



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



Occupational Safety and Health Guide

*“Managing Hazardous Manual Tasks 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 developed to support the business community in particularly employers and employees in complying with requirements of OSH Legislation.

In that regard, MCIL would like to recognise and acknowledge the financial support of the Government of Australia through the Samoa Governance Support Program (SGSP) who have made this project become a reality.

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Last but not the least, the following key stakeholders who have been involved in the development of this Guideline and have contributed immensely their time, feedback and advice on the compilation of this document.

Government Representatives;

- Samoa Airport Authority,
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- Ministry of Agriculture and Fisheries
- Ministry of Health
- Ministry for Revenue
- Ministry of Commerce, Industry & Labour

Private Sector Representatives:

- Ah Liki Construction
- Pacific Forum Line Company
- Farmer Joe Supermarket
- Frankie Company Ltd
- Fletcher Construction Company

This Guide was developed using guidance from the Australian, Safe Work Australia Model Code of Practice for Managing Hazardous Manual Tasks in the Workplace (2018)

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

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.

Commissioner means the Commissioner of Labour, or a person lawfully acting in the role of the Commissioner

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.

Hazardous manual task: A task requiring a person to lift, lower, push, pull, carry or otherwise move, hold or restrain any person, animal or thing involving one or more of the following:

- repetitive or sustained force
- high or sudden force
- repetitive movement
- sustained or awkward posture, or
- exposure to vibration.

These hazards directly stress the body and can lead to an injury.

Manual handling a manual task requiring a person to lift, lower, push, pull, carry or otherwise move, hold or restrain any person, animal or thing. Not all manual tasks will be hazardous.

Musculoskeletal disorder (MSD) An injury to, or a disease of, the musculoskeletal system, whether occurring suddenly or over time. It does not include an injury caused by crushing, entrapment or cutting resulting from the mechanical operation of plant.

Reasonably practicable: 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;

- a) the likelihood of the hazard or the risk concerned occurring
- b) the degree of harm that might result from the hazard or the risk
- c) what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk
- d) the availability and suitability of ways to eliminate or minimise the risk, and
- e) 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: 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.**

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 manual tasks in Samoan workplaces. Although the best practice approach **may go beyond strictly legal obligations**, 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, and, as the elimination or minimisation of hazardous manual tasks can often occur in the design or manufacturing stage also to 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

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 and the workplace are free, **so far as is reasonably practicable**, from risks to safety and health associated hazardous manual tasks (body stressing)

as well as the

- duties of **designers, manufacturers and suppliers** in section 6.0 below.

1.1 What kind of risks do hazardous manual tasks pose in the workplace?

Most jobs involve carrying out some type of **manual task** using the body to move or hold objects, people or animals. Manual tasks cover a wide range of activities including stacking shelves, working on a conveyor line and entering data into a computer. Some manual tasks are hazardous and may cause **musculoskeletal disorders** (MSD).¹

The term 'MSD' refers to an injury to, or a disease of, the musculoskeletal system, whether occurring suddenly or over time.

An MSD may include:

- sprains and strains of muscles, ligaments and tendons
- back injuries, including damage to the muscles, tendons, ligaments, spinal discs, nerves, joints and bones
- joint and bone injuries or degeneration, including injuries to the shoulder, elbow, wrist, hip, knee, ankle, hands and feet
- nerve injuries or compression, for example carpal tunnel syndrome
- muscular and vascular disorders as a result of hand–arm vibration
- soft tissue injuries including hernias, and
- chronic pain.

An MSD can occur in two ways:

- **gradual** wear and tear to joints, ligaments, muscles and inter-vertebral discs caused by repeated or continuous use of the same body parts, including static body positions, or
- **sudden** damage caused by strenuous activity, or unexpected movements such as when loads being handled move or change position suddenly.

Injuries can also occur due to a combination of the above mechanisms.

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 hazardous manual tasks.



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, in the context of hazardous manual tasks this includes developing safe systems of work (e.g. the design and organisation of manual tasks and work processes including safe operating procedures and training). The employer’s decision on what is ‘reasonably practical’ is discussed in section 4.0, hazard control.



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 hazardous manual tasks to ensure 'so far as is reasonable' that items, such as equipment and substances are safe when properly used and requires **adequate safety information to be supplied** about use. Manufacturer, designer and supplier duties are described in section 6.0.

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 workers are at risk of injury due to hazardous manual tasks,
- determine which tasks or situations could cause workers harm due to hazardous manual tasks
- 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.

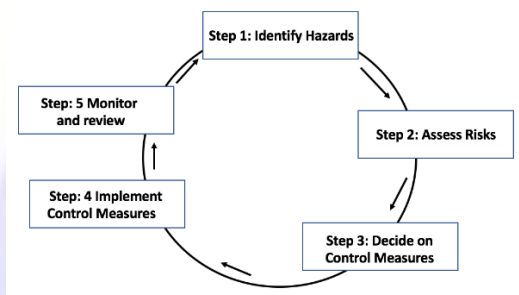


Figure A hazard management process steps

OSH Act Part 3 General Duties of Care, Section 11



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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 12

- (1) 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.*

And, **specifically** the law regarding Manual Handling obligations states:

OSH Regulations Part 8 Regulation 42 Manual Handling

An employer must take every step necessary;

- a) **To prevent the occurrence of injury and to reduce the severity of injuries resulting from manual handling task in workplaces; and**
- b) **To identify, assess and control risks arising from manual handling tasks in the workplaces.**

Current law, in the context of hazardous manual tasks requires employers to have a PLAN to identify those risks in the workplace, regularly assess the risk and take every step necessary to protect the health and safety of persons by controlling exposure to risk caused by the hazardous manual task.

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.

OSH Regulation Part 8, Regulation 43

43 Design, An employer must ensure, so far as is reasonably practicable:

- (a) That the plant and containers used in the workplace are designed, constructed and maintained so as to be, so far as is reasonably practicable , safe and without risk to health and safety when handled manually; and*
- (b) That work practices that involve manual handling are so designed, implemented and maintained as to be, so far as is reasonably practical safe, and without risk to health and safety; and*
- (c) That the working environment is so designed, constructed and maintained as to be, so are as is reasonably practicable, consistent with safe manual handling practices.*

2.1 Typical hazards arising from hazardous manual tasks

A hazardous manual task is a task requiring a person to lift, lower, push, pull, carry or otherwise move, hold or restrain any person, animal or thing involving one or more of the following:

- repetitive or sustained force
- high or sudden force
- repetitive movement
- sustained or awkward posture, or
- exposure to vibration.

Part 3.0 provides examples of how the tasks above can create risk, that requires risk assessment.

These, potentially, hazardous manual tasks directly **stress the body** and can lead to an injury.

2.2 Methods for identifying hazardous manual tasks in the workplace- Employers: Step 1 how to identify hazardous manual tasks

2.2.1 Consult workers

Workers who perform manual tasks can provide valuable information about discomfort or muscular aches and pains they experience in performing particular tasks. This information can signal potential hazards. Consultation with workers, and their health and safety representatives, allows the employer to obtain the experiences of all workers.

For example, ask workers to identify tasks that:

- are difficult to do or complete, appearing harder than they should be
- cause muscle fatigue, increasing the risk of injury and reducing work capacity
- involve awkward positions or movements or difficulty in controlling the load, or
- cause discomfort.

A **worker discomfort survey** may provide a useful way to identify hazardous manual tasks, **Appendix A**.

2.2.2 Observe manual tasks

Hazardous manual tasks can also be identified by looking at how people actually work. A manual task is hazardous if it involves any of the following characteristics,

- **repetitive or sustained force**
- **high or sudden force**
- **repetitive movement**
- **sustained and/or awkward posture, or**
- **exposure to vibration.**

The hazard identification and risk assessment worksheet in Appendix B may be used to record findings, if any of the above is identified.

Things to look out for include:

- any changes resulting in new manual tasks or a changed environment
- tasks involving tools, machinery or equipment that does not work properly or is difficult to use, and
- tasks where workers have made improvisations to avoid discomfort, like stacking mats or flattened cartons to stand on.

When hazards interact, the associated risk can change. Consider the cumulative effect of all hazards a worker is exposed to. For example, static posture combined with repetitive movement could increase the risk of a musculoskeletal injury.

2.2.3 Review available information

Records of workplace injuries and incidents, inspection reports, sick leave, worker complaints and any claims made for an MSD should be reviewed to help identify which manual tasks may cause harm. Trends may become more obvious if workers undertaking one particular task have more injuries/leave etc. However, not all hazardous manual tasks will be associated with reported incidents, so it is important to gather additional information.



OHS Regulation 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 the 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 or published in the Savali.**

Information from designers, manufacturers, and suppliers of plant or structures can provide information about safety precautions which may help to eliminate or minimise risks.

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



OSH Regulations Part 8 Regulation 44

- (1) An employer must ensure that any manual handling that is likely to be a risk to health and safety is identified and assessed.
- (2) An assessment undertaken for the purposes of this regulation must take into account the following factors:
 - a) The actions and movements involved in the manual handling and
 - b) The workplace and workstation layout; and
 - c) The postures and positions that must be taken by each person involved in the manual handling and
 - d) The duration and frequency of the manual handling and
 - e) The location of the loads and the distances that loads must be moved; and
 - f) The weights and forces involved; and
 - g) The characteristics of the loads and of any equipment that is used in the task and
 - h) The organisation of work at the workplace; and
 - i) The work environment and
 - j) The skill and experience of each person who must carry out the manual handling; and
 - k) The personal characteristics of each person who must carry out the manual handling; and
 - l) The clothing that is worn during the manual handling and
 - m) Any other relevant factor (as identified by the employer, any employee, representative or Health and Safety Committee).

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:

For hazardous manual tasks this means examining in detail the hazards associated with the task to assess the likelihood of the forces, movements and postures giving rise to an MSD. A risk assessment can help determine:

- the severity of a risk caused by a hazardous manual task
- deciding whether existing control measures are effective and based on legal requirements and manufacturers, designers or supplier recommendations
- what action should be taken to further control risk
- how urgently the action needs to be taken

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

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, the workers 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.

Dividing up workers into groups -that do similar tasks to consult and observe

Sourcing other information-The law requires employers to keep a record of accident/incident in the workplace. These can be reviewed to see if workers have previously provided notification of incidents or accidents involving hazardous manual tasks.

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.

The whole task should be examined, although it may help to look at the task in stages to identify all of the risk factors. For example, the task of putting office supplies away in a storage cabinet may involve the following steps:

- collecting boxes of office supplies from the delivery dock—handling boxes that are bulky may increase the risks associated with this task
- transporting office supplies to the storage area—using a trolley with poorly maintained wheels may increase effort
- unpacking boxes of office supplies—unpacking boxes from the floor may increase awkward postures, and
- placing supplies on storage shelves—shelving heights that are too high or too low may increase awkward postures.

Note, for complex situations, expert or specialist advice may be useful when conducting a risk assessment. A range of risk assessment tools is listed in Appendix C.

3.2 Characteristics of hazardous manual tasks

There are many different characteristics, or types of, hazardous manual tasks which should be considered when initially identifying hazards and assessing risks.

3.2.1 Forces

The term 'force' is used here to describe the amount of muscular effort required to perform a movement or task. Forceful muscular exertions overload muscles, tendons, joints and discs and are associated with most MSDs.

Repetitive force—using force repeatedly over a period of time

Examples of **repetitive force** include:

- lifting and stacking goods onto a pallet
- gripping and handling bricks when bricklaying (Figure 1)
- repetitively pressing components with the thumbs or other part of the hand to assemble an item
- cleaning and preparing surgical equipment
- prolonged application of therapeutic massage treatments, and
- removing splinting material from patients using shears.

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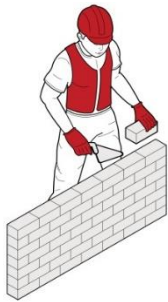


Figure 1

Sustained force—occurs when force is applied continually over a period of time

Examples of sustained force include:

- pushing or pulling a trolley around hospital wards (Figure 2)
- holding down a trigger to operate a power tool
- supporting a plaster sheet while fixing it to a ceiling
- carrying objects over long distances, and
- supporting, positioning or stabilising a patient's limb during surgery or when applying splinting or casting material.



Figure 2

- high or sudden force

High force—occurs when increased muscle effort is required in response to a task. It may be from the back, arm or leg muscles or by the hands and fingers.

High force occurs in any task that:

- a worker describes as very demanding physically
- a worker needs help to complete because a greater force is required
- requires a stronger person or two people to complete.

Examples of **high force** include:

- lifting, lowering or carrying a heavy object
- lifting, lowering or carrying an object that cannot be positioned close to the body
- pushing or pulling an object that is hard to move or stop (Figure 3)
- applying uneven, fast or jerky forces during lifting, carrying, pushing or pulling
- applying sudden or unexpected forces, and
- restraining a person or animal



Figure 3

Examples of **high force** using the **hands and fingers** include:

- using a finger-grip, a pinch-grip or an open-handed grip to handle a heavy or large load
- operating hand tools with tight squeeze grips (Figure 4)
- needing to use two hands to operate a tool, and
- gripping small instruments with high force, for example by a dental hygienist cleaning teeth.

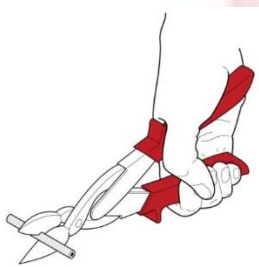


Figure 4

Sudden force—jerky or unexpected movements while handling an item or load. These movements are particularly hazardous because the body must suddenly adapt to the changing force.

Tasks where force is applied suddenly and with speed also generate high force.

Examples of **sudden force** include:

- impact recoil of a large nail gun
- throwing or catching objects (Figure 5)
- cutting reinforcement steel with large bolt cutters
- carrying an unbalanced or unstable load, such as bagged stock feed pellets, that suddenly moves
- handling frightened or resistant animals, and
- handling patients who suddenly resist or no longer assist during the handling procedure.



Figure 5

3.2.2 Movement- Actions and movement

Repetitive movement—using the same parts of the body to repeat similar movements over a period of time

Examples of **repetitive movement** include:

- painting
- lifting goods from a conveyor belt and packing them in a carton
- typing and other keyboard tasks (Figure 6)
- repeatedly reaching for and assembling components in electronics manufacturing, and
- using a socket and ratchet or spanner to unscrew long bolts.

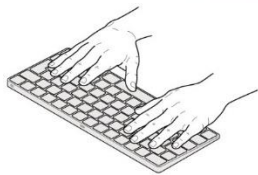


Figure 6

- sustained or awkward posture, or
- exposure to vibration.

These hazards directly stress the body and can lead to an injury.

3.2.3 Posture

An ideal posture is one where the body is in a neutral position (Figure 7) with the:

- trunk and head upright and forward facing
- arms by the side of the body
- forearms either hanging straight or at right angles to the upper arm, and
- hands in the handshake position.

Postures that are both awkward and sustained are particularly hazardous.

Note: no one posture is suitable for all tasks or positions.



Figure 7

Sustained posture—where part of or the whole body is kept in the same position for a prolonged period

Examples of **sustained posture** include:

- supporting plasterboard sheeting while it is nailed into place (Figure 8)
- continually standing with weight mainly on one leg while operating a power press with foot pedal controls, and
- prolonged sitting at a workstation.

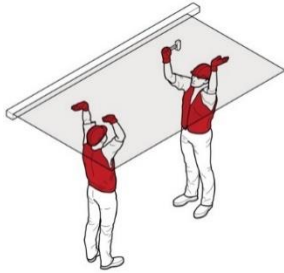


Figure 8

Awkward posture—where any part of the body is in an uncomfortable or unnatural position, for example:

- unbalanced or asymmetrical postures, or
- postures requiring extreme joint angles or bending and twisting.

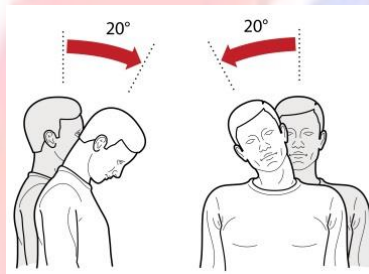
Examples of **awkward posture** include:

- squatting while servicing plant or a vehicle
- working with arms overhead
- bending over a desk or table
- using a hand tool that causes the wrist to be bent to the side
- kneeling while trowelling concrete or laying carpet, and
- bending the neck or back to the side to see around bulky items pushed on a trolley (Figure 9).



Figure 9

Postures that require more than 20 degree movement of head/neck, figures 10 and 11.



Bending back or head more than 5 degrees, or looking up, figure 12.

Twisting back or neck more than 20 degrees, figures 13 and 14.



Figure 12

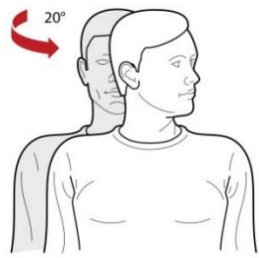


Figure 13

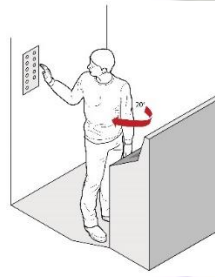


Figure 14

Working with one or both hands above shoulder height, figure 15 and overreaching figures 16-19

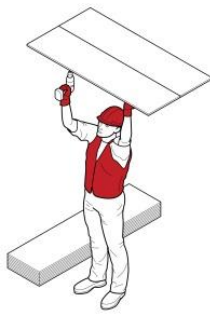
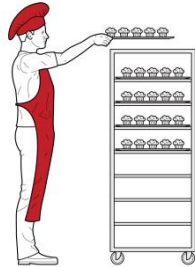


Figure 15



Figures 16-19 over reaching

Standing on one leg, figure 20, excessive twisting turning or grabbing with fingers hands or arms excessive bending of the wrist, figures 21 and 22.



Figure 20

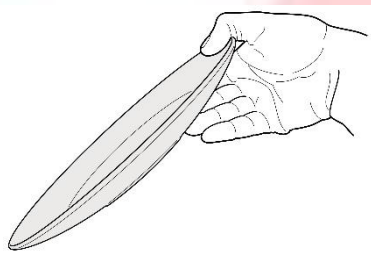


Figure 21

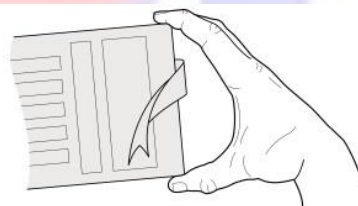


Figure 22

Squatting, kneeling, crawling, lying, semi-lying or jumping, figure 23 and very fast movements e.g. packing, figure 24.



Figure 23

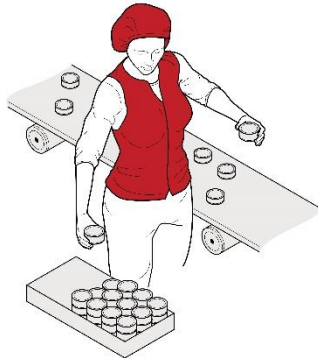


Figure 24

3.2.4 Vibration

Whole body vibration occurs when vibration is transmitted through the whole body, usually via a supporting surface, such as a seat or the floor in heavy vehicles or machinery. This may result in lower back pain, degeneration of the lumbar vertebrae and disc herniation.

Examples of whole **body vibration** include:

- operating mobile plant such as heavy earthmoving machinery, and
- driving a vehicle over rough terrain (Figure 25).

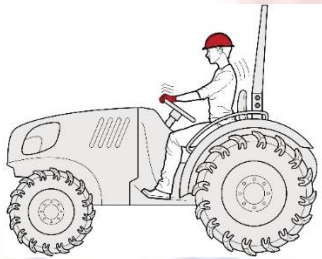


Figure 25

Hand–arm vibration occurs when vibration is transferred through a vibrating tool, steering wheel or controls in heavy machinery to the hand and arm. This can disrupt blood circulation in the hand and forearm and damage nerves and tendons. Localised vibration contributes to ‘vibration-induced white finger’ and ‘carpal tunnel syndrome’ through the gripping force needed to hold the vibrating tools (the tighter the grip, the more vibration is absorbed) and the repetitive shock loads of some tools.

Examples of **hand–arm vibration** include:

- using impact wrenches, chainsaws, jackhammers, grinders, drills or vibrating compacting plates (Figures 26 and 27 below), and
- using needle guns in de-rusting metal.



3.3 Documenting a risk assessment

Hazardous Manual Task Risk identification & assessment **Appendix B** may be used to record findings and provide evidence that an assessment of the risk of hazardous manual tasks has been assessed.

It is important to note that a task may involve more than one risk factor. Where a number of risk factors are present and interact, the risk of an MSD developing increases significantly. The Risk Assessment Worksheet provides details of the interaction of risks.

Sources of risk, included in **Appendix B** Hazardous Manual Task Risk identification & assessment worksheet to consider are:

All these factors may contribute to an MSD, and should be considered in a risk assessment:

- postures, actions and movements Reg 44 (2) (a) and (b)
- layout and design of the workplace and workstation : Reg 44 (2) (c) a
- the duration and frequency of the task regulation Reg 44 (2) (d)
- systems of work used eg location of loads, distances to be moved Reg (44) (2) (e), organisation of work Reg (44) (2) (h)
- forces Reg 44 (2) (f)
- the characteristics of the loads and of any equipment used in the tasks, e.g nature, size, weight or number of persons, animals or things handled Reg 44 (2) (g)
- workplace environmental conditions Reg 44 (2) (i)
- vibration
- the personal characteristics of each person who must carry out the manual handling Reg 44 (2) (k)
- the clothing that is worn during the manual handling Reg 44 (2) (l)

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.

In addition, **specifically for manual handling**, Regulation 44 states:

OSH Regulation 44 Risk Control



Risk control If a manual handling task is assessed as being a high risk to health and safety, the employer must take steps as are reasonably practicable to control the risk.

- (2) For the purposes of sub regulation (1):

- (a) the employer must
 - (i) redesign the manual task to eliminate or control the risk factors; and
 - (ii) ensure that the employees involved in the manual handling task receive appropriate training (including training in safe manual handling techniques and appropriate supervision, and
- (b) Where redesign is not reasonably practicable or as a short-term or temporary measure the employer must take (i) one or a combination of two or more of the following measures as may be appropriate
 - A. Provide mechanical aids
 - B. Provide personal protective equipment
 - C. Arrange for team lifting; and
 - (iii) Ensure that the employees receive appropriate training and supervision in the correct use or application of any mechanical aids, personal protective equipment or team lifting procedures supplied or introduced for the purpose of subparagraph

Note also Regulation 46 which imposes a duty upon employees.

OSH Regulation 46 Duties of employees

46 Duties of employees – An employee must, so far as is reasonable (but without derogating from any common law right) apply any training provided for the purposes of this Part and comply with any instruction given in supervision of the manual handling task.

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:

- a. the likelihood of the hazard or the risk concerned occurring,
- b. the degree of harm that might result from the hazard or the risk
- c. what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk
- d. the availability and suitability of ways to eliminate or minimise the risk, and
- e. 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.

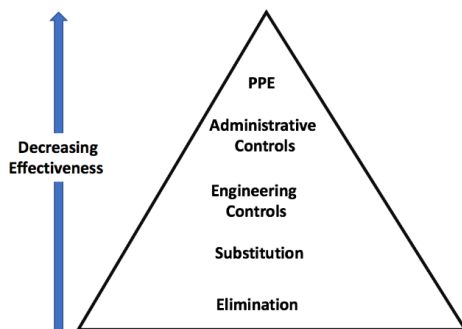


Figure 2 The Hierarchy of control

- **Eliminating the risk-** The aim is to eliminate the risk. If eliminating the hazards and associated risks is not reasonably practicable, minimise the risk by one or more of the following:
- **Substitution**—minimise the risk by substituting or replacing a hazard or hazardous work practice with something that gives rise to a lesser risk.
- **Isolation**—minimise the risk by isolating or separating the hazard or hazardous work practice from any person exposed to it.
- **Engineering controls**—engineering controls are physical control measures to minimise risk. Control measures should be aimed at eliminating or minimising the frequency, magnitude and duration of movements, forces and postures by changing:
 - the work area
 - tool
 - load
 - environment
 - method of handling, or
 - the way work is organised.

If risk remains, it must be minimised by implementing **administrative controls**, so far as is reasonably practicable.

Any remaining risk must be minimised with suitable **personal protective equipment (PPE)**.

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. Particularly with manual tasks PPE is likely to provide limited risk reduction.

4.2 Example Controls Hazardous Manual Tasks

Hierarchy of control measures	Examples of control measures
Level 1 Elimination The MOST effective	<ul style="list-style-type: none"> - Automate the manual task, for example by using robotics. - Deliver goods directly to the point of use to eliminate multiple handling. - Don't buy large containers if not required - When purchasing equipment review how easy to use, clean and maintain
Level 2 Substitution	<ul style="list-style-type: none"> - Replace heavy items with lighter, smaller or easier to handle items; be aware of the risk of increased repetition. - Replace hand tools with power tools to reduce the level of force required to do the task. - Coordinate with suppliers to replace packaging with packaging designed to allow goods to be handled using powered plant. - Handle items mechanically to reduce the risk to the worker.
Isolation	<ul style="list-style-type: none"> - Isolate vibrating machinery from the user. - Enclose the machinery or the personnel, creating an isolating barrier between the hazard and the person at risk. - Redesign the workplace to minimise distractions from the task performed.
Engineering	<ul style="list-style-type: none"> - Use mechanical lifting aids, chutes, pallet trucks and trolleys. - Design the workplace to minimise the need to lift and move things. - Provide workstations that are height adjustable.
Level 3 Administrative often in combination with other controls	<ul style="list-style-type: none"> - Rotate workers between different tasks. - Develop lifting procedures including what devices should be used, how many workers are required to operate them and what training those workers need. - Two person lifts - Supervision
Level 4 Personal protective equipment often used in combination with other controls	<ul style="list-style-type: none"> - Heat-resistant gloves for handling hot items. - Shock-absorbent shoes for work on hard concrete floors.

4.3 Methods to eliminate or minimise risks from hazardous manual tasks

4.4. Purchasing to eliminate or minimise risk

Before purchasing equipment, like tools, containers, workstations, machinery and vehicles, identify hazards and any control measures required.

- ensure it is suitable for the task

- brief designers and engineers, where possible so consideration can be given to the design implications on the manual tasks performed
- review information provided by the designer, manufacturer, importer or supplier about the features of the plant or structure to either eliminate or minimise the need for hazardous manual tasks
- liaise with manufacturers and suppliers about handling, delivery and storage requirements
- consult workers along with their health and safety representative (HSR) to ensure the item is appropriate for the work being undertaken
- compare what is used in similar workplaces and review industry guidelines
- trial equipment before purchasing if possible
- purchase ergonomically designed tools and equipment that suit the work and the physical characteristics of the workers, and
- check any vibration specifications.

4.5 Changing the design or layout of work areas

A well-designed work area will assist in eliminating or minimising the risk factors associated with a hazardous manual task, for example the degree of reaching, twisting or bending.

• Workstation design

Workstations should be designed to allow workers to work in an upright position, shoulders in a neutral position, not elevated, and upper arms close to the trunk most of the time without large reaches to perform the task. Work surfaces should be easily adjustable to suit a range of workers and the tasks they perform.

Where it is not possible to provide adjustable workstations consider altering the design so:

- the workstation height suits the widest range of physical characteristics of workers
- reaching distances suit shorter workers, and
- knee and leg clearances suit larger workers.

• Office workstations

The core components of an office workstation are a desk, a chair, and equipment to perform office tasks. The workstation should be designed to suit the range of workers who may use it, the types of tasks performed, and the types of equipment used by the workers. It should be flexible, large enough to accommodate the range of tasks performed and easily adjustable. The adjustment mechanisms should not create a hazardous manual task.

• Working heights

Tasks with high visual demands should be performed above elbow height and work surfaces may need to be tilted, for example for tasks involving delicate or precise manipulation.

Tasks where the hands make a narrow range of movements and can rest on the work surface should be performed at, or just above, elbow height. A sloping surface may reduce the amount of neck flexion required to perform desk-based tasks, such as drafting.

Light manipulative tasks or tasks involving the use of a keyboard should be performed at just below elbow height.

Tasks incorporating a range of arm movements using the shoulder should be performed at between hip and shoulder height, for example taking items from a stack and placing them on a conveyor.

Tasks requiring considerable muscular effort or use of the body for leverage, for example drilling at a workbench, should be performed at hip height and no higher.

Where possible, place items used in manual tasks, so they are:

- in front of the worker
- between waist and shoulder height
- close to the middle of the worker's body, facing towards the worker and balanced
- on the worker's preferred side
- within comfortable reaching distance, and
- positioned to avoid double handling and to avoid moving loads manually over long distances.

Displays and controls should be positioned to encourage comfortable head and neck postures, comfortable hand and arm reach and efficient use. Employers should:

- place frequently used displays and controls, including keyboards and other input devices, directly in front of the worker
- position controls at comfortable elbow height
- select electronic or foot controls rather than hand controls if high force is required, and
- place pedals so workers can operate them from a comfortable seated position.

- **Working position**

Workers should not remain in a seated, standing or otherwise static posture for prolonged periods. Design the workstation to provide opportunities for workers performing seated or standing tasks to vary their postures and movements.

For seated tasks, seating should have the following features:

- adjustable seat height and angle
- a contoured backrest with a lumbar curve, except where the backrest would interfere with the actions to be performed
- a swivel action to prevent the worker from twisting to reach workstation components
- rounded seat edges
- a five-point base with castors to allow movement on carpet, and gliders fitted to the base for low-resistance flooring, where access to work items located beyond normal reach is required or other risks identified, and
- a footrest or foot ring fitted to a chair to support the feet if required following a workplace assessment.

A seated work position is best for:

- work requiring fine manipulation, accurate control or placement of small objects
- close visual work requiring prolonged attention, and
- work involving operating a foot pedal.

Workers carrying out standing tasks should be provided with:

- a chair, stool or support so they can alternate between sitting and standing
- a footrest (large enough for the whole foot) to allow the worker to stand with either foot raised, and
- where possible, suitable floor covering to cushion concrete and other hard floors.

A standing work position is best when:

- large, heavy or bulky loads are handled
- forceful movements are required
- reaching is required
- movements away from the working position are frequent
- there is no knee room, or

- there is limited space.

- **Work space**

Work areas should have enough space to accommodate the number of workers and other people involved in the task, any equipment required, and space to operate the equipment safely. For example, workers in an aged care facility assisting a client to the bathroom need space to manoeuvre a person in a hoist over the toilet and bath or into a shower area. The bathroom needs to be of an appropriate size to accommodate two workers, the client and mobility equipment. If required, allow space to accommodate the needs of bariatric patients.

5.0 Changing the nature, size, weight or number of items handled

Handling loads

Examples of control measures to minimise the risks to workers when handling loads include:

- purchasing products in smaller loads for manual handling or arranging for larger loads to be shifted mechanically
- reducing the size or capacity of containers
- using handheld hooks or suction pads to move loads like sheet materials, and
- using grip devices adapted to the particular object to be carried (Figure 27).

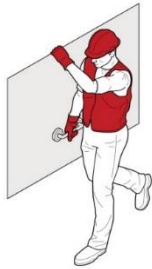


Figure 27

Tools and equipment

Hand tools should be designed and selected to:

- be held in a neutral wrist or handshake position (Figures 28–30)
- allow the hand to retain a comfortable grip span
- be light and well-balanced, with the heaviest part of the tool behind the wrist
- be suitable for use by either hand
- provide a good grip surface, and
- prevent a worker from adopting a pinch grip with high force or for prolonged periods

Figure 28 Handshake position



Figure 29 excessive bending

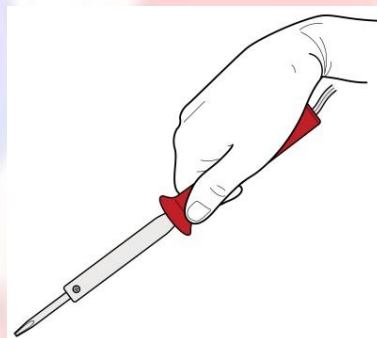
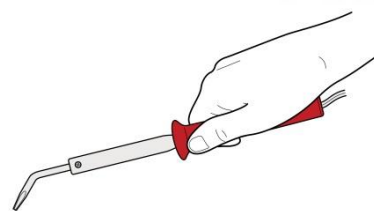


Figure 30 tool redesigned



The level of muscular effort can be minimised, particularly of the shoulder and wrist, needed to use hand tools by:

- selecting tools suited to the task (Figure 31), long handle
- using power tools where possible
- suspending or supporting heavy tools where they are used repetitively and in the same place (Figures 32–33), use of harness, suspension system
- counterbalancing heavy tools that are used repetitively and need to be kept away from the body
- using trigger locks where the grip has to be sustained for more than 30 seconds
- holding the work piece in place with either jigs or fixtures
- selecting tools that produce minimal vibration
- reducing impact shocks, and
- limiting torque or 'kick back' reactions.

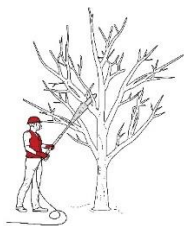
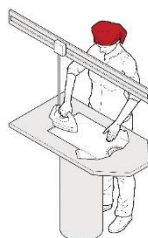


Figure 31



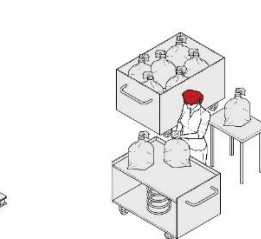
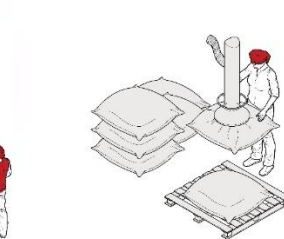
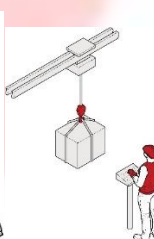
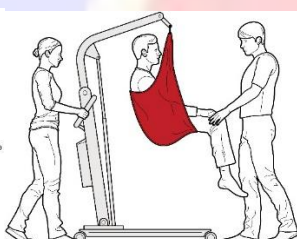
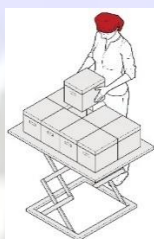
Figures 32 and 33

Tools and equipment should be well maintained by carrying out regular inspections and servicing in accordance with the manufacturer's specifications. Poorly maintained or irregularly serviced tools and equipment may increase the effort needed to use them. For example, an unsharpened knife will increase the force required to bone and slice meat

- **Using mechanical aids**

Mechanical equipment may eliminate or reduce the need for workers to lift, carry or support items, animals or people. A wide range of mechanical aids are available for various industries, for example (Figures 34-38):

- conveyors: roller conveyors, elevating conveyors, belt conveyors, screw conveyors, chutes, monorails or trolley conveyors
- cranes: overhead travelling cranes, gantry cranes or jib cranes, stacker cranes, industrial manipulators and articulating arms; e.g. using an *overhead crane to lift and move very heavy objects eliminates the need to apply high force (Figure 36)*
- lifting hoists
- loading dock levellers
- turntables
- springs or gas struts, mechanical devices: hand winches, hydraulic pumps, battery powered motors
- forklifts, platform trucks, tractor-trailer trains, tugs, pallet trucks
- lift tables, mechanical and hand stackers, lift trolleys, two-wheel elevating hand trucks, vacuum or magnet assisted lifters
- glass panel, duct and plaster lifters.



Mechanical aids should be:

- designed to suit the load and the work being done
- adequately rated for the load
- as light as their function will allow
- adjustable to accommodate a range of users
- easy to use
- suited to the environment in which the task is performed
- located close to the work area so they are readily available but do not cause an obstruction
- supported by a maintenance program to ensure they are safe and the required effort to use them is kept at the lowest possible level, and
- introduced with suitable instruction and training in their use.

When a mechanical aid is introduced into the workplace, the employer must ensure, so far as is reasonably practicable, workers are given adequate information, training, instruction and supervision to ensure the new arrangements do not introduce any additional risks.

- **Pushing and pulling loads**

Pushing loads is preferable to pulling because it involves less work by the muscles of the lower back, allows maximum use of body weight, less awkward postures and generally allows workers to adopt a forward facing posture, providing better vision in the direction of travel.

Reduce the effort required to start the load in motion by:

- using motorised push/pull equipment such as tugs or electric pallet jacks
- using slide sheets or air-assisted transfer mats to reduce friction when moving patients, objects or equipment
- reviewing castor types, sizes and arrangements
- positioning trolleys with wheels in the direction of travel, and
- using large power muscles of the legs and whole body momentum to initiate the push or pull of a load.

Reduce the effort to keep the load moving by:

- using motorised hand trucks and trolleys that are easy to operate
- ensuring hand trucks and trolleys are well maintained and adjustable to accommodate the range of users
- ensuring the hand truck or trolley is correctly designed for the load, and
- treating surfaces to reduce resistance when sliding loads.

Reduce the effort needed to stop the load by:

- indicating the exact place where loads need to be delivered
- planning the flow of work
- encouraging workers to slow down gradually, and
- fitting brakes and speed limiters so speed can be controlled, particularly if there is a need to stop quickly to avoid other traffic.

A trolley can eliminate many of the risks involved in manual handling (Figure 39). However, the load still needs to be manoeuvred onto the trolley and through the workplace.

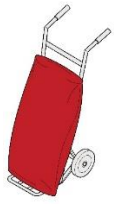


Figure 39

- **Handling people and animals**

- ❖ **Handling people**

No worker should fully lift a person, other than a small infant, unaided. This task should be assisted with mechanical aids, assistive devices or assistance from another worker. All people-handling activities are a potential source of injury and sufficient controls applied to eliminate or minimise the risks associated with this hazardous manual task so far as is reasonably practicable, in accordance with the hierarchy of control measures.

The health and safety of the person being handled needs to be considered as well as the health and safety of the workers involved in the task. This involves assessing the physical condition and characteristics of the person being handled as well as their non-physical characteristics. For example, how the activity is undertaken and the risks involved may be affected by the ability of the person being moved to:

- understand and communicate and their behaviour, and
- assist workers moving them.

If it is necessary for people to be handled, the controls selected in accordance with the hierarchy of control measures should take into account all sources of risk. Controls may include the following:

- a mobility risk assessment: maximise the person's ability to assist in the move through the use of appropriate instruction, mechanical and/or assistive devices
- moving the person to a place that does not constrain the movement of the worker performing the task, for example using a shower trolley to bathe a patient
- where handling is required, assessing the needs of the task or person being handled including the specific type of mechanical aids and personnel needed, and planning it in a manner that avoids the hazardous manual task
- where using a mechanical device that is designed to be operated by two or more people, providing adequate supervision and resources so workers under time pressure do not attempt the task on their own
- planning how to handle a person attached to medical or other equipment
- ensuring there is easy access to the location and storage of mechanical aids and assistive devices
- ensuring adequate and appropriate manual handling aids and assistive devices are available, and
- providing training, instruction and supervision for the safe use of mechanical aids and assistive devices.

- ❖ **Handling animals**

Animals should only be supported or restrained by people with the necessary skills and experience. When animals are being handled consider the following control measures:

- using mechanical devices or other restraining aids for lifting, transporting or restraining animals
- moving the animal to a place that constrains or minimises the movement of the animal before commencing the task

- where handling is required, assessing the needs of the task including the specific type of mechanical aids and personnel, and planning it to avoid double handling, and
- where a mechanical aid or assistive device is designed to be operated by two or more people, provide adequate supervision and resources so workers under time pressure don't attempt the task on their own.

6.0 Changing the system of work

• Workload and pace of work

The workload and pace of work should accommodate the physical demands of the manual task. Where possible, work should be organised to minimise multiple handling and improve the flow of work. For example, workflow can be improved by:

- having raw materials delivered, located or transferred mechanically to the location or work area where they will be used. For example, building supplies can be delivered by truck or crane to the on-site location where they will be used or to the external lift, rather than being delivered to the front gate
- using mobile plant to deliver materials, tools and items, for example roller pallets or wheeled cages
- processing and packaging items in the same location or on the same workbench
- locating storage areas close to distribution areas
- distributing work across the day or week to avoid high peak workloads
- using systems that minimise the need for storage and additional handling, and
- asking suppliers to deliver items in a way that allows them to be used without the need for additional handling. For example, flat packs delivered on a vertical frame or tabletops facing the right way up for use.

Workers should not have to work at a rate that is at the limit of their ability. When a work rate is established workers affected and their health and safety representatives should be consulted. Some examples of how to set realistic work rates include:

- allowing workers to control the pace for critical or physically demanding tasks
- providing adjustability in the line speed, for example reducing the speed when conditions are altered, such as when new products are introduced, or poor quality materials are used
- providing buffers to allow material to be taken off-line. Note, if this increases the handling of the products it has the potential to create additional risk, or
- ensuring the structure of remuneration does not incentivise workers to exceed their capacity to work safely or avoid taking breaks when required.

• Design tasks for the working population

Task design should take account of the range of human dimensions and capabilities such as height, reach and weight. Work systems should be adapted to accommodate the health and fitness of the worker. If this is not reasonably practicable, you can allocate the worker to other tasks. In designing work systems, consider:

- the capacity of workers who have not reached physical maturity for physically demanding work
- the possibility older workers may have a decreased physical capacity for physically demanding or fast work
- the need for gradual adjustment to physically demanding work activities during recovery from injury or illness, and
- pregnancy increases the risk of back pain because of the changing shape of the body.

Provide transition arrangements for workers undertaking unaccustomed work by:

- reducing the pace of work or workloads
- providing more frequent breaks, and
- job rotation.

- **Providing workers with resources and support**

When introducing risk control measures involving plant, tools or equipment, ensure:

- the equipment is suitable for the task
- there is sufficient, available equipment, and
- plant, tools and equipment are checked and maintained on a regular basis.

To allow for adequate recovery time and to reduce exposure to risks of an MSD, employers should arrange to have the right staffing levels, skill mix and shift arrangements, considering:

- shift lengths
- the levels of overtime
- placement of rostered days off, and
- the numbers of workers during peak periods.

Employers should communicate and consult with workers about the way work is organised and allow workers to seek assistance from another person when necessary.

6.1 Changing the work environment

Vibration



Whole-body vibration—the design of vibration damped equipment and engine mountings is generally the most effective method of controlling vibration exposure. Other strategies to reduce exposure include:

- improving vehicle suspension and installing operator seats mounted on suspension systems which incorporate spring and damper elements
- ensuring equipment and control measures implemented to reduce vibration are well maintained
- ensuring workers adjust their seats appropriately and equipment is operated within the speed suggested by the manufacturer or to a speed that reduces vibration levels, and
- training workers about the risks associated with whole-body vibration, the controls implemented and how they should be used.

Hand–arm vibration—substitute alternative manufacturing methods or processes to eliminate the need for vibrating equipment. Where this is not possible, the best strategy is generally to purchase tools and equipment that produce less vibration.

Cold conditions

To control exposure to cold conditions:

- relocate work inside or away from cold environments like refrigerated areas
- provide heaters where appropriate
- ensure workers take regular rest breaks in a warm place
- ensure workers wear non-slip footwear and clothing that is fitted and not too bulky or restrictive, and
- provide PPE suitable for the task, for example gloves to provide protection from the cold and also allow a good grip of the objects being handled.

Heat and humidity

For workers in hot and humid conditions, temperature and humidity may be able to be reduced during manual tasks where possible by:

- relocating work away from sources of heat
- providing fans or air-conditioning

- using screens, awnings and clothing to shield workers from radiant heat sources such as ovens, furnaces and the sun
- enclosing hot processes and increasing ventilation
- altering work schedules so work is done at cooler times
- allowing workers regular short breaks out of the heat
- providing a cool, well-ventilated area where workers can take rest breaks
- ensuring work requirements allow for the work to be undertaken at an appropriate pace for the conditions, and
- providing a supply of cool drinking water.

Windy conditions

Consider minimising the risk of exposure to windy conditions by:

- planning the route of work through protected pathways
- using vehicles to transport items outdoors, and
- scheduling tasks to occur during periods of low wind.

Floors and surfaces

Ensure work areas are kept clean, tidy and free of clutter or obstacles to prevent workers adopting awkward postures and to avoid the exertion required to reach over or around obstacles. Clean, smooth and flat surfaces can reduce forces required to push and pull objects and prevent slips, trips and falls.

Lighting

Lighting should be chosen to suit the task. Awkward or sustained postures arising from low or excessive levels of lighting, glare or reflection, can be reduced by:

- providing additional lighting, such as a lamp on a movable arm
- improving the layout of existing lights by lowering or raising them or changing their position in the work area
- increasing or decreasing the number of lights
- changing the diffusers or reflectors on existing lights
- changing lights to improve light levels or improve colour perception
- changing the orientation or position of the item to avoid shadows, glare or reflections
- cleaning lights and light fittings regularly
- using screens, visors, shields, hoods, curtains, blinds or external louvres to reduce reflections, shadows and glare, and
- controlling natural light sources, particularly bright sunshine, on work pieces, screens and work surfaces by orienting them 90 degrees to the light source or by providing screening and louvres.

6.2 Using administrative control measures

Administrative control measures do not address the risk factors or source of the risk—they only attempt to reduce risk by reducing workers' exposure.

Administrative controls include work methods or procedures designed to minimise exposure to a hazard.

Job rotation

The risk of an MSD may be minimised by rotating staff between different tasks to increase task variety. Job rotation requires the tasks to be sufficiently different to ensure different muscle groups are used in different ways so they have a chance to recover. To increase task variety, consider combining two or more tasks to be done by one worker. Alter the workstation and items used accordingly.

Rest breaks

Regular rest breaks provide opportunities for workers to prevent the build-up of, or recover from the effects of, fatigue in muscle groups used during hazardous manual tasks that involve:

- repetitive awkward postures or sustained postures
- application of high force
- vibration
- long duration
- high levels of mental demand or monotony combined with hazardous manual tasks, for example inspection work.

The frequency and duration of rest breaks will be dependent on the nature of the task. Generally, the greater the force required, or the longer a posture is sustained, the greater the recovery time needed.

More frequent and shorter rest breaks are better for rest and recovery than fewer, longer breaks. Build in short breaks where work is of a similar nature, for example process production or hand tool use. Micro-pauses, very short intermittent breaks, in physical activity are also beneficial. Build these into the design of tasks and methods of work, for example:

- workers putting down hand tools or releasing them (suspension) between operations
- keyboard operators removing hands from keyboards during natural keying breaks, or
- staggering manual tasks over the full work shift.

Team handling

'Team handling' is manual handling of a load by two or more workers. Team handling brings its own risks and requires coordination. It should only be used until a more effective control can be implemented or for tasks that are undertaken rarely. Manual tasks may need to be redesigned to allow the use of mechanical equipment, or eliminate the need to lift, if there is a regular need for team handling. Team handling can increase the risk of an MSD in circumstances such as when:

- the load is not shared equally
- workers do not exert force simultaneously
- workers need to make foot or hand adjustments to accommodate other team members, reducing the force each can exert
- performed on steps or a slope where most of the weight will be borne by handlers at the lower end, or
- individual workers unexpectedly lose their grip, increasing or changing the balance of the load on other team members.

Whenever team handling is used it is important to match workers, and to coordinate and carefully plan the lift. Ensure:

- the number of workers in the team is in proportion to the weight of the load and the difficulty of the lift
- one person is appointed to plan and take charge of the operation
- enough space is available for the handlers to manoeuvre as a group
- team members are matched by height and capability, where possible
- team members know their responsibilities during the lift
- training in team lifting has been provided and the lift rehearsed, including what to do if something goes wrong, and
- aids to assist with handling are used where possible and training is provided in their use, for example a stretcher, slings, straps, lifting bars, lifting tongs, trolleys and hoists.

Information, training, instruction and supervision

Training in the type of control measures implemented should be provided during induction into a new job and as part of an ongoing manual task risk control program. Training should be provided to:

- workers required to carry out, supervise or manage hazardous manual tasks

- in-house designers, engineers and officers responsible for the selection and maintenance of plant and/or the design and organisation of the job/task, and
- any health and safety representatives.

The training should include information on:

- manual task risk management, including the hazards associated with hazardous manual tasks
- specific manual task risks and the measures in place to control them
- how to perform manual tasks safely, including the use of mechanical aids, tools, equipment and safe work procedures, and
- how to report a problem or maintenance issue.

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

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

Risk control may initially involve using short-term, interim measures while a long-term solution is developed. For example, temporarily raising a bench until it can be replaced or altered permanently, or rotating employees through a production line to reduce the time spent working at a low bench until it can be changed.

To implement the most effective risk controls, employers should:

- communicate the reasons for the change to workers and others
- encourage workers to participate in the process
- develop work procedures to ensure controls are understood and responsibilities are clear
- provide training to ensure workers can implement the risk controls for the task competently
- allow workers to trial solutions before decisions are made to make the solution permanent
- ensure any equipment used in the manual task is properly maintained
- review controls after an initial testing period, as they may need modification.

Final decisions on control measures should only be made when enough time has passed for workers to adjust to the changes. Workers should be given a chance to practise using the new workstation, tool, mechanical device or new work method. Some modifications may require workers to use new muscle groups or different parts of the body and they may initially feel some discomfort. Frequently check with workers on how they feel the improvements are working and supervise workers to ensure controls are implemented effectively.

Employers must review and as necessary revise control measures implemented to manage risks to health and safety related to MSDs associated with hazardous manual tasks so as to maintain, so far as is reasonably practicable, a work environment without health and safety risks. For example:

- when the control measure does not minimise 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 risk to health and safety that the measure may not effectively control
- when a new or relevant hazard or risk is identified
- when the results of consultation indicate that a review is necessary, or
- when a health and safety representative requests a review if that person reasonably believes that:
 - a circumstance in any of the above points affects, or may affect, the health and safety of a member of the work group represented by the health and safety representative, and

- the control measure has not been adequately reviewed in response to the circumstance.

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

The same methods as in the initial hazard identification step can be used to check control measures. The employer should consult workers and their health and safety representatives and consider the following questions:

- Are the control measures working effectively in both their design and operation, without creating new risks?
- Have the control measures introduced new problems?
- Have all hazards been identified?
- Are workers actively involved in the risk management process?
- Are they openly raising health and safety concerns and reporting problems promptly?
- Have new work methods or new equipment reduced physical strain or difficulty?
- Are safety procedures being followed?
- Have instruction and training provided to workers on hazardous manual tasks and the implemented control measures been successful?
- Is the frequency and severity of MSDs reducing over time?
- Is an alteration planned to any structure, plant or process that is likely to result in a worker being exposed to a hazardous manual task?
- Has an incident occurred as a result of a worker being exposed to a hazardous manual task?
- If new information becomes available, does it indicate current controls may no longer be the most effective?

If problems are found, go back through the risk management steps, review information and make further decisions about risk control.

Once risk control measures are decided upon based on step 3, action must be taken to implement the control measure. It is important that there is an assigned person from the organisation/business that is responsible for the implementation of the measure within a reasonable timeframe.

Arrangements are needed to monitor the effectiveness of the control measures and this can be done through;

- Regular workplace inspections
- review of workplace accidents data
- Regular auditing processes

Control measures need regular review to ensure that they are reducing the level of risk to a suitable level as well as not introducing new hazards.

7.1.1 Designer, manufacturer and supplier obligations for hazardous manual tasks

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



The best time to eliminate or minimise the risk of an MSD is in the design and planning stage, when hazards and risks can be 'designed out' before they are introduced into a workplace. Designers, manufacturers, and suppliers of plant or structures have duties, so far as is reasonable to design, construct or manufacture equipment, things and/or substances to be free of risks to health and safety when used for a purpose for which they were designed or manufactured. The duty also includes to **provide sufficient information** about the **equipment, thing or substance** so that it can be used safely.

7.1.2 Design of workplaces

Designers of buildings used as workplaces should consider the manual tasks that may be performed throughout the lifecycle of the building, from construction through to use, maintenance, refurbishment and potential demolition. For example:

- using building materials that are strong yet lightweight
- equipping large structural components with suitable lifting points to enable lifting by crane
- designing spaces large enough to accommodate or incorporate mechanical devices
- incorporating minimal distances for pushing, pulling, lifting or carrying loads
- designing materials handling devices into the building, such as lifts and chutes
- specifying floor surfaces to enable wheeled equipment to be pushed or pulled easily.

Some types of workplaces, such as hospitals, nursing homes, warehouses and distribution centres that carry out a high level of manual tasks will have particular design needs to eliminate or minimise the risk of MSDs.

7.1.3 Design of plant

The safe design of plant can play a critical role in reducing the risk of an MSD for workers. When designing plant, consider all phases of its life, including manufacture, cleaning and servicing.

If practicable, trial a prototype in a range of operating conditions and think about how the plant will be used. As a result of the prototyping, aspects of the design that increase the risk of injury, for example by:

- eliminating or reducing the number of repetitive actions, postures and movements required to operate the plant
- designing handles on tools and controls to allow normal wrist postures
- reducing the forces required to operate the plant
- providing instructions, signs or symbols to help people use the plant properly
- taking into account the range of physical characteristics, such as size and strength, of those who use the plant
- ensuring the plant operates at a speed or rate that would suit most users, and
- ensuring regular maintenance points are easily accessible.

The following list some examples of design-related MSD risks for plant, and shows how to control the risks through safe design.

7.1.4 Examples of controlling MSD risks through design

Type of plant	MSD risk	Possible design solution
Road-making machinery	Repetitive or sustained twisting of the neck and body while reversing. This is caused by the seat being fixed in a forward-facing position.	Design a swivel seat-mount together with two sets of controls, or controls that move with seat rotation.
Forklifts	Sustained exposure to whole-body vibration transferred through the seat. Repetitive or sustained bending of the neck and back to see the work properly (for example continually looking up to place loads on high shelves).	Install damping mechanisms in the seat, cabin and vehicle suspension. Install visual aids such as mirrors or a video camera and screen.
Wrapping machines on process lines	Strain on the lower back when handling heavy rolls of plastic wrapping in awkward and twisted postures, often above shoulder height. This is caused by inappropriate design and positioning of the roll spindle and by restricted access.	Design the spindle to be adjustable. This allows the rolls to be loaded at a suitable height and orientation, and eliminates the need to lift them. Design equipment to help workers load rolls. Locate the spindle in an accessible place on the plant. Provide information about how to install the plant in a way that allows adequate access.
Power drills	Prolonged use of the forearm muscles and wrist caused by a heavy or poorly balanced drill. Exposure to vibration or impact shock recoil from hammer drills. Excessive force needed to grip and control the tool to counter the effect of vibration and impact shocks.	Design drills to be as light as possible. Design drills with the handle under the drill's centre of gravity. Design plant to reduce shock and vibration. Provide a suitable way of holding the tool with both hands.
Pliers	Pressure to the palm of the hand caused by handles that are too short. Prolonged use of the forearm muscles and compression of the wrist caused by using pliers with straight handles.	Design pliers with handles that extend beyond the palm. Design pliers with bent handles so that the user can maintain a straight wrist.
Crimping, clamping and cutting tools	Excessive force with outstretched fingers required to grip handles that are too wide apart.	Design handles with a grip span of 10 cm or less.
Chainsaws	Excessive vibration. High force required to handle the chainsaw.	Design to reduce vibration. Design the chainsaw to be as light as possible, and provide well-placed handles.
Chairs	Poorly designed chairs that cannot be adjusted provide little back support and cause workers to adopt poor postures and movements.	Follow existing design guidelines for chairs, and consider how the chair will be used in the workplace.
Work-benches,	Workstations that cannot be adjusted result in	Design workstations to be adjustable.

Type of plant	MSD risk	Possible design solution
workstations and other work surfaces	unnecessary reaching, bending and exertion of force.	Alternatively, dimensions should suit as many workers as possible.

Manufacturer requirements include:

- ensure the plant or structure is manufactured to eliminate the need to carry out a hazardous manual task in connection with the plant or structure
- where this is not reasonably practicable, ensure that the plant or structure is manufactured to minimise the need to carry out a hazardous manual task in connection with the plant or structure so far as is reasonably practicable, and
- give each person to whom the manufacturer provides the plant or structure adequate information about the features of the plant or structure that eliminate or minimise the need for any hazardous manual task to be carried out.

Suppliers must take all reasonable steps to obtain that information the designer or manufacturer is required to give and provide it to any person to whom the plant or structure is supplied.

Manufacturers and suppliers should consider the way their plant or structures are packaged and delivered to workplaces to eliminate or minimise the risk of an MSD, for example by:

- providing lifting aids or lifting points so mechanical aids can be used
- providing two handles or handholds to prevent one-handed lifting, particularly where the load is heavy or needs to be moved frequently
- repackaging the load into a different weight, size or shape:
 - large and bulky loads are difficult to handle, promote awkward postures, increased muscular exertion and are difficult to hold close to the body
 - heavy loads generally require greater force to handle, and
 - loads that are unwieldy, unstable or move unpredictably increase risk by creating sudden high forces.
- labelling loads to indicate any MSD risks, and where appropriate, any necessary precautions when handling the load
- delivering goods in sturdy boxes or containers with handles or handholds. Handholds on cardboard boxes should be reinforced so they do not rip when the box is picked up.

Packaged items should be arranged so the package is well balanced and the contents will not shift unexpectedly while being handled, for example:

- use slings or other aids to maintain effective control when handling non-rigid loads
- filling containers holding liquids or free-moving powder so there is only a small amount of free space at the top of individual containers
- using baffles, dividers or packing materials to keep the contents stable in partly-filled packages
- securing loads that may move during handling, for example animals in slings, fertiliser bags inside sturdy boxes, and
- shrink-wrapping loads on pallets.

7.1.5 Providing information

Manufacturers, importers and suppliers must provide adequate information about the plant or structure to each other and to the person being supplied with the plant or structure. The information provided should include safety considerations during its transportation, operation and maintenance. This information may be

provided in user manuals, brochures or on the plant or structure itself, for example by labelling cartons. The information should be accurate, clear and easy to understand.

Loads should be labelled to indicate any MSD risks, and where appropriate, any necessary precautions when handling the load. This information should indicate:

- the heaviest side of an off-centred load, for example with an arrow drawn on the packing carton
- the weight of the load
- whether the load is fragile
- the stability of the load, for example a label saying the contents of a package may move while being transported or handled, and
- any specific handling or unpacking instructions.

Information provided by the designer to the manufacturer should be passed on to the supplier and then to the purchaser.

Designers, manufacturers and suppliers of plant, substances and structures that are likely to be handled or used during or as part of a manual task have an important role in eliminating or minimising the risks of MSDs, which are often associated with the poor design and layout of work areas as well as the design of equipment, tools, packaging and materials. They have duties related to ensuring, so far as is reasonably practicable, the plant or structure they design, manufacture, import or supply is without risks to health and safety.

Manufacturers of plant or structures must:

- ensure the plant or structure is manufactured to eliminate the need to carry out a hazardous manual task in connection with the plant or structure
- where this is not reasonably practicable, ensure that the plant or structure is manufactured to minimise the need to carry out a hazardous manual task in connection with the plant or structure so far as is reasonably practicable, and
- give each person to whom the manufacturer provides the plant or structure adequate information about the features of the plant or structure that eliminate or minimise the need for any hazardous manual task to be carried out.

Importers and suppliers must take all reasonable steps to obtain that information the designer or manufacturer is required to give and provide it to any person to whom the plant or structure is supplied.

Manufacturers and suppliers should consider the way their plant or structures are packaged and delivered to workplaces to eliminate or minimise the risk of an MSD, for example by:

- providing lifting aids or lifting points so mechanical aids can be used
- providing two handles or handholds to prevent one-handed lifting, particularly where the load is heavy or needs to be moved frequently
- repackaging the load into a different weight, size or shape:
 - large and bulky loads are difficult to handle, promote awkward postures, increased muscular exertion and are difficult to hold close to the body
 - heavy loads generally require greater force to handle, and
 - loads that are unwieldy, unstable unpredictable increase risk by creating sudden high forces.
 - labelling loads to indicate any MSD risks, and where appropriate, any necessary precautions when handling the load
 - delivering goods in sturdy boxes or containers with handles or handholds. Handholds on cardboard boxes should be reinforced so they do not rip when the box is picked up.

Packaged items should be arranged so the package is well balanced and the contents will not shift unexpectedly while being handled, for example:

- use slings or other aids to maintain effective control when handling non-rigid loads
- filling containers holding liquids or free-moving powder so there is only a small amount of free space at the top of individual containers
- using baffles, dividers or packing materials to keep the contents stable in partly-filled packages
- securing loads that may move during handling, for example animals in slings, fertiliser bags inside sturdy boxes, and
- shrink-wrapping loads on pallets.



Appendix A Worker Discomfort Survey

A discomfort survey can help identify hazardous manual tasks. Early reporting of symptoms can lead to risk controls being put in place before injury occurs.

The survey sheet below will help you identify and record instances where workers experience discomfort that:

- persists
- recurs the next day, or
- persists after rostered days off.

Encourage workers to report pain or discomfort at work or at any other time. Follow up the reasons for the problem. Even if only one worker reports problems, assess the presence of a risk factor.

Name (optional)

Date

Job work location

Tasks involved

Time on this job Less than 3 mths 3 mths to 1 yr 1 yr to 5 yrs

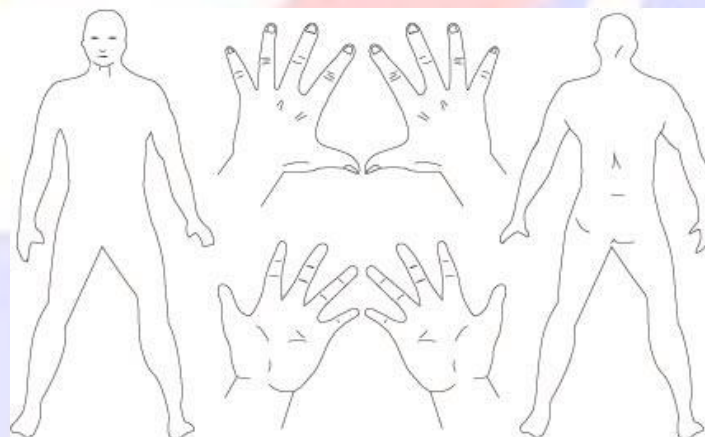
Supervisor

1. Do you suffer from swelling, numbness, tingling, 'pins and needles', stiffness, aches and pains in any part of the body? Indicate in the diagrams where the problem occurs.

2. Rate the level of discomfort/pain

1	2	3	4	5
Just noticeable		Moderate		Unbearable

What do you think caused the problem?





Appendix B Hazardous Manual Task Risk identification & assessment sheet

(adapted from

SafeWork SA Model Code of Practice 2018)

Location of task:	Management rep:
Description of hazardous manual task:	Health and Safety rep:
Date of assessment:	Others (workers/consultants):
Reason for review	

<input type="checkbox"/> Existing task object or tool	<input type="checkbox"/> Report of musculoskeletal disorder (MSD)	<input type="checkbox"/> Change in task,
<input type="checkbox"/> New task	<input type="checkbox"/> New information	

Part A- Review Manual Tasks to identify hazards

Task	Repetitive or sustained force 3.2.1 of Guide		High or sudden force 3.2.1 of Guide		Sustained or awkward postures 3.2.3 of Guide		Repetitive movement 3.2.2 of Guide		Exposure to vibration 3.2.4 of Guide	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No



CONTACT INFORMATION

For further information about Managing the risk of contracting Respirable Viruses in the workplace and OSH Compliance contact MCIL/OSH Unit

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