ACCIDENT SCENE**

- How many victims are there?
- What is the severity of the injuries? Are the injuries immediately life-threatening?
- Can the patient be easily moved to safety or will extrication be necessary?
- What type of equipment, and what brand, is involved? What part of the machine is involved?
- Are you familiar with this type of situation or the type of equipment or structures involved?
- Is the equipment or structure involved stable? If not, how can it be stabilized?
- Is there danger of fire, explosion or contamination by hazardous materials?
- If the victim is entangled in farm machinery, are you familiar with procedures for disassembly? Has the dispatcher called the local equipment dealer to have a mechanic sent to the scene to assist?

## **Plan Every Stage of the Rescue**

### **1. Stabilize the Scene**

- Establish a Hazard Zone
- Shut Off Equipment
  - \* Gasoline powered equipment
  - \* Diesel powered Equipment
- Prevent Fire
- Check for Hazardous Materials
  - \* Pesticides
  - \* Toxic Gases / Oxygen Deficient Atmosphere
  - \* Secure the Equipment / Structure
  - \* Be absolutely certain that you support the equipment by blocking, lifting or tying off to the frame!
  - \* **AVOID** lifting or supporting by the wheels
- Watch for settling or shifting!

### **2. Call for Additional Assistance**

### **3. Free and Transport the Patient**

### **4. Leave the Scene Safe and Stabilized**

#### **LIKELY ACCIDENT SCENARIOS**

- Tractor Overturns
- PTO Entanglement
- Augers

- Pickup Mechanism
- Header.
- Round Baler
- Conventional Baler
- Combine Harvester
- Hydraulic Operated Equipment
- Manure Pit.
- Silage Pit
- Silo (Portable)
- Grain Bin
- Toxic Chemicals (Spills, Release to Atmosphere)

{Note: - In Australia, in settings which may involve Farm Accidents, urgent contact with the State Emergency Services is advised to ensure that trained personnel and correct Rescue Equipment can be used to effect the rescue This may also make it easier to bring in Ambulance, The Flying Doctor, or other appropriate Emergency Service }

## 5. ANIMAL HUSBANDRY

### 5.1 Animals in Schools

*(See also “General Guidelines” - “Disease Transmission — Contact With Animals”)*

#### 5.1.1 Health of Employees and Students

1. Personal hygiene must be stressed. Regular washing of hands with antibacterial soap is essential.
2. Food and drink should not be prepared/consumed/stored in animal-keeping areas.
3. Employees required to handle animals should be immunised against tetanus and receive regular boosters.
4. Employees handling animals are at risk of **zoonoses** – infections that can be passed from animals to humans.

*Bites, scratches or similar injuries to students and employees must receive prompt attention. The immunisation status of affected individuals in relation to Tetanus, Q-fever, and leptospirosis should be ascertained and prompt action taken.*

#### 5.1.2 Animal Types

Animals must be used and cared for according to the recommendations of the Animals in School Programs Policy statement.

*(See \* “Animal Ethics Committee---Guidelines concerning routine Animal Husbandry...updated 1996”*

*\* “Petting Zoo Infection Control Guidelines”—Communicable Disease Control Branch, and Environmental Health Branch---Dept. of Human Services 2002 )*

1. Many animals carry transmissible diseases and some are poisonous. Such animals must not be supplied for use in schools.
2. These animals include all feral species, doves, pigeons and poisonous reptiles. Disabled birds may be tended providing such expertise is available and must be released when no longer disabled. However, remember that there may be risks of disease from these animals.
  - Animals supplied to and used in schools must be normal in appearance and, as far as can be ascertained, free from disease. Disease-free animals can be obtained from the Department of Primary Industry.
  - Veterinary advice will be sought where there is doubt about an animal’s state of health.
  - Farm animals, such as pigs, sheep, goats and poultry should be obtained only from reputable commercial sources of supply. Many of these may be members of recognised

breeding societies and it may be best to buy from such suppliers. Information on the supply of farm animals can be obtained from local stock and station agents.

## 5.2 Animal Housing

### 5.2.1 Cages and Containers

- Cages and containers must be constructed so they are not a hazard to the contained animals or the handlers.
- They must be secure, with no sharp edges. Material used in the construction of cages should not be absorbent and metal parts must be rust-proof.

### 5.2.2 Servicing — Hygiene and Health

1. Cages, containers and water bottles must be routinely cleaned by the suitable use of an appropriate disinfectant at regular intervals. Disinfectants containing cresols or phenols are unsuitable for school use, since they have a corrosive effect on the skin and are hazardous to the eyes. Those combining a disinfectant and a detergent effect are recommended. The use of disposable paper towels for final drying is preferred.
2. Large quantities of litter and bedding, such as straw or wood shavings, must not be stored as they present a fire risk.
3. Store fodder in metal containers to reduce attraction to vermin.
4. Written instructions on maintenance procedures and the proper use of equipment must be given to *any person who may be responsible for looking after school animals*.
5. Animals, which have been ‘boarded out’ during vacation periods, must be subjected to a period of quarantine and observation on return to ensure they are in good health.
6. If serious disease is suspected, it is essential that professional veterinary or other qualified advice be sought. Animals thought to be diseased should be promptly quarantined.

## 5.3 Handling Animals

### 5.3.1 Employee and Student Instruction

*Before an employee or student is permitted to handle or use animals, that person must have been instructed in the safe work practices and protective clothing required for the animals concerned.*

- Principals/managers must ensure that untrained employees do not handle or use animals nor supervise students in activities involving animals.
- Students must be assessed in a practical situation before being permitted to work with animals.

### 5.3.2 General Precautions

*Animals are responsible for many injuries, some of which can be fatal. Although domestic animals may appear docile, attacks by bulls, steers, rams and boars and kicks from horses and cows are common. Employees and students must therefore have a knowledge of correct handling techniques and restraints for each animal. Suitable handling facilities and equipment should always be available since injuries from animals can be prevented or minimised by correct handling.*

*Employees must keep under constant observation inexperienced students in charge of an animal.*

1. Approach and handle animals quietly. Fear will cause them to get excited and take defensive measures. Students must be warned against making sudden movements and noises (including yelling and laughter) particularly when catching animals. Handling must be firm and done with adequate equipment.
2. When catching and restraining animals use as little force as possible, since a hard fall may result in fracturing the animal's limbs or ribs. Before working with particular animals, students must be aware of the method of handling for that breed.
3. Students must be cautioned against approaching young livestock which are still with their mothers. The mothers of new-born animals may be provoked into attacking without warning.
4. Sick and injured animals which are normally tractable will be restrained for treatment.
5. Animals will be culled if they show either nervous or treacherous temperament and results do not indicate improvement in the breeding program.
6. Handling equipment, fences, yards, gates and shed fastenings must be well maintained.
7. Dehorn livestock at an early age and trim roosters' spurs frequently.
8. Consult a veterinary officer for the treatment or quarantine of livestock and disposal of dead stock. (*See 5.6 "Killing and Disposal of Animals"*)
9. Correct clothing and footwear is necessary when working with specific animals, eg. leather-soled riding boots for horse-riding, safety boots with reinforced toecaps for working cattle in a yard and longsleeved garments and hat for beekeeping.

#### **Restraints**

1. Warn students not to allow themselves to come between a rope restraining an animal and the fence or yards.
2. Never wrap a restraining rope around the hand or any part of the body.
3. Students should be warned never to get in a crush or confined space with an animal where they can be crushed. Always work from the outside. The safety-conscious use half-gates on crushes.
4. Students must be warned not to handle animals through the rails of a yard or crush. Should the animal throw its head or kick, it could seriously injure them. Similarly, the fingers must never be poked through weldmesh yards as a passing animal could fracture them.

#### **Classroom Pets**

- Psittacine birds (budgerigars, parrots and parakeets) are often kept in schools as classroom pets. They can carry the disease psittacosis which can be transmitted to humans through dust in the cage or through the bird's saliva. Close contact with the birds must therefore be avoided.
  - \* Precautions must be taken that only healthy birds are purchased from reputable dealers.
  - \* Avoid creating dust — wear a dust mask and use a vacuum cleaner to clean out debris, feather down etc.
  - \* Cages must be kept clean using the wet cleaning method. This involves wiping down the cage with a wet cloth or, in the case of an aviary, hosing it down.

## **5.4 Biological Hazards**

### **5.4.1 Handling Biological Materials**

1. All users must be clearly instructed as to the correct safety procedures to be taken to minimise the health risks associated with working with animals or their products.
2. Disposable gloves must be provided and used whenever employees and students work with animals with wounds or parts of the animal with possible disease risks (eg. reproductive tract) or where any dissection activity is undertaken or contact made with animal body fluids or waste products.
3. The provision of soap and appropriate washing facilities is essential. Employees and students must wash their hands thoroughly with soap and water immediately following any work with animals or animal products.
4. Protective clothing, which is regularly laundered, must be worn.
5. Keep the hands away from the mouth, eyes, nose, ears and face during and after working with animals or animal products. During the handling period, other objects such as pens, pencils and handkerchiefs must not be handled.
6. Food and drink must not be consumed while handling specimens.
7. Students must not handle materials and specimens, which are obviously diseased.

### **5.4.2 Use of Offal**

1. Genitourinary systems and their organs hold the greatest risk as a source of infection, although some risks are also associated with hearts, lungs and livers. Employees must avoid the use of pigs' kidneys altogether and preferably attempt to obtain other offal through retail butchers or local abattoirs.
2. Post-mortem examination of animals should only be carried out in well-ventilated areas. Students who may not be expected to have acquired immunity to Q fever through previous exposure to livestock and/or slaughtering activities should not be involved in the activity.

### 5.4.3 Visits to Abattoirs

*School visits to the South Australian Abattoirs or local slaughtering works are no longer allowed.*

### 5.4.4 Disease Control Equipment

1. Materials and equipment used in the control of animal disease, eg. vaccinating guns, syringes and needles, and non-refrigerated veterinary chemicals must be stored in a locked storage facility.
2. Vaccination needles and syringes must be destroyed after use in order to render them unusable for any purpose. ‘Universal precautions’ require employees to treat any blood or other body substances as a source of infection. The preferred and most convenient disposal method for syringes and needles is directly into a suitable yellow garbage bin (usually supplied and collected by waste management contractors). An alternative method is to place the contaminated objects in a rigid-wall, puncture proof container, sealed with the lid/screw top taped down and placed in a plastic bag which is then sealed. It is advisable to use tongs and gloves when handling the sharp object.
3. Both methods require disposal by a commercial disposal facility. Advice on disposal can be obtained from:
  - \* District health and safety advisers
  - \* Royal district nurses
  - \* South Australian Health Commission
  - \* Waste Management Commission.

## 5.5 Particular Animals — Safe Practice

### 5.5.1 Cattle

Both dairy and beef breeds of cattle need careful and special treatment. They are very intelligent and will only respond to a confident handler. Cattle should be handled from an early age, building up their confidence in the handler.

While beef breeds are generally less docile than dairy cows they can, with regular handling, become docile and tractable. Students must exercise care in handling, feeding, grooming and transporting such animals.

A regular drenching and vaccination program for cattle is essential.

#### Specific Handling Procedures

1. When working with cattle, be patient and sympathetic. Give them time to understand what is required of them.

2. Handle cattle quietly but firmly. Avoid handling them around the head.
3. Allow the leaders in a mob to sort themselves out and they will lead the rest.
4. Never try to break an animal's spirit. It is better to gain its confidence without any psychological upset.
5. Restrain animals before handling or treating them — cattle should be handled in a crush.
6. Every bull and/or steer should be fitted with a suitable-sized copper ring or nose grip and should never be led out without a halter.
7. When leading an animal, its head should be kept up at all times. The attendant should be to one side, just behind its head.
8. Since special treatment is of vital importance when handling animals such as beef cattle, bulls and horses, such animals should not be allowed on school farms until this equipment has been provided.

### **Bulls**

1. Be careful with bulls; even the quietest bull can kill or injure quickly.
2. Inexperienced attendants should be under observation at all times.
3. When treatment is necessary, a bull should always be restrained in a pen.
4. Bull pens must be strongly constructed with adequate fastenings on doors and gates. Escape gaps or baffles should be provided across the corners of the pen.
5. Caution should be taken when separating a bull from a herd of cows. This task must never be left for one person to do.
6. Bull calves must not be made pets. When fully mature they can inflict fatal injury while indulging in play learned as a calf.

### **5.5.2 Horses**

1. Always speak to a horse before approaching or touching it. Most horses are easily startled and may kick.
2. Never approach a horse directly from the rear.
3. Keep your head in the clear when bridling a horse. It may toss its head or strike to avoid the bridle.
4. Walk beside the horse when leading, not behind or ahead of it. Use a long lead strap or halter rope.
5. If the horse rears up, release more rope/lead strap so you are not pulled off the ground.
6. The horse is stronger than you — don't try to out pull it. It will usually respond to a sharp tug on the strap or rope.
7. Never wrap lead strap, reins or rope around any part of your body, or around your hand.
8. Keep bridle reins, stirrup leather, surcingles and girth straps in the best possible condition, as your safety depends on them. Replace any strap when it begins to show signs of wear.
9. Adjust the saddle carefully and pull the surcingle and/or girth strap tight so it will not slip when you mount.
10. When saddling, stand with your feet clear of the horse's hooves and reach forward slightly.
11. Never mount a horse too close to fences, trees or overhanging projections.
12. Soon after starting the ride, dismount and again tighten girth straps, etc. Horses often blow themselves up when first saddled and failure to tighten girths later can result in serious accidents.
13. Keep your horse under control and maintain a secure seat at all times.



14. Horses are easily frightened by unexpected noises or objects. Anticipate these and steady your horse.
15. When a horse is frightened and attempts to bolt, turn it in a circle and keep tightening the circle until it stops.
16. Avoid paved roads. Slow your mount to a walk when crossing such roads to avoid slipping.
17. Control your temper at all times. Let the horse know that you are a kind but firm rider.

### 5.5.3 Sheep

Sheep are timid animals and exhibit a flocking behaviour in which the majority mimic the behaviour of leaders in the group, rather than acting as individuals. Their handling requires a gentle and quiet approach. A regular drenching program is essential.

1. When catching a sheep, walk quietly towards it without looking at it directly.
2. Don't pack sheep or lambs tightly in yards or stock trucks as they go down and smother.
3. The primary risk in handling sheep is their tendency to butt when in a small yard or confined space. Rams are more likely to do this than ewes and injuries can be serious.
4. Treatment of sheep should, where possible, be carried out in a race where restraint is positive, rather than in a small yard.
5. When releasing sheep from pens, yards or raceways, don't stand at the front.

### 5.5.4 Poultry

All are domesticated birds, still possessing the instinctive behaviour to escape and become defensive when captured. The erratic movements of poultry suggest a cautious approach is wise.

1. Students should be warned to take care when entering a mating pen as the cock bird may attack. Most damage is done on bare legs by the spurs of the attacking male. For this reason, all roosters should be despurred.
2. Approach broody hens with caution as they can attack by pecking.
3. When handling ducks, geese and turkeys, make sure to grasp the bird by its wings close to the back. This prevents flapping, which may result in facial cuts and serious eye damage.
4. When examining poultry, warn students to keep the birds at a safe distance from their faces, since poultry (turkeys in particular) may peck at the eyes of the handler.
5. Use a wire hook to assist in catching poultry. This will save much time and may prevent minor accidents.
6. In larger poultry units, the use of blue light may be useful for mass-catching and treatments as it helps to relax the birds.

### 5.5.5 Bees

***The status of staff and students to bee sting allergy must be ascertained before exposure to working with bees, and ensure that appropriate medication is readily available.***

Bees have an easily triggered excitable temperament. They respond instinctively and rapidly to physical and chemical stimuli and injury from stings — particularly multiple stings inflicted by swarms — will be minimised through cautious management as follows.

1. Approach the hive quietly, as sudden movements attract the guard bees. Never approach the hive directly from the front.
2. Strong odours such as body deodorants will trigger the stinging behaviour.
3. Never make excessive use of the smoker.
4. Destroy any queens which have a particularly excitable temperament.
5. The best time to inspect a hive is on a warm, sunny day between 10am and 3pm. An experienced operator with the skilled use of smoke can handle a colony under almost any weather conditions. The inexperienced operator is advised not to inspect hives immediately after rain in late autumn and early spring when the weather is cold.
6. When working around the hive, all actions should be deliberate, with no sudden or violent movements. Never swing at bees or try to run from them. These actions will only attract many more bees.
7. The operator should wear correct clothing to reduce the number of stings he/she will receive. Dark-coloured clothes attract bees and should be avoided. White or khaki combination overalls are recommended. The trousers may be tucked into the socks to seal off the legs.
8. Veils must be in good repair and worn correctly according to the type.
9. The smoker must be properly lighted or it may go out when it is most needed.
10. The nozzle of the smoker must be held at the entrance to the hive. Clouds of smoke pugged near the entrance will be deflected by the guard bees and give them a chance to alarm the whole hive.
11. Any stings received should be removed by scraping with the fingernail, a knife blade or hive tool. If a sting is pulled out with the fingers, the sac of venom will be squeezed into the skin, making the sting worse.
12. Large numbers of stings can be fatal. Students known to be allergic to bee stings should undergo a course of sensitising injections or must not participate in practical work with bees.

## 5.6 Killing and Disposal of Animals

*(See also Department of Agriculture, Food, and Fishing Fact Sheet agdex # 430/10 “Transport, Slaughter, and Disposal of surplus Sheep”.)*

Employees may select one of the following methods of disposal for dead animals:

- deep burial
- incineration
- local council
- recycling
- waste disposal bins

**Deep Burial:** It is recommended the depth of hole equal the length of the animal (exceptions include snakes).

**Incineration:** The following incineration services are available for a fee:

* Animal Welfare League of S.A. Incorporated,
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11 Cormack Road, WINGFIELD  
Phone: - 8268 4188

\* COLLEX Pty. Ltd.  
500 Churchill Road, KILBURN  
Phone:- 8260 2122

**Recycling:** If it is not diseased, the dead animal could be used for food for another animal (e.g. fish to yabbies, tadpoles to tortoise, horse to zoo) burial in a compost heap, or a preserved specimen (offer to museum etc).

**Small Animals:** The Environmental Protection Authority advises that one of the following methods should be employed.

1. Wrap the remains in sufficient paper to prevent spillage and tie or tape securely. Place the wrapped remains in a plastic bag(s) and refrigerate until the day of normal weekly garbage disposal. Deposit in workplace garbage.
2. Place the remains in suitably sealed double-strength plastic bags and store in a cool place until the day of garbage collection (for small quantities only).
3. Arrange for the remains to be collected on the day of experimentation with a chosen waste collection service.
4. Take the remains in a sealed plastic bag direct to the local dump.

**Larger Animals:** Responsibility for disposal lies with the school as owner of the dead animal. Disposal must conform with local council by-laws. As local councils are not obliged to remove dead animals, schools should negotiate for collection and removal.

Councils have the power to act in preservation of public health and in prevention and supervision of sources of nuisance.

## 6. HAZARDOUS SUBSTANCES

### 6.1 Hazardous Substances - Forms and Effects

Hazardous substances have many forms, being solids, liquids, gases or vapours. They may be chemical elements, compounds or mixtures, occurring naturally or artificially. Hazardous substances may be compressed gases, flammable or combustible materials, oxidising agents, poisonous, corrosive or dangerously reactive materials.

*They may have deleterious effects on health, striking the bloodstream, central nervous system and reproductive organs and some are thought to be responsible for causing numerous cancers. The effects on the health of exposed individuals depend on the type of substance and the level and duration of exposure.*

Users should become conversant with the following terms associated with health conditions and other aspects of handling hazardous substances.

<b>SEE ALSO GENERAL GUIDELINES 11 - HAZARDOUS SUBSTANCES</b>
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<b>Hazardous Substances — Health Effects and Other Terms</b>	
<b>Allergy</b>	An abnormal response of a hypersensitive person to chemical and physical stimuli. Allergic manifestations of major importance occur in about 10% of the population.
<b>Anaesthesia</b>	Loss of sensation — in particular, the temporary loss of feeling induced by certain chemical agents.
<b>Asphyxia</b>	Suffocation from lack of oxygen.
<b>Assessment</b>	A legislative requirement, set out in the Code of Practice to Control Workplace Hazardous Substances, which must be applied to every hazardous substance and/or process in use in the workplace. A record of the assessment must be available to all employees who may be exposed to the substance/process. Necessary control measures identified in the assessment must be operating and induction and training must have been carried out and documented before the substance/process is used.
<b>Carcinogens</b>	Cancer-forming substances.
<b>Corrosives</b>	Corrosive substances burn any body tissues they contact such as skin, lungs and eyes. The burns can be as serious as those caused by fire.
<b>Dermatitis</b>	Inflammation of the skin from any cause.
<b>Intoxication</b>	Drunkenness or poisoning.
<b>Irritants</b>	Many substances irritate body systems. Irritation of the skin can lead to dermatitis and irritation of the respiratory tract can result in bronchitis.
<b>Material Safety Data Sheet</b>	The information sheet which must be supplied by the manufacturer/distributor for each substance in use in the workplace. A hard copy (or the capacity to create one) of every MSDS must be readily accessible at all times.
<b>Metal Fume Fever</b>	An acute condition caused by a brief but high exposure to the freshly-generated fumes of metals such as zinc and magnesium or their oxides. Symptoms appear from 4–12 hours after exposure and consist of fever and shaking chills. There is complete recovery, usually within one day.

<b>Poisons</b>	Substances (solid, liquid or gas) which are harmful to body tissues. Poisons may have acute or short-term effects such as headaches and unconsciousness. Chronic, long-term effects include cancer and liver disease.
<b>Hazardous Substances — Health Effects and Other Terms</b>	
<b>Narcosis</b>	Stupor or unconsciousness produced by chemical substances.
<b>Narcotics</b>	Chemical agents that put a person to sleep, completely or partially.
<b>Sensitisers</b>	Contact with many substances promotes sensitivity or allergic reactions — e.g. contact dermatitis (skin sensitisation) and asthma (lung sensitisation).
<b>Toxaemia</b>	Poisoning by way of the bloodstream.
<b>Toxicity</b>	A relative property of a chemical agent. It refers to a harmful effect on some biological mechanism and the condition under which the effect occurs.

### Routes of Entry

There are three major routes by which substances can enter the body:

- Dermal:** Dermal absorption of substances is very common, with hands and arms being at particular risk.
- Respiratory:** Protection of the respiratory tract is important where toxic dusts and vapours or very small droplets are prevalent. Fine particles and droplets found in dust and mist are easily inhaled.
- Oral:** The greatest risk of oral intake occurs when hazardous substances are decanted into food or drink containers and utensils. Practices such as attempting to blow out clogged spray nozzles or siphoning fluids by mouth or eating and drinking with contaminated hands must be strictly avoided.

The possibility of chemical poisoning is related to:

1. the susceptibility of exposed individuals
2. acute and cumulative toxicity of the substance
3. the substance's concentration before and after dilution for use
4. its rate of absorption into the body
5. length of time before the skin or clothing is washed
6. frequency and duration of exposure
7. the type of formulation — in general, liquid formulations are more readily absorbed through the skin than powder while solid (powder) formulations are more of a toxicity problem in regard to inhalation.

***If a substance is ingested, refer to its Material Safety Data Sheet for emergency treatment details. If this is not available, telephone the Poisons Information Centre for first aid information.***

***Tel:- 13 11 26  
24 hour service***

## 6.2 Toxicity of Agricultural Chemicals

The relative toxicity of pesticides is often stressed. This can be misleading, since the real danger is the total amount of poisons the body absorbs. A lower toxicity rating does not mean low risk. A user ignoring safety precautions can absorb a large, and therefore dangerous dose.

A pesticide of relatively low toxicity can be very toxic to someone who has already absorbed another chemical into the body. It is therefore extremely important to follow the printed safety precautions.

### Agricultural Chemicals on School Grounds

*Prior to using agricultural chemicals, instruction must be given in the use of necessary protective equipment and safety and first aid precautions and procedures.*

In the context of Agricultural Studies, chemicals may be used in schools only if there is very good reason for using them — i.e. \* when there are no alternative solutions

- \* and only if they appear on the Approved List of substances
- \* or satisfy the criteria to be added to the list.

All reasonable steps should be taken to minimise exposure to the operator, to students, and to the community— e.g. \* use of personal protective equipment,

- \* apply during times when students are not on school grounds.

## 6.3 Approval for the purchase and use of Unlisted Substances

If a substance not listed on the Approved List is at the site is required (including requirements for lessons, camps or curriculum extension topics) appropriate information must be obtained from the supplier and the following approval process adhered to before the substance is purchased.. It is possible for a particular workplace to successfully tender for an approval if it has met the criteria (See; - 6.4, 6.5, and 6.7.3 below)

*If a substance is new to the list, it may only be used in your workplace if it has also satisfied the approval criteria.*

### RISK ASSESSMENT

To identify substances which should be added to the Approved List, workplaces **must** conduct a **Risk Assessment** using the following criteria :-

(1) Check product information by using:

- \* Manufacturer's MSDSs (Material Safety Data Sheets)
- \* Reference To Chemwatch CD-ROM
- \* label information
- \* local user information. (e.g. Local farmers / graziers / horticulturalists etc.; Local suppliers / agents )

- (2) Check Chemical use Flowchart **See:- 6.7.3 of this Manual**
- (3) Assess product using the criteria for approval.
- (4) Complete an approval request application form. *(See 6.6)*
- (5) Send two copies of the form, with a copy of the MSDS attached, to the Hazardous Substances Project Officer, Occupational Health Services Unit at the department's Central Office. (Retain a copy for the workplace).

***Forward planning is essential if this substance is needed for current activities.***

Before using substances which are not familiar, employees/users must ensure that:

- \* they can access a hard copy of the MSDS
- \* the MSDS has been read and understood and complied with.

**Refer also to :- Section 6.7.3 Chemical Use Flowchart of this Manual**

## 6.4 Approved List of Substances

This summary is by no means a definitive list, but it is an attempt to detail the most commonly used substances and materials currently approved for use in Agricultural Education workplaces.

Although a substance may be listed as approved, it is still essential that a **site** risk assessment is conducted **prior** to use of the substance intended for use ( Refer to 6.7.3 Chemical Use Flowchart).

***The list will be regularly updated and supplemented in light of changing information, particularly when new findings become available in regard to substances previously thought to be either 'safe' or 'low risk'.***

A further source of reference and information in considering the use of Chemicals, whether listed or not , is **CHEMWATCH**, which may be accessed through CD-ROM (see Lab. manager ) or by reference to this website:-

<http://decsa.chemwatch.net>

### 6.4.1 Common Substances

**( See next page).....>**

**ANIMAL HEALTH**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Avomec Duotin Antiparasitic Injection/Cattle	Low	Min	Min	Low	Min	Animal health
CSL Glanvac	Min	Min	Min	Low	Mod	Animal health
Ferrosan	Low	Low	Low	Low	Mod	Animal health
levamisole hydrochloride (Ripercol)	Mod	Low	Low	Min	Mod	Animal health
oxytetracycline (Pinkeye Aerosol)	Low	Low	Low	Low	Mod	Animal health
sulfamezathine	Low	Mod	Min	Min	Min	Animal health
sulfaquinoxaline (Embazin)	Low	Low	Min	Min	Min	Animal health

**FERTILISER**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Hortico Aquasol	Low	Min	Min	Low	Mod	Fertiliser

**FUEL**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Diesel	Low	Low	Min	Low	Low	Fuel

**FUNGICIDE**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Bayer Bayleton Garden Fungicide	Mod	Low	Min	Low	Mod	Fungicide
Bayer Bayleton 125 Fungicide Spray	Mod	Mod	Min	Low	Mod	Fungicide
Bordeaux powder	Min	Min	Mod	Low	Min	Fungicide
Ciba Geigy Ridomil Plus	Low	Min	Min	Low	Min	Fungicide
Dithianon	Mod	Low	Low	Mod	Mod	Fungicide
Du Pont Benlate Fungicide Wettable Powder	Low	Mod	Min	Low	Mod	Fungicide
Hortico Lime Sulfur	Low	Min	Min	Mod	Min	Fungicide
Incitec Bravo 500 Flowable	Low	Low	Min	Min	Min	Fungicide
Incitec Bravo W75	Min	Low	Min	Low	Min	Fungicide



**FUNGICIDE (cont.)**

Product	Toxic	Flamm	React	Body	Chronic	Use
Incitec Terrazole 35% WP	Low	Low	Min	Low	Min	Fungicide
Mancozeb (Dithane)	Low	Low	Low	Mod	Mod	Fungicide
Rhone Poulenc Rovral Liquid Fungicide	Low	Min	Low	Low	Min	Fungicide
Thiram	Mod	Low	Low	Low	High	Fungicide
zinc dimethyldithiocarbamate (Zirame)	Low	Low	Min	Low	Low	Fungicide
Zineb	Low	Low	Low	Mod	Mod	Fungicide

**GERMICIDE**

Product	Toxic	Flamm	React	Body	Chronic	Use
Coopers Stericide	Low	Min	Min	Low	Min	Germicide

**HERBICIDE**

Product	Toxic	Flamm	React	Body	Chronic	Use
2,4 dichlorophenoxyacetic acid dimethylamine	Mod	Low	Low	Mod	Min	Herbicide
Amitrole, Weedazol Plus	Low	Low	Min	Min	Mod	Herbicide
Ciba Geigy Flowable Vorox AA Liquid Herbicide	Low	Low	Min	Low	High	Herbicide
CRG Bantox AA	Low	Low	Min	Low	Mod	Herbicide
CRG Banweed Plus	Low	Min	Min	Mod	Min	Herbicide
Dicamba (Banvel)	Low	Low	Min	Mod	Mod	Herbicide
diuron	Low	Low	Low	Mod	Min	Herbicide
Dow Elanco Treflan Herbicide	Low	Low	Min	Low	Mod	Herbicide
Du Pont Karmex DF	Low	Low	Low	Mod	Min	Herbicide
Embutox	Mod	Low	Low	Min	Mod	Herbicide
Fluazifop P butyl	Low	Low	Min	Low	Mod	Herbicide
Gesamil 500 (propazine)	Min	Min	Min	Low	Min	Herbicide
Gesatop 500 (simazine)	Low	Min	Min	Low	Min	Herbicide
Hoechst Hoegrass	Mod	Mod	Min	Low	Mod	Herbicide
Hoechst Yield	Low	Mod	Min	Low	High	Herbicide
Incitec Dacamine	Mod	Low	Min	Low	Mod	Herbicide

**HERBICIDE (cont.)**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
MCPA (Shamrox)	Low	Low	Min	Mod	Mod	Herbicide
Metribuzin (Sencor 700)	Low	Low	Min	Min	Min	Herbicide
metsulfuron methyl (Ally, Brush Off)	Low	Min	Min	Min	Min	Herbicide
Nufarm Amicide 500 Selective herbicide	Low	Min	Min	Low	Mod	Herbicide
Picloram (Tordon)	Low	Low	Low	Low	Low	Herbicide
Rhone Poulenc Rural Tridan Herbicide	Low	Low	Min	Low	Mod	Herbicide
secbumeton (Etazine)	Low	Low	Min	Low	Min	Herbicide
Simazine	Low	Low	Min	Low	Min	Herbicide
Stomp (pedimethalin)	Low	Low	Min	Low	Mod	Herbicide
trifluralin	Low	Low	Min	Low	High	Herbicide

**INSECTICIDE**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Amalgamated Lane Rogor 40	Mod	Mod	Min	Low	Mod	Insecticide
azamethiphos (Alfacron)	Low	Low	Low	Low	Mod	Insecticide
Bayer Folithion 1000 Insecticide	Mod	Mod	Min	Low	Min	Insecticide
Bayer Lawn Beetle Killer Granular Insecticide	High	Min	Low	Min	Mod	Insecticide
Baysol Snail and Slug Bait	Mod	Min	Min	Low	Mod	Insecticide
Carbaryl	Mod	Low	Low	Low	Mod	Insecticide
Chemspray Derris Dust	Low	Min	Min	Min	Min	Insecticide
Ciba Geigy Gesapon 800 Insecticide	Mod	Low	Min	Mod	Mod	Insecticide
Ciba Geigy Vetrazin Blowfly Treatment	Low	Min	Min	Low	Min	Insecticide
Diazinon (Neocid, Nucidol)	Mod	Low	Low	Mod	High	Insecticide
Dimethoate (Roxion)	Mod	Low	Low	Low	High	Insecticide
Fenitrothion (Nuvanol)	Mod	Low	Low	Low	Mod	Insecticide
fenthion	Mod	Min	Low	Min	Mod	Insecticide
Hortico Cabbage Dust	Low	Min	Min	Low	Mod	Insecticide
Incitec Grubkil Granular (Fix Ant, Beetle Bombs)	Low	Min	Min	Mod	Mod	Insecticide
Incitec Malathion 500	Low	Mod	Min	Low	Mod	Insecticide

**INSECTICIDE (cont.)**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Incitec V9 Kelthane	Low	Low	Low	Mod	Mod	Insecticide
Permethrin (Out Flank)	Low	Low	Low	Low	Mod	Insecticide
Phosmet (Imidan)	Mod	Low	Low	Low	High	Insecticide
Piperazine	Low	Low	Low	Mod	Mod	Insecticide
Pitman Flystrike Powder	Low	Min	Min	Low	Mod	Insecticide
Pitman Warbex	Mod	Mod	Low	Mod	Mod	Insecticide
Pyrethrum	Mod	Low	Low	Min	Mod	Insecticide
Rotenone (Derris Dust)	Mod	Low	Min	Low	Min	Insecticide
Schering Rogor Diostop EC	Mod	Mod	Low	Mod	Mod	Insecticide
Tiguvon Spot On	Mod	Low	Low	Mod	Mod	Insecticide
Troy Malatroy Insecticide wash/dogs, cats/birds	Low	Mod	Min	Low	Mod	Insecticide

**PESTICIDE/FUNGICIDE**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Ammonium thiocyanate	Low	Min	Min	Mod	Min	Pesticide
Copper oxychloride	Low	Min	Low	Low	Mod	Pesticide, Fungicide

**RODENTICIDE**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Warfarin	Ext	Low	Min	Min	High	Rodenticide

**SNAIL KILLER**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
Defender Snail Pellets	Low	Low	Min	Min	Min	Snail killer

**SURFACTANT**

<b>Product</b>	<b>Toxic</b>	<b>Flamm</b>	<b>React</b>	<b>Body</b>	<b>Chronic</b>	<b>Use</b>
ICIBS1000	Low	Low	Mod	Low	Min	Surfactant

## 6.4.2 Agricultural Chemicals — Poisons Schedules

### Poisons Schedules

Under poisons regulations, toxic substances are uniformly classified according to schedules, with many agricultural chemicals classified in the very toxic to lethal categories of schedules 5, 6, 7 and 8 according to prescribed guidelines.

***Chemicals with an S7 or S8 poison classification must not be used in schools.***

***Schedule 7 and 8 poisons are highly toxic and schools therefore must only use substances from Poisons Schedules 1–6. The aim should always be to choose the least toxic substance for any task.***

Regulations also require the main panel of container labels to feature statements describing the hazardous nature of the contents. The schedule ratings and corresponding precautionary statements are outlined in the following table.

<b>Poisons Schedules</b>	
S1	Poisons of plant origin of such danger to health as to warrant their being available only from veterinarians.
S2	Poisons for therapeutic use and available from veterinarians.
S3	Poisons for therapeutic use that are dangerous or are so liable to abuse as to warrant their availability to the public being restricted to supply by veterinarians.
S4	Poisons that should, in the public interest, be restricted to veterinary prescription or supply.
S5	Hazardous poisons that must be readily available to the public but require caution in handling, storage and use.
<b>Poisons Schedules</b>	
S6	Strong poisons that must be available to the public but require strict precautions in handling, storage and use.
S7	Very toxic poisons which require special precautions in manufacture, handling, storage or use, or special individual regulations regarding labelling or availability.
S8	Poisons — drugs of dependence.

The schedule of any agricultural or veterinary chemical can be easily recognised because the “labelling requirement” in the table below always appears prominently at the head of the main label panel.

***For products not sufficiently toxic to require scheduling, the following statement usually appears in the same place but is not required by law: “Keep out of reach of children. Read safety directions before opening”.***

Schedules	Purpose	Labelling Requirements
S1	For internal use	<b>Poison — S1</b> Use strictly as directed Keep out of reach of children
S1	Other than for internal use	<b>Poison — S1</b> Not to be taken Keep out of reach of children
S2	Liquids for dermal use	<b>Poison — S2</b> Not to be taken Keep out of reach of children
S2	Liquids for other than dermal use	<b>Caution — S2</b> Use strictly as directed Keep out of reach of children
S3	For any purpose	<b>Caution — S3</b> Use strictly as directed
S4	For any purpose	<b>Caution — S4</b> Supply without prescription illegal Keep out of reach of children
S5	For any purpose	<b>Warning — S5</b> Keep out of reach of children
S6	For internal use	<b>Caution — S6</b> Use strictly as directed Keep out of reach of children
S6	For other than internal use	<b>Poison — S6</b> Not to be taken Keep out of reach of children
S7	For any purpose	<b>Dangerous Poison — S7</b> Not to be taken Keep out of reach of children
S8	For any purpose	<b>Caution — S8</b> Supply without prescription or possession without authority illegal Keep out of reach of children

### Toxicity Guide

Poisons Schedules	Approximate Acute Oral **LD 50 (lethal dose 50%)	Label Statement	Substance Notes
S5	500–5000mg/kg	Warning Keep out of reach of children	Substances or preparations of a hazardous nature which must be readily available to the public but which require caution in handling, use and storage.
S6	50–500mg/kg	Poison Not to be taken Keep out of reach of children Read safety directions before opening.	Substances or preparations of a poisonous nature which must be readily available to the public for domestic, agricultural, pastoral, horticultural, veterinary, photographic or industrial purposes or for the destruction of pests.

S7	50mg/kg	Dangerous poison Not to be taken Keep out of reach of children Read safety directions before opening.	Substance or preparations of exceptional danger which require special precautions in manufacture and use for which special individual labelling and distribution regulations may be required.
----	---------	--	---

<b>Unscheduled (Exempt) Poisons</b>	
Ally	Herbicide
Amprolmix	Animal health — coccidiostat
Aquasol	Fertiliser
Bayleton 125	Fungicide spray
BS 1000	Wetting agent (biodegradable)
Calcigol	Animal health — cattle (milk fever)
Citowet	Wetting agent
Copper Oxychloride (numerous product names)	Fungicide
Couch Grass Killer	Herbicide
Dacthal	Herbicide — garden
Dacthal W750	Herbicide-fungicide
Derris Dust	Insecticide
Devrinol	Herbicide
Dipel HG	Insecticide — biological
Diuron (numerous product names)	Herbicide
Exhelm-E	Animal health — sheep, goat, cattle (drench)
Ferrosan	Animal health — iron supplement
Gesamil 50	Herbicide
Gesatop	Herbicide
Hibitane	Antiseptic
Karmex	Herbicide
Kerb	Herbicide
Lime Sulphur	Fungicide
Natural Insect Spray Natural Insect Dust	Insecticide
Nuvanol	Insecticide
Oticure	Animal health — eye drops
Pink Eye Aerosol (Terramycin)	Animal health — pink eye
Piperazine (numerous product names)	Animal health (drench)
Pottie's Green Ointment	Animal health — cattle

<b>Unscheduled (Exempt) Poisons</b>	
Rintal	Animal health (drench)
Rovral	Fungicide
Selenium Drench	Animal health (drench)
Seradix	Animal growth regulator
Stericide	Antiseptic
Stockholm Tar	Animal health
Stres-Ade	Vitamins
Sulfine	Fungicide-miticide
Sumisclex	Fungicide
Thibenzol	Animal health (drench)
Top Hydroponic Nutrients	Fertiliser
Treflan	Herbicide
Tridan	Herbicide
Trifuralin (numerous product names)	Herbicide
Ustilan	Herbicide
Vetrazin	Insecticide
Vita Stress	Animal health (vitamin)
Vitamin B12	Animal health (vitamin)
Vitrate	Animal health — calf scours
Wettable Sulphur	Fungicide
Yield	Herbicide

<b>Schedule 2 Poisons</b>	
Betadine	Antiseptic
Cabbage Dust	Insecticide
Carbaryl (numerous product names)	Insecticide (dust or spray)
Garden Spray & Dust (many products)	Insecticides and fungicides
Malathion (numerous product names)	Insecticide

<b>Schedule 4 Poisons</b>	
Calf Span Tablets	Animal health — cattle (calf scours)
Embazin	Animal health — poultry coccidiostat
Glanvac-3	Animal health — vaccine
Glanvac-6	Animal health — vaccine

<b>Schedule 5 Poisons</b>	
2, 4-D Amine	Herbicide
Alfacron 500	Insecticide
Amicide 500	Herbicide
Amitrol Plus	Herbicide
Amitrole T	Herbicide
Amizine AA	Herbicide
Bantox AA	Herbicide
Banweed	Herbicide
Baysol	Insecticide — snails
Baytex 550	Insecticide
Berg Oil	Animal health — bloat control
Bordeaux Powder	Fungicide
Cit-Tite	Growth regulator —plants
Comkil	Herbicide
Cyperderm	Insecticide — sheep (lice control)
Dacamine 4-D	Herbicide (selective)
Dipjet	Insecticide — sheep, cattle, pig
Embutox 40	Herbicide
Etazine	Herbicide
Fix Ant	Insecticide
Fly Strike Powder	Insecticide — sheep
Gesapon 800	Insecticide
Glean	Herbicide (cereal)
Glyphosate 360	Herbicide
Hoegrass	Herbicide
Kelthane	Insecticide-miticide
Lawn Beetle Bombs	Insecticide
Lebaycid	Insecticide
Mancozeb (numerous products)	Fungicide
MCPA (numerous product names)	Herbicide
Neocid	Insecticide
No Grow	Herbicide
Nucidol	Insecticide — parasites
Ridomil Plus	Fungicide
Roundup	Herbicide



<b>Schedule 5 Poisons</b>	
Rubigan	Fungicide
Sencor 700	Herbicide
Shamrox	Herbicide
Stomp	Herbicide
Thistle Killem	Herbicide
Tomato Set	Growth Regulator — plants
Top Clip Blue Shield	Insecticide — sheep
Top Clip Purple Shield	Insecticide — sheep
Top Clip Dridress	Insecticide — sheep
Tordon 50-D	Herbicide
Vorox AA	Herbicide
Weedaway	Herbicide
Weedazol TL Plus	Herbicide
Zero Weedspray	Herbicide
Zineb	Fungicide
Ziram	Fungicide

<b>Schedule 6 Poisons</b>	
Avomec	Animal health — cattle, antiparasitic injection
Banvel Broadside	Herbicide
Benlate	Fungicide
Bio Mal Spray	Insecticide — birds
Bravo	Fungicide — tree spray
Bromakil	Rodenticide
Cooper's Clout	Insecticide — sheep dip (pour on)
Cooper's Warbex	Insecticide — cattle (pour on)
Cooper's 4 in 1	Insecticide — sheep dip
Delan	Fungicide
Dimethoate	Insecticide (systemic)
Fenitrothion 1000	Insecticide
Folithion (numerous product names)	Insecticide
Formalin	
Fumitoxin	Insecticide (fumigant)
Fusilade	Herbicide
Garden Fungicide	Fungicide

<b>Schedule 6 Poisons</b>	
Gastion	Fumigant
Imidan	Insecticide-miticide
Ivomec	Animal health — sheep (drench)
Malatroy	Insecticidal wash
Malawash (numerous products)	Insecticide
Mesurol 750	Insecticide — snails
Meth-Weed	Herbicide
Metham	Fumigant — soil
Nilverm	Animal health — pig, poultry wormer
Orchard Spray V2	Insecticide-fungicide
Out Flank	Insecticide
Panacur	Animal health (drench)
Phostoxin	Fumigant pellets
Porect	Insecticide — pigs
Ratsak	Rodenticide
Ripercol	Animal health (drench)
Rogor	Insecticide
Roxion Dimethoate	Insecticide
Snail Pellets (numerous product names)	Insecticide — snails
Sulfa-Quin	Animal health — coccidiostat
Sulphamezathine	Animal health — poultry
Systemex	Animal health — drench
Terramycin (pink eye, numerous brands)	Animal health — pink eye
Terrazole	Fungicide
Thiram	Fungicide
Tiguvon	Insecticide — cattle
Wormex	Animal health — sheep (drench)

## **6.5 Approval Request Application Form**

A proforma for an application to add a substance to the Agricultural Education Approved List appears on the opposite page.

The process should only be commenced if the criteria for approval can be met.

# APPLICATION FOR A SUBSTANCE TO BE ADDED TO THE AGRICULTURAL EDUCATION APPROVED LIST

*\*Please use block letters when filling out this form*

Trade name of substance:

Chemical name:

Manufacturer and/or importer/distributor:

Chemical ingredients:

Proposed use:

Sizes/quantities of product available:

Reason(s) for wishing to use this substance instead of others available on the Approved List:

*Before applying, check the approval criteria in DETE'S OHS&W Manual, Agricultural Education Guidelines.) Send two copies of this application, with a copy of the MSDS attached, to the Hazardous Substances Project Officer, Occupational Health Services Unit, Central Office. Retain a copy for the workplace.*

Applicant: .....

Agricultural Education

Coordinator: .....

Date: ...../...../.....

School: .....

Address: .....

.....

Telephone: .....

Fax: .....

*\*Please attach a copy of the MSDS to this application form.*

**OFFICE USE:**

Substance approved: .....

Authorised by: .....

Not approved: .....

Signature: .....

Allowable maximum quantity storage is: .....

## 6.6 Storage and Handling of Hazardous Substances

### 6.6.1 Bulk Fuel

- Under the Dangerous Substances Act–1979, diesel is classified as a combustible liquid, and as such is not covered by regulations controlling storage amounts. It needs to be stored in a safe manner with procedures in place to deal with spillage and disposal.
- Class 3 volatile or flammable liquids (eg. petrol) require a licence if more than 120 litres is stored (in containers of not more than 60 litres each). For further information contact the Department for Industrial Affairs' Dangerous Substances Branch — Tel: 2071805.

### 6.6.2 Agricultural Chemicals

#### Classification

Chemicals used in agriculture usually fall into one of several major categories as follows:

- |                 |                         |
|-----------------|-------------------------|
| • antibiotics   | • coccidiostats         |
| • fertilisers   | • insecticides          |
| • fungicides    | • growth promoters      |
| • herbicides    | • Growth regulators     |
| • miticides     | • therapeutics          |
| • parasiticides | • veterinary chemicals  |
| • fumigants     | • vaccines and antisera |

1. Although all agricultural chemicals pose some degree of hazard if handled carelessly, this hazard can be minimised by adopting the correct precautionary measures in use and storage. Apart from the health aspects, agricultural chemicals, if not stored adequately, may deteriorate, resulting in a financial loss to the owner. Labels should therefore be referred to for instructions about specific storage conditions which may be necessary for some products.
2. Because of the wide range of conditions under which agricultural chemicals may be stored after they leave the manufacturers, they are usually formulated and packaged to give the best possible shelf life.
3. Product deterioration may be minimised if the containers are stored under optimal conditions. However, two years is regarded as a reasonable shelf life for pesticides though many products will retain their quality for a number of years. To minimise deterioration and to ensure safe storage, the following guidelines should be observed.

#### Storage Guidelines

Most agricultural pesticides are toxic, and safety is the most important consideration in choosing adequate storage facilities. However, the effects of storage conditions on the shelf-life of a product must also be considered. Some pesticides have specific storage requirements; these will be clearly stated on the label and should be followed. In the

absence of such statements, pesticides should be stored in buildings which provide the following:

**Security:** The storage facility should be inaccessible to children and be locked when not in use.

**Isolation:** Isolation from other farm buildings, especially dwellings, is a protection against accidental contamination and against fire.

**Ventilation:** Adequate natural ventilation (not dependent on electricity supply) to remove accumulated vapours or dust is desirable.

**Resistance to fire:** Mainly to minimise accidental volatilisation of the pesticide.

**Insulation from temperature extremes:** Both very low temperatures and very high temperatures can disrupt formulations of affect decomposition and/or volatilisation of the active ingredient.

**Protection from moisture:** Spillage from cardboard containers which burst when wet can cause accidental distribution and/or decomposition of some pesticides.

**Restriction of movement of spilled pesticide:** Impervious floors, dwarf walls and door sills, and subdivision of floor area in large storage's may be required to restrict movement of spilt pesticide.

**Separate storage of herbicides:** To avoid confusion or contamination with insecticides or fungicides.

\* All pesticides should be stored in their original labelled containers, on shelves or pallets. *Never store pesticides in containers recognisable as being used for food, drink or non-toxic substances.* A reasonable period of storage of pesticides is governed by both the shelf-life on the product, and the life of the container. Under normal storage conditions, pesticides should retain their efficacy for at least two years but some products may start to decline after 12 months. In general, do not purchase more than the current season's requirements. For specific pesticide requirements, consult the supplier.

## Buildings

1. Use fire-resistant materials such as steel frame, galvanised iron and concrete flooring.
2. Comply with State or Local Government requirements regarding siting and construction.
3. Always keep storage buildings locked when unattended.
4. If the above standard cannot be met, then the toxic chemicals should be stored in a locked, ventilated cupboard in a shed or the storage shelves should be isolated by a steel mesh lockable enclosure.

***Hazardous substances must not be stored in main teaching and activity areas of agricultural sheds.***

### Location

- Storage buildings should be located well clear of residential or animal buildings, in a shady area and in a well-drained position away from water courses, drains, etc.

### Precautions

1. Together with the storage guidelines described throughout this section, precautions in case of accident should be taken — ie. a fire extinguisher and a supply of lime should be available in the storage area. The Agricultural Veterinary Chemicals Association (AVCARE) document “Disposal of Spills” or similar should also be readily available in this area.
2. Special storage instructions, which may appear on the label, must be followed.
3. The following rules for safety should be displayed in every work area, truck and storage area where pesticides are handled:
  - \* Wear impervious gloves and other prescribed protective clothing when handling pesticides, particularly a respirator when recommended.
  - \* Do not handle containers roughly or carelessly.
  - \* Ensure that bungs, lids or other closures are secure.

### Fire Hazards

1. Compounds containing oils or aromatic distillates are likely to carry warnings which read “Warning — keep away from heat and naked flames”. However, some powder formulations also present fire and/or explosion hazards. Examples are herbicides, desiccants, defoliantes and soil sterilisers containing sodium chlorate.
2. When a container of sodium chlorate is opened, the entire contents should be used. Do not store partly used containers of this material.
3. Further information on storage can be obtained from the Department for Industrial Affairs and Department of Primary Industries

### Reducing Storage Hazards

1. Inspect containers periodically for leaks or tears.
2. Do not store protective clothing and equipment in chemical storage areas — keep them separate as, for instance, respirators can absorb harmful vapours which render them useless, even if they (unsealed respirators) have not been used.
3. Always store products in original, labelled containers and avoid damage to labels.
4. Pesticides and empty pesticide containers must not be stored near food or drink (including that of animals).
5. Do not keep food, drink, cups or cutlery in storage areas or in work clothes.
6. Eating and drinking must be prohibited in storage areas.
7. Herbicides or defoliantes must not be stored in the same area as insecticides.
8. Never transfer chemicals to food, feed, medicine or drink containers.
9. Rotate stock — store to allow for oldest to be used first.
10. Store containers so air flow is not impeded.
11. In case of leakage or spillage, keep people and animals away from the area, report immediately and decontaminate thoroughly.
12. Inspect vehicles for contamination after unloading. Do not permit a contaminated vehicle to leave without treatment.
13. Do not rub the eyes or touch the mouth while working with pesticides.
14. Wash hands thoroughly before eating and drinking or using a toilet.

### Storage Life of Pesticides

1. Some pesticides are very stable and can be stored for a number of years with little or no chemical change. Some of the organophosphorous compounds such as parathion, however, have a considerably shorter storage life. Atmospheric conditions such as high temperature, high humidity or sunlight may bring about a chemical change causing breakdown or degradation of such materials, especially when they are in wettable powder or dust formulations.
2. If a pesticide has been stored for some time and doubt exists as to its effectiveness, dispose of it in an appropriate manner.
3. Prolonged storage of some liquid concentrate formulations at low temperatures may result in changes in the chemical and/or physical properties of the formulation and, packaged in airtight containers, they may retain their effectiveness for several years if kept sealed.

## 6.7 Agricultural Chemical Use — Essential Precautions

### 6.7.1 Consultation and Documentation

Consultation with others in the workplace is essential before commencing application of agricultural chemicals. Health and safety representatives are useful contacts in this regard. Other aspects to be considered include hazard assessment, advisory signs referring to spraying activities, environmental protection issues, specifications for the chemical mixing area, personal protective equipment and proper clean-up facilities.

*It is imperative also to have in place the means of dealing with chemical spillages.*

*Another essential aspect is the documentation in detail of spraying activities and the organisation and preservation of these records-i.e a Spray Register*

### 6.7.2 Mixing and Application

Exposure to pesticides in spraying operations may occur before mixing commences, during mixing and spraying and after spraying. Agricultural chemicals are usually diluted or dissolved in an aqueous or organic solvent before use in spraying. The nature of this solvent may play an important role in increasing the toxicity of chemicals, especially if they are organic.

Organic solvents will increase the potential for absorption through the skin, by inhalation or orally, thus exacerbating symptomatology. In addition, many have significant toxic potential themselves. Skin contamination (hand to eye, skin, face) inhalation and oral ingestion (including hand to mouth) are the most common exposure hazards during operations.

**It is recommended that the following precautions are used during all of these operational phases.**



### 6.7.3 Chemical Use Flow Chart

#### Steps to be taken Preceding Chemical Use

*If any concerns or difficulties arise at any stage of a step, do not proceed to the next step unless the matter is resolved and documented. .*

#### Step 1:-

### DECIDING

#### Steps to be taken when deciding whether or not to use chemicals

- \* Are you carrying out an environmental monitoring program?
- \* Does the situation warrant use of chemicals?...and, if so, do you have the correct Personal Protective Equipment, and facilities to use and store the substance(s) as indicated in the MSDS?
- \* Can alternative substances be used?
- \* Do you need further advice from resource people, e.g. Dept. of Agriculture, Food, and Fisheries?.

#### Step 2:-

### PLANNING

#### Steps to be taken before working with chemicals

- \* Select correct, least toxic chemicals from "Approved Substances" list.
- \* Calculate the minimum amount of chemical you require to complete the task and purchase that amount.
- \* Plan for the best time to apply chemicals to minimise risk of exposure to humans and animals, eg. Friday afternoons and weekends.
- \* Plan for the best climatic conditions, eg. to minimise spray drift.
- \* Ensure that you have the appropriate machinery and it is in good repair for applying chemicals

#### Step 3:-

### PREPARING And MIXING

#### Steps to be taken when preparing chemicals for application

Have you:

- \* Read the instructions on the label re first aid, mixing and application of chemicals, emergency procedures etc?
- \* The right protective clothing to wear for safe mixing, eg. respirators and PVC gloves? **Refer to 2.3 Respirator types**
- \* Ensured the appropriate location and facilities — eg. shower, spillage control etc?
- \* The right climatic conditions for mixing, eg. ventilation, temperature, humidity?
- \* The correct equipment for chemical application?

#### Step 4:-

### APPLYING

#### Steps to be taken when applying chemicals

Do you:

- \* Have the right protective clothing?
- \* Know how to use the machinery?
- \* Limit exposure of chemicals to any part of the body by not eating or smoking while applying chemicals?
- \* Check for spray drift and presence of humans and animals during application?
- \* Monitor that climatic conditions are still suitable?

**Step 5:-  
COMPLETING  
And  
CLEANING**

**Steps to be taken after completing chemical application**

Have you:

- \* Cleaned the equipment appropriately?
- \* Put excess chemical concentrate away in correct storage facility with correct labelling?
- \* Cleaned yourself thoroughly by showering with warm water and soap?
- \* Laundered clothing in the correct manner?
- \* Disposed of empty chemical containers in the correct manner? **Refer to MSDS>**

#### 6.7.4 Spraying

##### Factors to Consider When Planning to Spray

***Do not spray when:***

- \* children are present without protective clothing
- \* feeling unwell — check symptoms
- \* inadequate personal protection is available
- \* it is a dead calm day nor a gusty day (steady wind direction necessary)
- \* it is a hot day
- \* instructions are not clear or not available
- \* other means of control are available
- \* neighbourhood activities would result in a possible exposure to chemicals
- \* there would be insufficient settlement time — eg. better to spray on a Friday
- \* there is a possibility of drift affecting other properties or persons
- \* children are present during school hours (plan for weekends or holidays).

##### Before Mixing

The following precautions cover possible pesticide hazards to which persons could be exposed.

***Mixing should be the last thing you do.***

1. Ascertain that weather conditions are suitable for the intended spraying operation.
2. Consult locals re future activities which may coincide with spraying program.
3. Notify surrounding occupants.
4. Provide pesticide which has official label recommendations for the proposed use.
5. Ensure that mixing equipment is adequate and effective.
6. Read the label carefully and prepare to follow the safety and usage directions.
7. Check that there is a readily available supply of or obtain a supply of atropine tablets, syrup of ipecac or other first aid treatment substances advised on the label of the chemical to be used.
8. Depending on the toxicity of the pesticide, the formulation being used and anticipated degree of exposure, choose the required protective clothing and equipment.
9. Consider contingencies (eg. spillage control) before proceeding.

### **While Mixing**

It is recommended that the following precautions be taken for mixing the spray material.

1. Check that you are in a wellventilated space and position yourself upwind in a steady air flow (ie. not calm conditions).
2. Read the label again and be prepared to follow directions and precautions given.
3. Remember there is more likelihood of a chemical entering the body through the skin than any other route.
4. Wear clean, protective clothing and equipment recommended on the label.
5. Use PVC gloves, goggles, face shield, overalls and rubber boots when handling moderately toxic materials even if the label does not call for them.
6. Do not eat or drink during mixing operations.
7. Plan to mix only enough spraying mixture for the job.
8. Transfer concentrate by placing pump in original drum and pumping into closed mixing container.
9. If less than a complete drum is needed for one load, carefully transfer the required quantity into a clearly marked, open top drum. Transfer from this container to the mixing tank by means of a pump.
10. Follow the mixing instructions on the label carefully.
11. Do not combine pesticides unless the combination is recommended on the label.
12. Rinse empty pesticide containers with water three times, adding washings to the mixing tank.
13. Be aware of spillage requirements specific to that chemical.
14. If a concentrate is spilled or splashed on overalls (or clothes) immediately remove, wash self thoroughly with soap and water, eyewash and shower and put on clean overalls (or clothes).
15. If concentrate is spilled on work area, clean it up immediately after attending to oneself.
16. An ED 155 report should be completed.

### **While Spraying**

1. Wear protective clothing (overalls, gloves, respirator, boots or impervious shoes).
2. Early morning is the ideal time.
3. Spray in calm conditions if possible.
4. Follow the label advice and instructions carefully.
5. Be alert for symptoms of poisoning.
6. Anticipate problems such as a burst hose or loose nozzle.
7. Post signs stating, "Hazard — Spraying in Progress" on nearby glasshouses, paddock gates etc. and notify other employees and area users as appropriate.

### **After Spraying**

- Clean up thoroughly.
- Post signs stating "Hazard — Freshly Sprayed".

### 6.7.5 Stock Control

1. Workplaces should store the minimum quantity and range of hazardous substances appropriate to their needs. A stock reduction strategy is one of the most useful approaches in controlling the hazardous substances inventory. A useful rule is ‘one job — one product’.
2. *A stocktake of hazardous substances must be undertaken at the end of every year and unwanted stock disposed of, and records of stocktake and disposal are maintained in a register.*
3. Stocktaking will not be a major procedure if workplaces stock the *minimum range and quantity* of hazardous substances.
4. Stock should not be stored beyond its shelf life or as recommended on the label.
5. Some veterinary chemicals need to be kept refrigerated and will break down quickly if not kept as required under label conditions.

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- \* - Safety Operating Instructions Charts
- \* - Safety Handbook, Technology Studies Teachers Association
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- OHS&W Guidelines Refer to DECS Website at :-

<http://www.dete.sa.gov.au/ohsw>

for on-line versions of guidelines for :-

- Agricultural Education
- Support Services and Photocopy Rooms
- Home Economics
- Performing Arts
- Physical Education
- Science
- Special Education
- Technology Studies
- Visual Arts

### • POLICIES

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- \* Accident-Incident Reporting and Investigation Policy
- \* Asbestos Management Policy
- \* Counselling and Rehabilitation Policy and Information Kit
- \* Hazard Management Policy
- \* Heat Stress Policy
- \* Infection Control Policy
- \* Long Distance Driving Policy
- \* Managing External Contractors and other Service Providers Policy
- \* Manual Handling Policy
- \* Occupational First Aid Policy
- \* Psychological Health Policy
- \* Purchasing and Supply policy
- \* Training Policy
- \* Ultra-Violet Radiation – Sun Protection Policy

\* Working in Isolated Circumstances Policy

• **GUIDELINES**

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- \* Risk Assessment for Hepatitis

• **PROCEDURES**

- \* Confined Space Procedure
- \* Driving Procedure
- \* Electrical Testing Procedure
- \* Hazard management Procedure
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- Noise Control in Industry
- Occupational Safety and Health
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