



Ministry of Commerce, Industry and Labour
Matagaluega o Pisinisi, Alamanuia ma Leipa



OCCUPATIONAL SAFETY AND HEALTH Guide



“Managing The Risks of Plant in the Workplace”



ACKNOWLEDGEMENT

In the ongoing efforts of the Government of Samoa through the Ministry of Commerce Industry and Labour ('MCIL') and the Samoa National Occupational Safety and Health Taskforce ('NOSH') to raise the profile of Occupational Safety and Health ('OSH') nationally, this Guideline was developing to support the business community in particularly employers and employees in complying with requirements of OSH Legislation.

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- **OTT Construction Company**
- **Samoa Breweries Limited**
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- **British American Tobacco Company**
- **Silva Transport Company**
- **Taula Beverages Company**
- **Bluebird Construction Company**

This Guide was developed using guidance from both the Australian Model Code of Practice for Managing the Risks of Plant in the Workplace and the New Zealand Managing Risks of Plant Compliance Code contextualise to the Samoa content.

Disclaimer:

- *MCIL has made every effort to ensure that the information in this Guide is reliable but makes no guarantee as to its completeness.*
- *Note this guide may be changed at any time without notice.*

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Key Definitions

| | |
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| Best Practice Approach | refers to suggested actions which currently go beyond specific legal obligations pursuant to the Occupational Health and Safety Act, 2002 and the Occupational Health and Safety Regulations, 2017. |
| Competent person | <p>A person who has acquired through training, qualification or experience the knowledge and skills to carry out the task.</p> <p>In most jurisdiction's competency to perform high risk tasks require the operator to have a 'licence', as much of the work around scaffolds, cranes, fork lift trucks etc is considered 'high risk'. Eligibility for licenses in these jurisdiction's is based on that person having obtained the qualification after achieving competencies in an approved training package. Currently in Samoa there is no provision for a license. For the purposes of this Guide, best practice determines that acceptable competency is based on a license for specified work obtained either in Australia, New Zealand or other jurisdiction as approved by the Commissioner. This Guide in no way reduces or removes a requirement under pre-existing law for other competency requirements.</p> <p>A competent person has a more specific meaning in the following circumstances:</p> <ul style="list-style-type: none"> • qualifications in an engineering discipline relevant to the plant being inspected, or • knowledge of the technical standards relevant to the plant being inspected. <p>For inspecting mobile cranes, tower cranes, amusement devices and passenger ropeways the person must:</p> <ul style="list-style-type: none"> – have the skills, qualifications, competence and experience to inspect the plant, and be registered under a law that provides for the registration of professional engineers in jurisdictions where such a law exists, or – be determined by the regulator to be a competent person. |
| Duty holder | Duty holder A person, either an individual and includes a body of persons corporate or non-corporate who holds a legal obligation under the Occupational Health and Safety Act, 2002 and the Occupational Health and Safety Regulations, 2017. |
| Fail safe | A state or condition where, if a component or function of the plant fails, a system exists to prevent an increase in the risks. For example, if the primary hoist brake fails on a crane lifting a person in a workbox, the secondary hoist brake will prevent uncontrolled dropping of the workbox. However, once the secondary brake is engaged, a lower level of safety has been reached. The situation must be made safe and the fault rectified so the fail-safe capability is re-established. |

| | |
|---|--|
| Safety and Health Employees committee | A consultative body established under the OSH Act, Sec. 22. The committee's functions include facilitating cooperation between workers and the employer to ensure workers' health and safety at work, and assisting to develop work health and safety standards, rules and procedures for the workplace. |
| Safety and Health Employee's representative | A worker who has been elected by their work group under the WHS Act to represent them on health and safety matters. |
| Plant | <p>Plant includes machinery, equipment, appliance, container, implement and tool components or anything fitted or connected to those things. Plant includes items as diverse as lifts, cranes, computers, machinery, conveyors, forklifts, vehicles, power tools, quad bikes, mobile plant and amusement devices.</p> <p>Plant that relies exclusively on manual power for its operation and is designed to be primarily supported by hand, for example a screwdriver, is not covered by the WHS Regulations. The general duty of care under the WHS Act applies to this type of plant.</p> <p>Certain kinds of plant, for example forklifts, cranes and some pressure equipment, require a licence from the regulator to operate and some high-risk plant must also be registered with the regulator.</p> |
| Reasonably practicable | <p>A requirement upon duty holders to do what they are reasonably able to do. It requires the duty holder to decide is it REASONABLE in the circumstances to do ALL that is possible or given the circumstances is it REASONABLE to do LESS based on consideration of</p> <ol style="list-style-type: none"> the likelihood of the hazard or the risk concerned occurring the degree of harm that might result from the hazard or the risk what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk the availability and suitability of ways to eliminate or minimise the risk, and after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk. |

Transitional Period A specified period of time in which duty holders are given time to ensure compliance with the law, during which the law will not be enforced with any deterrent penalty. The transitional period is **date 1st January 2022**

*note that the term employee and worker are used interchangeably in this Guide. See the fact sheet on OSH obligations

Scope and Aim of this Guide

This guide is intended for duty holders under the Occupational Safety and Health Act, 2002 (the OSH Act) and Occupational Safety and Health Regulations, 2017 (the OSH Regulations) and provides guidance on what is required to comply with their duties under this legislation.

In addition, this Guide provides supplemental information of a '**best practice approach**'* for the management of risks associated with Plants and equipments in Samoan workplaces. Although the best practice approach **may go beyond a strictly legal obligation**, duty holders are encouraged to work towards best practice. It is anticipated that future regulatory changes to Samoan OSH law will reflect aspects of the 'best practice approach' found in this Guide.

This guide provides information and advice to both employers as well as manufacturers, designers and suppliers.

To identify which are **current legal obligations**, compared to those which are **suggested best practice**, the following symbols are used.

*Denoted with the symbol:



current mandatory legal obligations, duty holder must ensure they comply



recommended best practice approach, a recommended approach

Exclusions

Plant that relies exclusively on **manual power** for its operation and is designed to be hand held (e.g. hand tools such as hammers or screwdrivers) are not covered under this Guide.

1.0 Introduction

This guide provides information on how to ensure compliance with the current Samoan law regarding managing the:

- **employer's duty** to ensure employees (workers) and the workplace are free, **so far as is reasonably practicable**, from risks to safety and health associated with plant in the workplace as well as the
- duties of **designers, manufacturers and suppliers**.

1.1 What kind of risks does plant pose in the workplace?

What is plant?



OSH Act, definition

Plant means any machinery, equipment, appliances, buildings and civil engineering structures required to be used in the workplace.

Plant includes machinery, equipment, appliances, containers, implements and tools and any components or anything fitted or connected to those things. Plant includes items as diverse as lifts, cranes, computers, machinery, conveyors, forklifts, vehicles, power tools, quad bikes, mobile plant and amusement devices.

Plant that relies exclusively on **manual power** for its operation and is designed to be hand held (e.g. hand tools such as hammers or screwdrivers) are not covered under this Guide.

There are significant risks associated with using plant and severe injuries can result from the unsafe use of plant including:

- limbs amputated by **unguarded moving parts** of machines
- being **crushed by mobile plant**
- sustaining fractures from **falls while accessing, operating or maintaining** plant
- being crushed by a quad bike **rollover**
- material being **ejected**
- **electric shock** from plant that is not adequately protected or isolated, and
- **burns or scalds** due to contact with hot surfaces, or exposure to flames or hot fluids.

Other risks include **hearing loss** due to noisy plant and **musculoskeletal disorders** caused by manually handling or operating poorly designed plant.

For further information about electrical risks or manual handling risks refer to the MCIL Guides, *Managing Electrical Risks in the Workplace* and *Managing Hazardous Manual Tasks in the Workplace*.

1.2 Who has safety and health obligations to employees and workplaces? Employers and Designers, Manufacturers and Suppliers

Under both the OSH Act and OSH Regulations **employers**, as well as **designers, manufacturers and suppliers** have **legal obligations** surrounding the management, and in particular, the elimination or minimisation of risk, from risks of plant.

OSH Act Part 3 General Duties of Care, Section 11



General duty of employers to employees

An employer must take all reasonably practicable steps to protect the safety, health and welfare, at work of employees and to provide and maintain a safe and healthy work environment including;

substances,

systems of work,

and,

any building or public or private area in which work takes place.



Current law requires the employer to take ‘**reasonably practicable**’ steps to protect the safety, health and welfare of employees/workers in the context of plant. This includes developing safe systems of work including safe operating procedures and training. The employer’s decision on what is ‘reasonably practical’ is discussed in section 4.0, hazard management determining controls.



OSH Act 2002, Section 19

Duty of designers, manufacturers and suppliers-

A person who designs, manufacturers or supplies any article, or substance or machinery for use at a place of work, shall:

- a) ensure so far as is reasonable that the article, substance or machinery is so designed and constructed and manufactured as to be safe and without risk to health and safety when it is used properly and under relevant information or advice relating to its use which has been provided by the designer, manufacture or supplier
- b) take any steps as are necessary to ensure the provision of adequate information in the English and Samoan language to purchasers and users about the use of which the article, substance or machinery has been designed and about any requirements necessary to ensure that it will be safe and without risk to health and safety when properly used



Current law requires designers, manufacturers or suppliers, in the context of plant to ensure ‘so far as is reasonable’ that items, such as equipment are safe when properly used and requires **adequate safety information to be supplied** about use.

1.3 Specific Regulation regarding plant



OHS Regulations,

Regulation 60 Use of Plant- An employer must protect the health and safety of persons from hazards arising from plant and systems of work associated with plant by:

- (a) ensuring that hazards associated with the use of plant in the workplace are identified and risks to health and or safety are assessed and controlled, and
- (b) eliminating or, where that is not reasonably practicable, minimising, risks to health or safety; and
- (c) specifying various requirements with respect to the design, manufacture, testing, installation, commissioning, use, repair, alteration, dismantling, storage and disposal of plant; and
- (d) providing relevant information and training to employees concerning the use of plant.



Current Samoan law requires, among other things, that employers identify, assess and control risks of plant in the workplace.



It also requires the employer to specify requirements regarding the **design, manufacture, testing, installation, commissioning, use, repair, alteration, dismantling, storage and disposal of plant**



It also requires that employers ensure that employees receive information and training.



Depending on the level of risk supervision of employees/workers when using plant may also be necessary.

2.0 Step One of the Hazard Management Process- Identify Hazards:

The hazard management process is a five step approach to managing risk in the workplace for legal compliance. Figure A, below outlines the steps for legal compliance, namely:

- **identify** which employees/workers are at risk of injury due to risks from plant
- determine which tasks or situations could cause employees/workers harm due to risks from plant
- evaluate the hazards, **assess the risk**
- identify and decide what kind of **control measures** should be implemented,
- implement
- **record, monitor and review** to check the effectiveness of the existing control measures.

Note that penalties may apply if this process is not undertaken.

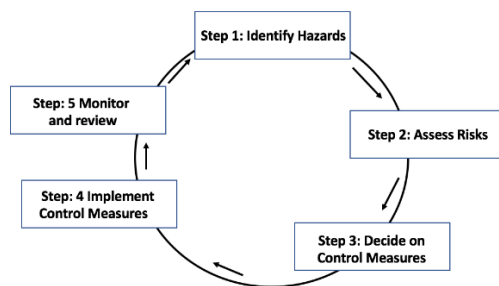


Figure A hazard management process steps



OSH Act Part 3 General Duties of Care, Section 12

An employer must establish and maintain effective methods for:

- a) systematically identifying existing and potential hazards to employees:
- b) systematically identifying at the earliest practicable time, new hazards to employees,
- c) regularly assessing the extent to which a hazard poses a risk to employees

(2) The methods may include but not necessarily be limited to self-inspection and hazard identification process approved by the Commissioner and notified or published in the *Savali*, and shall be carried out in cooperation with workplace representatives and Committees...



OSH Regulations Part 11 Regulation 3 Hazards and Risk Assessments

(3) Hazard identification and risk assessment

1. An employer must ensure that appropriate steps are taken to identify all reasonably foreseeable hazards arising from work which may affect the health or safety of employees or other persons in the workplace
2. If a hazard is identified under sub regulation (1), an employer must ensure that an assessment is made of the risk associated with the hazard

3. In carrying out an assessment under sub regulation (2) an employer must, as far as reasonably practicable, determine a method of assessment that adequately addresses the hazard identified, including one or more of the following:
 - a) a visual inspection
 - b) auditing
 - c) testing
 - d) technical or scientific evaluation
 - e) an analysis of injury or near miss data;
 - f) discussions with designers, manufacturers, suppliers, employees or other relevant parties
 - g) a quantitative analysis
4. Without limiting sub regulations (1) and (2) the identification of hazards and the assessment of associated risks must be undertaken:
before the introduction of any plant or substance; or
before the introduction of a work practice or procedure; or
before changing the workplace, a work or work practice, or an activity or process, where to do so may give risk to a risk to health or safety.
5. An employer who contravenes this regulation commits an offence and is liable on conviction:
 - (a) For a corporation, to a fine not exceeding 1000 penalty units; and
 - (b) For any other case, 100 penalty units.



It is also a legal requirement that the inspection and risk assessment process should be carried out with the **co-operation of workplace safety and health representatives and committees**.



Even if a workplace does not have safety and health representatives or committees it is reasonably practicable to **consult with employees** as well as undertake visual inspections when identifying and assessing hazardous manual tasks.

2.1 Typical hazards arising from plant

The plant itself. For example, hazards associated with a bridge and gantry crane include hazards relating to worn or damaged mechanical components; background noise causing problems with communication; lighting; and multiple cranes on the same runway

Traffic movements in the workplace. For example, vehicles including powered mobile plant moving in and around a workplace, reversing, loading and unloading are frequently linked with death and injuries to employees/workers and members of the public

The environment in which the plant is used. For example, there may be hazards associated with using a tower crane as a result of structural failure, collapse or contact or collision with other plant and structures.

2.2 Methods for identifying risks posed by plant in the Workplace-

Employers: Step 1 how to identify risks of plant

The first step in the risk management process is to identify all hazards associated with plant in the workplace. This involves finding things and situations that could potentially cause harm to people. Hazards generally arise from the following aspects of work and their interaction:

- physical work environment
- equipment, materials and substances used
- work tasks and how they are performed, and
- work design and management.

Hazards may be identified by looking at the workplace and how work is carried out. It is also useful to talk to employees/workers, manufacturers, suppliers and health and safety specialists and review relevant information, records and incident reports.

2.2.1 Inspection and observation of the plant

In combination with reviewing safety information an employer must ensure the inspection of each item of plant in the workplace. A checklist to assist in identifying hazards associated with plant is provided in **Appendix A**, further a plant risk register (**Appendix B**) provides for documentation of both hazard identification and risk assessment.

If the plant is hired, the employer consults the person who owns the plant about potential hazards.

Samoa law requires employers to specify requirements when identifying hazards throughout the life of the plant, for example installation, commissioning, operation, inspection, maintenance, repair, transport, storage and dismantling. For each of these activities, consider whether the plant could:

- cause injury due to **entanglement, falling, crushing, trapping, cutting, puncturing, shearing, abrasion or tearing**
- create hazardous conditions due to harmful **emissions, fluids or gas under pressure, electricity, noise, radiation, friction, vibration, fire, explosion, moisture, dust, ice, hot or cold parts, cleaning, and undisclosed asbestos-containing materials**
- cause injury when an operator responds to **common failure modes**. For example, machine jams cause injury due to poor ergonomic design; if operator controls are difficult to reach or require high force to operate.

Other factors to consider include:

- the **condition** of the plant, for example its age, maintenance history and how frequently the plant is used
- the **suitability** of the plant, for example is it actually being used for its intended purpose? Has it been modified from its intended use?
- the **location** of the plant, for example what is its impact on the design and layout of the workplace and are employees/workers able to access the plant without risk of slips, trips or falls?
- **abnormal situations, for example** what abnormal situations, misuse or fluctuation in operating conditions can you foresee?

2.2.2 Review available information



Information about hazards, risks and control measures relating to plant in your workplace can be obtained from:

- manufacturers, importers or suppliers of the plant (manufacturers and suppliers are legally obliged to provide information) e.g. instruction and user manuals

- you may need a competent person to undertake the task such as maintenance technicians or specialists, for example engineers (see the key definitions above for competency)
- consultation with employees/workers
- technical standards.

2.2.3 Review incident records and data



OSH Act section 20- Accident Register

- (1) An employer shall keep a register containing details of every accident or incident which causes or which nearly causes death, serious injury or illness to a person whether employed at that workplace or not.
- (2) The register shall comprise copies of all accident report forms and all accident investigation sheets as approved by the Commissioner and notified and published in the Gazette.



Current law requires employers **to keep a register of all accidents or incidents.**

Records of previous workplace incidents (injuries and near misses) and worker complaints related to plant should also be checked.

3.0 Step 2 of the Hazard Management Process- Assess the risk



Assess risks—understand the nature of the harm that could be caused by the hazard, how **serious** the harm (consequence) could be and the **likelihood** of it happening to determine the level of risk and prioritise the required action.

Risk assessment actions consist of:

A risk assessment involves considering what could happen if someone is exposed to a hazard and the likelihood of it happening. A risk assessment can help determine:

- how severe a risk is
- whether existing control measures are effective
- what action you should take to control the risk, and
- how urgently the action needs to be taken.

Plant hazards have the potential to cause different types and severities of harm, ranging from minor discomfort to a serious injury or death.

A risk assessment will assist to:

- identify which employees/workers are at risk of exposure
- determine what sources and processes are causing the risk
- identify if and what kind of control measures should be implemented, and
- check the effectiveness of existing control measures.

The nature and severity of risks will depend on various factors.

To assess the risk associated with plant hazards you have identified, you should consider the following.

What is the potential impact of the hazard?

- How severe could an injury or illness be? For example, lacerations, amputation, serious or fatal crush injury, burns or loss of hearing
- What is the worst possible harm the plant hazard could cause? For example, a crane could overturn or collapse causing harm to the operator, employee/workers and others below.

How likely is the hazard to cause harm?

- How frequently are employee/workers exposed to the hazard?
- What condition is the plant used in? For example, in a confined space, muddy or dusty environment
- What is the condition of the plant? For example, is it old and missing safety features found on new plant? Is it reliable or often needing emergency maintenance?
- If there are other people or items of plant in the vicinity, what effect do they have on the likelihood or consequence?
- Where and when is access required during the installation, operation or maintenance of plant and in an emergency?
- What work practices and procedures exist for plant safety? For example, is isolation required to carry out maintenance?
- What kinds of information, training, instruction and supervision are provided to employees/workers and other persons who may be exposed to plant?
- Does the plant's safety depend on the competency of its operators?
- How is work organised? For example, consider:
 - the speed of the process line
 - pedestrian and vehicular traffic around the plant
 - time spent on repetitive tasks
 - shift work arrangements, and
 - production incentives that may affect health and safety.

A plant risk register demonstrates the documentation of plant risk assessment (**Appendix B**).

3.1 Planning a risk assessment

The first step in completing a risk assessment is to identify who should participate in the assessment—for example, engineers or personnel with competency in plant, the employees who do the task, their health and safety representative, and management who have control over how the task is done.

Dividing up the workplace- If a workplace is very large use floor plans, or buildings or rooms and to break up the task, a register of all plant (**Appendix B**) enables documentation to be kept about inspection dates and any other requirements such as testing.

Reviewing information and instructions- from manufacturers, designers or suppliers, especially for plant and equipment

Examining work practices and conditions, consult with employees—

It is important to **observe and consult with employees** as they may not be following instructions even if previously trained in them.

4.0 Step 3 of the Hazard Management Process Determine Suitable Controls

After the risk has been assessed a decision about suitable controls is required based on consideration of 'what is reasonably practicable' in the circumstances.

OSH Act Part 3 General Duties of Care, Section 11



General duty of employers to employees

An employer must take *all reasonably practicable steps* to protect the safety, health and welfare, at work of employees and to provide and maintain a safe and healthy work environment including;

substances,

systems of work,

and,

any building or public or private area in which work takes place.



OSH Act Part 3 General Duties of Care, section 13

Management of identified risks:

- (1) An employer must take appropriate steps to control hazards which are identified and assessed as posing a threat to the safety, health or welfare of employees, and where practical the hazard must be eliminated.
- (2) If elimination is impracticable then steps must be taken to isolate hazards from employees
- (3) If elimination or isolation is impracticable, then employers must take steps:
 - a) To minimise the likelihood that the hazard will be a cause or source of harm to the employees; and
 - b) To ensure that protective clothing and gear is provided, such as meets the standards outlined in this Act, including Codes of Practice and regulations issued by this Act; and
 - c) To monitor the exposure of employees to the hazard; and
 - d) To monitor with the employees informed consent, the health of employees in relation to exposure of the hazard
- (4) The steps taken under this section include action to protect the environment, and persons in the environment from emissions, leakage or spillage from any machine process or substance used or stored in the course of the employer's business or operations.

5 Control of risk(1) An employer must on the basis of a risk assessment under regulation (3) ensure that any risk to health and safety arising out of work are eliminated or if that is not reasonably practical minimised.

(2) An employer must, in the implementation of sub regulation (1) ensure that the minimisation of any risk is achieved by the application of the following hierarchy of control measures

- a) Firstly, the application, so far as is reasonably practicable, of engineering controls, including substitution, isolation, modifications to design, guarding and mechanical ventilation
- b) Secondly, if steps taken under paragraph (a) do not minimise the risk, the application, so far as is reasonably practical of administrative control. Including safe work practices
- c) Thirdly if steps taken under paragraph (a) and (b) do not minimise the risk, the provision of appropriate protective equipment,

(3) An employer who contravenes this regulation commits an offence and is liable on conviction:

(a) for a corporation, to a fine not exceeding 1000 penalty units: and

(b) for any other case, to a fine not exceeding 100 penalty units.

Note failure to comply may lead to a penalty.

4.1 Reasonably practicable and the hierarchy of control



Current law requires the employer to take 'reasonably practicable' steps to protect the safety, health and welfare of employees and the work environment. The employer's decision on what is 'reasonably practical'. It requires the duty holder to decide is it REASONABLE in the circumstances to do ALL that is possible or given the circumstances is it REASONABLE to do LESS based on consideration of:

- the likelihood of the hazard or the risk concerned occurring,
- the degree of harm that might result from the hazard or the risk
- what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk
- the availability and suitability of ways to eliminate or minimise the risk, and
- after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.



The employer must decide what controls are suitable. Note that although the final decision is with the employer employees and their representatives best practice suggests employees should be consulted prior to final decision making.



The law requires elimination of the hazard where reasonably practicable, and, where elimination is not practicable, a 'sliding scale' of controls and combination of controls should be used based on what is reasonably practicable. It is a hierarchy because the further from elimination the less effective the controls.

First consider, based on the risk assessment, if it is necessary to eliminate risks so far as is reasonably practicable, then decide on control measures and implement—if it is not reasonably practicable to eliminate the risk, implement the most effective control measures that are reasonably practicable in the circumstances in accordance with the hierarchy of control measures, and ensure a plan is in place to **review control measures to ensure they are working as planned and are not introducing new hazards.**

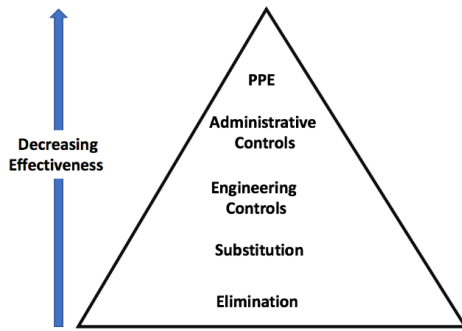


Figure 2 The Hierarchy of control

Eliminating the risk- For example, you may design items of a size, shape and weight so they can be delivered, handled or assembled at the location where they will be used without the need for a crane.

- **Substitution**— minimise the risk by substituting or replacing a hazard or hazardous work practice with something that gives rise to a lesser risk. For example, installing a conveyor system to replace forklifts will eliminate the risks associated with moving plant but will introduce other risks associated with conveyors. The new system should reduce the overall risks of transporting material.
- **Isolation**— minimise the risk by isolating or separating the hazard or hazardous work practice from any person exposed to it. For example, use concrete barriers to separate mobile plant from employees/workers
- **Engineering controls**— engineering controls are physical control measures to minimise risk. For example:
emergency brakes in a lift that are applied automatically when the lift exceeds its maximum speed
an automatically applied control system that prevents tower cranes from colliding while sharing the same air space
interlocked guards on machinery.

If risk remains, it must be minimised by implementing **administrative controls**, so far as is reasonably practicable. For example, a tag-out system could be used to ensure the plant is isolated from its power source and is not operated while maintenance or cleaning work is being done.

Any remaining risk must be minimised with suitable **personal protective equipment (PPE)**. For example, providing employees/workers with breathing protection, hard hats, gloves, aprons, hearing protection and protective eyewear.

Administrative control measures and PPE do not control the hazard at the source. They rely on human behaviour and supervision and used on their own tend to be the least effective in minimising risks.

Control measures may change the way work is carried out and create new hazards. In these situations, employers must consult with employees and develop safe work procedures, and provide training, instruction, information and supervision based on the changes.

OSH Act Part 3 General Duties of Care, section 15

Protective Clothing and Equipment PPE

An employer shall:

- a) provide, maintain and make accessible to employees the protective clothing and equipment necessary to avoid injury and damage to their health; and
- b) take all reasonably practical steps to ensure that the employees use that protective clothing and equipment whenever the circumstances for which it is provided arise; and
- c) make provision in the place of work, for protective clothing and equipment so provided to be cleaned and securely stored without risk of damage when not required.



Current law requires employers to provide appropriate PPE to the employee, however this should be the 'last' resort or included with other controls.

4.2 Specific control measures, utilising the hierarchy of control

4.2.1 Guarding plant

A **guard** is a physical or other barrier that can perform several functions including:

- preventing **contact with moving parts** or **controlling access to dangerous areas** of plant
- **screening** harmful emissions, for example radiation
- minimising **noise through applying sound-absorbing materials**, and
- preventing ejected parts or off-cuts from striking people.

Permanently fixed physical barriers-

The most effective guard is a **permanently fixed barrier**. These should be in place if access to the guarded area is not required during operation, maintenance or cleaning of the plant. Permanently fixed physical barriers are designed to be welded or incorporated into the body of the machine. In Figure 1, the plant's power transmission is not required to be accessed during normal operation, maintenance or cleaning. It is therefore **practicable** to have the gear arrangements enclosed in gearbox housing to prevent access to moving gears. This has **eliminated** the risk associated with entanglement.

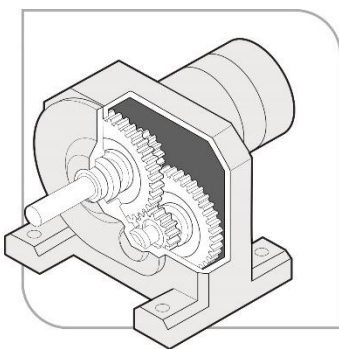


FIGURE 1 CUT-AWAY VIEW OF A FIXED PHYSICAL BARRIER ENCASING THE GEAR ASSEMBLY AND ELECTRIC MOTOR

Interlocked physical barriers

An **interlocked physical barrier** should be in place if **access is required** during operation, maintenance or cleaning.

An **interlocked guard** is connected to the plant's operational controls so the plant is **prevented from operating until the guard is closed**. The guard can either:

- remain **locked** while the plant is in operation and, where it takes time for the dangerous parts to come to rest, incorporate a delay before it can be opened, or
- not be locked but **stop the operation** of the machine when opened.

In Figure 2, the hinged top guard on the food mixer has a positively operating insertion key which **automatically cuts off the plant's power** when the lid is opened or removed. This allows the blades to come to rest. If the moving parts do not stop immediately once the power is cut off, then a guard should be designed to delay release of the locking mechanism until the moving parts have stopped.

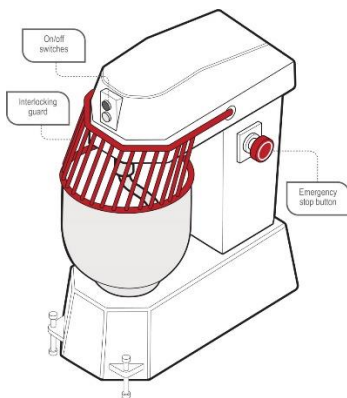


FIGURE 2 FOOD MIXER WITH INTERLOCKING GUARD.

Physical barriers fixed in position

If it is not reasonably practicable to use a permanently fixed barrier or an interlocked physical barrier then the guarding in a **fixed position** should **only be altered or removed using a SPECIAL tool**. The special tool should not be the same as any tool issued to and used by the operator of the plant when the operator is performing their normal work. Devices that can be operated using fingers, for example wing nuts or wedge inserts, should not be used.

Fixed position barriers should only be opened when the machine is not in operation (see Figure 3).

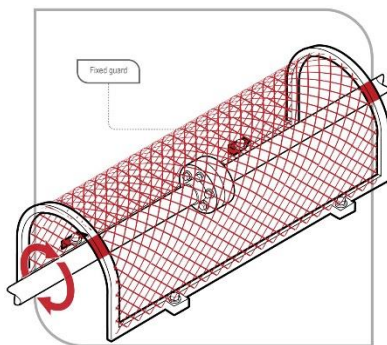


FIGURE 3 FIXED GUARD ON ROTATING SHAFT OR COUPLING

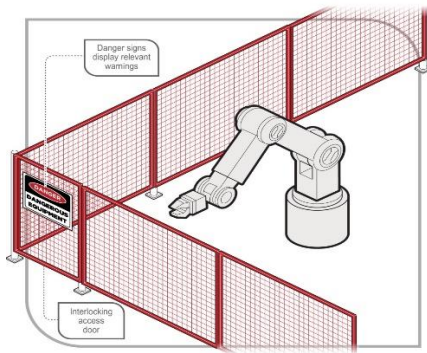


FIGURE 4 PERIMETER FENCE GUARD WITH FIXED PANELS AND INTERLOCKING ACCESS DOOR

Physical barriers, for example perimeter fences securely fixed in position, may prevent access to dangerous areas. Any access points, for example gates and doors, should be secured with a **lock and key** or an **interlocking system** (see Figure 4).

Isolation procedures may be necessary where there is a danger of machines activating while a person is inside the barrier. For example, when an interlocked door is accidentally closed the machine should not automatically restart.

Presence-sensing systems

If it is also not reasonably practicable to use a physical barrier fixed in position, then guarding should include a presence-sensing safeguarding system **that eliminates risk arising from the area of the plant requiring guarding when a person or any part of a person is in the area being guarded.**

These systems detect when a person or part of a person's body enters a defined area, and stop the machine before the person or part reaches the danger zone. Photoelectric light beams, laser scanners and foot pressure mats are examples of this type of guarding. They rely on sensitive trip mechanisms and the machine being able to stop quickly, which may be assisted by a brake (see Figures 5 and 6).

Effective presence-sensing safeguard systems require selecting a trip device appropriate for the work being done, and the correct location of beams with light-activated devices, taking into account speed of entry and machine stopping time. Employers whose workplaces use presence-sensing safeguarding system must have **records kept** regarding safety integrity tests, inspections, maintenance, commissioning, decommissioning, dismantling and alterations of the plant.

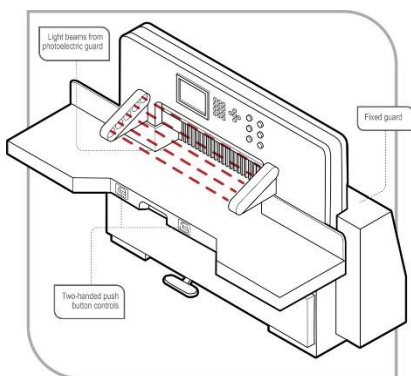


FIGURE 5 PAPER CUTTING GUILLOTINE WITH A COMBINATION OF GUARDS INCLUDING A PHOTOELECTRIC LIGHT CURTAIN

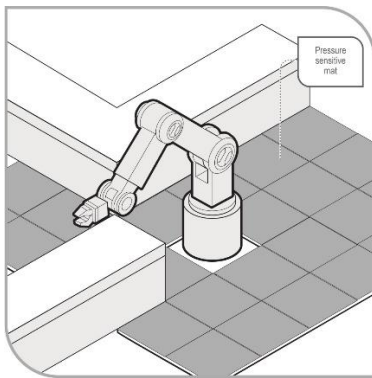


FIGURE 6 PRESSURE SENSITIVE UNIT

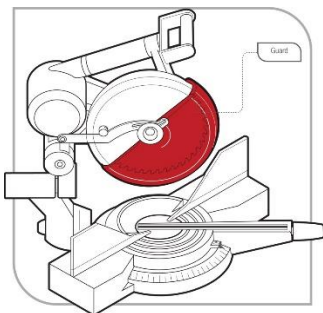


FIGURE 7 SELF-ADJUSTING GUARD FOR A DROP SAW

Adjustable guarding incorporates movable sections or panels of the guard to allow materials to be fed into the guarded area while still preventing physical contact (see Figure 7).

Removal of guarding

If the guarding is removed for the purposes of maintenance or cleaning, it should be replaced before the plant is put back into normal operation. Where reasonably practicable, **the plant should not be able to restart unless the guarding is in place**. When removing guarding, eliminate the energy source by **disconnecting the power** supply or by locking out motive power sources.

Environmental factors impacting on guard selection

When using a guard you should consider the environment in which it may be used. Some examples of poor guard selection include: guards on high frequency welders that become electrically charged; heating of guards in hot processes; and wire mesh guards on machines emitting splashes.

If a guard is likely to be exposed to corrosion corrosion-resistant materials or surface coatings should be used.

Colour coding of guards

It is good practice for all guards to be painted the same colour. For example:

- use high visibility yellow or red, provided it is different to the plant's colour, so it can be clearly seen when a guard has been removed or when it is not in its proper place, and
- paint the surfaces behind the guard a contrasting or bright colour so that when the guard is removed the exposed colour is clearly visible and it is easy to identify that the guard has been removed, alerting employees/workers to possible danger.

Guards should:

- be of **solid construction** and securely mounted so as to resist impact or shock
- make by-passing or disabling the guarding, whether deliberate or accidental, as **difficult** as is reasonably practicable
- not create a risk in itself. For example, it must not obstruct operator visibility, weaken the plant, cause discomfort to operators or introduce new hazards, such as pinch points, rough or sharp edges
- be properly maintained

4.2.2 Operational controls

An employer must ensure that any **operator controls** are:

- identified on the plant to **indicate their nature and function and direction of operation**
- located so they can be **readily and conveniently operated** by each person using the plant
- located or guarded to **prevent unintentional activation**, and
- able to be locked into the **'off' position to enable disconnection** from energy sources.

Poorly designed operator controls can lead to plant moving unexpectedly or not being able to be operated safely. For example, a control for setting the speed on a saw should not be a simple slider or rotary control that may be accidentally adjusted during operation. It should be graduated in fixed lockable steps.

Operational control devices should be designed:

- to enable the plant to be **'fail safe'**, for example when hand pressure is released on a lever controlling up and down movement, the lever will return to the neutral position and movement will stop
- to be within **easy access** of the operator
- so the intended function can be **easily read and understood**, especially in the case of dials and gauges
- so the movement of the control is consistent with established convention, for example anticlockwise to open, clockwise to close
- so the desired effect can only occur **by intentional control** operation, for example providing a starting control
- to withstand the rigours of normal use, undue forces and environmental conditions
- so they are located outside danger zones
- so they are readily accessible for maintenance, and
- so they are positioned to maximise visibility of the whole plant.

4.2.3 Emergency stops

If the design of plant at a workplace includes an **emergency stop control**, the employer should ensure that:

- the **stop control is prominent, clearly and durably marked and immediately accessible** to each operator of the plant
- any handle, bar or push button associated with the stop control is **coloured red**, and
- the stop control cannot be adversely affected by electrical or electronic circuit malfunction.
- Where the plant is designed to be operated or attended by more than one person and more than one emergency stop control is fitted, **multiple controls are of the 'stop and lock-off' type** so that the plant cannot be restarted after an emergency stop control has been used unless each activated stop control is reset.

- Emergency stop devices should not be the only method of controlling risks. They should be designed as a back-up to other control measures.
- Once engaged, the emergency stop controls should remain that way. It should only be possible to disengage the emergency stop controls by a deliberate action.
Disengaging the emergency stop control should not restart the plant. It should only allow the normal starting sequence to be activated.

In the case of plant or parts of plant designed to work together, stop controls, including the emergency stop control, should also stop all the equipment related to the plant's operation, where continuing to operate this related equipment may be dangerous.



FIGURE 8 EMERGENCY STOP BUTTON

4.2.4 Warning devices

If there is a possibility of the plant colliding with pedestrians or other powered mobile plant, the employer should ensure that the plant has a warning device that will warn persons who may be at risk from the movement of the plant.

Warning devices should be fitted to fixed plant to warn employees/workers of an impending risk. For example, these may warn of start-up movement or release of steam or overpressure.

Automatic audible alarms

Automatic audible alarms are usually fitted to warn of forward or reversing movement. These alarms emit an intermittent sound which is activated when the gear or drive lever is engaged.

It is also possible that employees/workers will become desensitised to the sound. For this reason it may be more effective to combine audible alarms with other warning devices, for example flashing lights.

Motion sensors

Motion sensors are used to activate an integrated or separately located alarm. Motion sensors also warn with sound. They are sensitive to movement and are activated by motion in the required direction. These devices are suitable for plant that moves suddenly in any direction, for example rollers, bulldozers, excavators, boom lifts or scissor lifts.

Motion sensor alarms usually deactivate after a short time. They should not be deactivated if the operator has restricted vision when reversing.

Lights

Lights are usually used to warn of forward and reversing movement. These lights are wired to operate continuously or in hazard mode by flashing, usually when reversing. They generally work when the gear or drive lever is engaged.

It is important to choose the intensity and colour of lights appropriate to your workplace to ensure the moving plant can be seen. For example, an orange warning light may be suitable inside a warehouse but may not be seen in sunlight.

Flashing lights

Rotary flashing lights are coloured revolving lights and are usually mounted in a prominent place, for example the top of a vehicle cabin. They can be wired to operate continuously or can be activated by a

switch. They are **suitable to** be used on any items of plant that move in the workplace, for example forklifts or skid steer loaders.

Flashing lights may not be suitable for plant that:

- is stationary for long periods of time, and
- operates in restricted areas, for example trucks travelling on defined site roads.

Percussion alarms

Percussion alarms are mechanical devices fitted to an axle or gearshift. When plant moves, a cam raises a hammer that drops repeatedly onto a bell or sounding plate. These alarms are relatively cheap to install. However, they require regular maintenance to ensure they continue functioning effectively.

Radio sensing devices

Radio sensing devices activate when the operator selects reverse. A light and alarm sound inside the cabin to alert the operator if a pedestrian is within a predetermined distance from the rear of the plant.

Air horns

Horns are suitable for powered mobile plant with long braking distances, for example trucks. Some large workplace or sites may require a truck to 'stop and sound horn before continuing'.

4.2.4 Isolating energy sources

An **isolation procedure** is a set of predetermined steps that should be followed when workers are required to perform tasks, for example maintenance, repair, installation and cleaning of plant.

Isolation procedures involve isolating potentially hazardous energy, so the plant does not move or start up accidentally. Isolating plant also ensures entry to a restricted area is controlled while the specific task is being carried out.

The **lock-out process is the most effective isolation procedure. The process is as follows:**

- shut down the machinery and equipment
- identify all energy sources and other hazards
- identify all isolation points
- isolate all energy sources
- control or de-energise all stored energy
- lock out all isolation points
- tag machinery controls, energy sources and other hazards, and
- test by 'trying' to reactivate the plant without exposing the tester or others to risk.

Failure to reactivate the plant may mean the main power has been isolated. However, it does not guarantee all stored energies have dissipated. Further measures to safely release these energies, for example hydraulic or pneumatic pressure, suspended weight or compressed springs, may be required.

In order for the isolation procedure to be effective, you should identify all energy sources likely to activate the plant or part of it and isolate or de-energise these to avoid the plant being inadvertently powered.

Energy sources include:

- electricity (mains)
- battery or capacitor banks
- solar panels
- fuels
- heat
- steam
- fluids or gases under pressure. For example, water, air, steam or hydraulic oil
- stored energy. For example, compressed springs

- gravity
- radiation.

In order to isolate plant devices which, lock out isolation points include switches with built-in locks and lock-out circuit breakers, fuses and valves. Other devices include chains, safety lock-out jaws (also known as hasps) and safety padlocks.

When isolating an energy source, it may be necessary to use a lock that allows one or more padlocks to be fitted. If more than one person is working on the plant at the same time, you should ensure each worker is able to attach a padlock to the device (see Figure 9). This will prevent access to the energy sources while the work is being carried out.



FIGURE 9 EXAMPLE OF LOCK-OUT WITH A TAG AND THE PADLOCKS OF TWO WORKERS

Another way to allow multiple locks to be used is to have one padlock on the isolation point, with the keys locked in a box that has been locked separately by each worker.

Each worker involved in the maintenance, cleaning or repair of the plant should have a lock, tag and key for each isolation point. There should be no duplicate key for any lock, except a master key that is kept in a secure location and which should only be used in an emergency.

If more than one energy source needs to be isolated to enable safe shut-down of the plant, the single key to each lock-out device should be held by the same person.

Tags should only be used as a means of providing information to others at the workplace. A tag should not be used on its own as an isolation device; only a lock is effective in isolating the energy source.

Tags and locks should only be removed by the person who applied them or by the supervisor after consultation with the signatory of the tag.

In the event that the person who applied the tag is unavailable, their tag or lock may only be removed in accordance with a **management approved procedure**.

4.2.5 Powered mobile plant

The employer of a workplace with **powered mobile plant** must manage risks to health and safety associated with the following:

- the plant **overturning**
- **things falling on** the operator of the plant
- the operator being **ejected** from the plant
- the plant **colliding** with any person or thing, and
- mechanical failure of **pressurised elements of plant** that may release fluids that pose a risk to health and safety.

A suitable combination of operator protective devices for the plant should be provided, maintained and used. For an industrial lift truck, the employer should ensure there are suitable procedures to prevent the plant moving of its own accord e.g. rolling down a sloping surface, or to prevent unauthorised operation. This procedure would include parking on a **firm, level surface** with the **handbrake** applied, the **motor switched off** and rendered **inoperable**, for example by **removing the key**.

4.3 Record keeping—plant

An employer should keep a **record of all tests, inspections, maintenance, commissioning, decommissioning, dismantling and alterations** of plant for the period that the plant is used or until the person relinquishes control of the plant.

For workplaces with a **presence-sensing safeguarding system** they must keep a record of safety integrity tests, inspections, maintenance, commissioning, decommissioning, dismantling or alterations of the plant. The record must be kept for:

- five years or
- the life of the plant or until the person relinquishes control of the plant

Records on items of plant that may be kept include:

- the unique plant identification number
- plant design registration information
- relevant data from commissioning
- compliance statements and/or test certificates
- manufacturer's specifications and user manuals
- results of inspections
- results of tests on the plant including safety devices, for example protective earth continuity tests, testing of mechanical guarding, stop time measurement
- information on maintenance and major repairs carried out
- information on alterations
- information on use deviating from intended operating or design conditions
- results of risk assessments carried out on plant
- information, instruction and training provided to workers, and
- competencies of operators.

Plant involving High risk work

Certain types of work, for example operating industrial trucks, forklifts and some cranes or scaffold and rigging work, require the operator to have gained, through certified training a specific level of competency. The competency will depend on the plant.

For more detail see the Guide, Managing the risks of working at heights in the workplace.

Lifting Plant

When plant is being used to lift or suspend persons or things, the employer, so far as is reasonably practicable, should ensure that the plant used is specifically designed to lift or suspend the load.

If it is not reasonably practicable to use plant that is specifically designed to lift or suspend the load, the employer must ensure that:

- the plant does not cause a greater risk to health and safety than if specifically, designed plant were used, and
- The person must ensure that the lifting and suspending is carried out:

- with lifting attachments that are suitable for the load being lifted or suspended, and
- within the safe working limits of the plant.
- no loads are suspended or travel over a person unless the plant is specifically designed for that purpose
- loads are lifted or suspended in a way that ensures that the load remains under control during the activity, and
- no load is lifted simultaneously by more than one item of plant unless the method of lifting ensures that the load placed on each item of plant does not exceed the design capacity of the plant.

Combining control measures

In most cases, a combination of the control measures will provide the best solution to minimise the risk to the lowest level reasonably practicable. For example, protecting workers from flying debris when using a concrete cutting saw may involve guarding the blade, isolating the work area and using PPE such as a face shield.

Check whether the chosen control measures introduce new hazards. For example, hiring a forklift to control hazardous manual tasks introduces risks involving moving plant that also need to be controlled.

5.0 Information, training, instruction and supervision



Samoan law requires employers to provide for suitable information, training, instruction and supervision.

Determining what is suitable information, training or instruction includes considering:

- the nature of the work carried out by the worker
- the nature of the risks associated with the work at the time of the information, training and instruction, and
- the control measures implemented.

Workers must be trained and have the appropriate skills to carry out a particular task safely. Training should be provided to workers by a competent person.

Before use of plant in a workplace, an employer should provide workers with information, training, instruction and organise ongoing supervision as necessary to protect them from risks arising from the use of the plant.

An employer must also provide the necessary safety information to persons who are involved in installing, commissioning, testing, maintaining or repairing plant, as well as decommissioning, dismantling or disposing of plant. This should include information on the types of hazards and risks the plant may pose to the person when they are carrying out these activities.

This information may be supported with **safe work procedures** including instructions on:

- the correct use of guarding and other control measures
- how to safely access and operate the plant
- who may use an item of plant? For example, only authorised or licensed operators
- how to carry out inspections, shut-down, cleaning, repair and maintenance
- traffic rules, rights of way, clearances and no-go areas for mobile plant
- procedures when plant malfunctions
- emergency procedures, and

- the proper use, wearing, storage and maintenance of personal protective equipment (PPE).

Emergency instructions relating to an item of plant should be clearly displayed on or near it.

Training programs should be practical and ‘hands on’ and take into account the particular needs of workers. For example, literacy levels, work experience and specific skills required for safe use of the plant should all be taken into account.

Training programs should be reviewed regularly, and also when there is change to work processes or systems, plant or equipment, implementation of new control measures, relevant legislation or other issues affecting the way the task is performed.

Records of induction and training given to workers must be kept. The records can include information such as the date of the session, the topics dealt with, the name and signature of the trainer and each of the workers who attended the session

6.0 Steps 4 and 5 of the Hazard Management Process implement, monitor and review

Control measures must be maintained so they remain fit for purpose, suitable for the nature and duration of work and are installed, set up and used correctly.

The control measures put in place to protect health and safety should be regularly reviewed to make sure they are effective. If the control measure is not working effectively it must be revised to ensure it is effective in controlling the risk.

Reviews are required:

- when the control measure does not control the risk so far as is reasonably practicable
- before a change at the workplace that is likely to give rise to a new or different health and safety risk that the measure may not effectively control
- a new or relevant hazard or risk is identified
- the results of consultation indicate that a review is necessary, or
- an employee representative requests a review if that person reasonably believes that:

Common review methods include workplace inspection, consultation, testing and analysing records and data.

If a risk remains employers should go back through the risk management steps and make further decisions about control measures.

7.0 Employer’s duty to specify requirements and the duty of designers, manufacturers and suppliers



Regulation 60 Plant:

Employers duty ...

(c) specifying various requirements with respect to the design, manufacture, testing, installation, commissioning, use, repair, alteration, dismantling, storage and disposal of plant;...



OSH Act 2002, Section 19:

Duty of designers, manufacturers and suppliers-

A person who designs, manufactures or supplies any article, or substance or machinery for use at a place of work, shall:

- a) ensure so far as is reasonable that the article, substance or machinery is so designed and constructed and manufactured as to be safe and without risk to health and safety when it is used properly and under relevant information or advice relating to its use which has been provided by the designer, manufacturer or supplier
- b) take any steps as are necessary to ensure the provision of adequate information in the English and Samoan language to purchasers and users about the use of which the article, substance or machinery has been designed and about any requirements necessary to ensure that it will be safe and without risk to health and safety when properly used



Samoan law requires employers throughout the lifecycle of plant to specify requirements from design, manufacture, testing, installation, commissioning, use, repair, alteration, dismantling, storage through to disposal of plant to ensure the safety and health of persons.

7.1 Employer Specifications for Design and Manufacture



Samoan law requires **manufacturers, designer and suppliers** to ensure, so far as is reasonable that plant is safe, without risks to health and safety. These duty holders should undertake a hazard management process similar to the employer's obligations described in sections 2, 3 and 4 of this Guide.

Manufacturers, designers and suppliers must also provide **adequate information** about the plant or structure to others, such as employers. This information may be provided in user manuals, brochures or on the plant or structure itself. Information provided by the designer to the manufacturer should be passed on to the supplier and then to the purchaser.

In some cases employers may be dealing directly with a designer or manufacturer. In these cases the employers should follow the recommendations regarding purchasing.

Purchasing

Failure to **select the right equipment** for the job can cause injury. Before purchase check if the plant is suitable for **the intended use** including the environment, it will be used in and the workers using it. Discuss the needs with the plant supplier, who should provide information about:

- the purpose for which the plant was designed or manufactured
- the results of calculations, analysis, testing or examination carried out to determine that the plant, so far as is reasonably practicable, is without risk to health and safety
- conditions necessary for the safe use of the plant, and
- alterations or modifications made to the plant.

Before purchasing, or hiring plant determine:

- the hazards and risks associated with installation, commissioning, operation, inspection, maintenance, repair, transport, storage and dismantling of the plant
- control measures needed to minimise these hazards and risks
- the manufacturer's recommendations for the frequency and type of inspection and maintenance needed

- special skills required for people who operate the plant or carry out inspection and maintenance, including preventative maintenance
- special conditions or equipment required to protect the health and safety of people carrying out activities. For example, installation, operation and maintenance, and alterations or modifications to be made to the plant.

Check whether the plant includes some or all the following risk controls:

- contact with or access to dangerous parts is prevented. For example, by using **guards** and protective structures
- it is of **sturdy construction** and has tamper-proof design
- there are no obstructions to the plant operator
- it has **fail-safe** operation
- it is easy to inspect and maintain
- it does not introduce other hazards, for example manual handling problems or excessive noise, into your workplace, and
- it incorporates measures to minimise risks during use, for example low noise.

Supplier's Duty to supply safe plant

Suppliers of second-hand plant must ensure, so far as is reasonably practicable, the plant is without risks to the health and safety of persons who are at or in the vicinity of a workplace. This includes, so far as is reasonably practicable, identifying faults in the plant and advising the employer.

Suppliers of second-hand plant must also take all reasonable steps to obtain information about how to use the plant correctly and safely from the manufacturer or original supplier.

Suppliers of second-hand plant must give the buyer:

- this information, and
- all available records of the plant kept by the previous owner.

The information may include data sheets, test certificates, operations and service manuals, reports and a safety manual.

Hiring plant

A person who hires or leases plant to others is a supplier of plant. This means they must ensure, so far as is reasonably practicable, the plant is safe to use and properly maintained. They must also provide specific information with the plant about how to operate it safely. The employer and the supplier must ensure that it is clear who will be responsible for inspecting and maintaining the plant in accordance with the manufacturer's specifications.

7.2 Employer Specifications for Inspecting plant

The employer must ensure that maintenance, inspection and, if necessary, testing of plant is carried out by a competent person.

The maintenance, inspection and testing must be carried out:

- in accordance with the manufacturer's recommendations, if any
- if there are no manufacturer's recommendations, in accordance with the recommendations of a competent person, or
- in relation to inspection, if it is not reasonably practicable to comply with the above, annually.

Plant inspection should be conducted in accordance with a regular maintenance system to identify:

- potential problems not anticipated during plant design or task analysis

- deficiencies in plant or the equipment associated with use of the plant, for example wear and tear, corrosion and damaged plant parts
- adverse effects of changes in processes or materials associated with plant, and
- inadequacies in control measures that have been previously implemented.

Inspecting associated work processes should be conducted regularly to identify:

- unsafe work practices associated with the use of plant
- negative effects of changes in processes or materials associated with plant, and
- inadequacies in control measures that have been previously implemented.

Regularly inspect hand-held powered plant and repair or replace when necessary, and replace damaged or worn parts, for example grinding wheels.

Control measures implemented, for example guards and warning devices, must be regularly inspected and tested to ensure they remain effective.

Appendix B is a template for an up-to-date register of the items of plant requiring regular inspection and maintenance. It should include information on:

- allocated responsibilities for people dealing with inspections
- standards against which plant should be inspected
- the frequency of inspections
- critical safety instructions to be followed during inspection. For example, the isolation procedure
- the procedures for types of inspections including:
 - periodic inspections
 - specific tests, and
 - repaired or modified plant, and
- variations from normal operation or dangerous occurrences and trends that may be occurring.

Reasonably practicable control measures must be implemented to ensure the health and safety of the person conducting the inspection. For example, you may need to ensure the plant is switched off and isolated from the energy source to avoid accidental re-energising of dangerous parts.

Guards that are removed must be replaced correctly to prevent access to the hazardous part of the plant when it is returned to use.

7.3 Employer specifications for installation and commissioning of plant



OSH Regulation - Definition

Commissioning in relation to plant means performing necessary adjustments, tests and inspections to ensure that the plant is in full working order to specified requirement, and includes re-commissioning

An employer must:

- not commission the plant unless they establish that the plant is, so far as reasonably practicable, without risks to the health and safety of any person
- ensure that a person who installs, assembles, constructs, commissions, decommissions or dismantles the plant is a **competent person**, and is provided with all the information necessary to minimise risks to health and safety, and

- ensure that the processes for the installation, construction, commissioning, decommissioning and dismantling of plant include inspections that ensure, so far as is reasonably practicable, the risks associated with these activities are monitored.

If an employer commissions plant they should ensure:

- the commissioning sequence is in accordance with the design specifications, and
- tests are carried out to check the plant will perform within the design specifications.

Positioning plant in the workplace

Plant should be positioned so:

- risks from hot plant, for example, friction, molten material, hot gases, are controlled through restricted access, guarding or insulation
- there is enough space (suggested 600 mm, the minimum width of a walkway) for safe access to the plant for operation, cleaning, maintenance, inspection and emergency evacuation
- the plant does not obstruct doorways and emergency exits
- the proximity to other plant does not have a negative effect on operation of the plant or work processes
- the plant rests on a suitable foundation where required, for example on a floor or other support that ensures the plant is stable and secure
- ventilation can deal with the nature and volume of emissions from the plant, and
- workers and others are not exposed to inappropriate noise levels

7.4 Employer specifications for use of plant in the workplace

An employer must:

- so far as is reasonably practicable, prevent alterations to or interference with the plant that they have not authorised
- take all reasonable steps to ensure the plant is only **used for the purpose for which it is designed**, unless they have assessed that the proposed use does not increase the risk to health and safety
- in determining whether or not the proposed use of plant increases the risk to health and safety, ensure that the risk associated with the proposed use is **assessed by a competent person**, and
- take all reasonable steps to ensure that all safety features, warning devices, guarding, operational controls, emergency stops are used in accordance with instructions and information that they have provided.

Workers who operate plant should be **competent or suitably supervised during training** so they do not put themselves or others at risk. It is important to retain all operating manuals and instructional material provided by the manufacturer in order to correctly operate and maintain the plant once it is in the workplace.

The employer should prepare a **safe operating procedure** for the use of plant.

The employer should also consider and address the risks that may arise from:

- operator fitness for work, such as fatigue
- carrying out routine or repetitive tasks, and
- local conditions and working procedures.

7.5 Employer specifications for alterations

If the employer intends to alter the design of the plant, change the way the plant is used or change a system of work associated with the plant, the risk management process must be carried out again.

If the employer intends to use the plant in a different way or for a purpose it was not designed for, the risk management process must be carried out again. For example, if an item of plant designed to cut wood is to be used to cut metal, all hazards associated with that use should be identified and controls implemented.

The competent person's assessment should:

- include all aspects of the proposed task
- outline the reasons a purpose-designed item of plant cannot be used for the proposed task. For example, the impracticability of using it
- take into account the recommendations of the designer, manufacturer or supplier of the plant and ensure the proposed use is not outside its capabilities
- identify differences between the item of plant and one that is purpose-designed for the task, and describe the measures that will be used to control the risks the purpose-designed plant was designed to control, and
- amend relevant documentation. For example, operator and maintenance manuals and signage.

If a **competent person** decides the plant is not suitable for the proposed task, it must not be used for that task.

Making alterations to plant

Before making alterations to plant, the employer should **consult with the designer and manufacturer** to ensure all relevant safety issues have been considered.

Plant should be **isolated from power sources** and be unable to be switched on or activated accidentally before alterations begin or while alterations are being carried out.

Before returning altered plant to service:

- have control measures in place to eliminate or, where that is not reasonably practicable, minimise risks created by the alteration including providing information and training for users and supervisors about the changes, and
- inspect and test the plant, having regard to the altered design specifications and relevant technical standards.

7.6 Employer specifications: Maintenance, repair and cleaning of plant

Plant must be **maintained and repaired according to the manufacturer's specifications**. In the absence of a manufacturer's specifications, plant energy sources should be maintained in accordance with a **competent person's** recommendations. For example, ensure fluid levels and pressures are correct and ensure brakes are functioning properly.

Plant should usually be **isolated before maintenance** or cleaning starts.

Isolated or disengaged plant should:

- not hinder or interfere with other plant operation
- have guards in place where a risk of injury is identified, and
- not obstruct access.

A process should be put in place to enable effective communication and consultation with affected workers and other persons conducting a business or undertaking to prevent any risk to health and safety

arising from restarting plant operation when plant has been shut down due to inspection, maintenance or cleaning.

Where plant cannot be isolated, methods to prevent accidental operation should be implemented. The work should be carried out under controlled procedures to allow for maintenance and cleaning without risk to the health and safety of the person performing the work.

If plant needs to be operated while being maintained or cleaned, the person with management or control of the plant must ensure that the operator's controls:

- permit operation of the plant while a person is undertaking maintenance or cleaning of the plant
- while the plant is being maintained or cleaned, either:
 - cannot be operated by a person other than the person carrying out the maintenance or cleaning of the plant, or
 - if the plant must be operated by a person other than the person carrying out maintenance or cleaning, cannot be operated except by a person authorised by the person with management or control of the plant for that purpose, and
- allow the plant to be operated in such a way that eliminates risks or, if that is not reasonably practicable, minimises the risks so far as reasonably practicable.

Following maintenance or cleaning, all guarding must be replaced before plant is used.

Plant with damage that poses a risk to health and safety should be withdrawn from service until those risks have been controlled.

Employer specifications for storing plant

The employer should ensure, so far as is reasonably practicable, that plant that is not in use is left in a state that does not create a risk to the health or safety of any person.

Plant not in use should be stored so it does not create a risk to workers or other people in the workplace. Where plant is to be placed in storage,

- ensure relevant health and safety information supplied by the designer or manufacturer is provided to the person who is to dismantle or store the plant
- implement control measures to eliminate, or if that is not reasonably practicable, minimise the risk to health and safety to people during storage. For example, release stored energy, lower moving parts that lower under gravity and provide support to prevent toppling
- implement control measures to eliminate or, if that is not reasonably practicable, minimise the risks of damage to plant during storage. For example, risks may arise from corrosion as a result of exposure to residues of hazardous substances and deteriorating consumables.
- Before plant is used after an extended period of storage, the plant should be re-commissioned by carrying out the same level of testing and inspection as when it was first commissioned.

Employer specifications decommissioning, dismantling and disposing of plant

Disposing of plant may include reselling, in full or part, scrapping, waste disposal or recycling. If the plant is to be resold, the seller will take on the duties of a person supplying the plant. The seller should ensure the plant is safe to load, transport, unload and store. Information relating to the plant's installation, operation and maintenance must be provided with the plant to the reseller or buyer.

The supplier must ensure, so far as reasonably practicable, the plant they import, or supply is without risks to health and safety to people at or in the vicinity of a workplace.

If the plant is to be used for scrap or spare parts, the person who is receiving the plant should be formally advised it is being supplied as scrap or spare parts and the plant in its current form is not to be used as plant. This should be done in writing or by marking the item of plant.

Appendix A—Hazard identification checklist

Plant description: [Click here to enter text.](#)

Activities for example use, cleaning and maintenance: [Click here to enter text.](#)

Assessed by: [Click here to enter text.](#)

Date: [Click here to enter a date.](#)

‘Yes’ to any of the following indicates the *need to implement control measures*

| Entanglement | Yes | No |
|---|--------------------------|--------------------------|
| Can a person’s hair, clothing, gloves, necktie, jewellery, cleaning brush or rag become entangled with moving parts of the plant? | <input type="checkbox"/> | <input type="checkbox"/> |

| Crushing | Yes | No |
|--|--------------------------|--------------------------|
| Can anyone be crushed due to: <ul style="list-style-type: none">– material falling off the plant.– uncontrolled or unexpected movement of the plant?– lack of capacity for the plant to be slowed, stopped or immobilised?– the plant tipping or rolling over?– parts of the plant collapsing.– coming into contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair?– being thrown off or under plant?– being trapped between the plant and materials or fixed structures?– other factors not mentioned? | <input type="checkbox"/> | <input type="checkbox"/> |

| Cutting, Stabbing or Puncturing | Yes | No |
|--|--------------------------|--------------------------|
| Can anyone be stabbed or punctured due to: <ul style="list-style-type: none">– coming in contact with sharp or flying objects?– coming in contact with moving parts during testing, inspection, operation, maintenance, cleaning or repair?– the plant, parts of the plant or work pieces disintegrating?– work pieces being ejected.– the mobility of the plant?– uncontrolled or unexpected movement of the plant?– other factors not mentioned? | <input type="checkbox"/> | <input type="checkbox"/> |

| Shearing | Yes | No |
|--|--------------------------|--------------------------|
| Can anyone’s body parts be sheared between two parts of the plant, or between a part of the plant and a work piece or structure? | <input type="checkbox"/> | <input type="checkbox"/> |

| Striking | Yes | No |
|----------|-----|----|
|----------|-----|----|

‘Yes’ to any of the following indicates the *need to implement control measures*

| | | |
|--|--------------------------|--------------------------|
| Can anyone be struck by moving objects due to: | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> – uncontrolled or unexpected movement of the plant or material handled by the plant? – the plant, parts of the plant or work pieces disintegrating? – work pieces being ejected. – mobility of the plant? – other factors not mentioned? | | |

| | | |
|----------------------------|------------|-----------|
| High Pressure Fluid | Yes | No |
|----------------------------|------------|-----------|

| | | |
|--|--------------------------|--------------------------|
| Can anyone come into contact with fluids under high pressure, due to plant failure or misuse of the plant? | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|

| | | |
|-------------------|------------|-----------|
| Electrical | Yes | No |
|-------------------|------------|-----------|

| | | |
|--|--------------------------|--------------------------|
| Can anyone be injured by electrical shock or burnt due to: | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> – the plant contacting live electrical conductors? – the plant working in close proximity to electrical conductors? – overload of electrical circuits? – damaged or poorly maintained electrical leads and cables? – damaged electrical switches? – water near electrical equipment? – lack of isolation procedures? – other factors not mentioned? | | |

| | | |
|------------------|------------|-----------|
| Explosion | Yes | No |
|------------------|------------|-----------|

| | | |
|--|--------------------------|--------------------------|
| Can anyone be injured by explosion of gases, vapours, liquids, dusts or other substances, triggered by the operation of the plant or by material handled by the plant? | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|

| | | |
|---------------------------------------|------------|-----------|
| Slipping, Tripping and Falling | Yes | No |
|---------------------------------------|------------|-----------|

| | | |
|---|--------------------------|--------------------------|
| Can anyone using the plant, or in the vicinity of the plant, slip, trip or fall due to: | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> – uneven or slippery work surfaces? – poor housekeeping, for example offcuts, cables, hoses obstructing walkways, spills not cleaned up? – obstacles being placed in the vicinity of the plant? – other factors not mentioned? | | |

| | | |
|--|--------------------------|--------------------------|
| Can anyone fall from a height due to: | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> – lack of a proper work platform? – lack of proper stairs or ladders? – lack of guardrails or other suitable edge protection? – unprotected holes, penetrations or gaps? – poor floor or walking surfaces, for example the lack of a slip-resistant surface? – steep walking surfaces? – collapse of the supporting structure? – other factors not mentioned? | | |

| | | |
|------------------|------------|-----------|
| Ergonomic | Yes | No |
|------------------|------------|-----------|

‘Yes’ to any of the following indicates the *need to implement control measures*

Can anyone be injured due to: ☐ ☐

- poorly designed seating?
- poorly designed operator controls?
- high forces?
- repetitive movements?
- awkward body posture or the need for excessive effort?
- vibration?
- other factors not mentioned?

| | | |
|---------------------------|------------|-----------|
| Hazard combination | Yes | No |
|---------------------------|------------|-----------|

Can anyone be injured due to unexpected start-up, unexpected over-run/over-speed or similar malfunction from: ☐ ☐

- failure/disorder of the control system, for example a hydraulic system?
- restoring energy supply after an interruption?
- external influences on electrical equipment?
- other environmental factors, for example gravity and wind?
- errors in the software?
- errors made by the operator?

| | | |
|----------------------|------------|-----------|
| Other hazards | Yes | No |
|----------------------|------------|-----------|

Can anyone be injured due to: ☐ ☐

- noise?
- inadequate or poorly placed lighting?
- entry into any confined spaces of the plant?
- failure to select plant suitable for its intended use?
- contact with hot or cold parts of plant?
- exposure to hazardous chemicals, radiation or other emissions released by the plant?
- lack of operator competency?
- other factors not mentioned?

Part 11 Hazard identification checklist- Employer Specifications and Controls

Are suitable controls implemented? Based on findings in Part 1.

Tested in accordance with requirements (eg manufacturers or as required by risk assessment-competent person)

Testing records available

Is **maintenance** undertaken in accordance with requirements?

Is a maintenance schedule used?

Maintenance records kept and available?

Installed appropriately, located appropriately

Are there **safe operating procedures** for use displayed and available?

Is there a safe operating procedure for isolation/deenergisation?

Have workers been **trained in safe operating procedures**? - Evidence of training (records)

Have all necessary **repairs** been carried out so far as is reasonably practicable?

Have any **alterations** been done which have created a new hazard?

If stored and not in use is there a tag to 'lock out' and deenergised, stored safely

Disposal

Suitably guarded

Emergency controls – labelled, easy to reach

Operational controls clearly marked, fail safe

Warning devices used where appropriate

Able to be isolated from energy source

Records kept (e.g.
plant register) – see
Appendix B

Appendix B Plant Risk Register, evidence of inspection and evaluation and proposed controls

Location: [Click here to enter a date.](#)

Date: [Click here to enter text.](#)

| Hazard | What is the harm that the hazard could cause? | What is the likelihood that the harm would occur? | What is the level of risk? | How effective are the current controls? | What further controls are required? | Actioned by | Date Due | Date Complete | Maintenance and review |
|--------|---|---|----------------------------|---|-------------------------------------|-------------|----------|---------------|------------------------|
|--------|---|---|----------------------------|---|-------------------------------------|-------------|----------|---------------|------------------------|

Appendix C Safe work procedure

(Your Business Name Here) – Safe Work Procedure

FORKLIFT TRUCK

DO NOT use this equipment unless you have been instructed in its safe use and operation and have been given permission

PERSONAL PROTECTIVE EQUIPMENT



E-OPERATIONAL SAFETY CHECKS

- ✓ Locate and ensure you are familiar with all machine operations and controls.
- ✓ Check brakes, lights and horn before use.
- ✓ Ensure reversing beeper and warning lights are operational.
- ✓ Ensure seat belt/safety restraint is in good condition.
- ✓ Know the capacity of the forklift before using it. Do not use a forklift without a load rating plate.
- ✓ Check gas-powered vehicles for gas leaks in fuel lines.
- ✓ Ensure the lifting forks are in sound condition and centred either side of the mast.
- ✓ Check tyre pressures. Never drive with a flat or under-inflated tyre.

OPERATIONAL SAFETY CHECKS

- ✓ Watch out for pedestrians.
- ✓ Ensure the lifting tines are secure into the pallet and the load is stable before lifting or driving off.
- ✓ Be careful of ceiling clearance or overhead obstructions when raising the mast.
- ✓ Always remember that the safe working load of a forklift reduces as the mast is tilted forward.
- ✓ Always put the heavy end of the load against the load backrest.
- ✓ When approaching a blind corner, use horn and drive slowly.
- ✓ Always have someone guide you if a load restricts your vision.
- ✓ Slow down when changing direction or on wet or greasy surfaces.
- ✓ Avoid harsh braking, especially when carrying a load.

REFUELLING

- ✓ For gas-powered vehicles, change gas bottles in a well-ventilated area clear of a naked flame or source of ignition.
- ✓ For battery-operated vehicles, charge in well-ventilated area.

ENDING OPERATIONS AND CLEANING UP

- ✓ When stopping the forklift:
 - Park on even ground and lower the forks to the ground.
 - Shift the gear selector to park position and apply the parking brake.
 - Turn off the ignition and remove the keys.
- ✓ For gas-powered vehicles, turn off gas and don't park near an ignition source, doorway or pit.

DON'T

- ✗ Do not use faulty equipment. Report any faults immediately.
- ✗ Do not use engine-powered forklifts in poorly ventilated areas.
- ✗ Do not allow anyone to ride on the forks.
- ✗ Do not lift a load with the mast tilted forward.
- ✗ Do not travel with forks raised or reach mechanism extended.
- ✗ Never travel with the load elevated.
- ✗ Do not attempt to turn on an incline or sloping surface.
- ✗ Do not dismount from a forklift while the engine is running unless the vehicle has completely stopped, transmission is in park position, and the parking brake is effectively engaged.
- ✗ Do not leave forks elevated when forklift is unattended.
- ✗ Do not refuel an engine-powered forklift unless the motor is stopped and ignition turned off.

This SWP does not necessarily cover all possible hazards associated with this equipment and should be used in conjunction with other references. It is designed as a guide to be used to compliment training and as a reminder to users prior to equipment use.



Contact Information

For further information about Managing Risks of Plant and Equipment in the workplace and OSH Compliance contact MCIL/OSH Unit

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