



Government of **Western Australia**
Department of **Commerce**

Guidance note

Falls prevention

in the agricultural sector

2011



commission
for occupational
safety and health

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Foreword

This guidance note is issued by the Commission for Occupational Safety and Health (the Commission) under section 14 of the *Occupational Safety and Health Act 1984* (the OSH Act).

The OSH Act established the tripartite Commission, which consists of representatives of employers, unions and government, as well as experts. The Commission has the function of developing the occupational safety and health legislation and supporting guidance material, and making recommendations to the Minister for Commerce for their implementation. To fulfill its functions, the Commission is empowered to establish advisory committees, hold public inquiries, and publish and disseminate information.

The Commission's objective is to promote comprehensive and practical preventive strategies that improve the working environment of Western Australians. This guidance note has been developed through a tripartite consultative process, and the views of employers and unions along with those of government and experts, have been considered.

The following information is provided as background to understanding this guidance note.

Legislative framework for occupational safety and health

The *Occupational Safety and Health Act 1984*

The OSH Act provides for the promotion, co-ordination, administration and enforcement of occupational safety and health in Western Australia. It applies to all industries with the exception of mining and petroleum.

With the objective of preventing occupational injuries and diseases, the OSH Act places certain duties on employers, employees, self-employed people, manufacturers, designers, importers and suppliers.

The broad duties established by the OSH Act are supported by a further tier of statute, commonly referred to as regulations, together with lower tiers of non-statutory codes of practice and guidance notes.

Occupational Safety and Health Regulations 1996

The Occupational Safety and Health Regulations 1996 (the OSH Regulations) have the effect of spelling out specific requirements of the legislation. They may prescribe minimum standards and have a general application, or define specific requirements related to a particular hazard or type of work. They may also allow licensing or granting of approvals and certificates.

Codes of practice published under the OSH Act

Codes of practice published under the OSH Act provide practical guidance on how to comply with a general duty or specific duties under the legislation.

Codes of practice may contain explanatory information. The preventive strategies outlined do not represent the only acceptable means of achieving a certain standard.

A code of practice does not have the same legal force as a regulation and is not sufficient reason, of itself, for prosecution under the legislation, but it may be used by courts as the standard when assessing other methods or practices used.

Guidance notes published by the Commission

A guidance note is an explanatory document issued by the Commission, which provides detailed information on the requirements of legislation, regulations, standards, codes of practice or matters relating to occupational safety and health.

Scope and application of this guidance note

This document applies to all agricultural industry workplaces in Western Australia covered by the *Occupational Safety and Health Act 1984* (the OSH Act). It provides guidance for employers and workers on the prevention of falls from heights in accordance with the OSH Act and the OSH Regulations.

As it is not possible to deal with every situation that may be found at workplaces, the practical guidance in this document should be considered in conjunction with the general duties in the OSH Act, specific requirements in the OSH Regulations and the Commission's *Code of practice: Prevention of falls at workplaces*.

Disclaimer

Information in this publication is provided to assist you in meeting your occupational safety and health obligations. While information is correct at the time of publication, readers should check and verify any legislation referenced in this publication to ensure it is current at the time of use.

Changes in law after this document is published may impact on the accuracy of information. The Commission provides this information as a service to the community. It is made available in good faith and is derived from sources believed to be reliable and accurate at the time of publication.

Acknowledgement

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1. Introduction

Falls from heights in the agricultural sector have been the cause of many injuries. As with other occupational safety and health issues, there are general 'duty of care' obligations to ensure people are not exposed to the risks of falls, as far as is practicable.

This document provides guidance on the prevention of falls from heights in the agricultural sector. In particular, it provides an outline of the risk management processes to be conducted. It is a starting point to address falls prevention from farm equipment and structures.

This document looks at typical high risk agriculture activities, such as using silos, working on windmills and carting hay bales, and recommends control measures to eliminate or minimise the risk of falling during these tasks. It only provides guidance on falls prevention, and information on other related matters may be found in Appendix 2 or on the WorkSafe website at www.worksafe.wa.gov.au

In relation to the prevention of falls, designers and manufacturers of farm equipment and structures have specific responsibilities under Western Australia's safety and health legislation to, as far as practicable, eliminate or control hazards to end users during the design and manufacturing phases.

Employers also have a 'duty of care' obligation to ensure that, as far as practicable, workers are not exposed to hazards and risks related to farm equipment and structures, and adequate control measures are implemented.

In addition, people, who in the course of trade or business, engage contractors and their employees have the responsibilities of an employer towards them in relation to matters over which they have control or the capacity to have control.

Employees also have obligations under the *Occupational Safety and Health Act 1984* (OSH Act). They must take reasonable care to ensure their own safety and health at work and that of others who may be affected by their work and report any situations that may be hazardous. Their duty for safety and health at the workplace is complementary to the employer's duty and they need to receive adequate information, instruction, training and supervision to fulfill it.

There are also specific requirements in the Occupational Safety and Health Regulations 1996 (OSH Regulations) in relation to fall prevention, some of which are outlined in this guidance document.

2. The risk management process: the three step process

The OSH Regulations contain a specific requirement for employers to undertake a risk management process. This involves a three-step process to:

- identify hazards;
- assess risks of injury or harm arising from each identified hazard; and
- control risks through implementation of control measures to eliminate or reduce the risks.

The following sections provide guidance on the three risk management steps. This should be conducted and monitored on an ongoing basis to ensure control measures are working and no new hazards have been introduced.

2.1 The first step: hazard identification

The first step in the risk management process is identifying fall hazards. This involves identifying anything that may cause a fall injury.

It is important that you identify all the hazards in the task your employee or contractor is required to do that could involve a fall. Tasks that may involve a risk of a fall include:

- working on any plant/machinery/equipment or structure being constructed, inspected, tested, maintained, repaired or cleaned;
- tasks on a fragile, slippery or potentially unstable surface;

- using equipment to gain access to, or work at, an elevated level;
- working on a sloping surface on which it is difficult to maintain balance; and
- working in close proximity to an unprotected edge, a hole, shaft or pit into which a person could fall.

Hazards can be more thoroughly identified by involving employees, contractors and others in a process of consultation.

2.2 The second step: risk assessment

The second step in the risk management process is assessing the risks of injury or harm arising from the fall hazards identified.

This involves looking at the chance or likelihood of a hazard occurring and, if it does occur, the extent of any harm or injury, ie the consequences. It is a way of deciding which hazards need to be addressed first, ie where there is the highest risk of injury or harm.

This step should provide information on:

- where, which and how many workers are likely to be at risk of incurring injury or harm to their health;
- how often this is likely to occur; and
- the potential severity of any injuries.


Risk assessment is not an absolute science — it is a ‘best estimate’ on the basis of available information. Therefore, it is important that the person or people involved or undertaking a risk assessment have the necessary information, knowledge and experience of the work environment and work process and employees and safety and health representatives (if they exist) are consulted as they may be able to advise on the particular hazards and risks associated with different work activities.

2.3 The third step: risk control

The third step is to implement control measures to eliminate or reduce the risk of a person being injured or harmed and ensure those measures are monitored and reviewed on an ongoing basis.

There is a recommended order of control measures to implement, ranging from the most effective to the least effective, to eliminate or reduce the risks of injury or harm. This is outlined in the following table.

Table 1 Recommended order of control measures to eliminate or reduce the risk of injury or harm

1.	Elimination — removing the hazard or hazardous work practice from the workplace.	
2.	Substitution — substituting or replacing a hazard or hazardous work practice with a less hazardous one.	
3.	Isolation — isolating or separating the hazard or hazardous work practice from people involved in the work or people in the general work area.	
4.	Engineering controls — if the hazard cannot be eliminated, substituted or isolated, an engineering control is the next preferred measure.	
5.	Administrative controls — this includes introducing work practices that reduce the risk, such as providing procedures, instruction and training.	
6.	Personal protective clothing and equipment — these should be considered only when other control measures are not practicable or to increase protection. While essential for some work procedures, these should be last in the list of priorities.	

In some instances, a combination of control measures may be appropriate.

The applicability of different control measures will depend on the particular situation and the hazards and risks. Recommendations for control measures are outlined in the following sections.

3. Silos and field bins
4. Vats and tanks
5. Windmills
6. Loading
7. Solids separation pits, effluent ponds or lagoons
8. Accessing trees
9. Accessing farm machinery
10. Livestock
11. Maintenance and service areas
12. Miscellaneous farm activities

References to 'fall injury prevention systems' in this document mean:

- restraint systems;
- fall-arrest systems;
- catch platforms;
- scaffolding;
- safety nets; and
- safety mesh.

Choosing the most appropriate fall injury prevention system for the situation and the risks is essential. Where required, further information may be found in the Commission's *Code of practice: Prevention of falls at workplaces*, available at www.worksafe.wa.gov.au, and in the other references included in Appendix 1.

Information regarding confined spaces, roll-over/falling objects protective systems and overhead power lines can be found in Appendix 2.

3. Silos and field bins

Most silos and field bins require fall protection as they may involve a risk of falling from heights.

High risk activities

For example, there may be a high risk of falling when:

- accessing or securing the top hatch;
- inspection of the level of storage through the top hatch;
- fumigating;
- sampling during or after filling;
- roof maintenance and cleaning; and
- temperature measurement.

Control measures

First, try doing the task from the ground by:

- blowing product into the silo through permanent filler tubes;
- installing fill indicators such as clear sight glasses at regular intervals up the side of the silo or field bin;
- installing a lid opening/closing device that can be operated from the ground;
- using a remote system for grain level assessment such as mechanical fill indicator visible from the ground, hand held sensor or weight indicator;
- fitting a fumigation system so that fumigant is delivered into the silo from ground level – the ground opening device should be compatible with the fumigation system to ensure a seal;
- fitting a ground level access hatch to allow cleaning; and
- using an extension pole to clean the inside without the need to enter the silo.



1. Field bin that incorporates sight glasses for showing product level and a fill hatch operated from the ground.

When these risk controls do not remove the need for a person to climb up a silo, consider:

- installing fixed stairs, ramps, work platforms or ladders complying with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation*;
- using an elevated work platform such as a cherry picker; or
- using a fall injury prevention system, such as a restraint system, fall arrest system, catch platforms, scaffolding (barrier or guardrails), safety nets or safety mesh – see the Commission's *Code of practice: Prevention of falls at workplaces* for further details.

A fall arrest system that is intended to arrest a fall from a height must not be used on a silo installation if a person could free fall less than six metres. This is because the length of a lanyard plus the length of deployment of the shock absorber plus the average height of a person comes to 5.4 metres, meaning that falls of less than six metres will result in the person striking the ground.

Caged rung ladders with angles exceeding 75 degrees to the horizontal should be fitted with a permanent or temporary fall arrest system. Persons using this fall arrest system need to use a system that consists of a locking device connected to a 300mm lanyard and harness with attachment to a drop-line, limiting the ability to free fall to a maximum of 600mm. As an alternative, there are also fall restraint systems that prevent falling by attaching a fitting on the front 'D' ring of the harness to the wire rope installed in the middle of the ladder or to one side and, if somebody slips, it locks off immediately and there is no fall.

A fall arrest system that consists of a 1.8 metre lanyard with a shock absorber must not be used on caged rung ladders as it is unsafe. As outlined above, it allows a fall of at least 5.4 metres before the fall is arrested, which in many cases would mean a person could hit the ground before the equipment activates fall arrest.

A temporary or permanent fall arrest system should not be used if it does not comply with the controls specified above.

Other safety issues to note include:

- controlling unauthorised access to silos and bin. For example, install a cover to an access ladder, and lock hatches where possible;
- recognising that silos and bins are potential confined spaces. Prior to any entry, all regulations and guidelines concerning confined spaces must be considered and followed – see Appendix 2 and regulations 3.82 to 3.87 of the OSH Regulations;
- providing all workers with adequate information, instruction, training and supervision in the use of controls to prevent falls, which is a requirement under the OSH Act;
- removing all debris and surplus materials under the access area and ensuring augers and other machinery are guarded – see the Commission's *Code of practice: Safeguarding of machinery and plant*;
- ensuring there is an effective structural design to help prevent silo collapse and falls. Safety issues associated with structural design include load densities, wind forces, uneven foundations, overloading, corrosion and water accumulation; and
- ensuring any silo or bin modifications are undertaken by a competent person and only after guidance is sought from the supplier/manufacture. A competent person means, according to the OSH Regulations, a person who has acquired through training, qualification or experience (or a combination of those things), the knowledge and skills required to do that the task competently.

4. Vats and tanks

The following typical activities may involve a high risk of someone falling from milk vats or wine fermentation tanks, unless proper fall protection is provided.

High risk activities

For example, there may be a high risk of falling when:

- accessing the top hatch;
- inspecting levels;
- cleaning the inside of vats and tanks; and
- doing maintenance.

Control measures

First, try doing the task from the ground by:

- having access to vats and tanks near the ground;
- fitting of outlets, inlets and controls near the ground;
- fitting the displays of measuring equipment where they are visible from the ground;
- using fully automatic cleaning vats;
- installing horizontal vats;
- when cleaning, using systems of work that enable the effective completion of the task from the ground – for example, using long handled equipment or pressure cleaners; and
- using effective cleaning processes that move residue or unwanted material to the bottom of the vat or tank for ground level removal.

Further control measures

If the above controls are not practicable:

- install fixed stairs, walkways, ramps, work platforms or ladders complying with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation*; or
- use a fall injury prevention system – see the Commission's *Code of practice: Prevention of falls at workplaces*.



2. Vats with inlets, outlets and controls near ground level.

Other safety issues to note include:

- providing adequate information, instruction, training and supervision to workers on the use of equipment and related safety controls and procedures, which is a requirement under the OSH Act;
- using a competent person where work platforms need to be attached to the floor, ceiling, wall or other suitable attachment and anchorage points. Work platforms should not be attached to the floor or ceiling without a competent person assessing the structural adequacy of the building;
- controlling unauthorised access to vats. For example, use barriers across fixed ladder guarding, and lock hatches;
- recognising that vats and tanks are potential confined spaces and may contain a hazardous atmosphere. Prior to any entry, all regulations and guidelines concerning confined spaces must be considered and followed – see regulations 3.82 to 3.87 of the OSH Regulations. Procedures and safe systems of work must be developed and implemented and include training and provision of satisfactory equipment for oxygen measurement and rescues. Vats must never be entered without a person on the outside acting as a spotter. Emergency rescue plans must be in place including a means of external communication such as a mobile phone. Ensure that pipework and electrical sources are turned off and isolated prior to entry – see the Commission's *Guidance note: Isolation of plant*; and
- where carbon dioxide is used in vats, scientific monitoring is needed to test the internal atmosphere. If there are unsafe levels of carbon dioxide or oxygen a worker could be quickly affected and at risk of death. Where carbon dioxide is used, there may also be a need for atmospheric testing outside of the vat, for example if the vat is indoors and there are cylinders of carbon dioxide used for carbonation.

5. Windmills

Access to most windmills will involve a high risk of someone falling, unless appropriate fall injury prevention systems are provided.

High risk activities

For example, there may be a high risk of falling when:

- tightening bolts;
- replacing seals;
- lubricating;
- carrying out breakdown maintenance; and
- repairing or replacing a head.

Control measures

First, try eliminating tasks to be performed at height by:

- installing a ground level lubrication system;
- installing an automatic lubrication system; or
- purchasing a tilt-over-structure designed windmill.

Further control measures

If the decision is made to access the windmill without any of the above-mentioned controls in place, there are limited options to complete this work safely. The risks associated with the work at height need to be assessed and eliminated. If the above controls are not practicable, then ensure:

- a safe work practice is developed, as far as practicable; and
- workers are trained in safe work practices and contractors have adequate experience for the work.

In addition, consider:

- installing fixed ladders and platforms complying with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation*, where practicable;
- using an elevated work platform, except in high winds; or
- using a fall injury prevention system – see the Commission's *Code of practice: Prevention of falls at workplaces* for issues and risks to consider when planning to use these systems.

Other safety issues to note include:

- seeking the manufacturer's advice on safety;
- replacing windmill heads should always be performed from the ground using mechanical lifting equipment to lower and raise the windmill or the windmill head if elevated work platforms are also being used. At all times while replacing a windmill head, a safe work procedure should be used that considers the safe positioning and support of the head while work is being carried out;
- before making a decision to access a windmill, establishing that the structure above and below the ground level can safely support the loads involved in access. Consideration must be given to the stability and security of the working platform prior to standing on it. Check for rotting wood and slip hazards such as oil and moisture;
- considering risks because of the weather conditions such as wind and rain;
- ensuring the site is clear hazards such as star pickets, fences and clutter and the ground is stable and accessible;
- controlling the equipment by turning the windmill head off or otherwise controlling the movement of the windmill head and tail during work;

- providing a safe means of transporting tools and equipment to the top of the windmill, such as a rope, bucket and tool belt. The use of a hard hat may prevent injuries from falling objects;
- considering the condition of the anchorage points and struts (due to corrosion etc). Ensure all bolts are in place and secure;
- establishing emergency procedures so they can be carried out as soon as possible after an emergency situation has arisen. They need to enable the immediate rescue and the provision of first aid to the injured person. Where practicable, ensure workers and contractors do not work alone on windmills. Where they do work alone, there must be a means of communication to enable workers and contractors to call for help in an emergency and a procedure for regular contact with them;
- provision of adequate information, instruction and training and supervision to workers to enable the performance of tasks safely and without risks of injury or harm to their health and safety, which is a requirement under the OSH Act;
- as part of the system of work, reviewing the condition of the windmill platform and upgrading where practicable; and
- engaging a suitably qualified person with the appropriate experience and equipment to conduct maintenance work.

Replacing windmills

When reviewing the update or replacement of windmills, it is advisable to consider other pumping solutions, including properly installed ground based pumps, which may be solar, diesel or electric powered, or air driven. Any alteration in design should consider the engineering implications for the air structure and the capacities of the mechanical lifting equipment to be used and should only be carried out after seeking advice from the supplier and/or manufacturer.

6. Loading

Loading and unloading in agricultural workplaces can involve a variety of activities that present a fall risk. These activities include:

- wool bale loading;
- large hay/silage bale carting and storing;
- small hay bale carting; and
- loading and unloading trucks.

6.1 Wool bale loading

The following typical situations involving wool bale stacks may involve a high risk of someone falling, unless risk control is provided.

High risk activities

For example, there may be a high risk of falling when:

- loading or unloading wool bales; and
- accessing a load for tarping.

Control measures

First, try doing the task from the ground by:

- using bale loading equipment for loading and unloading such as a bale clamp, bale grab or other suitably designed attachment on a loader or forklift;
- using a specifically designed truck with bale loader capabilities; and
- considering not covering the load – only use ropes which can be tied at ground level. However, this would depend on the load height and haulage requirements.

Other safety issues to note include:

- when loading/unloading, provision of overhead protection (falling object protection) for the operator should be considered to prevent them from being struck by a bale, such as a four poster roll over prevention system or approved cabin. Forklift attachments should have a back guard fitted, or alternatively use bale clamps to secure the load;
- using mechanical aids according to manufacturers' instructions;
- when loading, considering the stability of the formed load, including position, orientation and characteristics of bales along with the laying or stacking pattern in relation to the truck tray or trailer dimensions;
- fitting a back guard on the loader attachment to prevent rollback of the load;
- leaving loading equipment at ground level when not in use;
- ensuring forklift operators have a current high risk work licence for the tractor or loader if it has a mast operated forklift;
- ensuring the operator is competent in the operation of the tractor or loader; and
- to avoid hitting pedestrians, ensuring people are not in the vicinity of the tractor/loader/forklift during its operation. Signs, barricades or a spotter may be necessary.

The stability/security of the load is important as the driver or others may be exposed to falls risks arising from a need to re-secure the load during transport.

Further control measures

If mechanical loading is not practicable:

- use a bale elevator, a bale loader and a safe work procedure if the bales are to be manually stacked onto a truck;
- when accessing the load, use ramps or work platforms that comply with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation*;
- use a fall injury prevention system, such as a restraint system – see the Commission's *Code of practice: Prevention of falls at workplaces*; or
- use a ladder suitable for the purpose and ensure it is appropriately secured.

6.2 Large hay/silage bale carting and storing

Loading or accessing large bales on a truck or building a stack can involve the risk of someone falling from heights. For example, during loading and unloading, or covering a stack with a tarp. The use of mobile plant during loading and stacking can be helpful, but care must be taken not to increase the risk of workers falling from the truck or stack.

High risk activities

For example, there may be a high risk of falling when:

- loading and stacking bales onto trucks in the paddock;
- accessing stacks;
- loading/unloading at pick up and delivery point; and
- securing the load.

Control measures

First, try doing the task from the ground by:

- loading/unloading with mechanical aids such as a bale fork attachment on a front-end loader, forklift or tractor, or a multi-purpose telescopic loader. Ensure that the risks of falling bales are controlled by providing overhead protection, such as a fall object protective structure (FOPS);
- using vehicles which are fitted with headboards and tailboards to support the load;
- considering the stability of the formed load including position, orientation and characteristics of bales, and the laying or stacking pattern in relation to the truck tray or trailer dimensions. For example, consider the taper of round bales and use an alternating direction of restraint; and
- securing loads with the aid of throw ropes or load binders.



3. Round bale fork attachment.



4. Wrapped silage grab.

Other control measures that should be implemented when using mechanical aids include:

- using an appropriate loader/forklift/tractor attachment, such as grabs or spikes;
- when loading/unloading, using overhead protection for the operator to prevent them being struck by a falling bale. For example, FOPS or a four poster ROPS fitted to the tractor;
- fitting a back guard on the loader attachment to prevent rollback of the load;
- ensuring that equipment is well maintained and suitably rated for the load;
- ensuring surface conditions are suitable and any overhead power lines and tree branches are identified and avoided. 'No go' zones should be established;
- not using a 'bucket' attachment for this type of task, as it is not suitable;
- always leaving tines lowered on the ground when not loading;
- ensuring forklift operators have a current high risk work licence, which is a requirement under the OSH Regulations;
- ensuring the operator is competent in the operation of the tractor or loader;
- avoiding hitting pedestrians. People must not be in the vicinity of the tractor/loader/forklift during its operation; and
- when unloading, prior to releasing load binders, carefully assess loading stability and provide further support where necessary so that the load does not fall onto anyone.

Further control measures

If the above methods are not practicable, consider:

- when tarping and securing loads on vehicles, using platforms which provide safe access at the load height;
- using tarp spreaders – these should be used within load specifications of the forklift, tractor or loader; or
- tarping the load or stack from a defined and suitably equipped location using a fall restraint system – see the Commission's *Code of practice: Prevention of falls at workplaces*.

6.3 Small hay bale carting

Unless appropriate measures are taken, small hay bale carting and stacking tasks should not involve working at unsafe heights, as these activities may involve a high risk of someone falling and sustaining an injury.

High risk activities

For example, there may be a high risk of falling when:

- loading and stacking bales onto trucks, in the paddock or elsewhere;
- loading and unloading at pick up and delivery points; and
- securing the load.

Control measures

First, try doing the task from the ground by:

- using mechanical aids, such as a bale fork attachment on a front-end loader, forklift or tractor. Attachments and aids could include a bale clamp, a bale grab, a hay cart, or a bale wagon. Ensure that the risks of falling bales are controlled by providing overhead protection, such as the tractor cabin;
- using vehicles fitted with headboards and tailboards so as to support the load;
- stacking bales so that lower supporting bales are bound (stabilised) by overlapping and interlocking upper bales in an alternating pattern; and
- securing loads with the aid of throw ropes or load binders.

Further control measures

If the above controls are not practicable, consider:

- when manually stacking, using a bale loader/elevator and a safe work procedure. The safe work procedure should consider and include:
 - the optimum size of bale to be stacked;
 - an alternating pattern of stacking bales so that lower supporting bales are bound (stabilised) by overlapping and interlocking upper bales;
 - the position of the stack;
 - the positioning of the elevator and access ladders;
 - the use of sound bales for all edges and the requirement that the edge bales are not stood on during the stacking process; and
 - the identification of manual handling hazards, particularly forces and postures used by the workers. Risk controls such as training, supervision and reduced exposure are possible solutions;
- installing fixed stairs, ramps, work platforms or ladders complying with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation*; or
- using a portable access ladder suitable for the purpose (see the Commission's *Code of practice: Prevention of falls at workplaces*).

Precautions that should be taken when covering the load include:

- considering whether tarping is necessary and, if it is for any load, consider a means of doing this work safely. Platforms that provide safe access at load heights are in use in many workplaces. Tarp spreaders are also available but should be used within the load specifications of the manufacturers' instructions; and
- if these controls are not practicable, consider tarping from a defined and suitably equipped location which uses a fall restraint system – see the Commission's *Code of practice: Prevention of falls at workplaces*.

6.4 Loading and unloading trucks

Falls from trucks represent a sizable proportion of reported injuries in agricultural workplaces.

High risk activities

For example, there may be a high risk of falling when:

- accessing tanks, including access for maintenance and cleaning;
- loading/unloading stock from trucks; and
- loading/unloading equipment and pallets from trucks.

Control measures

First, try doing the task from the ground by:

- having access to tanks near the ground;
- fitting outlets, inlets and controls near the ground;
- fitting the displays of measuring equipment so they are visible from the ground;
- installing level indicators on liquid tanks;
- installing ground filling systems; and
- when purchasing a new truck, ensuring that access steps and/or accessible components are provided.

Further control measures

If it is not possible to perform necessary tasks from the ground, consider:

- installing gantries, ramps, work platforms or ladders complying with Australian Standard, AS 1657 *Fixed platforms, walkways, stairways and ladders – design construction and installation*;
- using a fall injury prevention system, such as hand rails or a fall restraint system – see the Commission's *Code of practice: Prevention of falls at workplaces*; or
- using a ladder suitable for the purpose that is appropriately secured.

Other controls that should be implemented when loading and unloading trucks include:

- where practical, not working in bad weather, or in conditions of excessive glare;
- using suitable non-slip footwear;
- ensuring emergency stop buttons are easy to access;
- consulting with workers about alternate ways to do the job. Employees and contractors must be provided with information, instruction, training and supervision to enable them to perform their work in a safe manner; and
- developing a safe work procedure, as detailed below.

Loading on/from a truck

The safe work procedure should address:

- the use of headboards/tailboards on the vehicle;
- an assessment of the optimum combination of bale or bag size, laying or stacking pattern and the dimensions of the tray of the truck;
- the distance the load has to travel;
- identification of the best position for the truck prior to loading, and the order in which loading will take place;
- maintenance of hooks, ropes and truck trays in optimum condition;
- working as close to the centre of the truck tray as possible;
- assessment of the footwear to be worn by workers, with consideration of contents of bales, such as heavy lanolin content of wool leading to slippery surfaces;
- training of workers in the procedures – it must be ensured that they receive training and are consulted in the development of the procedures;
- ensuring workers are adequately supervised in the performance of the tasks of feeding/stacking bales or bags according to the procedure; and
- safe access to and egress from loads – it must be ensured that workers are able to move safely to and from loads.

Platforms

Other controls include:

- the fitting of removable or fixed rails to the edges of the platform;
- an assessment that the platform is structurally sound and can take the weight and activity associated with loading wool or hay bales;
- ensuring that removable guardrails are left in place between wool loading tasks;
- for work undertaken at night or in poor visibility, making the platform rails a bright colour and reflective. Adhesive reflective tapes are readily available for use on the edges of platforms, ramps and steps;
- installation of external lighting;
- provision of a platform shelter with a fixed canopy;
- installation of buffers or bollards to maintain a suitable distance between the platform and vehicles;
- fitting a non-slip surface to the platform to decrease the risk of slipping;
- ensuring suitable non-slip footwear is worn;
- training workers in the handling of materials on and off the platform, so they can perform their job safely; and
- ensuring there are barriers or other buffers on loading ramps to prevent forklifts/tractors/loaders running off an edge.

Unloading

The safe work procedure should address:

- prior to releasing load binders, careful assessment of load stability and where necessary provision of further support; and
- avoiding hitting pedestrians by ensuring people are not in the vicinity of the tractor/loader/forklift during operation.

7. Solids separation pits, effluent ponds or lagoons

Solids separation pits, effluent ponds and lagoons may involve a high risk of someone falling and sustaining injury and/or drowning.

High risk activities

For example, there may be a high risk of falling when:

- accessing empty pits for cleaning/maintenance tasks;
- sheep dipping tasks;
- pumping out effluent ponds and lagoons; and
- rescuing an animal from a pond or pit.

Control measures

First, eliminate the fall hazard by:

- installing a fence around pits, lagoons or effluent ponds to prevent accidental access by people and animals; and
- installing a secure cover over pits.

Further control measures

If the above controls are not practicable, then consider controlling the risk by making sure that a permanently secured access ladder, which complies with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation*, is installed to provide access when regular and predictable access is required into pits where there is a fall hazard.

When siting ponds, pits and lagoons:

- ensure that machinery cannot come into contact with overhead power lines during activities such as pumping; and
- ensure they are not located adjacent to roads and thoroughfares.

8. Accessing trees

Adequate fall protection needs to be considered when accessing trees.

High risk activities

For example, there may be a high risk of falling when:

- fruit picking; and
- carrying out tree maintenance.

Control measures

First, try doing the task from the ground, by:

- limiting tree growth height by:
 - close planting;
 - trellising;
 - open planting;
 - altering tree architecture; and
- using a 'picking machine' which uses a vibrating motion to remove fruit from groves.

The use of tree growth height limiting methods is governed to some extent by the climate, terrain, soil and fruit type. Some growers have achieved increased yield by using these methods. Reported benefits include better spray control, easier and quicker pruning and the option of clearing the crop in one pick. It is, however, recognised that these methods require planning, staggered implementation and a lead time of years.

Further control measures

If the above controls are not practicable, consider:

- using a scissor lift or an elevated work platform, provided the operator holds an appropriate high risk work licence; or
- using a ladder suitable for the purpose.



5. An elevating work platform (EWP).



6. Fruit picking ladder.

Other control measures that should be implemented include:

- identifying overhead power lines to be avoided – ‘no go’ zones should be established;
- using ladders that are well maintained and selected specifically for the task to be performed – the ladder should be inspected for faults, such as broken rungs, rails and footing and, if available, consult the manufacturer’s checklist;
- checking that the ground surface is firm, stable and level;
- providing instruction to all workers in the safe use of ladders including ladder set up and picking fruit only in a safe reach area from the ladder – a guide is to keep the belt buckle within the side rails of the ladder, stay below the top two rungs, and have only one person on a ladder;
- having a three points of contact rule for the ladder use when going up or down;
- ensuring workers use only well-fitting, non-slip secure footwear; and
- providing regular supervision to ensure workers are picking according to the safe work procedure, and ladders are in a suitable condition – as a guide, this supervision should occur at least once a day.

9. Accessing farm machinery

Accessing tractors, balers, headers and other machinery may involve working from heights. Workers at risk include farmers, employees, contractors, suppliers and farm machinery service technicians. Unless proper fall protection is provided, accessing the machinery in the following typical farm situations involves a high risk of someone falling.

High risk activities

For example, there may be a high risk of falling when:

- loading and unloading;
- checking fluid levels or servicing/repairing engines;
- cleaning windscreens;
- changing air conditioner filters; and
- repairing radio aerials and global navigation systems.

Control measures

First, try doing the task by:

- where practical and safe, using the access steps, platforms and support rails;
- maintaining three points of contact when using access steps or ladders;
- purchasing or retrofitting equipment that has a system of lubrication points or automatic lubrication that can be accessed at ground level; and
- using extension handles for window cleaning.

When purchasing new farm machinery, it should be ensured that access steps and/or accessible components are provided.

Further control measures

If the above controls are not practicable, consider:

- carrying out servicing in a shed or workshop using fixed stairs, ramps and work platforms complying with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation*;
- using a portable ladder suitable for the purpose – see the Commission's *Code of practice: Prevention of falls at workplaces*;
- using firm foot and hand holds;
- referring to manufacturers' instructions; and
- developing agreed workplace safety procedures.

Other control measures that should be implemented include:

- wearing non-slip shoes or boots, and wet weather gear to reduce slip hazards;
- using suitable lighting, such as shed/vehicle lighting and/or portable lighting;
- where applicable, ensuring training and supervision is in place;
- avoiding working alone, or at the least notify another person of the work you are doing and the location, and have a means of communication;
- ensuring fatigue is managed appropriately to reduce the risk;
- accessing the cabin by the access steps provided;
- when servicing or maintaining equipment, ensuring machinery is turned off and lock-out devices are in place; and
- consulting the farm machinery manufacturer and supplier for advice on safety for new machinery purchases.

10. Livestock

Many tasks associated with handling and transporting livestock can involve a risk of falling from heights. These situations can occur on the farm or road or at saleyards, abattoirs or depots.

High risk activities

For example, there may be a high risk of falling when:

- loading and unloading stock;
- checking the welfare of stock;
- cleaning the stock crate;
- access and egress from handling/sale yards; and
- falling into stock yards.

Risk controls

First, try doing the task from the ground by:

- maintaining stockyards and loading areas to reduce or eliminate fall hazards;
- retrofitting improvements to the vehicle, such as ladders, or fall restraint systems;
- installing segregation barriers as protection against livestock; and
- loading or unloading from within the stock container.

Further control measures

If it is not possible to perform necessary tasks from the ground, consider:

- installing fixed stairs, ramps, work platforms or ladders complying with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation*;
- installing a fall restraint system;
- using a fall protection harness system on the side of livestock trailers, which will allow operators to remain protected from the risk of falling while working at height on the side of trailers; and
- using a fall injury prevention system, such as barriers and guardrails – see the Commission's *Code of practice: Prevention of falls at workplaces*.

Other control measures that should be implemented include:

- segregating workers from animals to prevent injury;
- using sliding segregation gates as barrier protection against livestock;
- loading vehicles from a flat, level, solid construction such as a loading dock, stationary platform, gantry/walkway, or drop-down gantry system;
- developing and applying a safe work procedure for handling and transporting livestock;
- ensuring nobody walks across fragile parts of the vehicle;
- where practical, not working in bad weather, or in conditions of excessive glare;
- ensuring there is adequate lighting and the work surface is even;
- making sure that anyone working on elevated workplaces are wearing suitable non-slip footwear;
- in auctioning yards, ensuring that edge protection is fitted to walkways, ramps and platforms to minimise risk of falling into stock yards; and
- consulting with workers about ways to do the job. Ensure that employees or contractors are provided with information, instruction and training to enable them to work in a safe manner.

For information on loading and unloading trucks, see also Section 6.4 of this guide.



7. Animal sales yard, showing correct use of handrails and edge protection.

11. Maintenance and service areas

Working in and around maintenance and service areas, such as pits or ramps, can involve a risk of falling and possible injury.

High risk activities

For example, there may be a high risk of falling with:

- slips, trips or falls into maintenance or service pits;
- slipping, tripping or falling off ramps; and
- equipment or materials knocked off ramps or into pits and onto workers.

Risk controls

First, try doing the task from the ground by:

- installing hoists, pulleys or ramps for access, removing the need to descend into a pit;
- enclosing as much of the pit as possible and marking risk areas, such as edges;
- marking clear areas for pedestrian and vehicle traffic; and
- ensuring all equipment is maintained and regularly inspected.

Further controls

If the above controls are not practicable, consider:

- erecting fixed guard rails around the wings and rear of wheel alignment pits;
- where ramps extend above a safe height, providing guard rails along the edges;
- ensuring the pit or ramp edge is marked and clearly visible;
- ensuring pits and elevated ramps comply with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design construction and installation*; and
- avoiding running the engines over mechanics pits to prevent the build up of carbon monoxide in the pit.

12. Miscellaneous farm activities

Many tasks on farms, including domestic maintenance, involve accessing areas where there is a risk of someone falling and sustaining injury.

High risk activities

For example, there may be a high risk of falling when:

- accessing fuel and water tanks;
- accessing roofs and gutters for maintenance and cleaning;
- loading/unloading animals from trucks; and
- loading/unloading equipment and pallets from trucks.

Risk controls

First, try doing the task from the ground by:

- installing level indicators on water tanks;
- installing ground filling systems on above ground fuel tanks;
- installing gutter guards (or similar) to negate the need to clean gutters; and
- for loading/unloading, implementing controls recommended in Section 6.

Further controls

If the above controls are not practicable, consider:

- installing fixed stairs, ramps, work platforms or ladders complying with Australian Standard, *AS 1657 Fixed platforms, walkways, stairways and ladders – design construction and installation*;
- using a scissor lift or an elevated work platform, provided the operator holds a high risk work licence;
- using a fall injury prevention system – see the Commission's *Code of practice: Prevention of falls at workplaces*; or
- using a ladder suitable for the purpose.

Other safety issues to note include:

- removing or locking off silo and tank ladders to prevent unauthorised access;
- if working in close proximity to any electrical sources, seeking the advice of the power supply company before commencing. Supply of power to where the work is occurring should be isolated and 'no go' zones should be established near overhead power lines;
- engaging a suitably qualified person with the appropriate experience and equipment to conduct roof work;
- checking/confirming that the roof is structurally sound and can support the weight of workers and equipment;
- ensuring nobody walks across fragile parts of the roof;
- not working in bad weather, or in conditions of excessive glare;
- making sure that anyone working on the roof/structure is wearing suitable non-slip footwear;
- making sure the area below the roof is kept clear of any debris or equipment; and
- consulting with workers about ways to do the job, and ensuring that employees or contractors are provided with adequate information, instruction and training to enable them to work safely.

Appendix 1 Further information

Legislation

- *Occupational Health and Safety Act 1984*
- *Occupational Health and Safety Regulations 1996*

The Act and regulations are available from the State Law Publisher on (08) 9426 0000 or online at www.slp.wa.gov.au

Commission for Occupational Safety and Health publications

- *Code of practice: Prevention of falls at workplaces*
- *Code of practice: Safe design of buildings and structures*
- *Guidance note: General duty of care in Western Australian workplaces*
- *Guidance note: Working safely with forklifts*

Department of Commerce, WorkSafe

- *Agricultural workbook and checklist*
- *Machinery and equipment safety – an introduction*

Department of Commerce, Energy Safety

- *Code of practice for personnel electrical safety for vegetation control work near live power lines*

Standards Australia

- *AS 1418.10 (Interim) Cranes, hoists and winches – Elevating work platforms*
- *AS 1418.13 Cranes (including hoists and winches) – Building maintenance units*
- *AS 1636.1 Tractors, roll over protective structures – Criteria and tests - Conventional tractors*
- *AS 1657 Fixed platforms, walkways, stairways and ladders – Design, construction and installation*
- *AS/NZ 1891.1 Industrial fall-arrest systems and devices – Harnesses and ancillary equipment*
- *AS/NZS 1891.2 Supp 1 Industrial fall-arrest systems and devices – Horizontal lifeline and rail systems (Supplement)*
- *AS/NZS 1891.3 Industrial fall-arrest systems and devices – Fall-arrest devices*
- *AS/NZS 1891.4 Industrial fall-arrest systems and devices – Selection, use and maintenance*
- *AS/NZS 1892 series Portable ladders*
- *AS/NZS 2153 Tractors and machinery for agriculture & forestry – Technical means for safety – General*
- *AS 2359.1 Powered industrial trucks – General requirements*
- *AS 2550.10 Cranes, hoists and winches – Safe use – Mobile elevating work platforms*
- *AS 2550.13 Cranes – Safe use – Building maintenance units*
- *AS/NZS 2865 Safe working in a confined space*
- *AS 3773 Bulk solid containers – Safety requirements*
- *AS/NZS 4576 Guidelines for scaffolding*
- *AS/NZS 4994 series Temporary roof edge protection for housing and residential buildings*

Copies of standards can be purchased by contacting SAI Global Limited on 131 242 or by visiting the website at www.saiglobal.com

Additional reading where required

WorkSafe Victoria

- *Guidance note: Falls prevention – Above ground fuel tanks*
- *Guidance note: Falls prevention – Farm forest pruning*
- *Prevention of falls in the transportation of livestock*
- *Prevention of falls – Trucks*

WorkCover NSW

- *Code of practice – Safety aspects in the design of bulk solids containers including silos, field bins and chaser bins*

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Appendix 2 Confined spaces, protection systems and overhead power lines

Confined spaces

A confined space is defined in the OSH Regulations (regulation 3.82) as an enclosed or partially enclosed space which:

- is not intended or designed primarily as a workplace;
- is at atmospheric pressure during occupancy; and
- has restricted means for entry and exit, and which either:
 - has an atmosphere containing or likely to contain potentially harmful levels of contaminant;
 - has or is likely to have an unsafe oxygen level; or
 - is of a nature or is likely to be of a nature that could contribute to a person in the space being overwhelmed by an unsafe atmosphere or contaminant.

As a guide, a risk assessment must always be carried out before work in a confined space begins. When working in a confined space, a person must always be on standby in the immediate vicinity outside the designated confined space. If it is not possible to keep the person working in the confined space in sight, then continuous communication must be maintained.

Protection systems

Occupational safety and health laws in Western Australia require roll over protection systems (ROPS) for nearly all tractors and mobile plant. Regulations require that ROPS and seat belts are fitted to:

- all tractors between 800 and 1500 kilograms and manufactured after 1980; and
- all earthmoving equipment manufactured after 1988.

ROPS made especially for older tractors and earthmoving equipment are available through farm machinery dealers and can be fitted easily.

Overhead power lines

When working in the vicinity of overhead power lines, the following process should be followed:

- contact the supply authority to establish the voltage of the power lines;
- determine the danger zone, as defined below; and
- if a safe working distance from the danger zone is not possible, then workers must be properly trained, and comply with the electrical safety requirements of regulation 316A of the Electricity Regulations 1947 and work in accordance with the requirements of the *Code of practice for personnel electrical safety for vegetation control work near live power lines*, published by EnergySafety.

The 'danger zone' for overhead power lines is defined in regulation 3.64 of the OSH Regulations as meaning anywhere that is within:

- a) 0.5 metres of a live insulated overhead power line or aerial bundled conductor line of a voltage of not more than 1,000 volts;
- b) 1.0 metre of a live uninsulated overhead power line of a voltage of not more than 1,000 volts;
- c) 3.0 metres of a live overhead power line, whether insulated or not, of a voltage exceeding 1,000 volts but not more than 33,000 volts; or
- d) 6.0 metres of a live overhead power line, whether insulated or not, of a voltage exceeding 33,000 volts.

**commission
for occupational
safety and health**

2011

ISBN 978-1-920836-51-1

ISBN 978-1-920836-52-8 (web)

Comprehensive work safety and health information,
provided by the Department of Commerce can be found at:
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