MINISTRY OF HUMAN RESOURCES MALAYSIA
DEPARTMENT OF OCCUPATIONAL SAFETY AND HEALTH

Guidelines

On Occupational Safety And Health In Agriculture

UNDP

UNITED NATIONS DEVELOPMENT PROGRAMME
OCCUPATIONAL SAFETY AND HEALTH INSTITUTIONAL CAPACITY BUILDING

GUIDELINES ON OCCUPATIONAL SAFETY AND HEALTH IN AGRICULTURE

Department of Occupational Safety and Health
Ministry of Human Resources Malaysia
UNDP Project MAL/99/006/A/01/NEX

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FOREWORD

The agricultural sector plays a vital role in the Malaysian economy. In the year 2000 agriculture contributed 8.7% to the GNP. Agriculture contributed RM22.9 billion in export earnings and employed 1.4 million workers. During the Third Outline Perspective Plan Period (2001 – 2010)(OPP3) agriculture will be promoted as an important area of growth. The Third National Agricultural Policy will focus on restructuring and modernizing the agricultural industry. The aim is to make agriculture a more dynamic and competitive industry, with an emphasis on market driven improved productivity. Mechanization and large-scale commercial production of foodstuffs will be encouraged under the policy. Integrated systems, such as multiple crop farming and plantation activities combined with livestock rearing will be especially encouraged.

To ensure that the OPP3 planning is successful, all resources needed for implementation must be available. The safety and health of our most important asset, the farmer, must be ensured. The reality is that the agricultural industry has some of the most dangerous workplaces in Malaysia with the second highest accident rate of all industry sectors. The Department of Occupational Safety and Health Malaysia (DOSH) are actively working with her social partners to improve safety and health in agriculture. Your wellbeing is important to us at DOSH and we have strong and effective laws governing safety and health. What is more important is a "culture of safety" where people work in a safe way because that is the way they prefer to work.

This booklet is design to provide practical information about working safely, the legal duties of persons who manage farms and advice about a range of farm safety topics. From time to time this booklet will be reviewed and we at DOSH would welcome written comment to help make the booklet more comprehensive and informative.

Director General
Department of Occupational Safety and Health
Malaysia

CONTENT

INTRODUCTION

This book is for people working or living on farms, and for those who manage or work in other agricultural enterprises, such as orchards, market gardens and plant nurseries.

The book is designed to provide practical information on managing farm safety, the legal duties of those who work on farms and on a range of farm safety topics.

Under the *OCCUPATIONAL SAFETY AND HEALTH ACT 1994*, employers, employees and self employed persons in Malaysia have a duty of care towards their own safety and health, and to that of others at their workplace. Similarly, designers, manufacturers, and suppliers of buildings, plant, substances and equipment also have a duty of care to the safety and health of the people who use these products.

Under the *OCCUPATIONAL SAFETY AND HEALTH ACT 1994* employers now also have an obligation to identify workplace hazards, to assess the associated risks and to minimise those risks. These procedures are also known as risk management.

1. **Identify the hazard** - before it causes injury or harm.

2. **Assess the risk in two ways** –
   - how likely it is to cause injury or harm?, and
   - how serious would the consequences be, if the accident happened?

3. **Make the changes** - minimise the risk of injury or harm to an acceptable level.

4. **Review the changes** - to ensure they are effective

In Step 1, farmers or managers are advised to make regular hazard spotting surveys, focusing on farm tasks, plant, equipment and substances. Special attention should be paid to hazards that have already caused injuries or near-miss incidents. Employees and family members should be encouraged to report hazards that could cause injury or harm.

In Step 2, having identified a hazard, the next question is, how immediate is the risk of injury or harm and how serious could the injuries be if an accident occurred.

In Step 3, what is the best way to reduce or remove the Hazard? Assessing risks is usually more successful if discussed with others working or living on the farm. Once a hazard has been spotted and a solution found, the changes should be made as quickly as possible.

In Step 4, Each solution should be reviewed at regular intervals to ensure the changes have been successful and risks have been minimised.

The book is divided into four sections:

Section 1 - Managing Farm Safety... explains how to develop a farm safety management program, incorporating the four risk management steps.

Section 2 - Your Legal Duties... explains how the *OCCUPATIONAL SAFETY AND HEALTH ACT 1994* apply to people in the farming industry.

Section 3 - Safety Topics... includes 18 topics on different aspects of farm safety. Farmers can use these topics as part of the induction-training program for themselves and other people working on the farm. Induction should include sufficient information, training, and supervision to enable workers to do their work without risk of injury or harm.

Section 4 - Safe Use of Tractors... provides a general overview on how to safely operate and maintain tractors. Accidents involving a tractor are the main cause of work-related fatalities on farms.

The *OCCUPATIONAL SAFETY AND HEALTH ACT 1994* can be purchased from,

National Institute of Occupational Safety and Health
Lot 1 Jalan 15/1 Section 15
43650 Bandar Baru Bangi
Selangor.
Tel : 03- 8929 6631
Fax : 03- 8926 5900
E-mail : asniosh@po.jaring.my

Or

At any large bookshop

SECTION 1 - MANAGING FARM SAFETY

Safety on a farm works best if the person or people in charge take a leading role in managing safety and health.

Many business enterprises in Malaysia have proved that good safety management leads to increased productivity, and the same works for farms.

By having a good safety management program, you cannot only avoid farm injuries, but also unplanned incidents that are costly, time consuming, stressful and inconvenient. This makes good economic sense.

How to Start

To assess safety management on your farm, check whether you have:

- Regular hazard spotting surveys of plant, equipment, substances, and tasks.
- Systems for recording injuries, near misses and identified hazards.
- Safe procedures for farm tasks.
- Safety training and supervision for new and young employees.
- Protective clothing and equipment.
- Safety training and practice for each new item of plant and equipment.
- Safety discussions between all persons on the farm.
- Safety information readily available for plans, equipment and hazardous substances.

Develop a Plan

Draw up a safety management plan covering the points listed above. Preferably, put your plan in writing, and keep it with other safety information about plant, equipment, and substances on the farm.

Discuss it with others on the farm during development, and ensure their safety concerns are met. Make sure the plan allows for ongoing safety consultation with others, the provision of information and training, and a system for hazard identification, risk assessment, and risk control.

Then make sure employees and others on the farm are familiar with the plan, safe work procedures, and current legal safety and health requirements.

The plan should cover providing farm workers with safety information, training for people new to your farm, safety training with new plant and procedures, special safeguards for young workers, and keeping a record of injuries, near misses and potential hazards.

Consultation

Consultation means discussion - talking about and reaching agreement on safety and health problems and solutions with others doing the work. Here are some guidelines:

- Allow others on the farm to discuss and contribute to the safety management plan.
- Make sure everyone on the farm knows and understands the safety rules you have agreed to, and is aware of the relevant workplace safety laws.
- Involve others in safety planning for new plant or equipment before it is ordered.
- Discuss unfamiliar or potentially risky farm tasks beforehand, and plan an agreed safe procedure.
- During shared tasks, communicate with one another continually to avoid risky situations.
- As far as possible, keep to agreed safety plans for each job.
- Following any injury or near-miss incident, no matter how minor, discuss and agree on a safer way to continue the work.
- Be prepared to stop work until suitable safety improvements can be made.

Spot the Hazard

The best safety outcomes on farms are achieved by a 24-hour approach to spotting and dealing with hazards. A hazard is any situation, activity, procedure, plant, equipment, or animal that may result in injury or harm to a person. Hazards may be identified in:

- Environments (light, noise, rain, heat, sun),
- Substances (pesticides, fuels, dusts),
- Workplace layout (work space, bench height, storage heights),
- Work organisation (unnecessary manual handling),
- Equipment (ladders, silos, chainsaws, angle grinders),
- Farm animals (that bite, kick, butt, crush, toss, infect),
- Heights (access to roofs, tall machines and silos),
- Electricity (switches, cables, leads, power tools, connections),
- Lack of employee training and supervision,
- Lack of safe procedures,
- Children in workplaces.

***How to Spot Hazards**

- Observation - use your senses of sight, hearing, smell and touch - combined with common sense, knowledge and experience.
- Chemical safety data sheets (CSDSs) - obtain them from manufacturers and suppliers of hazardous chemicals. Read them carefully to identify possible harm from hazardous substances, and precautions that need to be taken.
- Hazard and risk surveys - conduct hazard spotting surveys of main work areas. Talk to others about their safety concerns; check injury and incident records.
- New tools, plant and substances

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- Hazard and risk surveys - conduct hazard spotting surveys of main work areas. Talk to others about their safety concerns; check injury and incident records.
- New tools, plant and substances – check manufacturer's safety instructions, provide information and training for workers.
- New employees – ensure adequate information, training, and supervisor for new employees.

- Children and visitors - include in your surveys areas and activities in which children or visitors could be at risk.
- Discussion groups - are useful for identifying hazards and recommending solutions.
- Safety audits - consider hiring a consultant to investigate safety and help prepare a management plan.
- Information - keep informed about hazards in the industry through the latest available information.
- Record analysis - keep records of identified hazards, near misses, injuries and workers' compensation claims, to help identify possible trends.
- Consumer information - carefully read and follows consumer guidelines on equipment and substances.
- Malaysian legislation- becomes familiar with the Occupational Safety and Health Act 1994.

SECTION 2 – YOUR LEGAL DUTIES

Assess the Risk

Once a hazard has been identified, the likelihood and possible severity of injury or harm will need to be assessed, before determining how best to minimise the risk. High-risk hazards will need to be addressed more urgently than low risk situations.

You may decide that the same hazard could lead to several different possible outcomes. For each hazard consider how likely each possible outcome is, and record the highest priority you come up with. The following list may help your decision.

Make the Changes

Consider the following control measures, listed in order of importance.

a) Remove the hazard at the source - eg. Get rid of the plant or substance.
b) Substitute it with a less hazardous item of plant or substance.
c) Isolate the hazardous process, item of plant or substance from people.
d) Add engineering controls, such as safety barriers or exhaust ventilation.
e) Adopt safe work procedures, training and supervision to minimise the risk.
f) Where other means are not sufficient or practicable, provide personal protective equipment.
g) Implement and monitor the controls you decide upon.

One or more of the controls recommended above should be agreed upon, and the changes made as soon as possible, before the hazard causes an injury.

Checking the Changes

To make sure risk has been minimised, and a further hazard has not been created, the new safety measures may need to be carefully tested before people are allowed back onto a worksite or before work recommences. Consultation between the employer and others at the workplace will help to reach a safe decision.

- In some cases, a new set of safe work procedures may be necessary, possibly even another period of training and supervision, until the improvement can be shown to be working safely.
- Safety improvements should be reviewed periodically, to make sure they continue to be effective.

- Self-employed farmers, farm managers, employers and employees all have legal responsibilities to make the farm safe. This includes people running the family business or working for themselves on their own property.
- Manufacturers, importers, suppliers and installers of substances, materials, buildings, plant and equipment, and other people in control of farming workplaces can also have legal responsibilities relating to workplace safety on farms.
- Malaysian Occupational Safety and Health Act 1994 - Every employer is required under Section 32 of the Act to notify the nearest occupational safety and health office of any accident, dangerous occurrence, occupational poisoning or occupational disease which has occurred or is likely to occur.

These laws also covered people who live on or visit farms, whether they work there or not.

Employers

Employers must take all practicable steps to ensure employees are not exposed to hazards. Their responsibilities include:

- Maintaining work areas, machinery and equipment in a safe condition;
- Organising safe systems of work;
- Providing adequate information, instruction, training and supervision to enable employees to work safely;
- Ensuring employees are aware of potential hazards;
- Providing adequate protective clothing and equipment (eg. ear plugs, goggles, respirators, etc) where other measures to eliminate or control risks are impracticable or inadequate;
- Consulting with employees on safety and health matters;
- Making sure equipment and materials are used, stored, transported and disposed of safely; and
- Identifying hazards, assessing risks and controlling hazards on the farm.

Employees

Employees must take reasonable care to protect their own safety and health and the safety and health of others. These responsibilities include:

- Following safety instructions;
- Using and looking after protective equipment as instructed;
- Informing the employer of hazards; and
- Cooperating with the employer on safety and health matters.

Employers and Self-Employed Persons

Employers and self-employed persons have a responsibility to take reasonable care to ensure their own safety and health at work. They must also ensure, as far as practicable, that the safety and health of other people is not at risk through their actions or the actions of their employees.

Contractors

If you engage contractors or sub-contractors, for example an electrician, you have the same responsibilities to them and their employees as if you were their employer. This applies only to matters that are, or should be, under your control. Contractors and subcontractors also have responsibilities as employers to their employees.

Manufacturers

Where machinery is used in a workplace, those who design, manufacture, import, supply, erect or install the machinery must make sure that operators are not exposed to hazards when they are using the machinery properly. Adequate information on safe use, safe maintenance and potential hazards must be provided when equipment is supplied and, later on, whenever requested.

Work Buildings

Any person who manages or controls a workplace is required to make it safe. People must be able to work there and to enter and leave the workplace safely. Architects, designers and builders of workplace buildings have responsibilities to make sure people who work in these buildings are not exposed to hazards.

Consultation and Cooperation

Cooperation and discussion are the keys to safety and health at work. Employers and employees must consult one another to resolve safety and health problems. The employer must establish a safety and health committee if there are more than 40(forty) employees at the workplace.

The role of the safety committee is;

a) Assist in cooperation and consultation between employer and employees in developing and implementing safety and health measures;
b) Keep informed on safety and health standards, and keep accessible safety and health information relevant to the workplace;
c) Make recommendations to the employer on safety standards, safety programs and procedures, and safety aspects of workplace changes; and
d) Consider matters referred to it by persons at the workplace.

Resolving Issues

The Occupational Safety and Health issues should be resolved through consultation between employers and employees or their elected safety and health representatives. Both parties should agree on procedures for resolving issues. If all attempts to resolve a safety or health issue at the workplace fail, an inspector from DOSH Malaysia should be contacted.

Refusal to Work In an Unsafe Situation

Employees have an obligation to advise their employer of any situation they believe would expose them or others to the risk of serious and imminent injury or illness.

Topic 1 Farm Chemicals -Storage and Disposal

Stored farm chemicals can cause injury or harm if spillages occur, containers leak, labels fall off, or untrained people including children have access to storage areas. Transport of chemicals, and disposal of chemical containers and other wastes, pose separate hazards that can also affect the environment.

Spot the Hazard

Read and follow labels and CSDSs (Chemical Safety Data Sheets) for information on hazards, personal protective equipment, and safe handling, transport, storage and disposal for each chemical. Ensure chemicals are stored in a lockable, well lit and well ventilated area, separated from other chemicals that may cause them to react dangerously. Be aware that solvents in some chemical concentrates can escape as harmful vapours unless containers are well sealed.

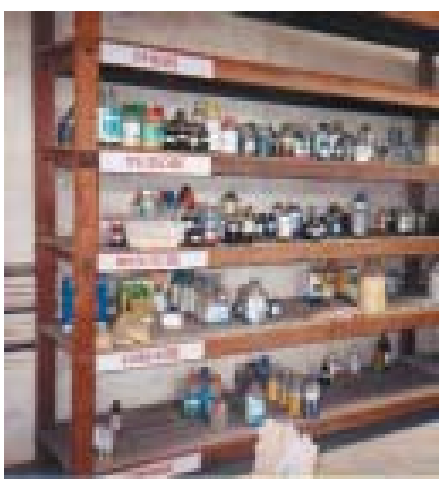
Assess the Risk

For each chemical hazard identified, assess the likelihood of an injury, harmful reaction or a hazardous incident occurring. Assess also whether any injury or harm is serious and imminent, and whether steps to minimise or eliminate the risk should be taken immediately. Consider proposed control measures for their likely effectiveness.

Make the Changes

Here are some ways of improving safety in the storage and disposal of farm chemicals.

- Store chemicals in a well ventilated, bunded, and well lit shed that is lockable and has an impervious floor and impervious shelving.
- Storage sheds must not be in flood prone areas.
- Check the label and CSDS for advice about storage.
- Store away from respirators, and other protective clothing and equipment.
- Ensure an emergency shower is available near the storage and mixing area.
- Keep pesticides separate from animal feeds, fertilisers, seeds and other chemicals.



- Ensure appropriate materials are located close by to clean up any spills. These may include soil, water, absorbent pillows, lime or sand.
- Store the chemicals in the original containers with labels intact and CSDS in a register nearby. If labels come off, always re-attach the label to the container.
- Never store chemicals in food or drink containers.
- Keep incompatible chemicals separated.
- Ensure that the storage shed is adequately signposted.

Disposal

- Check the label and CSDS for advice on disposal of chemicals and containers.
- Triple rinse empty containers to remove all traces of the chemical.
- Uncap, puncture and crush all rinsed containers to stop unauthorized use.
- Where possible return containers to the manufacturer or supplier.

Transport

- Avoid transporting chemicals with food, water, animal feed or other reactive hazardous substances.
- Secure hazardous substances on the vehicle so they can't move or fall.
- Keep a record of the chemicals you are carrying.
- Carry suitable personal protective equipment, including respiratory equipment if necessary, in case of emergency.

Care for the Environment

- Observe any warnings on the label regarding toxicity to non-target areas (animals or plants).
- Contact your local government authority or the Department of Environment for information on the procedures for safe disposal of containers or remaining chemicals.

Topic 2 Farm Chemicals - Pesticide Spray

Most pesticides and their sprays solutions are hazardous, and can cause injury or harm if not handled and applied correctly. Use them in accordance with labels supplied on containers, and with the more detailed chemical safety data sheets (CSDSs), available from your supplier.

Spot the Hazard

Read labels and CSDSs carefully. Check spray equipment, safe handling procedures, protective equipment, operator training and awareness, and supervision of new and young workers.

Be aware pesticides enter the body through:

- Absorption through contact with the skin and eyes;
- Inhalation of fumes, vapours and dusts;
- Accidental swallowing while eating, drinking or smoking.

Assess the Risk

Assess the effectiveness of protective equipment, decanting the chemical into a spray tank, spray and washdown procedures, operator training and safe practices. Check the toxicity of the chemical and likely operator exposure. Will blockages occur, requiring jets to be cleaned? Assess also the likely risk of contamination or poisoning occurring, and the severity of harmful effects to the operator. Finally, assess the effectiveness of proposed new safety measures.

Make the changes

Here are some ways of improving farm spray safety:

- Try to eliminate the use of pesticides through Integrated Pest Management (IPM);
- Use the least toxic pesticide available for effective control of insect, fungus or plant, as the case may be;
- Ensure only the recommended rate of pesticide is used;
- Wear protective clothing and equipment as described on the label and CSDS;
- Prepare only enough chemical for immediate use;

- Keep a record of each use and the results;
- Ensure equipment works properly and does not leak;
- Cover feed and water containers near areas where livestock are grazing;
- Don't eat, drink or smoke while pouring, mixing or spraying;
- Don't pour concentrated pesticide into tanks above shoulder height and use automatic pumping systems;
- Avoid working alone if you are using a highly toxic pesticide; or have some form of mobile communication; and
- Perform biological monitoring of employees when using organophosphate pesticides.

Spraying

- Spray with minimal drift and preferably in low wind conditions.
- Never spray in high wind conditions.
- Use mechanical suction to transfer pesticides to spray tank.
- A vortex system can be used to mix pesticide concentrate with water before filling the spray tank.
- Prevent nozzles blocking by using correct filters and pesticide formulation. Ensure water and equipment are clean.
- Clear blocked nozzles by using a soft bristle brush or compressed air. Never suck or blow nozzles to clear them.
- Observe the re-entry periods for crops that are sprayed as specified on the label or CSDS.
- Use tractors that have enclosed cabins with adequate filtration systems.
- Prevent pesticide spray drift onto nearby property, persons or roadside areas by:
  - Using pesticide formulations that help maintain droplet size;
  - Spraying in low wind conditions;
  - Using existing vegetation barriers to reduce possible spray drift; and
  - Communicating with people in the spray area or likely to be affected by spraying (including employees, neighbours etc), before spraying.

Clean up

- Thoroughly clean all spraying and protective equipment, where run-off will not create a hazard or contaminate the environment.
- Wash work clothing separately from domestic clothing, or use disposable clothing.
- Wash yourself well after a spray operation.
- After handling pesticides, wash hands with soap and water before eating, drinking, going to the toilet or smoking.

Take precautions

- Provide a first aid kit that includes a towel, clean clothing, a resuscitation mask for expired air resuscitation, disposable eye wash bottle and eye wash solution, soap, nailbrush, and clear instructions on what to do with this equipment.
- Keep fresh water close by for washing.
- Advise someone where you will be working and how long you intend to be gone and where possible have a mobile phone available for emergency calls.
- Have a family member or other person at the farm attend first aid classes.
- Check the labels, CSDSs or other safe handling guides for your pesticides, to ensure you have the correct antidotes, emergency equipment and facilities required by labels and CSDSs.
- Stop work immediately and seek medical attention if there is any sign of muscular spasm, blurred vision, excessive saliva or difficulty breathing. Suspect pesticide poisoning with any of these symptoms.
- If regularly using pesticides, an annual medical examination is recommended before and after the spraying season, and more frequently with some chemicals. Advise the doctor of your involvement with chemicals.
- For skin contact: Wash with soap and water, and rinse with clean water. Remove any contaminated clothing, and seek medical advice.
- For eye contact: Hold eye open under running water for 15 minutes. Seek medical advice.
- For swallowing: contact a doctor or the nearest hospital.

Topic 3 Skin Cancer From Exposure To Sun Light

Exposure to ultraviolet radiation from the sun is the main cause of skin cancers in people. Skin damage from the sun is cumulative - the longer the skin is exposed to the sun, the greater the risk of skin cancers, regardless of your tan or skin pigment. Rural workers have a high risk of getting skin cancers, as their work can expose them to long periods of ultraviolet radiation.

Spot the hazard

To help you spot skin cancer hazards, consider:

- Lack of shade in outdoor work areas;
- Reflective surfaces, eg water, cement, shiny metal or white painted sheds and silos, cement surfaces;
- What jobs are done in sunlight, and how long they take;
- What are the peak sun hours;
- What body surfaces are exposed to sunlight
- Whether sun block out is provided or used; and
- Whether protective clothing is available and worn.

Assess the risk

To assess the risk of skin cancer from identified hazards:

- Work out approximately how long is spent working outdoors each day;
- Identify what jobs are normally done in peak sun - between 10am and 4pm;
- Check whether shade is available for outdoor jobs;
- Check whether hats, protective clothing and sunscreens are adequate; and
- Check whether SPF15+ sunscreen is applied to all exposed skin areas.

Learn to identify various types of skin cancer, and check your skin for sunspots and unusual pigmentation.

- **Basal Cell Carcinoma**
  Starts as a small lump that flattens out as it grows. One of the two most common growths, it can be easily treated and cured.
- **Squamous Cell Carcinoma**
  The other most common growth; however it is more likely to spread to other parts of the body.

- **Malignant Melanoma**
  The most dangerous type of skin cancer. Often starts as a dark mole. This type is very dangerous and will result in death if left untreated.
- **Sunspot (Keratosis)**
  A small, scaly patch of skin occurring on the arms, face, nose and ears. They are not strictly a form of cancer, but indicate excessive exposure to solar UV radiation.

Be aware of short term injury risks:

- Reddened skin, blistering, swelling, and later, peeling of the skin.
- Photosensitization - acute skin reaction to UV with certain drugs, ointments, creams, and chemicals, resulting in increased sunburn and skin damage.
- Photo conjunctivitis and photokeratitis - sore, red, gritty swollen eyes, with sensitivity to strong lights.

Long term effects include:

- Premature ageing - wrinkling, wasting skin tissues, excessive pigmentation, spots marked by clusters of tiny blood vessels.
- Cataracts of the eye.

Make the changes

- Wear cool, protective clothing, ie. a shady hat, shirt with collar and long sleeves, and long trousers.
- Ensure sunscreen is re-applied during outdoor work.
- Use a sunscreen with a high sun protection factor (SPF 15+) before you go into the sun.
- Noses, lips, ears, bald heads, necks and backs of hands need extra protection.
- Reapply sunscreen regularly, especially if you are sweating.
- Make use of shade areas wherever possible in the high-risk hours.
- Use a tractor with shade protection fitted.

- To safeguard against cataracts, sunglasses that conform to Australian Standard 1067-1990 (or any other recognized international standard) are recommended.

Early signs

Check your skin for early signs of skin cancer:

- Any unusual skin conditions that don't heal in four weeks;
- Any sore, ulcer or scaly patch on the skin;
- A white patch on the lips that doesn't heal;
- Any mole that seems to grow quickly;
- Any mole that changes shape or colour;
- Any mole that bleeds or repeatedly itches.

If you find any of these signs, see your doctor.

Remember
Over-exposure to the sun's rays increases the skin cancer risk both now and in the future.

Topic 4 Heat Stress

The effects of heat stress range from simple discomfort to life threatening heat stroke. Heat stress causes increased sweating which leads to loss of body fluid and then reduced heat tolerance. This results in reduced capacity for work, inefficiency and increased risk of hazardous incidents. Heat stroke, a rarer condition, is when sweating stops and body heat rises. This is a life threatening condition, and requires immediate medical attention.

Spot the hazard

Heat stress hazards can occur through:

- high temperatures;
- high humidity;
- lack of air movement;
- unsuitable clothing;
- a person's lack of acclimatization;
- hot protective clothing or equipment;
- physical activity; or
- radiant temperature of surroundings.

Warnings

Warning signs of heat stress are:

- tiredness;
- headache;
- nausea;
- loss of concentration;
- muscle cramps; and
- dizziness.

Assess the risk

Using weather forecasts, availability of shade, knowledge of the job ahead, and an awareness of individual workers' heat tolerance, assess whether the day's tasks could cause heat stress or heat stroke. Consider ways of minimising or eliminating the risks. Those most at risk working in a hot environment is more likely to adversely affect people who are:

- overweight;
- medically unfit;
- not acclimatised to heat;
- unhealthy, particularly if suffering from heart disease; or
- dehydrated, whether from alcoholic hangover, failure to replace salt and water lost in sweat, or from medically prescribed diuretic drugs.

Make the changes

Indoors

- Open windows and doors to allow natural cross ventilation, or install air conditioning if practicable.
- Provide fans or ventilators to lower temperature and increase air movement.
- Insulate roof, walls or heat making equipment.
- Duct hot steam and gases outside to help reduce humidity and lower temperature.
- Install extraction ventilation around heat producing equipment.

Outdoors

- Wear cool cotton clothing to allow air circulation and evaporation of sweat.
- Use a broad-spectrum sunburn cream with an SPF of 15+.
- Wear broad brimmed hats that shade head, neck, face and ears.
- Wear close fitting sunglasses with side shields, labelled to meet Australian Standard AS 1067.or any other equivalent international standard
- Use a wetted scarf.
- Provide shaded rest areas.
- Provide an ample supply of cooled, non-alcoholic drinks and ensure they are easily accessible.
- Drink small amounts of water at frequent intervals to avoid dehydration.
- Re-schedule heavier work for cooler times of the day or for cooler days.
- Where possible, rotate work so workers spend less time each on heavy tasks.

Heat stroke

If heat stroke occurs:

- Remove the person from heat and allow to rest in the coolest available place;
- Cool the person down with a fine spray of water and fan them;

- Remove excess clothing;
- If conscious, give them cool, but not cold, water to drink;
- Contact a doctor, nurse or first aid officer immediately; and
- Do not give salt or alcohol.

Remember

If working in hot weather:

- Replenish lost fluid - take small drinks frequently.
- Reduce sun exposure during the hottest hours of the day.
- Rest frequently in a cool place.

Topic 5 Children

Children who live on farms or who come to visit are often at greater risk than adults who work there. To make your farm safer for children, hazards must be spotted and risks minimised before children discover them. The safest farms for children are those where safety is a priority for everyone.

Spot the hazard

Ask children to help you to spot hazards. Identify places where children like to play, perhaps where they are not supposed to be, and the sort of things they might like do. Consider dams, streams and pools, silos, tractors, electricity, workshops and machinery sheds, chemical storage areas, farm bikes, guns and dangerous stock.

Assess the risk

For each identified risk, assess the likelihood and possible severity of injury or harm. Ask the children to help. Make high risk areas your top priority for safety improvements.

Make the changes

The following suggestions will help you to minimise risks to children on your farm.

Fences

- For small children, have an effective fence around the house and yard.
- Fence off septic tanks, seepage pits, ponds, dams, pools and streams, particularly if close to the house.
- Maintain fences round nearby paddocks and work yards to protect small children from animals, vehicles, machinery, and road traffic.
- Have safe, fenced-off areas where children can play.

Workshop

- Ensure gates, doors and locking systems keep young children out of workshops and hazardous storage areas.
- Have safety rules for older children who may need to enter these areas on farm duties.
- Keep workshops free from child hazards relating to electricity, power tools, fire, poisoning, slips, trips, falls and other dangers.

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Pesticides

- Keep farm pesticides locked away out of children's reach.
- Fence off pesticide mixing and wash-down bays to prevent access by children.
- Keep children out of crops after spraying.

Access to dangerous parts of the farm

- Keep machinery, and trucks adequately guarded to prevent access by children.
- Ensure fixed ladders are guarded and kept the bottom of the ladder above children's reach.
- Have rules keeping children out of any dangerous part of the farm and storage areas unless under close supervision.

Machinery and equipment

- Lock tractors, trucks and other farm machinery away after use, out of bounds to children.
- Electrical appliances and tools should be turned off, disengaged and kept inaccessible to young children.
- Keep firearms, ammunition and explosives locked and out of children's reach.

Protection from animals

- Have rules to safeguard children from dogs that might attack or bite.
- Ensure small children cannot wander into animal pens and stockyards with confined stock.

Ladders

- Store ladders away to prevent children climbing roofs, silos, trees and other height hazards.
- Ensure fixed ladders on silos, bins, tank stands etc. are adequately guarded against children attempting to climb them.

Emergency first aid

- Have an emergency plan for dealing with serious accidents.
- Keep a first aid kit suitable for children, and have someone trained in first aid.

Do you

- Have a 24-hour safety program for everyone on the farm?
- Set a good safety example for children?
- Safeguard children from potential hazards?

Topic 6 Manual Handling

Manual handling or strain injuries can keep farm workers away from work for weeks at a time. They can happen from lifting, pushing, pulling, carrying, lowering, holding or restraining. Injuries occur through:

- Increased wear and tear or damage, eg. From intense or strenuous manual activity;
- Graduals wear and tear, eg. From frequent or prolonged periods of activity (continuous handling of feed bags); heavy or awkward lifts (lifting heavy machinery onto a lorry);
- Sudden damage, eg. From unexpected movement (carrying a heavy object over uneven ground, stumbling, tripping or falling).

Spot the hazard

Conduct safety audits of all farm jobs involving manual handling. Take note of heavy, stressful, awkward or repetitive activities. Check injury records to see which activities have caused most strain injuries. Look for difficult handling jobs that could be made easier.

Assess the risk

Assess the likelihood of each identified hazard resulting in injury or harm. Use injury records to assess the potential risk of various tasks. If you consider there is a significant risk of serious injury, look for the best way to minimise the risk.

Make the changes

Here are some suggestions to help you make the changes.

- Plan ahead. Consider the safest possible ways of lifting, carrying, holding, lowering, pushing and pulling.
- Eliminate unnecessary tasks.
- Avoid double handling.
- Use leverage, rather than brute force.
- Use mechanical aids.
- Carry out a safety check first.

Lighten the load

- Where possible, choose lightweight materials.
- Divide heavy loads into smaller loads.
- Purchase in smaller bags.
- Half fill containers.
- Get help to share the load.

Reduce bending, twisting, reaching

- Point your feet in the direction of the load you are carrying.
- Keep tools and equipment within easy reach.
- Build benches to waist height.
- Keep frequently used items at waist height.

Follow a safe procedure

- Plan the handling.
- Clear the way.
- Wear appropriate protective clothing.

Correct body techniques

- When lifting a load from ground level, bend knees, keep back straight, keep load close to your body, lift with leg muscles, support forearms with knees, and support the load with your body.
- When lowering a load, use leg muscles and lower the load by bending your knees, not your back. Where possible, support forearms on knees.

Avoid muscle fatigue

- Warm up first.
- Take frequent breaks.
- Change jobs to use different muscles.
- Gradually get used to the job.
- Adopt good posture when standing or sitting at a job.
- Instead of crouching or squatting for low jobs, use a small stool.

Mechanical aids

Consider using:

- Trolleys for heavy bags, drums or other weighty, awkward items;
- Special trolleys to move and tilt 200 liter drums;
- Picket drivers for fencing; *
- Small mobile hoists or forklifts;
- A fixed hoist on a utility or truck;
- Mobile ramps or skids for loading and unloading trucks or pick-up trucks;
- Crow bars, barrows, pulleys, hooks and jacks; and
- Purchasing light weight posts during fencing.

* Fence picket injuries

- Steel fence pickets can inflict nasty injuries on workers using metal pipe drivers.

- Unless the pipe section is long enough, the picket can dislodge at the top of the upstroke, and the down stroke can bring the worker's arm down on the picket.

- Make sure the pipe section is long enough to minimise these risks. Minimum pipe length should be 600 mm. Take into consideration the size and strength of the worker.

- Safe procedure should include instruction and training to ensure the worker's upswing does not exceed the length of the pipe.

Topic 7 Farm Noise

Noise from farm tools, machinery and animals can cause permanent hearing loss. Hearing loss may be temporary at first, but repeated exposure will lead to permanent damage. The damage can occur gradually over a number of years and remain unnoticed until it is too late. Some noises, such as gunshots, are so loud they can cause immediate permanent damage. The noise exposure for an eight hour day should not exceed 85 dB (A). The exposure standard for peak noise - for example gunshot - is 140 dB (lin).

Spot the hazard

Some early warning signs of hearing loss include:

- Ringing in the ears after work;
- Difficulty understanding a normal conversation;
- Turning up the volume on radio or television when others appear to hear adequately; and
- Failing to hear background noises, such as a ringing telephone or doorbell.

Typical farm noises that can damage hearing include:

- Tractor (95-100dB(A));
- Header (88-90dB(A));
- Orchard sprayer (85-100dB(A));
- Angle grinder (95-105dB(A));
- Bench grinder (90-95dB(A));
- Chainsaw (105-120dB(A));
- Pig shed at feed time (95-105dB(A)); and
- Gun (over 140 dB(lin).

Assess the risk

If you have to shout above noise to be heard by someone a meter away, your hearing could be at risk. If noise cannot be reduced or removed at its source, and if there is no other way to separate people from damaging noise exposure, protective hearing equipment must be worn. Some larger farmers may consider employing a noise consultant to take noise readings, assess hearing risks and recommend preventive measures.

Make the changes

You can reduce noise at its source by:

- Purchasing quieter machinery and equipment;
- Modifying equipment to reduce noise;
- Keeping machinery well maintained; and
- If practicable, running machinery at lower revs.

You can protect people from loud noise exposure by:

- Limiting the time workers spend in a noisy environment;
- Isolating work areas from noisy machinery using distance or insulation;
- Scheduling noisy work when fewer workers are around; and
- Using job rotation to alternate noisy jobs with quiet ones.

Protective equipment

- Where noise exposure cannot be reduced, hearing protection should be worn, eg. On open tractors, when shooting, or when using a chainsaw.
- Try on earmuffs before buying, to ensure comfort and a soundproof fit.
- The higher the SLC 80 (sound level conversion) figure for hearing protection, the higher the protection.
- Use lower SLC 80 muffs for moderately noisy jobs - a high rating might mask out important danger warning sounds.
- Earplugs may be more comfortable for some farmers, but must be inserted with clean hands. Re-usable plugs must be cleaned regularly. Cotton wool is not sufficient.
- Clean and maintain hearing protectors. Replace worn or damaged parts. Keep protectors near the area of noisy activity, eg. In the tractor cab.
- Wear a combination of earmuffs and earplugs when shooting.

Remember

Once hearing is gone, it is gone forever, and hearing aids are of little help. They can make speech louder, but they cannot make it clearer.

Topic 8 Machinery Guarding

Manufacturers of machinery and equipment are legally required to make sure dangerous parts are safely guarded so that operators and others are protected from injury. But old farm machinery is sometimes poorly guarded. Extra moving parts like wheels and pulleys may have been added for various other uses. Original guarding may have been removed for maintenance and not put back.

There may be times when an operator may need to reach over, under, around or into a machine while it is running. If so, any moving parts or other hazards must be appropriately guarded from human contact. A guard may be any shield, cover, casing, or physical or electrical barrier, intended to prevent contact between a hazardous machine part and any part of a person or a person's clothing. The guard must not be easily removed.

Spot the hazard

Some of the hazards associated with machinery likely to cause injury include:

- Rotating Power Take Off (PTO) and other shafts (eg. joints, couplings, shaft ends and crank shafts);
- Gearing (including friction roller mechanism), cables, sprockets, chains, clutches, cams or fan blades;
- The run-off point of any belt, chain or cable. All belts are hazardous, especially if joints are not kept smooth;
- Key ways, keys, grease nipples, set-screws, bolts or any other projections on rotating parts;
- Any pulley or flywheel that incorporates any openings, spokes, protrusions, etc, that render it anything except totally smooth;
- Any crushing or shearing points, eg. Augers and slide blocks, roller feeds, conveyor belts;
- Ground wheels and track gear that incorporate protrusions, spokes, etc, that are adjacent to an operator's position (standing platform, seat, footrest) or passenger's seat;
- Rotating knives, blades, tines or similar parts of power driven machines that operate in or near the ground or engage crops;
- Any machine component that cuts, grinds, pulps, crushes, breaks or pulverises farm produce; and
- hot parts of any machine where the surface temperature exceeds 120oC in normal operation.

Assess the risk

Once a hazard has been identified, assess the likelihood of the hazard resulting in injury to the operator or any other person, and the likely severity of any injury or harm.

Make the changes

Ensure machinery guards:

- Are designed in a practical way to protect the user but allow ready access for operation and maintenance;
- Are always in place on dangerous parts of machinery unless they are, by any reasonable definition, located out of reach of users, operators or bystanders;
- Are conveniently placed so that users, operators and service and maintenance people are less likely to remove them permanently;
- Are strong and durable enough for the machine part they cover;
- Protect users, operators and bystanders against burns caused by hot parts;
- Are ventilated where applicable to avoid the machine over-heating; and
- Are not removed until the machine is stopped and isolated with a tagged lockout switch, and all sources neutralised, eg. Pressure in the hydraulic, or LPG gas line.

Children and machinery

Children on or visiting the farm are often at risk of being injured by machinery. Minimise the risks, teach your children about safety on the farm, and get them to tell their friends.

- Agricultural machinery is not a playground. Make sure guards are on machines, especially when children are around;
- Be aware that children's fingers can sometimes reach into guarding designed for adult hands.

Safe procedure

Stick to a safe procedure for machinery guarding.

- For maintenance jobs, have a checklist procedure ensuring guarding is safely replaced.
- Use approved lock-out and tag devices to prevent machinery being accidentally started during maintenance.
- Redesign work processes to minimise risk from moving parts.
- Get rid of machinery and eliminate work processes that can't be made safe.
- Replace unguarded machinery with safer machinery.
- Have guards designed and fitted for improvised machinery.
- Ensure employees are fully instructed about safe procedures for guarding, and lock-out and tag isolation switches.

Topic 9 Workshops

Farmers and farm workers routinely perform workshop tasks that in other industries would be done by a variety of skilled trades' people. Repairs and maintenance of farm machinery, and associated workshop jobs, are among the most frequent causes of farm injuries. Identify potential hazards and develop safe procedures for all workshop tasks, in particular training and supervision for young and inexperienced workers.

Spot the hazard

Check potential hazards in the structure of farm buildings, electrical fittings and fixtures, power tools and equipment, ladders and trestles, welding equipment and procedures, safe storage of hazardous materials and equipment, accessibility to children, and in procedures for lifting and carrying heavy and awkward weights.

Assess the risk

Check each potential hazard for the likelihood of it resulting in injury or harm. Make the highest risk items top priority for safeguarding. Assess possible risks in alternative safety measures.

Make the changes

- Ensure adequate working space for each job.
- Provide and use personal protective equipment where appropriate.
- Check there is sufficient lighting and ventilation.
- Keep walkways and exits clear.
- Update fire fighting and first aid equipment to meet current needs.
- Ensure fuel, compressed air, steam, electrical or other services are safely installed and maintained.

Tools and equipment

- Read the manual before using new tools and equipment.
- Follow instructions on safe procedures.
- Ensure power tools and equipment are properly guarded.
- Use angle grinders only for grinding and not for cutting. Safer power cutting tools are available.
- Ensure all guards and shields are kept in place during use.
- Use clamps and vices where possible to hold job items.
- Store tools safely to prevent damage and unauthorised use.

Ladders and trestles

- Before climbing, place a ladder's feet about a quarter of the ladder's length from the wall or top support.
- Before working high on a ladder, secure it to prevent it slipping sideways.
- Never place a ladder in front of a doorway unless the door is locked or guarded.
- Avoid standing ladders on drums, boxes or blocks.

Electricity

- Replace old fuse boxes with an Earth Leakage Circuit Breaker (ELCB) board that protects the whole building, or fix portable ELCBs at power points where power tools are connected. For further information contact an experienced electrical worker regarding fitting a Earth Leakage Circuit Breaker.
- When someone gets an electric shock and becomes stuck to a live component, the power must be turned off before the person is touched or attempts made to assist the person.
- Check all power cords regularly to ensure insulation is intact, and that inner cabling is not exposed.
- Get rid of old, worn or faulty power cords.

Welding

- For maximum protection against eye injuries, wear goggles with side shields, as well as a welding shield or helmet.
- Protect skin areas from radiation burns, preferably with woollen or flame resistant canvas clothing.
- Never wear or open footwear when welding. Shoes or boots should be rubber soled for non-slip and electrical protection.
- Obtain and follow safety guidelines on welding.
- See Topic 10 on Welding and Allied Processes.

Topic 10 Welding and Allied Processes

The dangers in welding, cutting, heating and grinding should never be underestimated. Everyone doing these tasks should be properly trained to use the equipment safely and to understand the hazards involved.

Spot the hazard

Hazards associated with welding include:

- **The arc itself**. The arc reaches extreme temperatures. Intense ultraviolet and infrared rays can be harmful to both the welder and anyone else nearby. Damage to uncovered skin can be similar to severe sunburn. Unprotected eyes can become extremely red and sore and in extreme cases suffer permanent damage.
- **Welding gases**. In gas welding, leaking oxygen can enrich the atmosphere so that a naked flame, cigarette, spark or electrical fault can be dangerous.
- **The fumes**. Welding in confined and unventilated spaces should be avoided, because welding fumes can be fatal. Where it's not possible to ensure good ventilation, it may be necessary to wear an air-line fed respirator
- **Fumes and explosions**. Avoid welding, cutting or heating empty drums. People have been killed this way when undetectable fuel residues vaporise and explode. Always check what's been inside, and if necessary clean the drum thoroughly before cutting, welding or heating. Welding heat can also generate toxic fumes from chemical residues. Avoid welding on metal-coated surfaces, such as galvanised iron.

- **Heat**. Hot metal surfaces, metal fragments and sparks can cause severe burns to unprotected skin or a fire within the workshop.

- **Electric shock.** The risk of electric shock in welding is high. All electrical hazards should be identified and addressed. Check manufacturers' instruction.

- **Gas cylinders.** Gas cylinders should be secured or stored in such a way that prevents them from falling over.

Assess the risk

Check each of the above areas for potential to cause an injury or hazardous incident. Refer to accident records, safe work procedures, training and the experience of operators doing hazardous work. If risk of injury or harm is identified, take steps to minimise or eliminate the risk.

Make the changes

Here are some suggestions for making welding safer. Appropriate protective clothing should include:

- A shield or helmet with a suitable grade of filtered lens;
- A felt or leather skull cap or hat;
- Fire resistant gloves and leather apron;
- Boots and leather spats;
- Arm protection - long sleeves, leather if possible;
- Fire resistant overalls.

To prevent deterioration, all protective clothing and equipment should be stored carefully, and kept clean and in good working order.

Machine welding

- Never attempt to connect or change welding cables before switching off mains power.
- Always install the welding machine as near as possible to the power point.
- Always keep the welding machine terminals and cable connections clean and tight.
- Only use welding cables that are fully insulated throughout their entire length.
- Work on a well insulated floor wherever possible.
- Wear rubber insulated shoes.
- Always wear dry gloves when handling equipment that is live, eg. When placing an electrode in a holder.
- Always get a qualified electrician to do any electrical repairs.
- Don’t use gas pipes or water pipes as part of the welding circuit; it can cause an explosion or give someone a shock.

Gas welding

Leaking gases are a major hazard in gas welding. While fuel gas is usually recognised by its odour, oxygen leaks are potentially more dangerous because they are not easily recognised. Leaking oxygen can enrich the atmosphere so that a naked flame, cigarette, spark or electrical fault can be dangerous. Oils and greases may spontaneously ignite in the presence of pure oxygen.

- Do not allow any fittings of oxy-acetylene equipment to be contaminated with grease or oil under any circumstances.
- Do not oil unions, gauges or other components.
- Have regulators regularly maintained by a competent person.
- Regulators can fail in two ways - by the controlled forward flow of gas (known as regulator "creep"), or by the reverse flow of another gas in the gas lines. Regular maintenance can avoid these situations. Either of these failures can be recognised by a higher than expected reading on the operational or low pressure gauge. The gauge needle creeps beyond the pressure set for actual welding or cutting. If this happens, stop work, close down the cylinder valves, and have the equipment repaired.
- Take care not to drop or damage gauges and regulators.
- Excess pressure or the presence of a different gas in a regulator can cause fire and explosions of varying severity, resulting in damaged equipment and operator injury.
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- Excess pressure or the presence of a different gas in a regulator can cause fire and explosions of varying severity, resulting in damaged equipment and operator injury.
- Never use equipment fitted with a regulator in which a "creep" condition is known to exist.
- Use the correct colour and type of hoses and fittings recommended by the manufacturers. Copper must never be used on acetylene lines, as unstable substances are formed that may spontaneously explode.
- Flashback arresters should be fitted to all oxy-acetylene equipment to overcome the danger of flashback.
- Oxy-acetylene or oxy-LPG equipment should not be left near hot equipment or metals that could burn the leads and must be secured in an upright position. Gas leaks can be detected using soapy water.
- Proper maintenance of equipment is necessary to prevent accidents.
- Don't light up welding equipment using cigarette lighters or matches. Use an appropriate flint or piezo electric ignition device.
- Don't smoke when welding or near welding jobs, and don't keep your lighter in your pocket - it could explode. Simple prevention could save your life.
- Have a suitable fire extinguisher close by for all welding, cutting, heating and grinding activities.
- Provide welding screens and ventilation where appropriate.
- Obtain and refer to CSDSs (Chemical Safety Data Sheets) for all welding electrodes, welding rods and hazardous fluxes.

Topic 11 Handling Cattle

Injuries from cattle relate to a number of factors - inadequate yard design, lack of training of handlers, unsafe work practices, and the weight, sex, stress factor and temperament of animals.

Spot the hazard

- Check accident records to identify tasks most likely to cause injury.
- Consider situations that cause stress and injury to handlers and stock.
- Take into account sex, weight and temperament of stock.
- Consider effects of weather and herding on animal behaviour, and time allowed for settling down.
- Check potential hazards and safety advantages of stock facilities, including mechanical aids and work layout.
- Consider what training is required before a person can confidently and competently handle stock.

Assess the risk

- Using accident records, check which tasks and work situations are most frequently linked with injuries.
- Discuss safety concerns of handlers in regard to various tasks.
- Check each identified hazard for likelihood and severity of injury.
- Assess proposed safeguards and safe procedures for other hazards.

Make the changes

Here are some suggestions for improving safety in cattle handling.

- Always plan ahead. Prepare and communicate safe work practices. Get assistance if necessary.
- Wear appropriate clothing, including protective footwear and a hat for sun protection.
- Make use of facilities and aids – head rails, branding cradles, whips, drafting canes, dogs etc.
- Know the limitations of yourself and others - work within those limitations.
- Respect cattle - they have the strength and speed to cause injury.

Facilities and conditions

- Yards and sheds should be strong enough and of a size to match the cattle being handled.
- Good yard design assists the flow of stock. Avoid sharp, blind corners, and ensure gates are well positioned.
- Keep facilities in good repair and free from protruding rails, bolts, wire etc.
- Where cattle need restraining, use crushes, headrails, cradles, etc.
- Footholds and well-placed access ways are important.
- Try to maintain yards in non-slippery condition.
- Cattle are more unpredictable during windy weather.

The stock

- Hazards vary according to the age, sex, breed, weight, horn status, temperament and training of animals.
- Approach cattle quietly, and make sure they are aware of your presence.
- Bulls are more aggressive during mating season and extremely dangerous when fighting. Separate into different yards where appropriate.
- Cows and heifers are most likely to charge when they have a young calf at foot.
- Heifers can also be dangerous at weaning time.
- Isolated cattle often become stressed and are more likely to charge when approached.
- Cattle with sharp horns are dangerous - dehorning is recommended where practicable. Dehorned cattle can still cause injury.

Cattle Yarding

- Avoid working in overstocked yards where you risk being crushed or trampled.
- While drafting cattle through a gate, work from one side to avoid being knocked down by an animal trying to go through.
- Take care when working with cattle in a crush, eg. To vaccinate, apply tail tags, etc. A sudden movement by stock could crush your arms against rails or posts.
- When closing a gate behind cattle in a crush or small yard, stand to one side, or with one foot on the gate in case the mob forces the gate back suddenly.

Kicking and butting

- To avoid kick injuries, attempt to work either outside the animal's kicking range or directly against the animal, where the effect of being kicked will be minimised.
- When working on an animal's head, use head bail to restrain it from sudden movement forwards or back.
- Take care when using hazardous equipment, such as brands or knives for castrating.

Stud cattle

- When working with stud cattle, train animals to accept intensive handling through gradual familiarisation, eg. Grooming, washing, clipping.
- When leading cattle on a halter, never wrap the lead rope round your arm or hand. If the animal gets out of control, you could be dragged.
- Bulls should be fitted with a nose ring. When being led, their heads should be held up by the nose lead.

Hygiene

- Be aware of the risks of contracting zoo noses when working with animals. These diseases are transmitted through contact with blood, saliva and urine. (See Topic 14 on Zoo noses for more information.)
- Hygiene is important. Consider vaccinating the cattle against disease.

Topic 12 Handling Sheep and Goats

Manual handling injuries - wear and tear to the back, shoulders, neck, torso, arms and legs - are the main problems to avoid when handling sheep. Awkward postures, working off balance, and strenuous, repetitive and sudden stress movements can cause immediate or gradual strain injuries and conditions.

Spot the hazard

- Take note of sheep handling activities that put strain on any part of the body.
- Unfit, untrained or out of condition workers are most likely to be injured.
- Check sheep yarding, and handling facilities for injury hazards.
- Check injury records for tasks and situations causing most injuries.
- Discuss hazard concerns with other sheep handlers.
- Be wary of goat horns when handling the animal as they may damage eyes.

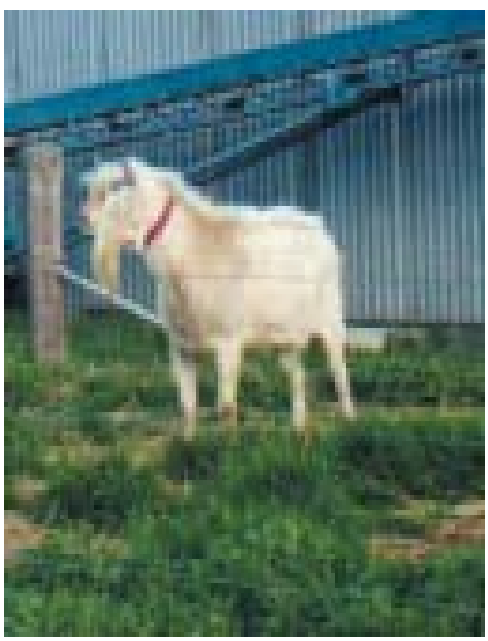
Assess the risk

Assess each identified hazard for the likelihood of injury or harm. Assess also the likely severity of injuries or harm. The more likely and serious the potential injury, the more urgent it is to minimise the risks.

Make the changes

The following suggestions are to help farmers and sheep handlers make sheep handling safer:

- Use a yard design that will encourage sheep to move freely;
- Build yards on sloping ground for better drainage;
- Keep shadows to a minimum where not required to provide shade. Build protective coverings over working and drafting races where practical;
- Avoid slippery surfaces, especially in races and forcing yards; and
- Keep dust levels at a minimum.



Working with lambs or kids

- Catchers should wear protective gloves.
- When administering veterinary substances use a work system that minimises hazards of being cut, sprayed with chemicals or jabbed with a needle.
- Sterilise knives, shears and ear pliers, and ensure operators observe hygiene practices.
- When dipping or spraying animals, if possible, use chemicals that are least harmful to humans. Always wear protective clothing, goggles and breathing equipment as specified on the Chemical Safety Data Sheet.
- Use appropriate respiratory and skin protection. If headaches or other discomforts occur after handling chemicals, seek medical advice and have appropriate health tests. Avoid using those chemicals in future.
- Ensure correct mixing rates are used.
- Keep equipment well maintained, and check regularly to avoid chemical leakage.

Moving sheep or goats

- Plan the move. Sheep movement is affected by wind direction, location of water, etc.
- Allow plenty of time. Do not rush stock.

Lifting sheep or goats

- If a sheep need to be lifted, get assistance where possible.
- When lifting alone, sit the sheep on its rump, squat yourself down, take a firm hold of its back legs while keeping the sheep's head up to restrict movement. Pull the animal firmly against your body, and lift using your legs, not your back.
- If lifting over a fence, do not attempt to drag the sheep over. Rather, work from the same side as the sheep.
- To save lifting, put a drafting gate at the end of the handling race. It is advisable to have several positions for "drop gates" in the race to hold sheep that are to be drafted off.

Rams

- Rams can be aggressive and unpredictable. Treat them with caution.
- When working rams in a race, ensure you are protected from those behind you. This applies particularly when checking testicles, etc. A well-positioned drop gate is useful to reduce the hazard.

Transmittable diseases

- Animals carry diseases that are transferable to humans. Be familiar with the symptoms so you can determine if disease exists in the stock.
- If signs of disease appear, have the disease confirmed and animals tested.
- If the disease is present, treat affected animals appropriately and vaccinate to prevent further occurrence.
- Diseases are transmitted by urine, blood and saliva, and through open wounds
- Keep open wounds covered. Wash well with water, soap and antiseptic if contact is made with urine, blood or saliva from diseased animals.
- Personal hygiene is important at all times. After handling animals always wash before eating or smoking.
- See Topic 14 Zoo noses for more information.

Topic 13 Handling Pigs

Pig handlers face injuries from the size, strength and temperament of the animals they tend. Injuries may also relate to training of handlers, the safe design of pens, lanes and other yarding, and the administering of drugs and chemicals. Noise in pig sheds can reach levels that require hearing protection.

Spot the hazard

Check the safety of pens, floors and lanes, handling and restraining of animals, safety training for new and young workers, safe lifting methods, safe use of chemicals and protection from diseases carried by pigs. Study worker injury records for evidence of hazardous jobs and situations.

Assess the risk

Assess whether any of the hazards identified are likely to cause injury or harm, and base safety decisions on the likelihood and possible severity of the injury or harm.

Make the changes

The following suggestions are to help minimise or eliminate the risk of injury or harm in pig handling:

- Check pens and lanes are large and strong enough for the pigs being handled;
- Ensure pen design assists the smooth flow of pigs - avoid sharp, blind corners, and ensure gates are well positioned;
- Keep facilities in good repair and free from protruding nails, bolts, wire and rubbish;
- Where pigs need restraining, use crushes and nose ropes; and
- Try to maintain non-slippery conditions, especially in lanes and loading yards.

Stock factors

- Safety in pig handling varies according to a number of factors - age, sex, breed, weight, temperament and training of the animal.
- Boars can be aggressive and unpredictable. Treat them with caution.
- Boars are most aggressive during mating, and extremely dangerous when fighting.
- Prevent boars from coming in contact with each other at all times.
- When moving boars, use a drafting board. (Drafting boards are pieces of 10mm thick plywood portable barriers carried by the pig handler to separate himself from the pig.

Lifting pigs

- When lifting pigs, get assistance where possible.
- When lifting alone, sit the pig on its hindquarters, squat down, take a firm hold of the back legs and pull the animal firmly against your body and lift, using your legs and not your back.
- Remember, when lifting a pig this way; make sure the pig's head is positioned so that it cannot bring its head back into your face.
- Chemicals, vaccinations and injections
- Read labels on chemicals and antibiotic containers carefully - follow manufacturers' instructions and safety directions.
- Sterilise needles, teeth cutters and ear pliers, and ensure operators observe hygienic practices.
- Observe recommended withholding periods for drugs and chemicals before pigs are slaughtered.
- Wear appropriate protective clothing.
- If headaches or any other discomfort is suffered after handling chemicals, seek medical advice and have appropriate tests.
- If possible avoid chemicals that have caused headache or other discomfort in future, and use full protective clothing and breathing filters when handling chemicals in the feed mill.
- Ensure correct dosage rates are maintained.

Transmittable diseases

- Animals carry diseases that can be transmitted to humans. Be familiar with the symptoms so you can tell if these diseases exist in the pigs.
- If signs of disease appear, have the disease confirmed and animals tested. If the disease is present, treat affected animals appropriately and vaccinate to prevent further occurrence. Maintain a vaccination program in accordance with advice from government veterinary department.
- Zoo noses are transferred by urine, blood and saliva, and through open wounds. Keep open wounds on humans covered and wash well with water, soap and antiseptic if contact is made with blood, urine or saliva from animals. (See Topic on Zoo noses for further information).
- Maintain personal hygiene at all times.

Topic 14 Zoo noses

Zoo nose is the name given to animal diseases that can cause illness in people. Often the animal carriers are not obviously ill, yet people in contact with them can become infected. Farm animals are a common source of infection, and people most at risk are abattoir workers, farmers, veterinarians, livestock handlers and animal laboratory workers.

It is almost impossible to predict which zoo nose will affect the agricultural industry next. There are however a number of ways we can protect both humans and animals from disease.
Good hygiene for both animals and humans is the most practical first defence and should be exercised at all times even when there is no signs of illness in either the human or animal population.

Spot the hazard

- Contact with any form of animal body fluids is a source of infection and should be avoided.
- Inhalation from infected farm animals' is a source of infection. This may happen on farms, in abattoirs, or wherever infected animals give birth, are killed, butchered or handled.
- Signs to watch for include sick animals, stock abortions, weak offspring and chronic illness in any farm animal or bird.
- Do not allow humans, or animals (particularly dogs), to drink raw milk or consume meat that has not been thoroughly cooked.
- Dust contaminated with urine or faeces in yards can be a hazard if ingested by humans. Ingestion can occur where dusty conditions are allowed to exist.
- Birds release large amounts of dust from their feathers, which may cause breathing disorders in humans.

If at risk, treat any adverse medical symptoms with suspicion. The sooner a zoo nose is diagnosed and treated, the less chance of long term disease.

Assess the risk

- Animals who appear sick should be immediately isolated from other animals and handled last.
- Early expert medical diagnosis of any sick animal is recommended.
- Safe work practices are – pest eradication, cleanliness, good hygiene where there is any risk of contracting zoo noses.

- Facing possible contact with urine or fasces, workers should wear goggles, gloves and appropriate protective clothing, where practicable.
- Be cautious about swimming or other skin contact in contaminated dams, rivers and streams as the water may be contaminated with faeces or urine.
- Persons who have any abnormal medical symptoms such as, flu-like fevers, chills and sweats, pneumonia, chest pains, varied pains of the musculoskeletal system or who have chronic debilitating symptoms should be encouraged to seek expert medical advice. Persons seeking such advice should advise their doctor that they have been working or in contact with animals.
- Where possible do not mix new animals with existing stock until enough time has passed for a valued judgment, as to the overall health of the new animals, can be made.

Abattoir, farm, dairy, veterinary and animal laboratory workers, and animal transporters are at most risk.

Make the changes

Risk can be minimised by:

- Provide suitable working attire and footwear for farm and abattoir workers;
- Keeping animals and humans physically fit;
- Participate in the national herd health program which provides regular herd screening and vaccination;
- Early detection and isolation of sick animals;
- Cleanliness in animal sheds, yards and pens;
- Mice, rat, and tick eradication;
- Reduction of insect and fly population by proper waste disposal practices;
- Adequate ventilation for indoor risk areas;
- Safe work practices when assisting in animal births;
- Quick and hygienic after-birth clean-up;
- Safe disposal of animals that have died or been culled;

- Preventing dogs from eating animals that die on the farm (including vermin) or raw meat and offal from farm killed animal;
- Discouraging dogs from licking humans, especially on the face or mouth;
- Discouraging children from playing with dogs;
- Employers and doctors watching for symptoms that may indicate an occupational zoo noses;
- Wearing respiratory protection when entering poultry rearing enclosures;

Personal hygiene, washing with soap and water after handling any animals and wearing clean suitable protective clothing and footwear when at risk, reduces the risk of contracting zoo noses.

Topic 15 Electricity

The best safeguard against electrocution on farms is to install Earth Leakage Circuit Breaker (ELCB) or safety switch and to ensure electrical cables and equipment are maintained. A fixed ELCB can be installed instead of a fuse box in your house, shed or workshop, or portable ELCBs can be used with individual power tools. For more information on ELCBs seek the assistance of an experienced electrical worker.

Spot the hazard

Check to ensure electrical fittings, fixtures, plant and equipment, wiring, insulation, switches, power cords, plugs, earth wires, guarding, and welding equipment are in good condition and regularly maintained.

Look for shorting or sparking fittings. Avoid using electrical equipment in wet conditions. Wear safe footwear and clothing. For work on wires, plugs, switches, fuses and electrical plant, call the electrician.

Assess the risk

Assess each identified hazard for likelihood and severity of possible injury or harm. If there is any risk of electric shock or electrocution, you should have a safe procedures to ensure the hazardous plant is put out of use and either isolated, or kept in a safe place until repaired or discarded.

Make the changes

The following suggestions will help to minimise or eliminate the risk of electric shock.

- Make sure all hand held power tools and appliances are connected through an ELCB.
- Always employ an electrician for power alterations or repairs.
- Ensure wiring, equipment, leads and plugs are kept in good repair.
- Don't overload your wiring installation.
- Don't remove guards or covers from electrical switchgear.
- In areas exposed to wind and rain, always use weatherproof outlets and fittings.
- Avoid using outdoor electrical equipment in wet weather.
- All lights exposed to breakage by farm tools should be fitted with wire guards.
- Old rubber-insulated wiring is now unsafe, and should be replaced.

Earth wires

The earth wire is an essential safety feature. Its purpose is to divert any current leakage to the ground and cause a fuse to blow or an ELCB to trip out should a fault develop in the installation. The earth wire is usually a bare or green and yellow insulated copper wire, connected to a water pipe or stake driven into the ground. It should never be removed or disconnected.

Outdoor power lines

- Make sure tall items of equipment are kept well clear of overhead wires.
- Never ride on top of loads.
- If your crop-dusting is done by aeroplane, tell the pilot beforehand about any power lines in the area.
- Plan farm roads to avoid passing under power lines, and have new power lines installed so they don't cross over roads.
- Always check the location of power lines before you start work.
- Always check plans and records of underground power lines before any digging or earthworks.
- Never park machinery under power lines.
- Remember, power line heights are deceptive. Know the operation and maximum height of your machine.
- Have an observer check your position when working close to overhead power lines.
- If you see a power line that has been damaged or has fallen down, keep clear and notify the supply authority.

Fuses and ELCBs

- If a fuse blows out, turn off the switch and check the electrical equipment being used before you replace the fuse wire. If the fuse blows again, call an electrician.
- When replacing a fuse wire, make sure its rating is correct for the circuit.
- If an ELCB trips out, check the electrical equipment for obvious faults. If it keeps tripping out, call an electrician.
- Remember, while an ELCB may shut off a lethal dose of electricity, it does not prevent electric shock. You must still avoid live contact, particularly if you are working at height or operating hazardous machinery.

Power tools

- When buying a portable power tool, double insulated is safer.
- Never use a light socket to operate a power tool.
- Don't use tools if the casing is broken or damaged. Damaged cords and plugs should be replaced.
- Regularly check power tools are free from external damage or makeshift repairs. This includes leads and plugs.
- Don't make adjustments to a tool without first switching it off and removing the plug from the power point.
- All bench-mounted equipment, such as power saws or grinders, should be effectively earthed - except for those with double insulation.
- Don't use makeshift extension lights. Use a type with a guard around the globe and an insulated handle.

Welding equipment

- Switch off power before connecting welding leads to terminals.
- Check leads are correctly connected to terminals marked 'electrode' and 'work'.
- Ensure supply terminals and live parts are suitably enclosed and protected.
- Ensure welding terminals are shrouded to prevent inadvertent contact or short circuits.
- Check the frame of welding equipment is effectively earthed.
- Don't use leads if they have bare sections. Replace them.
- Never use bare hands on metal parts of electrode holders or electrodes while the welder is switched on. Never rest the electrode on your body.
- Be sure to keep waste material away from the welder.

Do you:

- Make sure all appliances and power tools are connected through a safety switch or ELCB?
- Make sure alterations or repairs are carried out by an electrician?
- Inspect cords and plugs regularly?

Topic 16 Ag Bikes

The term agricultural refers to all motorbikes with two, three and four wheels, used for farm work. Three and four wheelers are also known as all terrain vehicles or ATVs.

Spot the hazard

Most ag bike injuries result from lack of training and experience, speed, uneven or unfamiliar terrain, humps, logs, rocks, embankments, carrying a passenger or an unbalanced load, inadequate protective clothing and unsafe driving. Those aged between 10 and 24 have a significantly higher risk of injury on agricultural bike.

Assess the risk

Agricultural bike injuries are predominantly to legs, followed by injuries to spine, arms and head. Three and four wheeler spills often result in the rider being pinned beneath or rolled on by the vehicle. Assess all use of agricultural bikes for the likelihood and possible severity of injuries. Assess terrain and tasks likely to increase risks. Develop safe use procedures to match the risk.

Make the changes

The following suggestions will help minimise risks.

- Never ride an agricultural bike without an approved helmet.
- Long sleeves and pants, sturdy boots and gloves all provide protection if you come off the vehicle.
- Eye protection prevents serious eye injuries from bugs, branches or stones.

Maintenance

- Check your bike before riding it.
- Pay attention to maintenance advice in the vehicle manual.
- Check brakes and tyres regularly.
- Ensure that all parts used to repair your bike are designed for use on your particular brand of bike.

Attachments

- Take extra care when using attachments such as spray tanks and other equipment on your ATV, as they can change the vehicle's centre of gravity and affect its stability.
- Ensure any attachments are designed for use on your ATV.

Terrain

- Be on the lookout for potential hazards when riding. Rocks, bumps, irrigation pipes, fences and wildlife all have the potential to cause an accident, and should be approached with caution.
- Take extra care when operating a bike on unfamiliar or rough terrain.
- Where possible, use familiar farm tracks.
- Be particularly careful when turning, approaching a rise or navigating an obstacle. If you are not sure of your ability to clear an obstacle, find another route or go back.
- Ensure hazard areas are out of bounds, especially to young drivers.

Paved surfaces and public roads

- Don't drive ATVs on paved or bitumen surfaces. They are not intended for use on smooth surfaces and could be difficult to control.
- Never ride ATVs on public roads. It may be difficult to avoid a collision if other vehicles are on the road.

Passengers and children

- Passengers and ATVs don't mix. ATVs are designed to be controlled by the shifting of weight around the vehicle. A passenger limits the driver's ability to do this.
- Never allow children to operate an ATV without training and appropriate supervision.
- Children do not always have the weight, limb size, skill and judgement to control an ATV safely.

Stunts and speeding

- Never attempt jumps, wheelies or other stunts on an ATV.
- Ride at an appropriate speed for the terrain, your experience and the visibility conditions.

Drugs, alcohol and fatigue

- Never ride under the influence of alcohol or drugs, including prescription drugs. They may affect your balance, vision, judgement and concentration.
- Fatigue can also limit your ability to control an ATV safely. Operating an ATV is more physically demanding than driving a car. If you are travelling long distances, take frequent rest breaks.
- Ensure you are dressed comfortably and appropriately - uncomfortable clothing can make you tire more easily.

Know the manual

- Be familiar with the capabilities of your machine.
- Read and understand the manual, particularly safety information.
- Know the meaning of all the warning labels on the machine.

Owner responsibility

- As an ag bike owner you must fully understand the risks associated with ATVs and know the appropriate safety precautions to take. You must ensure anyone riding your ag bike has the necessary skills and understanding to operate it safely and responsibly.
- If you are an employer, you have a duty of care under the Malaysian Occupational Safety and Health Act to ensure that ag bikes including ATVs are safely maintained and used in accordance with the manufacturer's specifications, and that employees riding them are adequately trained and are wearing protective gear. See section 15 of the Act

Topic 17 Dairy Farms

Dairy farmers often work in isolation, facing risks from animal behaviour, mechanical hazards, climatic conditions, and rushed work deadlines.

Spot the hazard

Look for hazards related to lighting, electricity, slips and trips, training and supervision of new and young workers, animal behaviour, machinery guarding, heavy lifting and carrying.

Assess the risk

Check each identified hazard for likelihood and severity of injury or harm. The greater the risk and severity, the more urgent it is to minimise or eliminate the risk. Consider appropriate changes and make sure new hazards are not created.

Make the changes

The following are to help minimise risks in dairy farming.

- Have adequate lighting for early morning and evening milking.
- Concrete surfaces should be roughened to provide extra traction for handlers and stock.
- Design the milking shed to minimise physical effort.
- Keep guarding in place on moving parts, eg. Belts and rotaries.
- Check guarding on compressors, pumps, electric motors and grain augers.
- Have an emergency stop lanyard - in addition to the forward-stop-reverse lanyard.
- Have an Electric Circuit Breaker Devices (ELCD) installed on the electrical circuit board.
- Fit all-weather covers on power boards in wet areas.
- Ensure milk line supports and union joints are adequately designed for the job and meet recommended safety levels.
- Cover head-high projections like handles on milk filter casings with padding.
- Keep exhaust pipes clear of walkways.
- Maintain exhaust systems in good order to reduce noise and fumes.
- Fence off effluent disposal ponds to keep out children and stock.
- Clearly mark all water outlets not suitable for human consumption.
- Ensure hot water taps are inaccessible to children.

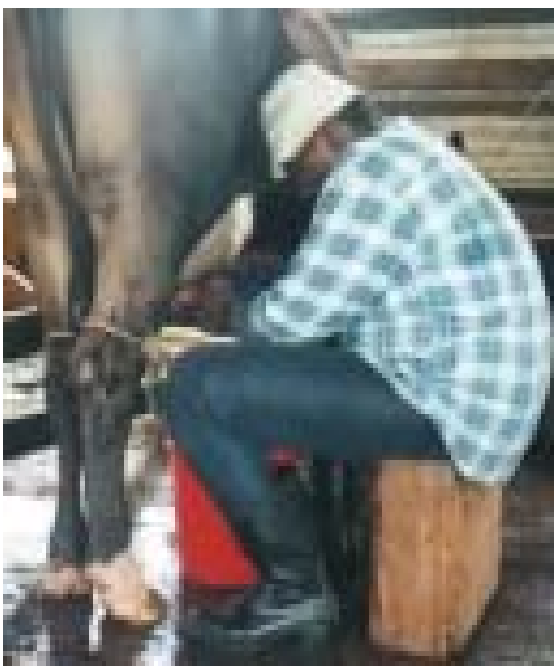
Strain injuries

Activities that can lead to back strain injuries include:

- Stock feeding;
- Manually carting animal food to the stock

To reduce the risk of back strain injuries,

- Use mechanical aids, such as hoists, trolleys, barrows and pulleys
- Use team lifting, planning each task in advance;
- Keep loads small;
- Keep walkways clear;
- Modify work areas to minimise bending, lifting, pulling, pushing, restraining, lowering and carrying;
- Do repetitive tasks at a comfortable height, with the least amount of bending, stretching or leaning; and
- develop safe lifting techniques - using the legs and not the back.



Hot water

- Ensure hot water taps, pipelines and storage tanks are safely guarded.
- Have safe procedures for working with or near hot water.
- Make sure hot water taps can be clearly identified.
- If appropriate, fix clear warning signs next to hot water hazards.

Remember

- Ensure adequate lighting for milking.
- Use specialised equipment where you can.
- Plan tasks and modify equipment to minimise hazardous manual handling.

Topic 18 Firearms

Firearms are used on some farms to control vermin and destroy sick or unwanted stock. Firearms are also one of the highest risk items on the farm, with serious injury or death the outcome of most shooting accidents. Firearm noise can permanently damage hearing, both of the shooter and others nearby, especially small children. All applicable requirements of the Firearms Act 1960 must be complied with when having any dealings with firearms.

Spot the hazard

The firearm

- Firearms and ammunition must be stored separately in locked steel firearm cabinets, and keys stored securely.
- Firearms should never be left unsecured around the farm after use.
- Ensure all farm firearms are licensed.
- Regularly maintain firearms.

The environment

- Safe shooting zones must be observed – 4.5 km for high-powered rifles, 1.5 km for a .22 rim fire and 180 m for a shotgun.
- It is more hazardous shooting at night or in dim, hazy or glary conditions than in clear daylight.
- Shooting from moving vehicles, particularly over bumpy roads or fields, increases risk of firearm injury.

The shooter

- Firearm users must be licensed and adequately trained in safe and lawful firearm use.
- Employers must provide safety instruction for each different type of firearm.
- Shooters, bystanders or children should not be exposed to firearm noise.

Assess the risk

- Remember: If a firearm hazard exists, risk of death or serious injury is HIGH.
- The degree of risk may be linked directly to the availability of firearms and ammunition, the type of firearm used, the shooting environment, the frequency and duration of shooting activity, and the training, supervision and state of mind of the shooter.

- Wherever risk associated with firearm use is high, short-term control measures should be applied immediately, and longer-term safety measures introduced as soon as practicably possible.

Make the changes

Suggested risk controls, listed from most to least effective are:

- **Elimination**: Cease using firearms for farm tasks; remove firearms from the property.
- **Substitution**: Use another pest control method, eg professional shooters.
- **Isolation**: Store firearm and ammunition in separate locked containers. Keep keys safely, and out of children
- **Elimination**: **Engineering control**: Attach a gunlock to the firearm itself.
- **Safe practices**: Only licensed shooters may use firearms. Training in the safe handling of firearms is essential. Supervision is essential for new and young shooters.
- **Personal protective equipment**: The only firearm injury preventable with protective equipment is noise deafness. Ear plugs and earmuffs, worn together, should be of maximum Sound Level Conversion Value.

Basic safety rules

- Treat every firearm as being loaded and ready to fire.
- Apply safety catches at all times when not firing.
- Loaded or unloaded, always point firearms in a safe direction, never at anyone.
- Never have loaded firearms in the house, car or camp.
- Carry firearms in a broken position or with the action open.
- When traveling, carry only empty firearms, preferably in a suitable case.
- Positively identify your target and what is behind it. Never shoot over the top of hills or ridges. If in doubt, do not shoot.
- Never fire at hard surfaces or water. Ricochets are a significant hazard.
- Store firearms and ammunition separately in locked steel containers to comply with relevant firearm laws.
- Do not consume alcohol or drugs when handling firearms.
- Do not climb fences or obstacles with loaded firearms. Carefully ease the unloaded firearm with the action open under the fence. If with another person, both firearms can be passed, unloaded and one at a time, across the fence.
- Do not run with a loaded firearm.
- Tell someone where you are going and when to expect you back.

First aid

Effective first aid technique can dramatically improve a person's chance of surviving a firearm injury. At least two people on the farm should be trained in first aid. First aid kits should be placed at handy locations on the farm, and stocks should be replaced as they are used. A mobile phone or some other form of communication is invaluable in an emergency.

Firearm cabinets

Lockable steel firearm cabinets are highly recommended. They must be made to detailed specifications that provide maximum security from theft. A cabinet should be kept locked and the key held by a responsible person. Stored magazines should not contain ammunition.

Farm suicide awareness

Farm families need to be aware of the increased risk of suicide in rural and remote communities, particularly where firearms are readily available. While it is not possible to prevent all suicides, steps can be taken during periods of crisis – or in the event of aggressive, suicidal, depressed or risk taking behavior. If necessary, firearms should be removed from the property; at least until a crisis situation is assessed to be over. Consider storing the gun elsewhere.

Topic 19 Hand Tool

The dangers of using and storing hand tools should never be underestimated. Accidents often result in severe injuries. Everyone working with hand tools should be properly trained to use the equipment safely and to understand the hazards involved.

Spot the hazard

Hazards associated with hand tools:

- Hand tools stored where a person can trip over the tool;
- Wooden handles must be examined to ensure they are not cracked;
- The metal end of a tool must not be loose on the handle;
- The string binding of all long handle knives must be in good order;
- The handles of tools should not be contaminated with chemicals;
- Tools used for cutting must be kept sharp;
- When carrying a sharp tool be sure the blade is covered;
- Never run when carrying a sharp tool;
- Is the tool the safest one for the job;

Check each of the above areas for potential to cause an injury or hazardous incident.

Assess the risk

- Are any of your tools stored in a way that may cause injury to yourself or someone else?
- Before using a tool do you inspect it to make sure it is not damaged, the cutting edge is sharp, the handle is not cracked or broken and the tool is the correct one for the job?
- Is the blade of all your tools kept sharp;
- If you use tools when you are tired it will increase the risk of injury
- Loose tool heads may fly off the handle and hit the operator

Extra care should be taken if it is known that the type of tool you are using has caused accidents in the past. Learn how to use the tools safely, if a defective tool is found take steps to get the tool repaired before someone is hurt. That someone could be you or your children.

Make the changes

- Damaged handles may break during use and cause the metal head of the tool to injure the operator;
- Make sure that the tools are comfortable for the individual person to use;
- Tools should be stored in a safe place out of reach of children;
- After handling chemicals wash your hands before you touch the wooden handle of a tool. Chemicals can soak in to the wood and contaminate the handle for a long time;
- Do not carry sharp tools in your pocket;
- Do not carry sharp tools when climbing a tree or structure. If you fall you could be seriously injured by the tool;
- Raise tools to the level you are working using rope;

To prevent injury make sure the tool you are using is kept clean, and in good working order.

SECTION 4 – SAFE USE OF FARM TRACTORS

Introduction

A large number of fatal and serious tractor accidents in Malaysia could have been prevented had the tractors been fitted with "Roll-Over Protective Structures" (ROPS) or cabs. The most serious accidents generally occur when a tractor rolls sideways or back-flips, crushing the operator beneath it, or against a tree or farm structure. In all of these accidents, a ROPS or cab, combined with a seat belt and a seat with a back support, would have protected the operator from serious injury.

Another cause of fatal or serious injury is when the operator falls or is climbing off a moving tractor, and is run over by the tractor or by towed machinery. Unguarded power take-offs can grab clothing, causing horrific injuries and death. Passengers and children riding on tractors without ROPS or seat-belt protection are also victims in tractor accidents, usually by falling off and being run over.

Operating a Tractor

Tractors are the main cause of accidental deaths on farms. Over the years, many farmers, farm workers and others living on or visiting farms, have been killed or seriously injured falling from moving tractors, being run over by tractors, or being crushed when a tractor rolls sideways or backwards.

Spot the hazard

Regularly check for hazards relating to tractors, attached implements and field conditions. Hazard areas could include mechanical parts, operator training, other people, work procedures, unsafe jacking, climatic conditions, chemicals used, uneven terrain, and any other potential causes of an injury or a hazardous incident. Keep a record to ensure identified hazards are assessed and controlled.

Assess the risk

Once a potential hazard has been identified, assess the likelihood of an injury or hazardous incident occurring. For example, risk to children playing near a tractor will vary, depending on what the tractor operator is doing, how close they are to the tractor and whether the operator knows they are there. Consider ways of minimising risk.

Make the changes

Here are some ways of improving tractor operator safety:

- Read and follow safety procedures in the manufacturer's manual;
- Ensure an approved cab or roll-over protective structure (ROPS) is fitted.
- Fit and use a seatbelt on tractors with ROPS;
- If there is a risk from falling objects, fit a fall-on protective structure (FOPS);
- To reduce risk of back strain, fit a seat with side restraints and a backrest;
- Wear hearing protection if required, and remember, not all tractor cabs are sound proof;
- Keep children away from tractors and machinery;
- Remove starter keys when tractors are not in use;
- Have an up-to-date maintenance schedule;
- Follow safe maintenance and jacking procedures;
- Ensure the operator is properly trained for each type of tractor work;
- Always mount and dismount on a tractor's left side - to avoid controls;
- Adjust the seat so all controls are safely and comfortably reached;
- Keep all guards in place, including the power take-off (PTO), the power take-off shaft, and power input coupling;
- Operate the self-starter from the operator position only; and
- Never carry passengers unless there is a proper seat fitted for them.
- Never leave the seat of a tractor with the engine switched on.

When operating a tractor

- Drive at speeds slow enough to retain control over unexpected events.
- Reduce speed before turning or applying brakes.
- Watch out for ditches, logs, rocks, depressions and embankments.
- On steep slopes, without a trailed implement, reverse up for greater safety.
- Engage the clutch gently at all times, especially when going uphill or towing.
- Use as wide a wheel track as possible on hillsides and sloping ground.
- Descend slopes cautiously in low gear, using the motor as a brake.
- Never mount or dismount from a moving tractor.
- Ensure the park brake is on and operating effectively before dismounting.
- Take short breaks regularly when working long hours.

When towing implements

- Fit attachments according to the manufacturer's instructions.
- Always attach implements to the draw bar or the mounting points provided by the manufacturer.
- Never alter, modify or raise the height of the draw bar unless provided for by the manufacturer.
- Regularly check safety pins on towed lift-wing implements, to ensure they are not worn.
- Ensure all guards on towed implements are in place before operating.
- Never hitch above the centre line of the rear axle, around the axle housing or to the top link pin.
- Never adjust or work on implements while they are in motion.
- Never attach implements unless the PTO shaft is guarded.
- When parking, always lower the three-point linkage and towed implement.
- Be aware deep ripping equipment can snag and cause the tractor to back flip.

To avoid strain injury

- Adjust the tractor seat for back support and comfort.
- When buying a tractor, ensure seating is safe and comfortable.
- Check seat height, seat depth, backrest height and angle, fore and aft movement, seat tilt, firm padding, partial pivoting (if you have to spend long periods looking behind you), and vibration-absorbing suspension.
- Dismount every hour or so, and spend 5 or 10 minutes doing something active.
- Plan for your next tractor to include suitably low steps, handgrips, adequate doorway and cab space, and a safe mounting platform.
- Dismount by climbing down - not jumping down - and use each provided foot and hand hold

Tractor Maintenance

People have been killed or seriously injured doing maintenance and repairs to farm tractors. Major hazards can occur when tractors are jacked and wheels are removed without safe working procedures. These risks are magnified on soil. Regular workshop maintenance of farm tractors and trailed implements can prevent hazardous incidents in the field.

Spot the hazard

When planning tractor maintenance check the right equipment is available for safe jacking, removal of wheels and other tasks. People doing the job should be experienced, and there should be agreed safe procedures. Heavy lifting and carrying can cause strain injuries. Children should be kept away from tractor workshops. Field repairs present specific injury risks.

Assess the risk

The greater the risk of an injury or a dangerous incident occurring, the more urgent the need for changes to be made to minimise or eliminate the risk.

Make the changes

Here are some ways of improving tractor maintenance safety;

- Routinely adjust brakes, clutches and drives, according to the manual;
- Ensure steering, exhaust system and brakes are in top condition;
- Stop the motor before refuelling, servicing or greasing and, if possible, wait until the engine is cold before refuelling;
- Never remove or replace belts while pulleys are under power;
- Keep steps and working platforms free of grease and oil to avoid slips and falls;
- If the engine overheats, allow time for it to cool off before removing the radiator cap.

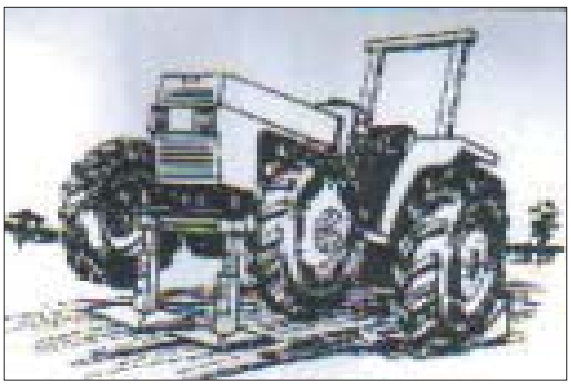
When jacking a tractor

- Jack on a flat surface, ideally a concrete floor.
- Avoid working alone. Ask somebody with training and experience to help.
- Refer to the manufacturer's manual on safe jacking, or seek professional advice.
- Where jacking points are not identifiable, jack from the lowest possible point.
- Use jacks that comply with Australian/New Zealand Standard 'AS/NZS 2693 1993 Vehicle Jacks or any other internationally recognized standard.
- Use vehicle stands that comply with Australian Standard 'AS 2538 - 1985 Vehicle Support Stands or any other internationally recognized standard and are designed for the load to be supported.

Blocks and chocks

- Ensure wooden blocks for jacking are of hardwood, with a surface area that will support the tractor's weight on soft soils.
- Chock all wheels that will remain on the ground, using big wooden chocks at the front and rear of each wheel. Don't use rocks; they're too unstable.
- Chock all wheels on articulated vehicles to stop them twisting sideways during jacking.
- Before jacking, apply brakes, place in gear - or automatic park - and switch ignition off.
- Stay clear of the tractor while operating the jack.

Removing Wheels



- Before removing any tractor wheel, first chock the other wheels and apply all brakes.
- If both wheels are removed from an axle, special precautions must be taken when replacing the first wheel to avoid knocking the tractor off its supports.
- When removing a rear wheel, make sure the front axle is immobilised by fixing wedges between the axle and body. Otherwise the body weight can shift and tip the tractor off the jack, blocks or stand.
- Loosen wheel nuts before the wheel is off the ground, to avoid any movement that could dislodge the tractor.
- Avoid improvised chocking when removing wheels _ use a wide-based jack of adequate lifting ability.
- Use a wheel trolley where practicable to reduce manual handling injury risk.
- Do not leave a tractor or any other vehicle supported on a hydraulic jack. Use appropriate axle stands or vehicle supports.
- In the field maintenance tasks, axle stands should be positioned on flat, wide bases.
- When inflating tyres, always use a tyre safety cage or other approved guard.
- Do not over-inflate tyres. Correct tyre pressure can be obtained from the tyre fitment placard inside the tractor cabin or stamped on the side of the tyre.
- If the right equipment is not available, call the tyre service company.
- If both rear wheels have to be removed, work on a flat, level concrete floor, in the workshop.

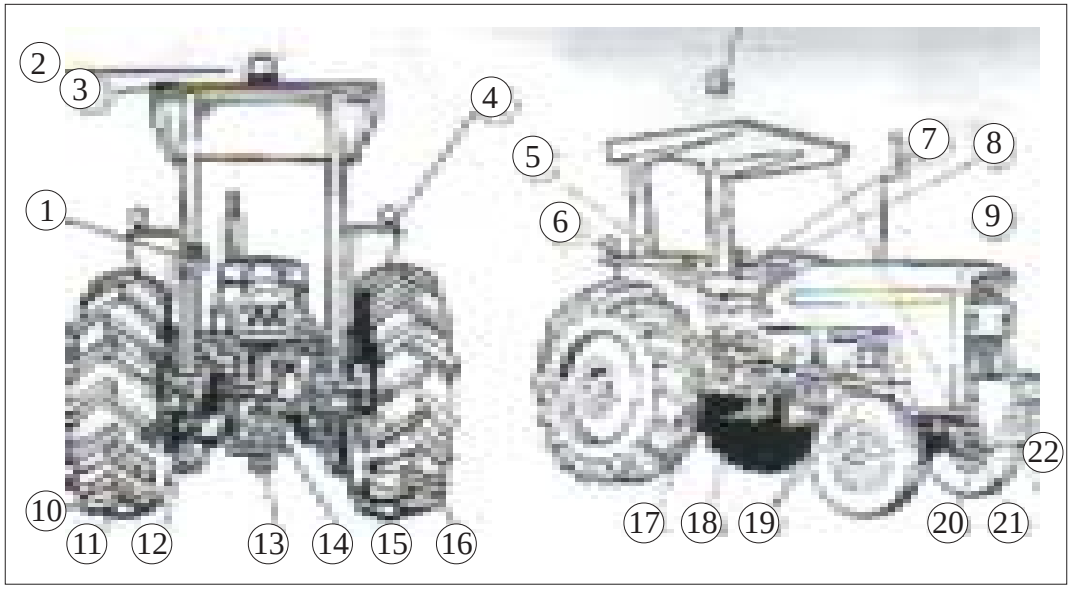
Tractor safety features

Young people and learners should not drive tractors unless they are under direct supervision and have received sufficient training.

The following illustrations show safety features that should be included on a tractor as well as components that assist in its safe operation.

1. Roll Over Protective Structure (ROPS).
2. Flashing amber light for towing on roads.
3. Rear tail and work lights.
4. Mudguards.

5. Side light.
6. Seat-belt.
7. Posture designed seat.
8. Manual over-ride power steering.
9. Maximum visibility.
10. Hazard warning decals.
11. Hydraulic power for heavy lifting.
12. Three point hitch for rear mounted equipment.
13. Draw-bar located low to minimise back-flipping.
14. Protective PTO shaft cover.
15. PTO shield.
16. Controls conveniently located.
17. Skid-resistant safety platform.
18. Neutral start switch with safety interlock.
19. Shroud and shield for fan and alternator.
20. Weights for greater stability and traction.
21. Sun-shield to reduce risk of skin cancer.
22. Headlights.



Climbing on and off your tractor

A tractor must be stationary when being mounted or dismounted. Never dismount from a moving tractor. Ascend and descend from the vehicle only from the left (clutch pedal) side, always using the access and egress provided, and facing towards the driving seat.

Do not use the right side, because:

- You may accidentally release the brake;
- The right side is crowded with controls _ brake pedal, foot throttle, hydraulic controls; and
- You may catch your clothing in the controls.

Always:

- Mount and dismount carefully, using the access and egress provided; and
- Use controlled movements. Place your feet carefully. Take a firm grip with your hands so that you will not fall or get your clothing entangled if you slip.

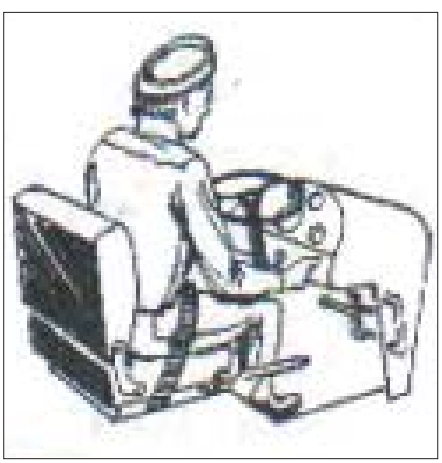
Safe Mounting Platform

A safe mounting platform is a combined left rear wheel guard and mounting step that reduces the risk of a person being run over while mounting a tractor.

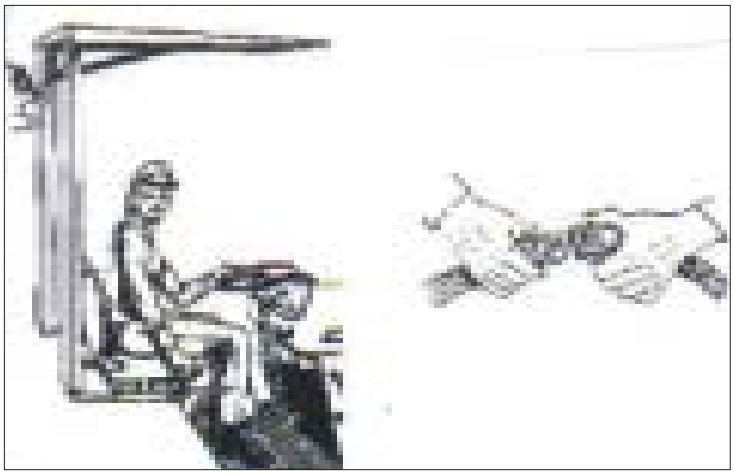
- Check with your dealer about getting a safe mounting platform for your tractor.
- When buying a new tractor, ask which models include a safe mounting platform.
- Remember always to mount and dismount on the left side, using access and egress provided.

Before starting your tractor

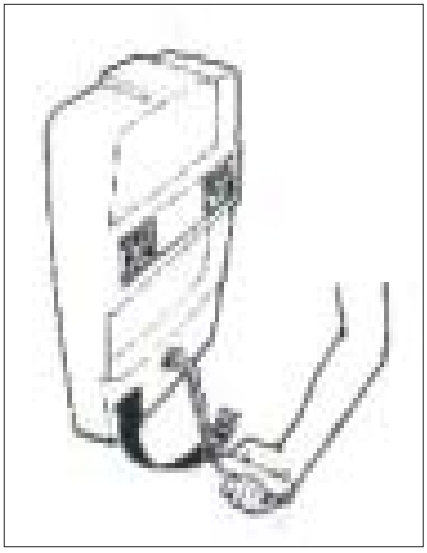
- Adjust the seat so that all controls are in easy reach.
- Seat belts must be worn when driving tractors fitted with ROPS.
- Know where to find and how to operate brakes, clutch and gears
- Know how to stop the tractor.
- Familiarise yourself with other controls and instruments.
- Check the tractor is in neutral and the handbrake is on.



- Check power take-off is disengaged and properly guarded.
- Keep children well clear.
- Remember to wear hearing protection.



Hand Starting (Cranking)



Cranking a tractor is hazardous and should be avoided wherever possible. It is much safer to maintain your battery in good working order. If you must crank-start a tractor:

Pull the crank-handle upwards _ don't push it downwards, don't
curl your thumb around the handle.

Follow these rules and your hand and arm will be flung clear of the engine backfires. If you ignore them, the spinning crank-handle could break your arm. Double check the tractor is out of gear and all brakes are on. Make sure the crank handle is disengaged before starting the engine normally.

Jump Starting

Jump starting a tractor can be hazardous. It is safer to recharge the battery at the workshop, or have a replacement battery handy. If you must jump start, make sure the tractor is out of gear and all brakes are applied.

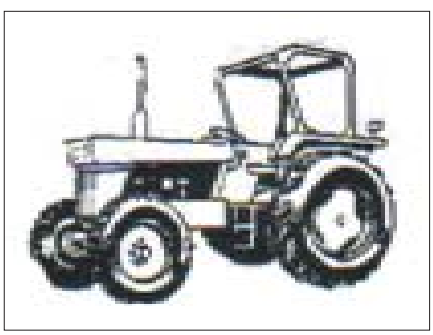
ROPS (Roll-Over Protective Structures)

A Roll-Over Protective Structure (ROPS) or a protective cab is the only sure protection against death or serious injury should a tractor roll sideways or back-flip. Tractors used for work under trees or low structures may have their ROPS lowered or removed while the work is being done. For agricultural tractors, the ROPS frame should comply with Australian Standard 1636 or Australian Standard 2294 or any other internationally recognized standard. In any event the ROPS must be capable of withstanding the dynamic loads resulting from a roll over incident.

Two Post _ standard protection.
For general field work

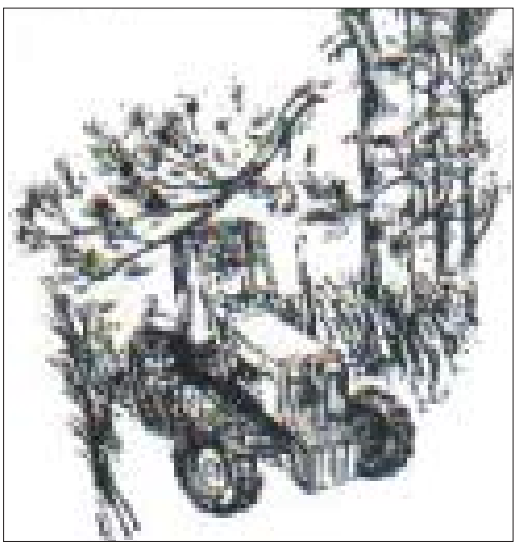
Fold-down _ for orchard or confined work, such as in undercover parking

Fold-down _ for orchard or confined work, such as in undercover parking



Enclosed cab _ controlled environment - controls climate, comfort and noise

ROPS can be made specially for older models and can be fitted for a reasonable price. Many older tractors are still used without ROPS and are potential hazards to those who operate them. To be effective every tractor with a ROPS or cab should also be fitted with a seat-belt and/or an appropriate combination of operator protective devices in case of a roll-over or back-flip. Any passenger must have a separate seat and seat-belt and be positioned within the zone of protection of the ROPS or cab. Once installed, ROPS must not be altered or modified in any way. They must not be welded, cut or drilled. In the timber industry, or in any situation where there is a possibility of objects falling on the tractor, a Falling Objects Protective Structure (FOPS) should be fitted. DOSH Malaysia strongly recommends that ROPS be fitted on all tractors where practicable. A Falling Objects Protective Structure (FOPS) protects the tractor operator from falling objects, such as branches. However a FOPS is not necessarily an adequate roll-over protective structure.



Children and passengers

Children are have been tragically killed by riding on, playing near or operating tractors and other farm machinery. Children should not be in the workplace, particularly where tractors are kept or are likely to be working. It is also highly dangerous and against the law to allow passengers of any age on a tractor without specific passenger protection.

A passenger may not ride on a tractor unless it has a ROPS or cab that totally encloses the passenger in its zone of protection, and is fitted with a safe and secure seat-belt and an appropriate combination of protective devices. Remember that a ROPS is generally designed to protect only the driver. Unless a ROPS is specifically designed to protect passengers, even properly seated and belted passengers will be outside the protective zone and may be seriously injured in a roll-over or a back-flip.

- Exercise extreme caution when operating a tractor or any attached equipment when children are in the area. Clear all-round visibility is essential to avoid children and animals.
- Never leave the motor of an unattended tractor running.
- Never leave the tractor in a position where it can roll.
- Never leave a tractor jacked up in the vicinity of children.
- Never leave three-point linkage machines or front-end loaders in the raised position.

Guarding the power take-off (PTO)

A power take-off implement fitted to a tractor is something to be treated with great care and attention.

- If the power take-off shaft, drive and input connections are not properly guarded, clothing may become tangled and loss of limb and other serious bodily injuries may occur.
- Power take-off guards should enclose the entire length of the input shaft from above and on either side. There should be enough clearance between the guard, the tractor parts and the power take-off to prevent fouling of limbs or clothing.
- Where the guard revolves with the shaft, it should be capable of being stopped by hand.
- Risk of PTO injury can be reduced by ensuring the control lever is easily reached.
- When operating power implements, don't turn too sharply. It can cause the PTO guard cones to break, and the lower links or the tractor tyre can foul the power shaft.

  Guard your equipment and you guard your life.

Hitching hazards

Most fatal tractor accidents involve roll-overs. Some operators tempt fate by hitching loads to the rear axle or by attaching loads to a high draw-bar hitch.

- A tractor's front wheels can be kept firmly on the ground by fitting attachments strictly in accordance with the manufacturer's instructions. When attaching equipment use draw-bars fitted to tractor mounting points.
- This picture demonstrates what can happened when the draw-bar height is increased or when loads are hitched around the axle, seat bracket or top link the front wheels are lifted off the ground and the tractor may topple over backwards.
- When backing the tractor up to the implement be aware of any person who may be nearby or helping. People have been killed while standing between a tractor and its implement.
- Engage the clutch gently when towing.
- When pulling heavy loads, or pulling another vehicle from a bog, it is better to use reverse gear and pull from a low hitch point at the front of the tractor, if one is fitted. Pulling from the front will stop the tractor flipping over backwards. When pulling reverse, use the lowest gear ratio.
- High hitching can cause overturning.
- Hitch low for safety!

Too many operators have been killed because they hitched too high.

- If you get bogged and cannot back out, get help.
- If the rear wheels will not turn forward, the tractor may overturn backwards.

Obstructions, ditches and bogging

- Beware of striking obstructions _ they can cause the tractor to overturn.
- Make sure hidden ditches, gully edges, holes and embankments are marked with an easily seen marker.
- Drive carefully, especially on unfamiliar surfaces.
- Drive cautiously when near edges, ditches, embankments or depressions in the ground. Never drive close to the edge of a trench or ditch.

Steep slopes

- Always back up steep slopes. If the rear wheels slip or spin, abandon the attempt.
- The danger of a tractor overturning is greatly increased on hills and sloping ground. Take great care!
- Engage the clutch gently when going forward uphill.
- Do not park a tractor on steep slopes.
- Descend slopes cautiously. Keep the tractor in low gear.
- For crossing slopes, you should increase the wheel tracks for greater traction and stability. However, if the tractor seems likely to slide, or if it starts to slip, abort the operation!
- Travel straight down a slope, and not across it.
- Descend a slope using the same low gear you would need to climb it.

Powerlines

Overhead high tension powerlines which cross may properties can be extremely dangerous. Treat them with great caution.

- Tall farm machinery _ headers, towed augers and tractors fitted with radio antennae _ become instant killers if they contact high-voltage powerlines. In fact, in the right atmospheric conditions, the machinery does not even have to touch the powerlines. Simply being too close-sometimes even a metre away _ can evoke a fatal "flash-over.
- Another cause of powerline electrocution in rural areas is the upending of long metal irrigation pipes beneath high-voltage lines.
- Conductive farm machinery and equipment should remain at least three metres away from powerlines carrying up to 33kV and at least six metres from powerlines carrying more than 33kV.
- Before operating high equipment or moving irrigation pipes near powerlines, check the energy density and safe working distances with your local Western Power district office, listed in the country telephone books.
- Plan powerlines so they do not cross driveways and roads, if possible.
- Plan driveways and roads so they don't go under powerlines.
- Consider having hazardous overhead wires buried underground.

To be safe from electrical contact, tall farm equipment should be kept well away from high-voltage powerlines.