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working  
across  
borders

## MACHINERY AND EQUIPMENT SAFETY — AN INTRODUCTION



## CONTENTS

Introduction	2
1. Machinery and equipment hazards	3
1.1 Mechanical hazards	3
1.2 Non-mechanical hazards	4
1.3 Access hazards	5
1.4 Examples of common hazards by type of workplace activity	6
2. Risk control of machinery and equipment hazards	7
2.1 Risk control of mechanical and equipment hazards (general)	7
2.2 Risk control of mechanical hazards	8
2.3 Risk control of non-mechanical hazards	11
2.4 Risk control of access hazards	12
3. Purchasing machinery and equipment	16
4. Information and guidance: where to get more information and assistance	18

### DISCLAIMER

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Please note that South Australian workplace relations and other related laws may change and it is recommended that you seek legal advice for further information about your situation.

## INTRODUCTION

*Machinery and Equipment Safety — An Introduction* is provided to help employers and employees who work with items of plant that may present a risk of injury or illness to comply with their duties under the *Occupational Health, Safety and Welfare Act 1986* and the *Occupational Health, Safety and Welfare Regulations 1995*.

### Working across borders

This guide is an introduction to managing the risks associated with use of machinery and equipment in the workplace. It was developed by WorkSafe Victoria and has been adapted by SafeWork SA to provide obligation holders with nationally consistent practical guidance to manage the hazards arising from the use of machinery and equipment.

Employers and employees can use this guide to:

- identify machinery and equipment hazards in the workplace
- eliminate or reduce the risk of those hazards causing harm.

### Consulting employees and health and safety representatives

Consultative processes allow people to provide input and raise potential safety concerns about the work they undertake. Although hazards associated with machinery and equipment are often easily identified, the ways in which people can gain access to hazards requires a detailed understanding of how they do their job.

To ensure consultation occurs in workplaces, Division 1.3 of the *Occupational Health, Safety and Welfare Regulations 1995* places obligations on employers to consult with people affected by changes in the workplace that may impact on their health and safety.

## 1. MACHINERY AND EQUIPMENT HAZARDS

### 1.1 Mechanical hazards

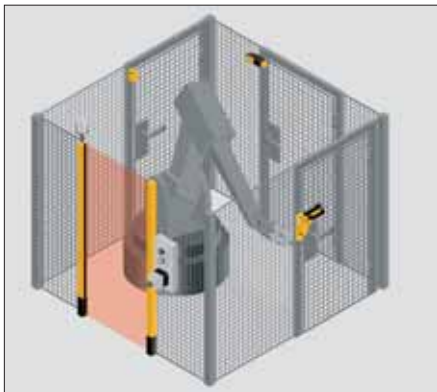
Mechanical hazards that cannot be eliminated must be controlled to prevent harm. Machines have moving parts. The action of moving parts may have sufficient force in motion to cause injury to people.

When assessing machinery and equipment for possible mechanical hazards, consider:

- machinery and equipment with moving parts that can be reached by people
- machines and equipment that apply high force or rotational speed may eject parts, components, products or waste items that can hit people causing bruising, eye damage, or body penetration
- machinery and equipment with moving parts, such as booms or mechanical appendages (arms), that can reach people
- mobile machinery and equipment, such as forklifts, pallet jacks, earth-moving equipment, operated in areas where people may gain access and be hit or struck.

Machines and equipment that are mobile may:

- collide with people and trap or pin them between solid objects or other equipment
- overturn during operation due to excessive forces applied (e.g. forklifts, ejecting operators or injuring other workers).



*Robotic arms can reach over their base, move with remarkable speed and high force, and can cause injury if controls to separate people from moving plant are not implemented.*



*Mobile plant operated in areas where people work may cause injury through collision. Traffic control and segregation are forms of control.*

## 1.2 Non-mechanical hazards

Non-mechanical hazards that cannot be eliminated must be controlled to prevent harmful exposure. Non-mechanical hazards associated with machinery and equipment can include harmful emissions, contained fluids or gas under pressure, chemicals and chemical by-products, electricity and noise, all of which can cause serious injury if not adequately controlled. In some cases, people exposed to these hazards may not show signs of injury or illness for years. Where people are at risk of injury due to harmful emissions from machinery and equipment, the emissions should be controlled at their source.

When reviewing machinery and equipment for possible non-mechanical hazards, consider how machines and equipment can affect the area (environment) around them.

Common non-mechanical hazards include:

Non-mechanical hazards	
Dust	Mist (vapours or fumes)
Explosive or flammable atmospheres	Noise
Heat (radiated or conducted)	Ionising radiation (x-rays)
High intensity light (laser, ultra violet)	Molten materials
Heavy metals (lead, cadmium, mercury)	Chemicals
Steam	Pressurised fluids and gases
Ignition sources (flame or spark)	Electrical



*Woodworking dust generated by a buzzer is extracted via forced extraction and ventilation.*



*Welding fumes are extracted via flexible locatable, extraction system.*

### 1.3 Access hazards

Access hazards that cannot be eliminated must be controlled to provide safe access (for operation, maintenance, repair, installation, service, cleaning or decommissioning). People must be provided with safe access for work they perform in, on and around machinery and equipment. A stable work platform suited to the nature of the work, which allows for good posture relative to the work performed, sure footing, safe environment and fall prevention (if a fall may occur) is a basic requirement.

As an example, cooling towers on building roofs may have poor access, yet must be attended by a service person at predictable times for water treatment, chemical dosing or monitoring of automated dosing equipment. People performing these tasks must be provided with the means to get themselves and any equipment they require on to the roof with no risk or minimal risk of fall or injury.

When thinking about safe access to machinery and equipment, provide sufficient space for comfortable access and think about:

- Who will be working on or around the machinery and equipment?
- What people are required to work in enclosed areas where the atmosphere could be harmful, such as pits, tanks or storage vessels?
- What equipment or material is needed to be carried to undertake the task?
- Where and when is access required for operation, maintenance and cleaning?
- How will people gain safe access (walkway, gantry, elevated work platform or ladder)?
- What work will be carried out during access?
- Will people be near or exposed to a mechanical or non-mechanical hazard at the time of access?
- Has consultation occurred with employees or contractors regarding how they intend to gain access, what equipment and work platform or structure is best suited for the intended task?

#### Access

If people need to gain access to machinery and equipment (either continually or occasionally) for tasks such as operation, maintenance, repair, installation, service or cleaning, access must be planned in advance and training provided.

Access may vary during each stage of machinery and equipment life cycle. For example:

- installation or removal
  - complete access from every area may be required and involve disconnection and connection of services such as water, air, pipes, installing electrical cable to switch board, etc.
- operation
  - access for set-up, operation and adjustment.
- maintenance, repair, cleaning, alteration or adaptation
  - access to remote areas may be required.



*Permanent gantries, ladders and walkways are incorporated into this machinery and equipment to reduce the risk of a fall from height during operation and maintenance.*

## 1.4 Examples of common hazards by type of workplace activity

People who install or dismantle machinery and equipment could:

- work alone or in isolation
- work on machines and equipment at height, or over machinery or equipment to connect services (such as electricity, air or water)
- work in low light or with bright directional light
- access machinery and equipment from the top, sides or underneath
- work with or near cranes, forklifts or rigging to lift machinery and equipment
- work in confined spaces
- use power tools, welders, extension leads that present electrical hazards if damaged or wet.

People operating machinery and equipment could:

- work alone or in isolation
- be required to place their hands close to the mechanism of machinery or equipment that does the work, and may be injured if caught or trapped by moving parts
- be exposed to constant harmful noise, radiated energy or fumes being emitted from machinery and equipment they are operating
- inadvertently bump or knock poorly placed control levers or buttons
- be required to make adjustments to the mechanism of machinery and equipment while the machine is in motion
- be required to clear away scrap
- make minor adjustments or reach into the moving mechanism of the machine they are operating.

People providing maintenance or repair services could:

- work alone or in isolation
- work on machinery and equipment at height, or over machinery and equipment to connect services (such as electricity, air or water)
- access machinery and equipment from the rear or sides
- need to enter confined spaces of larger machinery and equipment
- be trapped by the mechanism of machinery and equipment through poor isolation of energy sources or stored energy, such as spring loaded or counter-balance mechanisms, compressed air or fluids, or parts held in position by hydraulics or pneumatic (air) rams
- move heavy parts when changing the set up of machinery and equipment, or repairing failed parts such as electric motors or gear box assemblies
- disable or remove normal safety systems to access the mechanism of machinery and equipment.

People providing cleaning services could:

- work alone or in isolation
- access machinery and equipment from the rear or sides
- climb on machinery and equipment
- enter confined spaces of larger machinery and equipment
- become trapped by the mechanism of the machinery and equipment through poor isolation of energy sources or stored energy, such as spring loaded or counter-balance mechanisms, compressed air or fluids, or parts held in position by hydraulics or pneumatic (air) rams
- work with chemicals
- operate electrical equipment in wet areas.

## 2. RISK CONTROL OF MACHINERY AND EQUIPMENT HAZARDS

### 2.1 Risk control of mechanical and equipment hazards (general)

When a risk assessment of a hazard is undertaken, the 'hierarchy of controls' must be applied to eliminate or reduce the risk of injury or harm. Health and safety laws require the highest order of control be applied so far as is reasonably practicable.

#### Elimination

Remove the possibility of exposure to the hazard by eliminating the hazard at the source.

#### Substitution

Replace machinery and equipment with safer models, or replace the hazardous process with a non-hazardous one.

#### Engineering controls

Less hazardous options may include automation, enclosure, interlocks, warning signals or interlocking guards.

#### Administrative controls

Use systems of work to reduce risk i.e. good policies and procedures, rotation of staff to reduce exposure to any hazard.

#### PPE

Personal protective equipment can reduce injury severity, but is the least preferred option of the hierarchy of controls as it relies on employee behaviour.

Effective machinery and equipment risk controls reflect some or all of the following characteristics:

- the hazard is controlled at its source
- contact or access to the hazard is prevented
- sturdy construction (correct materials with few points of potential failure)
- fail-safe (failure of the control system to be effective will result in machinery shut-down)
- tamper-proof design (as difficult as possible to bypass)
- presents minimum impediment to machinery and equipment operator
- easy to inspect and maintain
- does not introduce further hazards through action of the risk control.



**Centre lathe:** The exposed rotating chuck of a centre lathe can eject parts or tools with great force, cutting fluid fumes are difficult to contain and the machinery requires manual set-up.



**CNC (Computer Numeric Control) lathe:** Substituting a centre lathe with a CNC lathe is an example of improved risk control of machinery and equipment through improvement in design.

## 2.2 Risk control of mechanical hazards

Separation is a simple and effective machinery and equipment risk control.

Separation may be achieved by distance, barrier or time.

- Distance separation means a person cannot reach the hazard due to distance.
- Barrier separation means an effective barrier or guard denies access and/or controls ejection of parts, products or waste.
- Time separation means at the time of access, the machinery or equipment is disabled.

Examples include:

- physical barriers and guards, such as fences, screens or fixed panels of various materials
- various forms of guarding and interlocking (as described in Australian Standards *AS 4024, part 1601 and part 1602 Safety of Machinery*)
- making the hazard inaccessible by reach (where the distance between a person and the hazard forms an effective barrier).

### Note:

When considering the suitability of distance guarding, also consider the safe access requirements of maintenance people who gain access by ladder, scaffold or elevated work platform.

### Guarding

A guard can perform several functions. It can deny bodily access, contain ejected parts, tools, off-cuts or swarf, prevent emissions escaping or form part of a safe working platform.

Guarding is commonly used with machinery and equipment to prevent access to:

- rotating end drums of belt conveyors
- moving augers of auger conveyors
- rotating shafts
- moving parts that do not require regular adjustment
- machine transmissions such as pulley and belt drives, chain drives, exposed drive gears
- any dangerous moving parts, machines or equipment.



*Fences, barriers, guards and interlocked gates separate people from the hazardous action of machinery and equipment.*

Where access is not required, a **fixed guard** can be permanently applied by welding or secured with one-way screws. If access is generally not required, a permanently fixed barrier is the preferred option.

Where access to the hazard is infrequent, the installation of a **fixed guard** that can be removed by use of a tool may be an acceptable control. The tool to remove the barrier or guard must not be available to the operator.

**Adjustable guarding** incorporates movable sections or panels of the guard and allows for material or parts to be fed into the guarded area whilst still preventing bodily contact.



*Older style power press incorporating a manual interlock and adjustable guarding.*

*If the guard slides up a connected metal bar separates the clutch mechanism and the press will not activate.*

*The guard can be adjusted to provide an opening by releasing retaining bolts on the guard face to allow individual panels to move.*

*Adjustment must be performed by an experienced person to ensure the resulting opening only provides room necessary to incorporate the material being fed in and prevent intrusion by hands or fingers into the danger area.*



*The covered throat of the mincer prevents a person's hand from accessing the hazard.*

Tunnel guards comprise a tunnel, aperture or chute through which material is inserted into the machine. The restrictive design of the opening prevents fingers, hands, arms or the entire person from accessing the danger area.

**Interlocking guarding** stops the action of the hazardous mechanism when the guard is opened.

Interlock guarding works by:

- mechanically disconnecting the drive mechanism (applies a brake or disengages a clutch or geared mechanism)
- isolating the power source of the drive mechanism (stops the motor)
- combination of mechanical and power disconnection.

Interlock guarding is generally achieved via mechanical or electrical means, but may also include hydraulic or pneumatic control systems.

The energy stored in moving parts (momentum) can cause the mechanism of the machine or equipment to run on for some time after the source of driving energy has been removed.

For access panels or doors supporting an interlocking device allowing access to mechanical parts that move for periods after the energy source is removed, a separate mechanism to delay release of the retaining or locking mechanism may be incorporated.



*An old style press refurbished with an interlocked safety cage and gate.*

*The control mechanism uses a combination of pneumatics and electrical interlocking to ensure the danger area of the press cannot be accessed unless the press down stroke action is disabled.*

*Improved design and technology can be fitted to older machinery and equipment to meet current standards and reflect the latest knowledge regarding ways to control hazards and risks in the workplace.*

**Captive key systems** rely upon a single key that is shared between the control panel ('on' switch) and the access gate lock of the physical barrier to the danger area. Removal of the key from the control panel can only occur when the switch is in the off position, and the gate will only release the key when in the locked position.

Effective supervision, instruction and training are required as administrative controls to ensure that only one key is available for the system, and the key is not removed from the access gate or guard by a second operator while a person is exposed to the danger area of the plant. Operation such as maintenance, repair, installation, service or cleaning may require all energy sources to be isolated and locked out to avoid accidental start-up.



**Captive key systems:** *The key cannot be removed unless in the off position. The same key is used to unlock the access gate. Only one key per system is retained by the locking mechanism.*

### Simultaneous two-handed operation

Where a machine has only one operator, the use of simultaneous two-handed operation buttons can serve as a risk control. This ensures that operation of the hazardous mechanism cannot occur until both hands are clear of the danger area.

The two buttons must be pushed at the same time and are located at a distance from each other that prevents simultaneous operation by one hand.

The operation should be designed so that if either or both of the buttons are not depressed, the hazardous action of the machine or equipment cannot be initiated, or if it can be initiated, the mechanism returns to a safe state.

#### Note:

This is not a guarding method, and is only a partial risk control measure. Generally two-handed controls should be used in conjunction with another method of guarding. They should be installed at adequate distances from the hazardous area.



*A two-handed control option may be suitable to ensure that a machine cannot operate until both hands of the operator are clear of the hazard areas.*

### Presence sensing systems

If physical guards are not reasonably practicable, then a presence sensing system can be used as a control to reduce risk. Presence sensing systems can be used where people enter areas shared by moving production equipment.

Presence sensing systems detect when a person enters the identified danger area. They can rely on foot pressure pads, infrared sensing, light beam or laser scanning. The most appropriate type of sensing device will depend on the operating environment and the access requirements.

Australian Standard AS 4024.2 provides guidance on design specification, ratings on integrity and reaction times. Also observe manufacturers' specifications for installation and maintenance.

Specialist assistance may be required to ensure correct selection and installation of a presence sensing system.

### High integrity/fail-safe control

All safety control systems should be designed and built to prevent failure of the control system or, in the event of failure, de-activate the operation of the machinery and equipment.

The extent to which a safety control system should tolerate systems faults is a function of risk (likelihood and consequence) and is described fully in Standards Australia publication *AS 4024.1501 Safety Related Parts of Control Systems*, which explains the categories of control required as a function of increasing risk.



*A light curtain used to disable the hazardous mechanism of a machine must have a high degree of integrity to resist failure and fault.*

*Components relied on to protect people from harm must be designed and built to a high standard and display compliance ratings relative to their reliability. They must also be correctly installed and maintained to ensure their effective operation.*

Machinery and equipment that use this type of safety system include:

- brake press
- power press
- robotic machine (automated machines)
- injection moulders
- powered guillotines
- programmable lathe and milling equipment
- industrial mixers
- mincing equipment
- plasma cutting tables
- laser cutting tables.

### Redundant and self monitoring fault detection systems

Redundant or dual systems and self-monitoring fault detection systems are also effective methods of increasing the integrity of the safety related control system. Selection and installation of these types of complex interactive control measures, however, may require expert or specialist assistance.

The Australian Standard provides information on plant safety systems and reflects current state of knowledge and best practice. The *AS 4024 Safety of Machinery* series of publications provide specific information for commonly used machine types in industry such as metal working machinery.

## 2.3 Risk control of non-mechanical hazards

The first step in selecting a suitable and effective control for non-mechanical hazards is to understand the nature of emissions that can be released by machinery and equipment in the workplace, where those emissions collect and the way they may cause harm.

- Separating people from non-mechanical hazards is necessary where elimination or substitution cannot control the emission at the source. Hazardous machinery and equipment emission controls rely largely on extraction of the emission or isolation of people from the hazardous emission.

Hoods, lids, covers or impervious guards (solid barriers that prevent escape of the emission) can serve to contain a number of different types of emissions within machinery or equipment.

For potentially harmful substance exposures from machinery and equipment, such as mist, fumes, vapour or dust, and where it is not reasonably practicable to control the emission at the source, ventilation and extraction systems are used to remove the hazardous atmosphere from the work environment.

- For noise, mechanical hazard guarding fitted with sound absorbing materials may also serve to mute noise emissions. Other emissions such as laser, ultra violet light, bright light or welding flash can also be safely screened to prevent potential harmful exposure.
- Oil leaks from machinery or equipment may present a serious slip hazard. However, the risk the hazard presents can be controlled by preventing oil leaks through quality routine maintenance.

### Personal protective equipment

Where it is not reasonably practicable for hazards to be controlled at their source, removed or reduced to safe levels through other controls, the use of personal protective equipment (PPE) is a last measure.



*Ear muffs*



*Particle half face respirator*



*Gloves*



*Welding mask*



*Safety glasses*

## 2.4 Risk control of access hazards

### Confined space

Larger machinery and equipment may contain internal areas where a hazardous atmosphere may occur by design or as a result of the work being done.

A confined space may exist where people require access to a closed area. Oxygen levels may be depleted or displaced, or harmful levels of contamination, such as gas, vapour or dust exist.

Training in confined space entry, including issue of entry permits and continuous monitoring and supervision, is mandatory. There are legal requirements that must be observed before allowing people to enter a confined space.

### Working at height

Providing people with a suitable work platform for the task being undertaken reduces the risk of injury from falling from machinery and equipment.

Often 'safe access' equipment made available during installation of machinery or equipment is removed after commissioning. Workplace managers may not have considered the need to provide similar or permanent means to gain safe access to parts of machinery and equipment at height or in awkward locations for maintenance, repair, service or cleaning activities.

Safe access for working at heights can be broken into three categories. Each category must provide a stable, safe platform suitable for the work to be undertaken, and be designed to support and retain a person within the confines of the platform.

#### 1. Fixed or permanently installed access platforms

- gantries
- mezzanine floors
- fixed platforms

#### 2. Mobile elevated work platforms (EWPs)

- scissor lifts
- boom types

#### 3. Temporary platforms

- scaffolding

Where safe working platforms are used and the risk of falls remains, **travel restraint** and **fall arrest harnesses** must be used. Suitable points of attachment must be provided. Harness systems, anchor points and shock absorbing lanyards must be compatible at each point of attachment from the anchor point to the harness, with approved and rated latching devices to ensure the integrity of the system.

When using fall arrest systems, specialist assistance may be necessary to select the correct equipment, provide effective training in its use and inspection, and to develop an emergency retrieval plan to recover a person suspended in a fall arrest harness. People suspended by harness for short periods of time may suffer serious health effects or may have incurred injury during the fall prior to the fall arrest device deploying. Emergency retrieval plans should include for immediate local response in safely retrieving people to avoid fatalities.

**Note:**

The *Occupational Health, Safety and Welfare Regulations 1995* prescribe specific requirements that must be taken into account when determining risk controls for both confined spaces and working at heights.



*Fixed access platform*



*Mobile work platform with fall arrest harness*



*Temporary mobile platform*

**Lock out - tag out: Removing and controlling energy sources during access**

People performing tasks such as maintenance, repair, installation, service and cleaning are highly vulnerable, and have a high risk of being killed or maimed through the inadvertent operation of the machinery and equipment they are working in, on or around.

Accidental start-up or movement of a machine mechanism can occur if control levers or buttons are bumped or knocked, if a short circuit of the control system occurs when hydraulic or air pressure is released, or when undoing retaining bolts.

It is essential that people who work in, on or around machinery and equipment are not exposed to hazards due to accidental start-up or movement of the mechanism. **(Reference: Australian Standard AS 4024.1603 Safety of Machinery)**

The following is a step-by-step overview of the lock out – tag out process:

- **shut-down** the machinery and equipment
- **identify** all energy sources and other hazards
- **identify** all isolation points
- **isolate** all energy sources
- **dissipate** all stored energies
- **lock out** all isolation points
- **tag** machinery controls, energy sources and other hazards
- **test** by 'trying' to reactivate the plant without exposing the tester or others to risk (failure to re-activate ensures that isolation procedures are effective and all stored energies have been dissipated).

### Identifying energy sources

All energy sources likely to activate the machinery and equipment and expose people to hazards should be identified before work begins.

Such energy sources include:

- electricity (mains)
- battery or capacitor banks
- fuels
- heat
- steam
- stored energy fluids or gases under pressure (water, air steam, or hydraulic oil springs hydraulic fluid)
- gravity
- radiation.

Diagrams and photographs showing location and details of various isolation points of machinery and equipment should be part of the isolation procedures. Isolation points may include switches, valves, energy lines, pipes and power sources. If the original designer and installer 'as built' diagrams of machinery and equipment installations are not available, new diagrams should be prepared. These diagrams and photographs can then be used, along with written procedures, for information and training.

### Dissipate stored energies

Any or all of the following steps are necessary to guard against energy left in the machinery and equipment after it has been isolated from its energy sources:

- inspect the machinery and equipment to make sure all parts have stopped moving
- install ground wires
- block the movement of spring-loaded parts
- block or brace parts that could fall
- block parts in hydraulic and pneumatic systems that could move from pressure loss
- bleed the lines and leave vent valves open
- drain process piping systems and close valves to prevent the flow of hazardous material
- if a line must be blocked where there is no valve, use a blank flange
- purge reactor tanks and process lines
- dissipate extreme cold or heat, or provide protective clothing
- if stored energy can accumulate, it must be monitored to ensure it stays below hazardous levels.

### Isolation procedure

Isolation procedures in each workplace vary in detail because of differences in machinery and equipment, power sources, hazards and processes. However, if adequate interlocking is not possible or the maintenance, repair, installation, service or cleaning requires the method of guarding or interlocking to be bypassed or removed, an isolation procedure must be implemented.

#### Note:

Activating operational stop buttons, emergency stop devices or interlock devices is not equivalent to the isolation of power sources or the release of stored energy.

## Locking out

### **Isolation devices**

A wide range of devices are available for locking out energy sources and other hazards that could pose a risk to people working on machinery and equipment. These devices include switches with a built-in lock, and lock-outs for circuit breakers, fuses and all types of valves.

Also readily available are chains and safety lock-out jaws (sometimes called hasps), which accommodate a number of padlocks and sets of robust safety padlocks. Only devices that incorporate a lock or accommodate one or more padlocks are suitable lock-out devices.

### **One person - one lock**

If more than one person is working on the same item of machinery and equipment, each person should attach their own lock to each lock out point, to prevent the isolator being opened while their specific task is in progress.

The isolation procedure should identify common lock out points to ensure energy cannot be restored while someone is still working on the machinery and equipment.

### **One lock - one key**

Each person working on the machinery and equipment should have their own lock, key and tag. There should be no duplicate key available for any lock, except a master or duplicate key for use in an emergency that is secured and not readily available.

During inspection, repair, maintenance, cleaning or adjustment of the machinery and equipment, the one key to each person's lock should be held only by that person, who is responsible for both locking and unlocking the lock-out device.

### **Multiple energy sources**

If more than one energy source or hazard has to be locked out to enable safe shut-down of the machinery and equipment, the single key to each lock out device should be held by the same person.

### **Tag out**

A tag on its own is not an effective isolation device. A tag acts only as a means of providing information to others at the workplace. A lock should be used as an isolation device, and may be accompanied by a tag.



*Tag and lock*



*Multiple locks*



*Valve lock and tag*

### 3. PURCHASING MACHINERY AND EQUIPMENT

The following list provides topics for consideration and consultation when purchasing machinery and equipment. It is important to also note that under Division 1.2.11 of the *Occupational Health, Safety and Welfare Regulations 1995*, designers, manufacturers, importers and suppliers of plant and substances have specific duties.

#### People

- Who will come into contact with the machinery and equipment?
- What are people required to do?
- How will work be carried out and completed?
- Based on the knowledge of existing machinery and equipment, what improvements should the purchaser specify when buying new machinery and equipment?

#### Documentation and training

- What supporting documentation will accompany the new machinery and equipment?
- Does this machinery have a risk register?
- Has the machinery and equipment been manufactured to Australian Standards?
- What support do suppliers of machinery and equipment offer (service, training, maintenance)?
- What operating and maintenance information is supplied with the new machinery and equipment?
- Is the supplied information sufficient to provide the basis of a workplace-training package?
- If the machinery and equipment is refurbished or second-hand, how do the risk controls compare with new machinery and equipment?
- Have you upgraded the existing risk controls to reflect current state of knowledge?

#### Location

- Where is the machinery and equipment to be located and how much space does it require?
- Have you conducted a risk assessment?
- Is there enough room to access your machinery and equipment for servicing, maintenance, repair or cleaning?
- Do people walk past or work in close proximity to the proposed machinery and equipment location?
- Is there enough light?
- Is there sufficient ventilation?

#### Operation and maintenance

- Have you conducted a risk assessment?
- Will the machinery and equipment introduce more noise to the workplace?
- Will your machinery and equipment perform a task other than what it was designed for?
- What types of emissions does the machinery and equipment produce when operated or cleaned (such as noise, fumes, light, and heat)?
- What are the expected hours of machinery and equipment operation?
- How will material arrive and how is product going to be removed after the process is complete?
- Are there environmental factors, such as hazardous atmospheres of flammable vapours or dust or water that may affect the machinery and equipment, the operators or the maintenance workers?
- Does the machinery and equipment have confined spaces?
- Does the machinery and equipment have valves or isolation points located at height?

## Importers

- Must, insofar as is relevant to any such plant, structure, materials or substance, ensure compliance with any regulation that, pursuant to regulation 1.2.14 and Schedule 2, applies to suppliers.

## Various

- Have you conducted a risk assessment?
- Will the machinery and equipment fit through the door?
- Is the floor of your workplace strong enough to support the machinery and equipment?
- Do you understand that if you purchase machinery and equipment outside SA, then you also take on the duties of the importer?
- Do you understand the duties of an importer?
- Do you understand that if you alter or adapt machinery and equipment to perform an alternate function, then you also take on the duties of the designer for those alterations?
- Do you understand the duties of a designer?
- If the machinery and equipment is mobile, where will it operate and who may be in the area?
- In what terrain will the mobile machinery and equipment operate?

## 4. INFORMATION AND GUIDANCE: WHERE TO GET MORE INFORMATION AND ASSISTANCE

### General

Contact SafeWork SA:

#### HELP AND EARLY INTERVENTION CENTRE

##### Help Centre

Telephone: **1300 365 255**

Email: [help@safework.sa.gov.au](mailto:help@safework.sa.gov.au)

##### Bookshop

Telephone: (08) 8204 8881 or (08) 8204 8882

Email: [bookshop@safework.sa.gov.au](mailto:bookshop@safework.sa.gov.au)

Opening hours from 8.30am - 5.30pm, Monday to Friday (the Help Centre closes at 4.15pm on Wednesdays)

##### Website

[www.safework.sa.gov.au](http://www.safework.sa.gov.au)

##### Legislation

- *Occupational Health, Safety and Welfare Act 1986*
- *Occupational Health, Safety and Welfare Regulations 1995*

##### Technical Standards

- Standards Australia [www.saiglobal.com](http://www.saiglobal.com)
- AS 4024 *Safety of Machinery*

## SAFEWORK SA

### HELP AND EARLY INTERVENTION CENTRE

100 Waymouth Street, Adelaide

#### HELP CENTRE

Telephone: **1300 365 255**

Email: [help@safework.sa.gov.au](mailto:help@safework.sa.gov.au)

To report all serious workplace accidents and incidents  
telephone **1800 777 209** (24 hour service)

#### LIBRARY

Telephone: (08) 8204 8877

Facsimile: (08) 8204 8883

Email: [library@safework.sa.gov.au](mailto:library@safework.sa.gov.au)

#### BOOKSHOP

Telephone: (08) 8204 8881 or (08) 8204 8882

Facsimile: (08) 8204 8883

Email: [bookshop@safework.sa.gov.au](mailto:bookshop@safework.sa.gov.au)

Opening hours from 8.30am - 5.30pm,

Monday to Friday (the Help Centre

closes at 4.15pm on Wednesdays)

#### HEAD OFFICE

Level 3, 1 Richmond Road, Keswick

GPO Box 465, Adelaide, SA 5001

DX 715, Adelaide

### COUNTRY OFFICES

#### BERRI

30 Kay Avenue, Berri

PO Box 346, Berri SA 5343

Telephone: **(08) 8595 2199**

#### MOUNT GAMBIER

Level 1, 11 Helen Street, Mount Gambier

PO Box 871, Mount Gambier SA 5290

Telephone: **(08) 8735 1199**

#### PORT LINCOLN

Civic Centre, Suite 10, 60 Tasman Terrace, Port Lincoln

PO Box 2862, Port Lincoln SA 5606

Telephone: **(08) 8688 3057**

#### PORT PIRIE

Level 1, 104 Florence Street, Port Pirie

PO Box 462, Port Pirie SA 5540

Telephone: **(08) 8638 4777**

#### WHYALLA

15-17 Horwood Street, Whyalla

PO Box 696, Whyalla SA 5600

Telephone: **(08) 8648 8733**

To speak to SafeWork SA in a language other than English,  
contact the Interpreting and Translating Centre on  
(08) 8226 1990 and ask them to contact SafeWork SA.

This interpreting service is available at no cost to you.

[www.safework.sa.gov.au](http://www.safework.sa.gov.au)