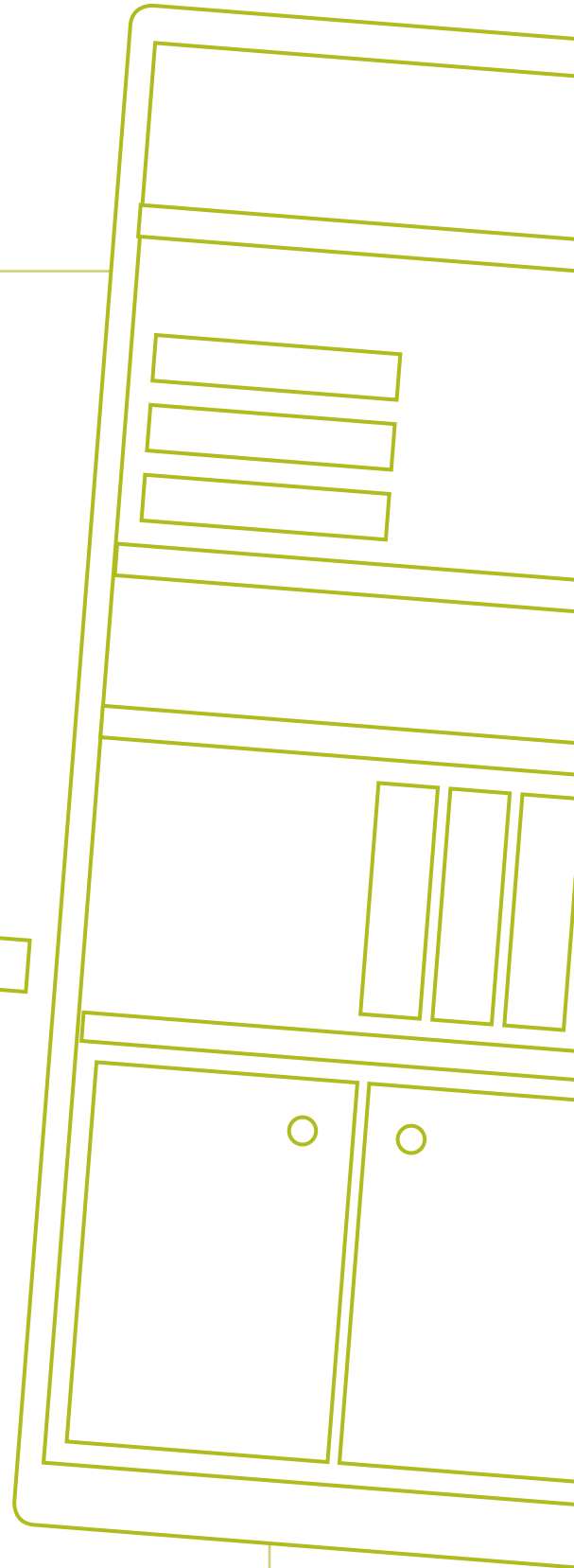
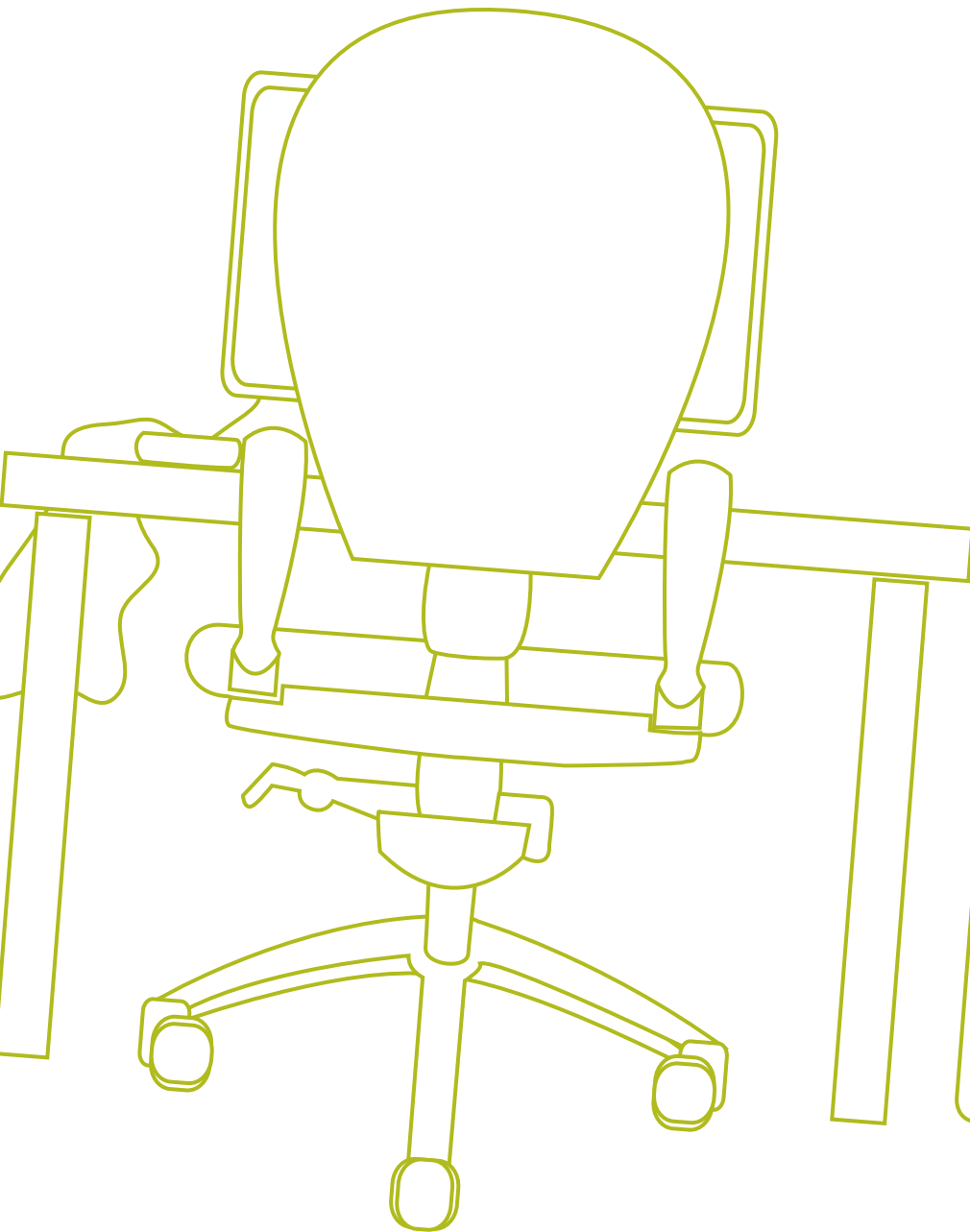




**Australian Government**  
**Comcare**

# Officewise

A guide to health and safety in the office



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# 1. INTRODUCTION

Almost every organisation has some office-based work. Technology like data processing, communications and information transfer has enabled an enormous increase in the volume of information handled daily.

These changes offer many positive effects through faster communication, greater job satisfaction and increased variety in the tasks performed, but also some negatives like decreased physical variation, information overload, repetition and monotony.

The increase in flexible and portable equipment has also expanded the office environment into areas outside the traditional office such as off-site locations, vehicles and the home. Occupational health and safety practices need to keep pace with the rapid changes in office-based work.

## Using This Guide

This guide promotes health and safety in the office and is designed as a resource for managers, supervisors and anyone involved in office work. It brings together a range of information and provides references where more information is necessary.

*Officewise: A guide to health and safety in the office* is based on a risk management approach to office health and safety – a consultative process to identify hazards, assess their risks and control them as far as possible. This approach should be adopted in the design and management of offices, work carried out in them, and the selection and use of furniture and equipment.

## How This Guide Can Help You

Offices vary from multi-storied, air conditioned buildings to small areas that are part of warehouses, factories, hospitals and homes. While hazards in the office may not always be as obvious as those in factories, office workers may also face a range of health and safety issues, including poor job design, prolonged repetitive work, moving heavy loads, inadequate lighting and cramped or unsafe work areas.

*Officewise* is designed to help employers and employees take a look at their workplace.

It aims to:

- raise awareness of health and safety issues in the office
- help identify existing and potential health and safety problems
- encourage consultation on health and safety issues
- help employers meet their legal responsibilities in relation to health and safety
- offer solutions and advice
- give guidance on where to go for further information and help.

## 2. MANAGING OCCUPATIONAL HEALTH & SAFETY IN THE OFFICE

This section outlines a risk management approach to health and safety in offices. It provides general information about the framework of Commonwealth occupational health and safety legislation, and how this applies to office environments.

### The Risk Management Approach

The aim of occupational health and safety risk management is to eliminate or reduce the risk of injuries and illness associated with work. Managing health and safety in the office requires a process of hazard identification, risk assessment, risk control and evaluation of control measures. Effective management of health and safety hazards also involves training, consultation, documentation of health and safety activities and regular review of the management system. Risk management is a continuous process, as technology changes and further options for the control of risks become available. It requires consultation between employers, employees and health and safety representatives (HSRs) when determining the approach and methods to be used (Fig. 2.1). Employers are also required to provide information, training and supervision so that employees can perform their work in a safe manner. Training should provide employees and their supervisors with an understanding of:

- health and safety legal responsibilities
- the nature of the hazards in the workplace
- the process of hazard identification, risk assessment and risk control
- the arrangements for reporting
- circumstances likely to cause hazards
- the reasons for and safe use of the risk control measures in place in the workplace
- safe work practices.

Employers are also required to keep information and records relating to the health and safety of employees. These include records for legal requirements (for example, injury reports) as well as records of hazard identification, risk assessment and risk control. A review of health and safety enables an organisation to determine whether their health and

safety management activities are effective. Policies, procedures and control measures require reviewing over time to ensure that their objectives are being achieved.

### Why is health and safety risk management important to an organisation?

There is a legal obligation to provide a healthy and safe workplace. In addition, effective management of health and safety hazards makes good business sense. It can lead to reduced costs, increased productivity, higher morale and better employee relations.

### Who is responsible for health and safety?

Employers have a duty of care to provide a healthy and safe working environment under occupational health and safety legislation and common law. *The Occupational Health and Safety Act 1991 (OHS Act)* states that an 'employer must take all reasonably practicable steps to protect the health and safety at work of the employer's employees' (Section 16(1) of the OHS Act).

Employers should ensure that all managers, supervisors and employees are aware of their occupational health and safety responsibilities. This should be done through consultation, documenting responsibilities and ensuring there are processes in place to hold people accountable for occupational health and safety performance.

Employees also have obligations under Section 21 of the OHS Act.

Figure 2.1 Responsibility



Manufacturers and suppliers of plant and substances used in the office environment also have responsibilities, as do people installing, erecting or commissioning plant.

## Integrating health and safety into office management

Systems and processes for the management of health and safety hazards in the office should be built into the day-to-day running of any organisation. They should be viewed as part of the normal operation of the organisation.

## How can this be achieved?

Occupational health and safety must be managed systematically (Fig 2.2). The best system will depend on the nature and size of the organisation, however, there are a number of aspects to be considered as a basis for any sound occupational health and safety management system.

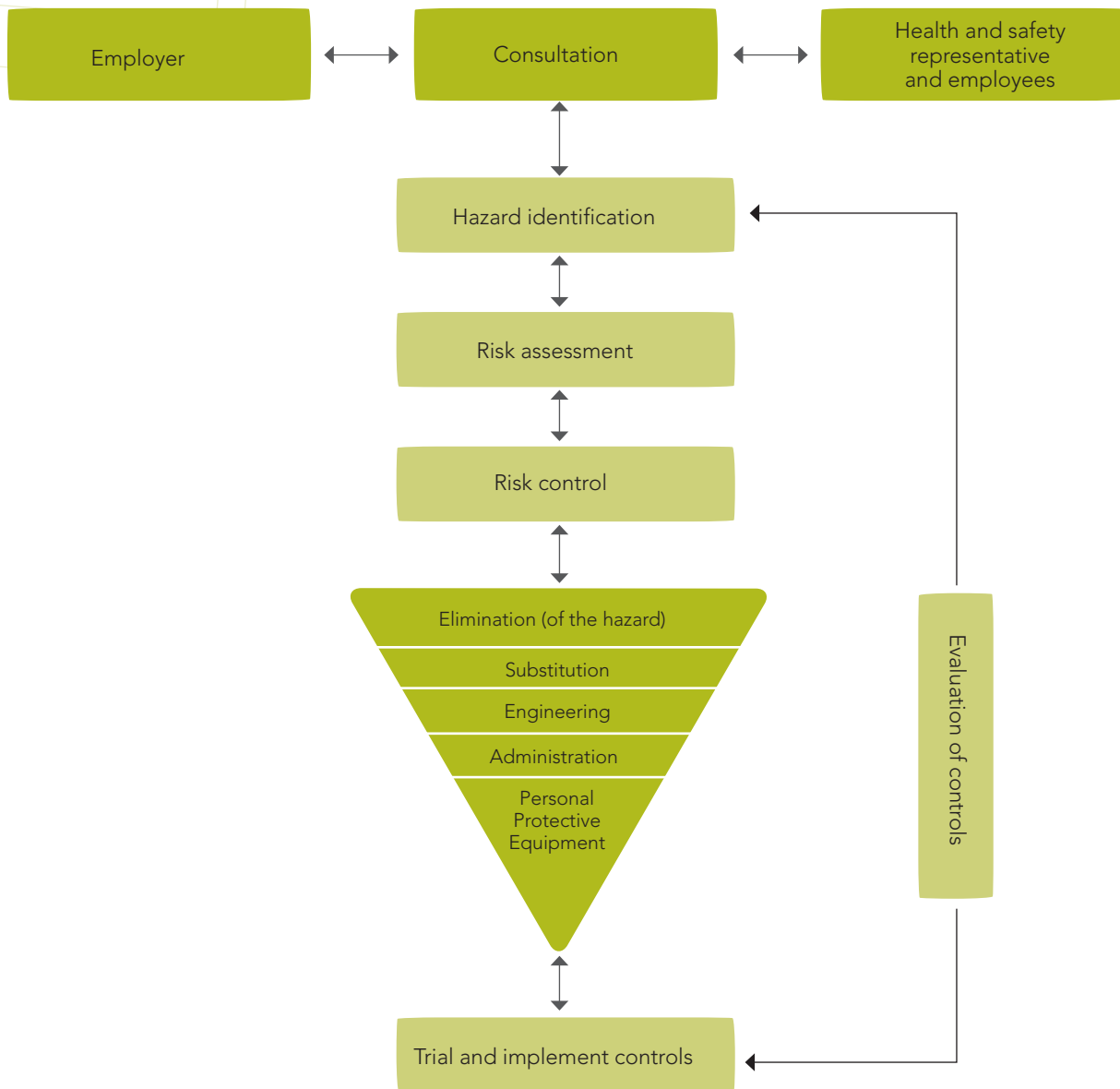


Figure 2.2 The hazard management approach

## Consultation

Consultative arrangements must be in place to enable effective cooperation between the employer and employees in developing and promoting measures to ensure employees' health, safety and welfare at work.

Consultation should involve:

- managers and supervisors representing the employer
- employees and elected HSRs or other parties representing the employees
- form of consultation must ensure all employees are effectively represented
- information is to be provided in a reasonable time frame and in an easily understood and accessible format.

Consultation will vary from organization to organization.

## Hazard management process

A hazard is a source or potential source of human injury, ill health or disease. Anything which might cause injury or ill health to anyone at or near a workplace is a hazard. While some hazards are fairly obvious and easy to identify, others are not for example exposure to noise, chemicals or radiation.

Hazard management process is the process of identifying all situations or events that could give rise to injury or illness. It generally involves consideration of the type of injury or illness possible, (for example musculoskeletal disorders) and the situations and events that could create potential for the injury or illness (for example, prolonged bending over a low desk during a collating task). Eliminating or minimising workplace hazards needs a systematic approach. It is essential to try and anticipate all possible hazards at the workplace known as the 'what if?' approach.

## What to consider when identifying hazards

Consider the type of hazard present in your office:

- Mechanical hazards, such as filing cabinets that tend to tip when heavily laden top drawers are open; tripping hazards
- Physical hazards like glare or reflections from screens; hot components of photocopiers; poorly designed chairs that do not provide the user with adequate back support; poorly designed jobs and tasks that demand prolonged work in a fixed posture
- Chemical hazards, such as vapours in the atmosphere for example, paint, solvents or airborne particles like photocopier toner
- Psychological hazards, like the need to perform excessive workloads under pressure, being bullied by a co-worker or supervisor, lack of satisfaction from a job where there is inadequate recognition of work performed or repetitive work and insufficient task variety
- Electrical hazards such as damaged electrical cords or overloaded power points that may lead to the risk of electric shock

Each of these hazards is discussed in more detail in other sections of this guide.

### Check records of injuries and incidents

Employees in the Commonwealth jurisdiction are required to maintain a record of injuries and incidents that occur at or near the workplace. Employers must provide preliminary information (notification) to Comcare about these incidents and dangerous occurrences.

Check injury records, first aid reports and workers compensation claim forms for information about the work tasks, the area in which work is performed, the activity being undertaken at the time of injury, factors thought to be related to the incident and the type of symptoms or injury reported.

In particular, check for reports of pain in the back, neck, shoulders and upper limbs; cuts or bruising; trip and fall incidents; and headache and vision problems. The absence of any history of accidents or incidents, or a small number of such incidents should not be taken to mean that the hazard does not exist.

### **Conduct a walk-through inspection of the office using a hazard checklist**

A checklist is a useful method for identifying hazards. You do not have to be an expert in health and safety to use one. A good checklist provides a systematic method to ensure that you do not miss hazards. It enables you to gather important information and record it quickly so that it can be considered more thoroughly during the assessment. An example of a checklist is included on page 40.

### **Risk**

Risk means the likelihood of harm arising from exposure to any hazards and the consequences of that harm. For example, cleaning fluids may be a potential hazard but may not pose a risk of exposure unless they are incorrectly stored or handled.

### **Risk assessment**

This process determines whether there are any risks associated with the identified hazards. This generally involves consideration of the nature of exposure to the hazards, including the frequency and level of exposure, pattern of exposure (continuous or intermittent) and adequacy of any existing risk control measures.

### **Risk control**

This process determines and implements appropriate measures to control risk. Factors that are assessed as posing an increased risk are required by legislation to be controlled so far as is 'reasonably practicable'. 'Reasonably practicable' in this case means you need to consider:

- the likelihood of the hazard or risk eventuating
- the degree of harm that would result if the hazard or risk eventuated
- what the person concerned knows, or ought reasonably to know, about the hazard or risk and any ways of eliminating or reducing the hazard or risk
- the availability and suitability of ways to eliminate or reduce the hazard or risk
- the cost of eliminating or reducing the hazard or risk.

The objective is the elimination at source of risks to the health, safety and welfare of persons at work. If risks cannot be eliminated, occupational health and safety legislation requires that they be reduced so far as is reasonably practicable. You could use one or more of the following methods:

- substitution of the hazard with something posing a lower risk
- isolation for example, enclosing the hazard or
- engineering control for example, a mechanical aid.

If a risk to health and safety remains after the above methods have been used, administrative controls, for example work procedures and training, should be applied and, if relevant, personal protective equipment should be worn. See next page for examples.

### **What to consider when assessing risk**

#### **The likelihood of the exposure leading to injury or disease**

Typical injuries arising from exposure to hazards in the workplace include:

- musculoskeletal disorders of the back, neck and upper limbs
- minor injuries due to cuts, trips or falls or being hit by an object
- stress related conditions.

The employer should assess the likelihood of these or other injuries at their workplace

#### **The frequency and duration of exposure**

How often and for how long employees may be exposed to a particular hazard should be estimated or measured by consulting with employees, looking at duty rosters and observing employees performing the work.



### Who may be affected?

Determining tasks and areas that may be affected by a particular hazard can help direct limited resources to those areas where the most effect can be obtained from control measures.

### What to consider when controlling risk

A range of measures for controlling risk involves elimination, substitution, isolation, engineering, administration and personal protective equipment.

#### Elimination

Redesigning the job to design out risks altogether is the most effective method of risk control. For example, the need for excessive photocopying and collation can be eliminated if memoranda are circulated by email. A quality photocopier can sort, collate and staple to eliminate manual handling.

#### Substitution

Materials, equipment or processes can be replaced with less hazardous ones. For example, a telephone handset can be replaced with a headset (Fig 2.3) where there is prolonged use of the telephone or where typing is required while using the telephone.



Figure 2.3 Reducing risk by using a telephone headset

#### Isolation

Enclosing or isolating the hazard from employees can eliminate or reduce the risk of injury or illness. For example, a photocopier can be located in a separate well ventilated room to isolate noise and fumes.

#### Engineering

Engineering controls may involve the provision of mechanical aids, barriers, guarding, ventilation or insulation to prevent employees being exposed to a hazard. For example, a heavy compactus system may have a mechanical winder or electric controls to prevent the need for pushing and pulling the sections.

#### Administration

This may involve establishing policies, procedures and work practices designed to reduce an employee's exposure to a risk. It may also relate to the provision of specific training and supervisory practices, for example, by advising employees against performing continuous keyboard work for long periods, and increasing task variety.

#### Personal protective equipment

This may involve using appropriate protective clothing, such as gloves when handling cleaning solvents, as a method of reducing an employee's exposure to risk.

A combination of substitution, isolation and engineering controls may be applied simultaneously. For example, training employees in lifting techniques may not sufficiently reduce manual handling risk of relocating office furniture. Higher level control options, such as providing mechanical aids or eliminating the job altogether by contracting it out to a furniture removal specialist will be more effective.

### What to consider when evaluating control measures

Evaluation of risk control measures determines their effectiveness. For example, introducing exercises or rest breaks for repetitive keying tasks does not completely control all risks involved in the task. The evaluation of control measures may involve the reworking of the process of hazard identification, risk assessment, risk control and evaluation of control measures. Satisfactory control of risk is often a gradual consultative process, involving trialling and refining risk control measures in the light of employee feedback, new technology and changes in scientific knowledge over time.

### Evaluation of control measures

This means checking to see whether the introduced changes reduce the risk previously assessed.

It may involve repeating the process of hazard identification, risk assessment and risk control to ensure that all risks to health and safety from a particular hazard have been controlled as far as practicable. This depends on the hazard, the nature of the assessed risks and on the control measures used. Where the evaluation of risk control measures reveals some remaining risk, the process continues until risk is minimised as far as reasonably practicable.

## Occupational Health and Safety Legislation

### What does the legislation consist of?

The Commonwealth Occupational Health and Safety legislation has three major parts.

These are:

- The parent Act is the *Occupational Health and Safety Act 1991*
- Regulations made under the Act
- Codes of Practice approved under the Act.

Occupational health and safety legislation provides a framework for health and safety management in workplaces and flexibility in the management of hazards.

### The Occupational Health and Safety Act 1991

The Act spells out duties for all workplace parties. These include employers, employees, and occupiers as well as manufacturers and suppliers of plant, equipment and substances used in the workplace and erectors and installers of plant.

It provides a framework that must be followed for employers and employees to work together to make decisions about health and safety.

### Regulations

Regulations set out legal requirements for the management of various health and safety hazards and issues. Where they exist, they must be used in a workplace.

### The Approved Code of Practice

The approved code of practice provides practical guidance for complying with the provisions of Acts or Regulations and are recommended for use where applicable. While they are not legal requirements in themselves, they may be used as evidence in legal proceedings to show whether a person has failed to meet requirements set out in an Act or Regulation.

### Other reference material

Guidance material produced by Comcare can be endorsed by the Safety Rehabilitation and Compensation Commission (SRCC). Additional guidance (booklets and web based information) can be viewed at: [www.comcare.gov.au](http://www.comcare.gov.au). While not legal requirements, they provide advice to assist decisions regarding health and safety in the workplace.

### Australian Standards

There are many Australian Standards that relate to work in offices. Standards set some basic requirements in the design, development and use of equipment, furniture, plant and work practices in both office and industrial work environments. Australian Standards are not law unless incorporated into Regulations. However, where an issue in law is being considered, reference can be made to Australian Standards if there are no regulations or code of practice for making decisions. Specific Australian Standards are sometimes referenced in the approved code of practice. Where relevant, regulations, the approved code of practice, guidance material endorsed by the SRCC, and Australian Standards are referenced in this publication. These publications should be used to help organisations in the effective management of health and safety issues in the office.

## Health and Safety Management Arrangements (HSMAs)

HSMAs are arrangements between an employer and their employees that manage the promotion and development of measures to ensure the health, safety and welfare of employees at work. HSMAs provide a framework for employers and employees to work together to effectively manage workplace risks and hazards. They are an integral part of the employer's duty of care.

Section 16(2)(d) of the Act imposes an obligation on employers to develop, with their employees, HSMAs that will:

- enable effective communication between an employer and its employees
- promote and develop appropriate measures to ensure the health, safety and welfare of employees at work
- provide adequate measures for
  - informing employees about the arrangements
  - reviewing the arrangements
  - varying the arrangements
  - dealing with disputes that may arise in the course of consultations.

Employers who are required to establish a health and safety committee (HSC) under Section 34 of the Act are also obliged to provide in their HSMAs for the way in which the HSC is to be constituted and to operate.

Under amended Section 16(3) of the Act the HSMA may also cover the following matters:

- a written OHS policy
- risk management arrangements
- the making of agreements between the employer, the employees and their employee representatives about
  - continuing consultation on occupational health and safety matters
  - or
  - other matters as agreed between the parties
- training in relation to occupational health and safety.

This does not limit matters which may be covered by HSMAs. The intent of the HSMAs is that they are tailored to the needs of each workplace. The process for their development should therefore consider the particular circumstances of an organisation such as the relevant hazards, organisational culture and employee profile.

### Designated Work Group (DWG)

A DWG in a workplace (or part of a workplace) is established so that each employee within the group can be represented by a HSR.

The HSR for a DWG should be accessible to each employee within the group. When physical distance is involved, employees should be able to contact their HSR by telephone and, where possible, by fax and email.

Whether there is one or more, DWGs in the workplace will depend on a number of factors. The following factors must be considered in developing or varying DWGs:

- number of employees
- nature of each type of work performed by the employees
- number and grouping of employees who do similar sorts of work
- workplaces (and areas within workplaces) where each type of work is performed
- nature of any risks to health and safety in the workplace
- overtime and shift arrangements.

### Health and Safety Representative (HSR)

HSRs represent the OHS interests of employees in the designated work groups (DWGs). They perform an important role in the Commonwealth jurisdiction in facilitation, communication and consultation between employers and employees. Sections 25 to 33 of the Act outlines the key provisions of relevance to the operation of HSRs.

Deputy HSRs (DHSRs) can also be selected for DWGs. They are useful for ensuring that the role of HSR is performed in the HSRs absence. Most, but not all, provisions relating to HSRs apply to DHSRs. An organisation's HSMAs may include provisions relating to HSRs and DHSRs.

## Health and Safety Committees (HSCs)

Health and safety committees are committees comprised of both employer representatives and members representing employees. An employer must, by written instrument, establish a health and safety committee when there are normally no less than 50 employees employed by the organisation.

HSCs have the power to do all things which are necessary for the performance of their functions. The broad functions of HSCs are to assist employers with health and safety and facilitate cooperation between employer and employees regarding OHS.

Specific functions of the committee are to:

- help the employer to develop, implement, review and update prevention activities
- facilitate cooperation between the employer and employees on OHS matters
- help the employer to distribute OHS information (in appropriate languages).

HSCs operate and are constituted in the manner specified in an organisation's HSMA. However, some matters are prescribed in the Act.



## Additional Reading

The following Comcare information can be found at: [www.comcare.gov.au](http://www.comcare.gov.au)

The OHS Act

*Occupational Health and Safety (Safety Arrangement) Regulations, 1991*

*Identifying hazards in the workplace, Comcare*

*OHS workplace consultative arrangements, Comcare*

*Health and Safety Management Arrangements: A guide to developing HSMA, Comcare*

*Health and Safety Representatives Handbook, Comcare*

*Participating in effective Health and Safety Committees, Comcare*

## CHECKLIST – MANAGING OCCUPATIONAL HEALTH AND SAFETY

- Do you have a HSMA?
- Are there documented OHS procedures?
- Is there a systematic approach to managing OHS risks (hazard identification, risk assessment, risk control and evaluation)?
- Is there a consultative process in place (committee, employee representation, communication) to manage OHS?
- Are injuries and incidents reported and the risks assessed?
- Is there training in OHS for employee and employer representatives?
- Do you know where to go to access occupational health and safety resources, e.g. Comcare, Australian Standards and other sources?

### 3. JOB DESIGN IN OFFICE WORK

This section describes the physical and psychosocial factors that need to be considered in matching jobs to people's capacities. It discusses common physical injuries that occur in office work including musculoskeletal disorders (MSD).

It describes the physical factors and the psychological and social stressors that need to be considered. Examples of job design are included here to show how the needs of people working in offices can be improved.

#### Physical Factors

People come in all shapes and sizes and have a wide range of different needs, capacities and limitations. Good job and work environment design relies on matching the work and environment to people's needs, capacities and limitations. Some of the consequences of a mismatch in this area are discussed in this section.

#### Manual handling in the office

Manual handling refers to any activity requiring the use of force exerted by a person to lift, push, pull, carry or otherwise move or restrain something. Examples of manual handling tasks commonly performed in offices include lifting and carrying boxes of photocopying paper; moving office furniture (Fig 3.1) and equipment such as computers and printers; handling large files, books and legal documents; prolonged data entry; and opening and closing filing cabinet drawers.

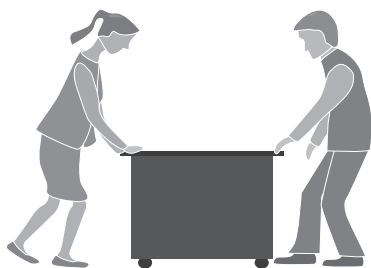


Figure 3.1 Moving office furniture

#### Musculoskeletal disorders

MSDs (also known as body stressing) is a collective term for a range of conditions characterised by discomfort or pain in muscles, tendons and other soft tissues, with or without visible symptoms. MSDs are usually associated with tasks involving repetitive movement, sustained or unnatural postures or forceful movements. Previously these conditions have been referred to in various ways, such as Occupational Overuse Syndrome (OOS) or Repetitive Strain Injuries (RSI).

Muscle strains can occur suddenly, and may result from forceful exertion in a bent or twisted posture for example, lifting a box of photocopying paper from the floor. However, many MSDs occur due to daily work involving the maintenance of static postures, which result in muscle fatigue, for example, holding the telephone, and repetitive work such as keyboard and mouse tasks. Conditions that have this type of gradual onset are probably more common in office work than sudden injuries. Ways of reducing manual handling and the risk of MSDs are suggested in various sections of this guide.

In office work, other factors that have been associated with MSD include prolonged and intense keyboard or mouse use, high demands on vision, sustained mental effort and peak demands or set work rates. Control of these factors is discussed in a number of sections of this guide. The best way to prevent the development of any injury due to manual handling is to design jobs, tasks and the work environment (including equipment and furniture) so that the factors that contribute to the risk of injury can be avoided or minimised. To achieve this, all the factors that can increase risk must be identified and managed.

*The Occupational Health and Safety (Safety Standards) Regulations 1994, Part 5 Manual Handling, set out the legal requirements for managing manual handling risk.*

The occurrence of MSDs may also be affected by psychosocial factors, such as higher levels of distress. In situations where the level of physical demand placed on employees is within reasonable benchmarked levels, factors such as personal vulnerabilities (personal stress susceptibility) and organizational culture will have a stronger influence on the occurrence of MSDs. Employees in

workplaces with supportive leadership and clear role definitions have a lower rate of MSDs.

### Improving physical job design

The important aspect of physical job design is that it fits with how our bodies operate. Points to consider include:

- joints should be in relaxed and comfortable positions (see Fig 3.2). This makes the work of muscles, ligaments and tendons around joints more efficient. Where extreme positions must be used, they should be held for as little time as possible and not repeated often

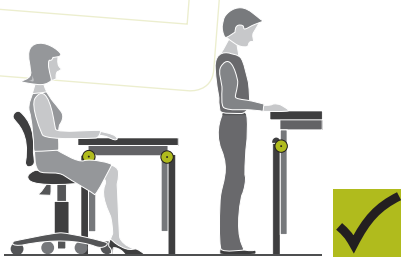


Figure 3.2 Relaxed, comfortable work positions

- the work should be kept as close as possible to the body to minimise the stress on the body when reaching to perform a task
- commonly accessed items should be stored between hip and shoulder height where possible to avoid bending over and reaching up
- repetitive tasks such as using a keyboard and mouse should be performed for short periods. They are best interspersed with other tasks requiring different postures and movements, e.g. collecting work at the printer, reviewing, photocopying and distributing documents
- static or fixed postures should only be held for short periods of time and interspersed with different tasks
- job design should provide the opportunity for people to sit, stand or walk a short distance as a normal part of their duties
- exertion from the use of excessive force should be avoided
- exertion of force should be done in an upright posture, without twisting the spine and preferably using both hands equally.

### Maintain a good posture

Where the user does not have good posture, the risk of sustaining a muscle strain can increase as the operator may frequently or for a sustained period bend their neck to see the keyboard or the document they are typing from. When beginning to use computers, it is important to learn basic typing skills. This can be achieved through short but frequent training with the use of tutorial software programs. This approach can equally apply to two finger typists who may have developed a reasonable knowledge of the keyboard but cannot operate it without looking at the keys. This method of work is habitual and a concerted effort is needed to help with the development of new work methods.

### Task variety

It is important to include task variety in the design of work. This is best done by mixing intensive keyboard use and other computer use with a variety of other work. It is important that the different tasks involve a change in posture and muscles used to perform the work.

As the working day progresses it becomes more important to provide work with different mental demands, changes in posture and more frequent work breaks.

### Breaks

Rest or work breaks can range from short pauses to defined breaks such as lunch. Answering the phone or collecting a document from the printer are short breaks that provide an opportunity for muscles that have been active in keyboard or mouse use to rest and recover, and muscles which have been fixed during this use to move. Where a variety of alternative tasks are not available, it is important to have more work breaks away from the task. The length of these and how often they are taken depends on the work, the person and other factors. Frequent short pauses are preferable to infrequent longer pauses. The use of exercises during breaks can provide a variety of changes in posture and movement for muscles during periods of intense work (see Appendix B). These exercises may be useful where there are no alternative tasks available. Exercises should not be used to replace other controls listed above. Exercises should be gentle stretches which provide rest for frequently used muscles and movement for muscles which have

been static. The best exercise is usually to get up from a seated position and move around.

### Work adjustment periods

It is important that during employee absences, their work is not left to pile up awaiting their return. This situation can cause an overload that can increase the risk of MSD and loss of job satisfaction (Fig 3.3). Where employees are new to keyboard use and other office-based tasks or are returning from an absence of several weeks, a period of adjustment may be required. The adjustment period will depend on the individual, the equipment, the environment and the duration of computer-based work involved. Where there is highly repetitive work, such as keyboard and mouse use, adjustment may be achieved through reduced work loads or provision of a greater variety of tasks than usual, with a gradual reintroduction of highly repetitive, or demanding work.

## Psychosocial Factors at Work

Work is generally beneficial to mental health and personal wellbeing. It provides people with structure and purpose and a sense of identity. It also provides opportunities for people to develop and use their skills, to form social relationships, and to increase their feelings of self-worth.

There are circumstances, however, in which work can have adverse consequences for health and wellbeing. Risks to psychological health at work may arise from organisational or personal factors, with the major factors being poor design of work and jobs, poor communication and interpersonal relationships, bullying, occupational violence and fatigue. Risks to psychological health due to work should be viewed in the same way as other health and safety risks and a commitment to prevention of work-related stress should be included in an organisation's health and safety policies. Section 16 of the OHS Act outlines employers' responsibility for the psychological health of their employees, this includes the identification, assessment and management of work-related risk factors.



Figure 3.3 Work overload can cause stress

Risks to psychological health may be identified from various sources in the workplace, such as records of claims and high levels of absenteeism or sick leave, self report information such as interviews and surveys, and through consultation with Health and Safety Representatives and employees on current issues and risks. To assess these risks, employers should consult with work groups to determine the key work-related or other psychosocial risk factors, the circumstances, the exposure (frequency and duration), the harm they cause and how employees think they could be managed.

### Stress

'Stress' is a generic term that is widely used in society to describe the feeling that some people might have in response to pressures that they face in their lives. In the workplace context, it is a term often used to describe the responses they may develop when people are subjected to demands and expectations that are out of keeping with their needs, abilities, skills and coping strategies.

There are two basic forms of stress. The first, 'eustress' can be beneficial, particularly when the individual is facing a new challenge. Eustress increases the individual's creativity and productivity levels. 'Distress' is what is commonly thought of when discussing stress, and occurs when high demands and expectations continue for extended periods exceeding the abilities, skills and coping strategies of the employee. Distress is likely to result in a decrease in productivity and a lowered sense of wellbeing by the individual.

The occurrence of stress depends on the interaction of the individual and the circumstances as they perceive them. No one is immune to stress, and some circumstances are so stressful that the majority of people would be adversely affected. However, an individual's response to stress will be influenced by several factors including: personality, age, previous experience, degree of training and pressures faced outside the workplace.

Work-related stress can impact upon an organisation in many ways, including through an adverse impact on workplace and work team relations, productivity, quality, absenteeism, and customer and client complaints.

### Reducing distress through good job design

Eliminating or reducing risks to psychological health has advantages for the health and wellbeing of employees. Where employees have open communication and consultation and feel supported and engaged in their work, there is likely to be improved productivity, less absenteeism and unrest, and increased staff retention. There are various strategies to reduce risk to psychological health from work stress. Some strategies that focus on the sources of risk are listed below.

#### Content of work factors

- Designing jobs so the demands of the work meet the capabilities of workers by: modifying the way the job is done or the working environment; sharing the workload differently; setting reasonable deadlines and quality standards; ensuring there are sufficient resources and time to do the work; providing variety in work
- Ensuring safe work schedules by: providing suitable rest breaks; sufficient time for recovery from fatigue and enough notice for people to prepare when hours of work are changed; designing shifts, long hours or work at night to minimise fatigue at work and when commuting
- Improving workplace consultation and employee participation in decision-making by: introducing flexi-time, job sharing or other ways to meet people's needs while ensuring productivity is maintained or improved; providing employees with some control over how they do their work; consulting

with employees and Health and Safety Representatives in decisions that affect their work

- Improving equipment, technology, facilities and physical working conditions by: providing suitable, effective and reliable equipment and technology; providing control over lighting, noise and the thermal environment.

#### Social and organisational work factors

- Ensuring there are effective opportunities for communication, consultation and feedback between supervisors and staff or co-workers.
- Developing a supportive workplace culture by: ensuring suitable leadership which delegates and encourages participation and initiative, enhances co operation and teamwork, and makes clear the organisation's objectives.
- Establishing clear roles by: ensuring roles and responsibilities are clearly specified; regularly reviewing and where required modifying roles in consultation with staff; reviewing relevant roles and responsibilities when role conflicts emerge.
- Establishing suitable work/life balance policies by: providing flexible working time arrangements, e.g. part-time or home-based work, job sharing, phased retirement, additional purchased leave or non-standard working hours.
- Providing training and information about risks to psychological health from stress by raising awareness.
- Disseminating information about workplace prevention actions.
- Giving employees access to an Employee Assistance Program (EAP). EAP personnel are usually qualified counsellors or psychologists and work for an external, independent organisation. They can assist employees by providing confidential support and counselling for either work-related problems or personal issues which affect work.

For further information see *Working Well*.



## Bullying

Workplace bullying is repeated, unreasonable behaviour directed towards a person or group of persons at a workplace which creates a risk to health and safety.

'Repeated' refers to the persistent or ongoing nature of the behaviour, not the specific type of behaviour, which may vary. 'Unreasonable behaviour' means behaviour that a reasonable person, having regard to the circumstances, would expect to victimize, humiliate, undermine or threaten.

The following types of behaviour, if repeated, could be considered bullying:

- verbal abuse
- excluding or isolating particular workers, harassment or intimidation
- assigning meaningless tasks unrelated to the worker's job
- assigning tasks that are impossible for the worker to successfully complete
- unreasonable threats of dismissal.

## Preventing bullying in the workplace

The goal of prevention initiatives should be to create a culture where bullying is not tolerated, and, if it does occur, is recognised and acted upon. Therefore, the first step to preventing bullying is to secure the commitment and involvement of the organisation.

### Senior management commitment

A demonstrated commitment from senior staff and their active involvement in a bullying prevention initiative is vital to ensuring the success of such initiatives. Examples of how senior management can demonstrate their commitment include:

- actively endorsing a bullying policy
- making it clear that bullying in the workplace will not be tolerated
- ensuring that complaints of bullying are taken seriously and properly investigated
- consulting with staff at all levels.

## Develop a policy and procedures

Ensure the organisation has an up-to-date policy on bullying which clearly addresses the issue and is developed and reviewed in consultation with employees. The contents of the policy must be made known to all staff, applied consistently and reviewed regularly.

Clear reporting, investigation and resolution procedures are essential to the good management of bullying incidents. Reports that are ignored or mishandled decrease the likelihood that reports will be made in the future and may send a signal to the bully that their behaviour is condoned. Ensure procedures are in place and available to all staff.

## Occupational violence

The Australian Institute of Criminology defines occupational violence as:

**"the attempted or actual exercise by a person of any force so as to cause injury to a worker, including any threatening statement or behaviour which gives a worker reasonable cause to believe he or she is at risk"**

Violence in office workplaces can be perpetrated by co-workers (including managers, supervisors or employers), customers (e.g. in a reception area), people known to the organisation or an employee, or a stranger such as an intruder. In some circumstances, violence can be a crime and incidents should be reported to the police.

The nature and location of work, the types of clients, hours of operation and staffing levels can all affect the risk of occupational violence instances. Some common risky situations include:

- denying someone a service or dealing with frustrated customers
- working alone or at night
- handling cash
- working in human services where clients are potentially violent.

Eliminating the reason for violence should be the first step to preventing violence. Examples include:

- removing the incentive for occupational violence by not having money, drugs or valuables on the premises

- changing customer contact arrangements, e.g. by providing services over the phone instead of in person or withdrawing service to a customer who is known to be violent.

If it is not possible to eliminate the risk then the next steps are to reduce the risks as much as possible by:

- changing the equipment or process, e.g. replacing breakable glass panes with safety glass or removing items that could be thrown
- designing for safety, e.g. increasing the depth of the reception counter to create more space between the customer and the staff member
- Use Crime Prevention Through Environmental Design (CPTED) principles to ensure there are clear sightlines between public areas and individual or separate work spaces, as well as effective lighting and landscaping that does not provide hiding places
- control access for internal or high-risk areas, and ensure landscapes are designed so that pedestrians are directed through appropriate routes
- create a clear distinction between public and non public spaces and display appropriate signs
- use good design and maintenance of public spaces to encourage a sense of ownership and responsibility.

Other methods to reduce the risk include:

- providing training to help workers identify potentially volatile situations and know how to diffuse potential violence in management of customer service and complaints, and emergency response procedures (including violence, fire, bomb scare, armed hold up)
- providing written and/or verbal hand over on the status of risk (e.g. customers who have exhibited potential for violent behaviour during a previous shift)
- providing secure cash management and entry and exit from the premises (particularly at night)
- providing duress alarms, personal alarms or mobile phones where customers may be violent or staff work alone

- developing a plan for violent incidents, including provision of first aid, comfort to those affected, communication to emergency services, maintaining an undisturbed scene, asking witnesses to remain and contacting families
- reporting on the threats or incidents and assessing possible triggers for the threats
- providing post-incident reporting, debriefing and review.

## Fatigue

Fatigue is an acute or chronic state of tiredness which affects employee performance, safety and health and requires rest or sleep for recovery. Fatigue may affect physical and mental capacities and increase the risk of workplace incidents. It can also contribute to workplace conflict and absenteeism. Through a build-up of sleep debt, fatigue can result in errors of judgement that may lead to injury or death, affecting not only the employee but the health and safety of others.

The fatigue factors that influence risk include:

- mentally and physically demanding work (very high demands)
- long periods of time awake (e.g. long hours of work extended by long commuting times)
- inadequate amount or quality of sleep (e.g. when 'on-call')
- inadequate rest breaks (e.g. inadequate or poorly timed rest breaks or rest breaks where the environment is not conducive to rest)
- disruption of the body clock (e.g. working when we would normally be sleeping)
- environmental stresses (e.g. noisy or hot environments)
- work requirements, work schedules or systems of reward (pay, recognition or promotion) that provide incentives to work longer and harder than may be safe
- personal factors such as caring for a young child or working multiple jobs.

## Shift work

Research shows there are significant issues associated with fatigue from shift work. Shift work is not so common in office work; however, workplaces that respond to the public may have shifts over a 24 hour period, for example, a call centre. Many aspects of human performance are at their lowest levels during the night, particularly between 2 and 6am. Disruption to the body clock by working during these hours can affect behaviour, alertness, reaction time and mental capacity.

Prolonged night shifts can result in sleep debt, as sleep cycles are usually about two hours shorter when sleeping during the day after working a night shift. Day sleep and sleep during 'on-call' periods at night are usually of a lesser quality than night sleep. Individuals adjust to shift work in different ways, so it is essential to consult your workers when putting together staffing arrangements and work schedules. Prolonged fatigue can have detrimental effects on physical and mental health; for example, sleep disorders, mood disturbances, gastrointestinal complaints, headaches, depression, cardiovascular disease and irregular menstrual cycles.

Fatigued individuals in the workplace may complain of feeling drowsy or of headaches, and may show symptoms such as increased irritability, blurred vision, falling asleep at work, making mistakes or having near misses, yawning, moving off track while driving vehicles, or increased absenteeism.

Not all the factors noted mean there is a risk of fatigue in the workplace, but where the work involves potential for fatigue the employer must assess the risk to determine whether risk control measures are required.

## Managing fatigue and shift work

Where reasonably practicable, shift design should try to eliminate early morning start times (before 6am), late finish times, work between 2am and 6am, long hours of work and the need to work overtime or extended shifts. If risks cannot be eliminated:

- improve shift schedules or rosters to prevent build-up of sleep debt (cumulative fatigue when normal sleep or rest is disrupted over time)
- provide back-up for absences rather than having others work longer hours to cover absences
- change work requirements or work schedules that promote longer working hours
- change practices that provide incentives to work longer and harder than may be safe; for example, systems of reward (pay, recognition or promotion)
- provide adequate rest breaks and an environment conducive to rest
- provide training and information about risks to health and safety from fatigue, e.g. raise awareness, and disseminate information about the strategies that the workplace is using to prevent fatigue risk
- provide information for shift workers on managing fatigue, e.g. planning optimum sleep conditions, developing sleep and wake time routines, maintaining exercise and regular healthy eating patterns and minimizing caffeine, alcohol or high-fat food intake prior to sleep
- provide safe travel arrangements for employees following long hours of work or when commuting during normal sleeping hours.



## Additional Reading

The following Comcare information can be found at: [www.comcare.gov.au](http://www.comcare.gov.au)

*Bullying in the workplace*

*Preventing and managing psychological injuries in the workplace*

*Working Well: An organisational approach to preventing psychological injury*

*Applying best practice principles to the prevention and management of customer aggression.*

## CHECKLIST – JOB DESIGN IN OFFICE WORK

Have hazardous manual handling tasks been assessed and controlled as far as is practicable, including:

- Repetitive or sustained force, awkward posture or movement?
- Application of high force?
- Handling of people, animals or loads which are unstable, unbalanced or difficult to grasp or hold?

Have social and psychological risk factors been assessed and controlled as far as practicable, including:

- Job content issues (such as overload, lack of control or variety, high levels of repetition or concentration, poor physical environment)?
- Social and organisational issues (such as conflicting demands, inconsistent expectations, personal relationships, inadequate training)?
- Bullying (such as intentionally withholding information, excluding or isolating workers, unreasonable threats of dismissal, verbal violence)?
- Occupational violence (such as physical assault or threat, indecent physical contact, pushing, shoving)?
- Fatigue (long hours, inadequate breaks, demanding shift patterns)?
- Physical demands of jobs (excessive repetition, awkward and static postures, unrealistic deadlines)?

## 4. DESIGNING A HEALTHY AND SAFE WORKING ENVIRONMENT

This section discusses health and safety issues relating to environmental factors in offices, including lighting, noise and air quality.

### Lighting in the Office

Good lighting in workplaces is essential to enable people to see clearly and perform their work safely. The key factors to consider when determining the adequacy of lighting are the:

- amount of light in an area
- number, type and position of the light sources
- tasks or activities performed, how often and for how long these are performed.

In general, good lighting should enable people to easily view their work and environment without the need to strain their eyes. However, different activities require different levels and qualities of light. The visual demands of the activity or task performed determine the lighting needs of an area. Activities that do not require a high level of visual acuity for example, walking through a corridor do not require high levels or an optimum quality of light. On the other hand, tasks such as drawing or checking a document for errors involve fine and detailed work requiring a moderate to high level of visual control, and so greater levels and a higher quality of light are required.

#### How much light is needed?

We are able to see quite well in a wide range of lighting levels due to the ability of the eye to adapt to different lighting conditions. For example, when you move from a bright room into a relatively dark area, or vice versa, your eyes adapt and over time (some seconds) you are able to see more clearly. To reduce the demands on your eyes and the need to adapt when changing tasks or viewing fields, or when moving from one work area to another, specific levels of lighting for particular types of tasks are recommended (see Fig 4.1).

#### How is light measured?

The amount of light in an area can be measured using a light meter (or lux meter). This measures the amount of light falling onto a surface, which is known as the illuminance of that surface. Illuminance is measured in lux. Recommended illuminance levels for different types of work areas are approximate and are shown in Fig 4.1.

CLASS OF TASK	RECOMMENDED MAINTENANCE ILLUMINANCE (LUX)	CHARACTERISTICS OF ACTIVITY AND INTERIOR	REPRESENTATIVE ACTIVITIES AND INTERIORS
Intermittent use	90	Interiors requiring intermittent use with visual tasks limited to movement and orientation	Staff change rooms
Simple	160	Occasional reading of clearly printed documents for short periods	Waiting rooms
Ordinary or moderately easy	240	Continuously occupied interiors where moderately easy visual tasks with high contrasts or large detail are required	Computer usage
Moderately difficult	400	Areas where visual tasks are moderately difficult with low contrasts	Routine computer work
Difficult	600	Areas where visual tasks are difficult with low contrasts	Drawing offices (boards), proof reading

Figure 4.1 Recommended illuminance levels for various types of office tasks, activities and interiors. Adapted from AS 1680 Interior Lighting

## Quality of light

This refers not only to the level of lighting, but also to other factors which have a significant impact on how well we are able to perform a task. These include:

- the number of lights in use, having the correct number of lights will provide evenness of lighting over the area
- the type of lights, e.g. fluorescent tubes, tungsten and halogen lights. The most common type of office lighting is fluorescent, most resembling natural light and long-lasting; fluorescent lights can provide different qualities of light, such as white, warm, natural, daylight or colours
- the type of light fittings used, the design of light fittings can influence the direction of lighting
- the position of lights should be placed to illuminate the workstations
- how colours appear under them
- maintenance of the lighting system.

All these factors need to be taken into account when designing lighting for office environments. A lighting designer should be consulted when designing lighting in a new office area.

## Other issues related to lighting in the office

### Glare in a work area

Glare occurs when one part of an area is much brighter than the background or vice versa. For example, if a bright window is positioned behind a computer screen, the contrast (difference between dark and light) can be so great that the eyes have to constantly adapt to the change. This may cause eye fatigue and headaches, as well as decreased ability to view the screen. Glare can be identified by observation as well as complaints and comments from people working in the area. There are several ways to reduce glare in the office environment:

- control natural light from windows, e.g. Venetian blinds enable people to adjust the light in their work areas

- reduce the contrast between the foreground and background, e.g. the use of a slightly darker partition with a matte surface reduces the contrast between a computer screen and the surrounding area
- reposition the workstation to reduce the light falling on the work surface
- reduce the general lighting to suit the task being performed.

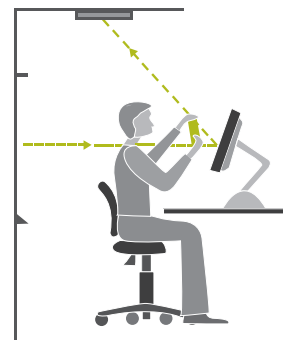


Figure 4.2 Assessing reflections

### Reflections from a work surface

Light reflected from a surface can make it difficult to see what is on it. For example, it can be difficult to read a screen when light from artificial lighting or windows is reflected from it. To identify reflections, observe a work surface or screen and ask the operator if they have difficulty seeing their work due to reflections. Don't forget, light from windows changes during the day and with the seasons. To assess reflections (Fig 4.2), hold a sheet of paper above a screen or place a mirror over the work surface to reveal the source of the reflections visible from the usual working position. Check whether the mirror indicates overhead lighting or other sources of light as a problem for that work surface.

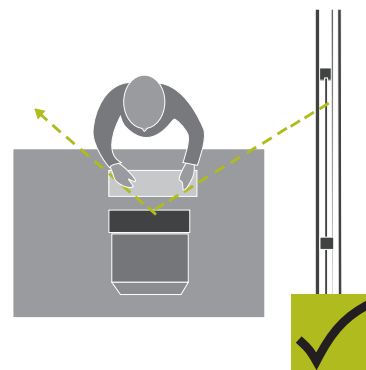


Figure 4.3 Preferred placement of the screen to reduce reflections

Reflections from screens have been reduced by the development of colour monitors, Windows-based systems, Liquid Crystal Display (LCD) screens and non-reflective screen surfaces. Additional controls for reflections include positioning the screen side-on to the main light source (Fig 4.3). A light screen background also reduces difficulties caused by reflections. If these options do not resolve the problem, then consider moving the workstation to another position. This is particularly relevant where the screen is used for prolonged periods of time. These controls should be used in preference to the use of screen filters, which can reduce the quality of the screen display and require regular cleaning.

Annoying reflections can also occur in workplaces where there are highly polished floors or glass covered wall paintings. These issues should be addressed when planning and setting up an office. Even glossy paper documents can reflect light and become unreadable.

### Colour

Choice of colours can determine the mood of an environment and the level of reflection from a surface. It is recommended that ceilings have high reflectance, (reflecting around 80% of the light) and are usually white or off white. Walls should have 50 to 75 percent reflectance (subdued cool colours) and a gloss or semi gloss finish. Floors should have low (less than 20%) reflectance and therefore should be darker and not glossy. The use of colourful posters or non-reflective paintings can relieve monotony and provide visual relief.

### Shadows across a work surface

Shadows can reduce the visibility of work, contribute to glare problems and cause the adoption of poor posture in order to view work (Fig 4.4). A simple observation and test by holding a piece of paper above the viewing surface can indicate whether shadows fall over that work surface. Assessing the effect of shadows may be achieved by observing a person's posture. If a person is adopting a poor posture to read or see their work, then shadows may be a significant problem (also consider glare and reflections).

Increasing the number and spread of overhead lighting, repositioning work or redirecting lighting are the main ways of reducing shadows. Barriers to light falling on the work surface, for example, an

overhead shelf, should be removed or relocated to reduce shadows. An adjustable task lamp may provide specific lighting where shadows are a problem, where light from a particular direction is required or when an increase in general lighting is not practicable. A task lamp can, however, create pools of light, causing the eyes to have to adapt rapidly when looking at the whole work surface, so the removal of barriers to light falling on the work surface is the preferred control measure.

### Posture and the visual environment

When people find it difficult to see what they are working with, it is common for them to lean closer to the object or to bring it (e.g. a document) closer to their eyes. In both cases, this may lead to an awkward posture. People who report discomfort at work should be observed performing their usual duties. A well supported, neutral posture is less likely to result in discomfort. Where the person is not well supported by their chair, leans towards their work or adopts a posture such as in Fig 4.4, there may be a problem caused by poor lighting, poor screen design or position, or uncorrected visual problems.



Figure 4.4 Poor posture may be due to inadequate lighting or uncorrected visual problems

If lighting is contributing to poor posture, the location and all aspects of the lighting relative to the task need to be considered, for example:

- Is a shadow being cast over the work surface?
- Is there enough light for the task being performed?
- Are reflections or glare causing the person to adopt an unsatisfactory posture?

Where visual problems are thought to exist, advice should be sought from a medical specialist or optometrist (refer to Section 6 Health Effects, p. 44).

### Visual fatigue

Eye muscles can become tired when constantly focused on close work. To identify if this is an issue in your office, ask people if they get tired eyes or other eye strain symptoms. To control visual fatigue, a change of focus, such as a view out of a window or to a picture along a hallway at a distance from the operator, can provide exercise to other muscles of the eyes while resting the tired muscles.

### Natural light

When identifying, assessing or controlling lighting issues in offices, you need to take into account the time of day and year, as this will affect the quantity and quality of natural light in a work area. This is particularly important when designing lighting systems. Some of the office lighting issues may be caused by natural light entering a work area. By providing staff with control and adjustment of natural light, for example, Venetian or vertical blinds, many of these issues can be addressed.

### Flickering lights

Some lights can be a source of annoyance, particularly older fluorescent tubes which may flicker when malfunctioning. Regular maintenance will help control the effects of light flicker.

## Noise in the Office

### What is noise?

Noise is usually defined as any disturbing sound. In practice it is referred to as 'sound' when pleasant, and 'noise' when annoying. Typical noise levels in different work environments are depicted below (Fig 4.5).

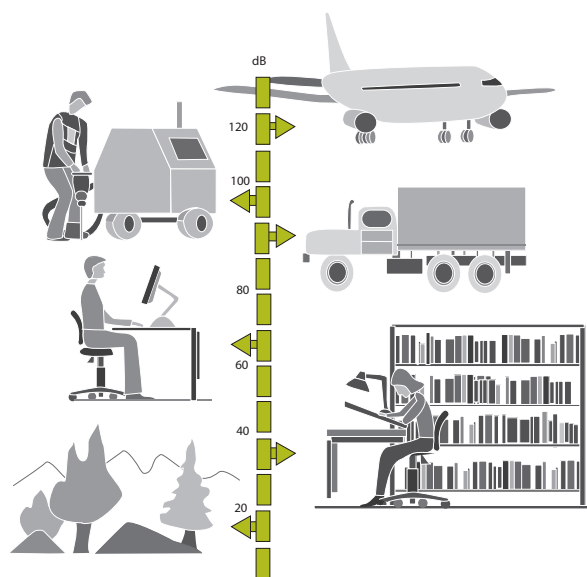


Figure 4.5 Common noise levels in decibels

### Sources of noise

Noise within the office can originate from internal and external sources. Internal noise sources include office equipment (e.g. telephones, printers and photocopiers), people (e.g. conversations) and background noise generated by the building (e.g. from lifts and air conditioning). Background noise generally goes unnoticed unless there is a malfunction of equipment. In fact, some background noise is desirable as an absolutely quiet environment can be uncomfortable. External noise sources can include road traffic and general industrial noise.

### Call centres

Call centre employees experience specific issues relating to noise exposure. The nature of their work means that they spend the majority of their working day either receiving incoming calls or making outgoing calls. There are several hazards relating to this work including infection due to poor headset maintenance, and in rare circumstances acoustic shock, where the employee experiences symptoms which may include dizziness, nausea or anxiety.



## Why is the control of noise in an office important?

Generally, the levels of noise in office areas are below those levels known to pose a risk to hearing. In offices, 'annoyance' noise is likely which may interfere with communication, annoy or distract people and affect a person's performance of tasks like reading and writing. This can be costly for an organisation. Noise that prevents a person from understanding an instruction or warning signal may also be a risk to safety. For these reasons, it is important to consider what can be done to control unwanted noise in the office.

## Speech privacy

Some privacy during conversations is required, particularly in open-plan offices. This requirement should be built in at the design stage of the office layout, when the distance between people and orientation of workstations is determined. People should be able to have telephone conversations and perform work without the person next to them listening to every word. Partitions are frequently installed to provide privacy between workstations. This involves considering the design of the whole environment including the size, construction and continuity of partitioning and all other surfaces in the office. Expert advice should be sought when designing partitioning to provide speech privacy. For further information refer to AS 2822: Acoustics - Methods of assessing and predicting speech privacy and speech intelligibility.

## Identifying disturbing noise in the office

To identify disturbing noise sources in an office it is best to ask the people working in the area a series of questions, for example:

- What noise is most disturbing (if any)?
- When does it occur?
- What effect does it have?
- How do you deal with disturbing noise?

This may be done using a general walk-through survey that includes interviewing people.

Where noise issues have been identified as a problem in an office environment, assessment and development of noise control measures should be undertaken. A qualified person should be consulted where specialist assessment or advice is required. Noise control measures should be developed using the hierarchy of controls outlined in Section 2, page 9.

If you need to control noise in an office environment, there are several things you can do:

- use a layout which separates noise generating activities or equipment from tasks requiring concentration
- isolate noisy equipment such as printers or photocopiers by placing them in separate rooms, (Fig. 4.6)

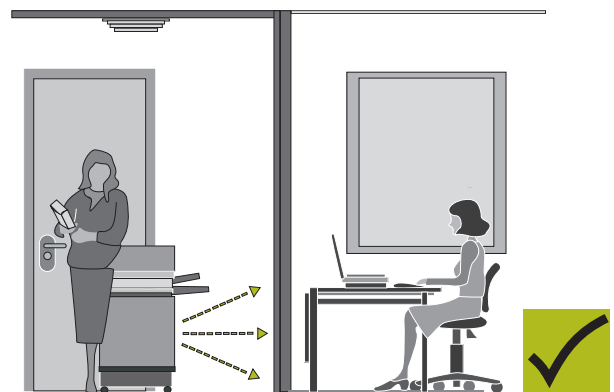


Figure 4.6 Noise from a photocopier controlled by isolating equipment in separate rooms

- use sound-absorbent materials, including suitable floor coverings, wall panels, ceiling panels and dividing screens, installation of barriers should also take into account the effect this may have on ventilation and any sense of isolation it may cause with staff
- provide acoustic-grade dividing screens to reduce conversation noise. Studies have found that partitions with sound absorbing panels of at least 1,600 mm height are required to have any effect on the transfer of sound between workstations, these panels need to be used in conjunction with other sound absorbing surfaces, floors, walls and ceilings to be

effective; in an open-plan office compromises may be made to allow communication between workstations by using 1,200 mm height partitions between employees and 1,600 mm between work sections

- select equipment with the lowest noise specifications practicable
- install noise barriers including double-glazed windows, solid walls and fences to reduce external noise sources
- lower the volume setting on a disruptive telephone; this is a simple way to reduce existing noise levels
- adopt administrative controls such as encouraging employees to use meeting areas away from work areas for conversations
- use masking sound, i.e. electronically generated background noise that is deliberately introduced to mask or cover up intrusive noises; it is best to control unwanted noise rather than try to mask it – masking has generally been found to be an unsatisfactory way of dealing with unwanted noise (consult an expert on this issue)
- orient workstations so that one person does not use the phone in a direct line to the ear of the person in the next workstation.

## Thermal Comfort and Air Quality in the Office

Thermal comfort is influenced by clothing, the job being undertaken, temperature, humidity and air flow. People may feel uncomfortable if the temperature within an office is either too low or too high. High humidity can create a stuffy, sticky atmosphere and contribute to feelings of tiredness. There are considerable individual differences between people regarding what is comfortable and it is unlikely that a single temperature or level of humidity will suit everybody.

## Identifying thermal comfort issues

To identify thermal comfort issues in office environments, ask the people working in the area a series of questions like:

- Do you find the atmosphere hot, cold, stuffy or draughty?
- When do you notice these conditions?
- What effect do these conditions have on your work?
- How do you deal with them?
- Where do you notice these conditions?

## Assessing thermal comfort issues

Where thermal comfort is an issue, there will usually be a history of complaints from staff. Where problems are identified by many staff, thermal comfort issues should be assessed by an appropriately qualified person and control measures developed in consultation with employees.

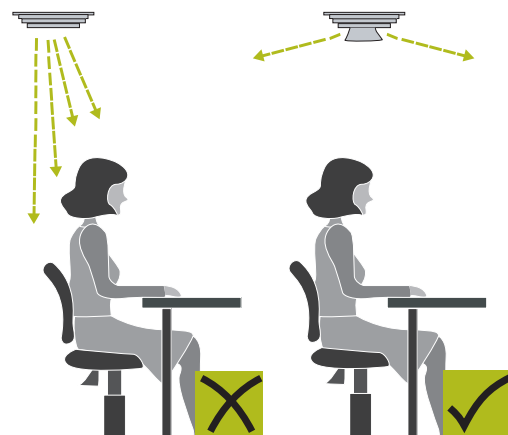


Figure 4.7 Direct air flow away from people

## Controlling thermal comfort issues

Some general suggestions for improving thermal comfort include:

- regulate air conditioning for temperature and humidity
- avoid locating workstations directly in front of or below air conditioning outlets

- install deflectors on air vents to direct airflow away from people. These measures will help prevent staff being annoyed by draughts (Fig 4.7)
- control direct sunlight (radiant heat) with blinds, louvres and window treatments
- minimise draughts and thermal differences between the head and the feet (thermal gradients)
- ensure adequate air flow; feelings of stuffiness can result when air flow is low, and draughts occur when air flow is high – an air flow rate of between 0.1 and 0.2 metres per second is desirable.

### Air quality in offices

Air in offices may be contaminated by several different sources, including odours and micro-biological and chemical contaminants. In an office environment, the quality of the air is often controlled through an air conditioning system. A building's air conditioning system can be considered its lungs. The function of such a system is to draw in outside air, filter, heat, cool or humidify it and circulate it around the building. The system expels a portion of the air to the outside environment and replaces this expelled portion with fresh or outside air.

Where air quality factors are identified as a problem, they should be measured by an appropriately qualified person and action required recommended.

### Legionnaire's disease

Legionnaire's disease is an infection caused by exposure to Legionella bacteria. Infection can often be traced to exposure to mists of airborne droplets carrying the bacteria. These may be related to contaminated air conditioning cooling towers and warm water systems. Other sources may include aerosols from spa baths or potting mix. Legionnaire's disease is not transmitted from one person to another.

The key to reducing the risk of contracting Legionnaire's disease is to minimise the risk of exposure to Legionella bacteria. This is achieved by effective management of air conditioning cooling towers and warm water systems and other such plant that afford optimum conditions for Legionella growth and provide a means of dispersal.

In order to prevent the occurrence of Legionnaires' disease, it is recommended that employers implement in full, all requirements as detailed in Part 8 of Comcare's approved code of practice.

### Ozone

Under normal circumstances, the concentration of ozone is not sufficient to cause symptoms such as itchy eyes or illness. Most older photocopiers now have activated carbon filters fitted to decompose ozone. It is best to store photocopiers in a well-ventilated area.

Electrostatic photocopiers can produce small amounts of ozone gas.

## CHECKLIST – DESIGNING A SAFE & HEALTHY WORKING ENVIRONMENT

Have environmental issues been assessed and where necessary controlled as far as is practicable, including:

- Lighting (such as adequate amount, quality, colour of light and control of glare, reflection, flicker and shadows)?
- Noise (e.g. disturbing or nuisance noise, lack of speech privacy)?
- Thermal environment (such as heat, cold, stuffiness or draughts)?
- Air quality (e.g. control of air conditioning systems, office equipment outputs)?



## Additional Reading

The following Comcare information can be found at:

[www.comcare.gov.au](http://www.comcare.gov.au)

*Call Centres: A guide to safe work*

*Legionnaire's Disease, fact sheet 40*

*Air Conditioning and Thermal Comfort in Australian Public Service Offices, OHS 32*

*Guidance on the management of eye health in the workplace, OHS 60*

## 5. OFFICE LAYOUT, WORKSTATIONS AND EQUIPMENT

This section looks at the general principles of office layout, workstation design, seating, desks, workbenches and storage systems. Consideration is also given to health and safety issues related to technological changes in office equipment and tools.

### Office Layout and Design

An important feature of modern office design is the need for flexibility in office layout, furniture, equipment and the environment to suit the needs of the users and the work they perform. Design must be taken into account in the early stages, not just when a building is being outfitted.

#### Floor space

Provision of adequate space in an office to enable a person to operate effectively is essential. There are three types of space that need to be considered:

- primary space such as amenities, meeting rooms, lift lobbies and similar areas
- secondary space such as corridors and storage
- tertiary space such as space required in a workstation to accommodate a desk, chair, drawers, filing cabinet and other necessary equipment

The building block approach is one method used to determine the amount of space required by personnel. This is based upon a functional analysis of their needs, that is, the tasks they perform in their jobs. This method recommends a minimum of 6 square metres per person for tertiary space and additional space for secondary and primary space requirements. It enables planners to provide enough space for all the requirements of technical people working in offices including clerical and administrative staff. The important thing to design for in all circumstances is the functional needs of the employee.

#### Walkways

Walkways should provide safe access and egress at all times. The use of walkways for temporary storage can introduce tripping or falling hazards and block emergency exits. The through traffic using walkways can be a source of noise and distraction for staff positioned near them. Walkways near office workstations should be bordered by sound absorbing panelling to help reduce noise.

#### Partitions

Partitions are used to divide workstations and provide visual and auditory privacy. They can also reduce unwanted distractions, provide a background visual surface for computer screens, reduce contrasting light intensities, help direct a person's line of sight towards an external window for relief of visual fatigue, and control external and reflected light. Partitioning can cast shadows and reduce levels of light if not appropriately designed or installed. Refer to Section 4 for additional information on lighting in the office.

#### Storage

Storage facilities such as filing cabinets, lockers and shelves often sit on the border of a walkway. When choosing the location of this equipment it is important to consider what other activities occur in the area. For example, a filing cabinet requires approximately 1.2 metres of space in front of it to enable someone to access a fully opened bottom drawer. If this projects into a frequently used walkway it becomes an obstruction and a hazard will be created.

#### Function of the space

The size and layout of a work area should accommodate the equipment and the needs of the users. Where equipment such as photocopiers, faxes, printers and similar equipment are used, allow space for additional traffic and general activity.

#### Eating and relaxation facilities

A separate space, with access to hot water and a sink, should be provided for meal and tea breaks and to allow employees to take rest breaks away from their work desks.

## Floor surfaces

Generally carpet is preferred in office areas to provide a comfortable walking surface, and to reduce noise and reflected light from polished floor surfaces and the risk of slips and falls. Wool mix carpets reduce the build-up of static electricity, which can give a mild electric shock. Carpets should be properly laid without loose edges or ripples and should be well maintained. Where there are tasks requiring pushing and pulling wheeled equipment, carpet should have a low profile to prevent resistance.

## Workstation Design

The core components of an office workstation include a desk, a chair and the equipment used to perform office tasks. Other furniture may include reception desks, paper storage, collation benches and workbenches next to office equipment such as photocopiers, faxes and printers. Flexibility and adjustability are the key issues in the design of office workstations. Individuals can then control how their workstation is set up and organised to meet the changing demands and variety of tasks they perform.

### General principles

The design of a workstation should take account of the range of people who may use it, the tasks they perform and the type of equipment to be accommodated.

### Adjustability

In addition to adjustability to accommodate the different sizes and statures of people, workstations need to be flexible and large enough to accommodate the growing range of tasks performed and equipment used in offices. The workstation should be easily adjustable and the adjustment mechanism should not create a risk from manual handling. See APPENDIX A: Setting up your workstation.

### Posture and movements

The shape and adjustability of a workstation influences the postures people adopt while working. The location and type of equipment used at the workstation also influences the range of movements

performed during work. The workstation then is the means of placing people in the best position to enable them to effectively perform their tasks and use their equipment in comfort.

### Workstations in the office

A variety of workstations are used in offices to meet the needs of computer users, including:

- data entry or customer service users engaged in continuous input tasks such as keying numerical data
- interactive users performing a variety of tasks with a considerable proportion of the day interacting with a computer
- casual users using computers on an occasional basis or infrequently during the day.

Workstations should also allow for non-computer tasks, or separate workstations should be available for non-computer work. In addition to the type of computer usage, the design of a workstation is influenced by the variety of people required to use it:

- multi-user workstations need to be adjustable to meet the needs of different users
- single-user workstations need to be adjusted initially to meet the particular dimensions and preferences of the individual; even after this initial adjustment, the user's tasks or needs may change requiring further workstation adjustments; possibly the most common workstation found in the office combines provision for computing and general administrative duties.

### The computer and administrative workstation

This workstation usually involves an adjustable chair, a desk, a footrest if needed, desktop computing equipment including a keyboard, a mouse, a hard disk drive and a screen, a document holder, a telephone, and related furniture and equipment. As new technologies and tools are introduced, flexible workstations are required to accommodate the job design changes that occur as a result (Fig 5.1). A guide to setting up your workstation can be found in APPENDIX A.

Working with computers is discussed in Section 6.



Figure 5.1 The computer and administrative workstation

## Chairs

It is essential that office seating is comfortable, appropriate to the task being undertaken and easy for the operator to adjust. The often held view of the activity of sitting is that people maintain a fixed posture for long periods of time, however, when performing a range of activities, people tend to adopt different positions and postures while seated. This is desirable as it provides variation in loading of the thighs and back and in general can improve seating comfort.

In general, chairs are designed to fit 90 to 95 percent (%) of the adult population. People outside this range because they are tall, short or large, may need seating that is tailored to their needs. Chairs should support the body in a way which minimises awkward postures and provides comfort, however, chair positions may need to be changed often. No chair can provide a perfect position for long periods and it is important to change postures and get up from a chair many times during the day's work. Setting up an adjustable chair for optimum support is shown in APPENDIX A.

### Alternative seating

Use of alternate seating should be assessed on a case-by-case basis using a risk management approach.

Some forms of alternative seating are designed to enable people to sit with the hips at an angle that is believed to reduce pressure on the lower back. These types of seating are not necessarily better or worse than conventional adjustable office chairs, but may not provide the optimum support in a

workplace where many hours of the day may be spent in sitting. There are no current guidelines or design standards for alternative chairs.



Figure 5.2 Kneeling chair

Different seating is sometimes chosen by personal preference, for example by someone with lower back pain or to look good. Some examples are:

- the 'kneeling' chair, a forward tilted chair base with knee support (Fig 5.2)
- the 'sit-stand' or 'saddle' chair with a tilted base for 'propping' on
- executive chairs, which, as the name suggests, are designed as status furniture for executives; their design often provides little in the way of adjustability and seat and backrest design to give support; as most senior managers use computer equipment as a core part of their daily work, executive chairs should include the adjustability and other features listed above.

## Desks and Workbenches

### General design considerations

The main factors to consider when choosing desks include:

- tasks to be performed
- equipment and resources to be accommodated.

## General features of desk design

A good desk should have:

- rounded corners with no sharp edges
- good access for legs with no obstacles under the desk to cause discomfort and possible injury (Fig 5.3)
- a flat, smooth surface for ease of writing, of a neutral colour with a non-reflective finish
- adjustability to fit most users (AS/NZS 4442: Office Desks 1997 recommends a range of adjustment for seated tasks of at least 150 mm, from 610 mm to 760 mm in height, easily adjustable from the seated position).

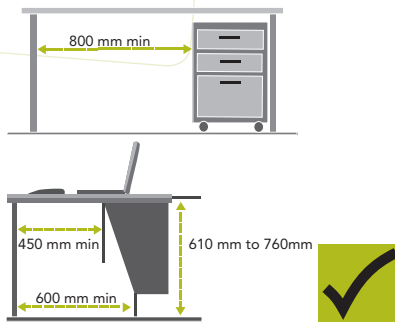


Figure 5.3 Knee clearance dimensions for office desks

### Tips and hints

When selecting desks and other workstation equipment and furniture, consider:

- tasks to be performed
- type of equipment and materials to be used
- adjustability
- number of different users.

Where possible, split desk designs should be avoided as these limit the options for placing equipment and can cause secondary hazards if the user's legs strike the adjustment mechanism.

The space under the desk should be free of obstacles to enable safe and comfortable location and movement of the legs.

Where possible, arrange trials of a variety of desks from suppliers. This allows you to select desks suitable for the variety of tasks performed at each workstation.

Consider modular workstations that permit flexibility in design and layout.

## Types of desks

### Freestanding height-adjustable desks

These desks are designed to raise and lower the desk surface so that the user can position work at the most comfortable height. They are suitable where different staff use the same desk (multi-user) or where a range of different tasks are performed at the same desk (multi-task).

### Freestanding fixed-height desks

These desks provide limited flexibility for the user. Chair adjustments are relied on to meet the user and task requirements. In some situations the desk can be modified (raised or lowered permanently) by a tradesperson; however, this renders the desk unsuitable for use by people of different physical dimensions.

### Corner workstations

In these workstations, the desk is usually designed to extend along two sides of the partitioning so that it occupies the corner. The corner section usually has a bridging section that is at 45 degrees to the two sides. Corner workstations can be an efficient use of space and often have built-in cable housing. Care should be taken to choose a workstation that does not impose limitations on adjustability or the ability to choose a layout if needs change.



Figure 5.4 Incorrect standing height

### Standing-height benches

Typical tasks that require a standing-height bench include sorting mail, collating and binding documents, and receiving incoming goods. In some cases, standing-height benches or drafting workstations are used by staff whose capacity to sit for prolonged periods is limited (Fig 5.4 and 5.5).



Ideally, standing-height benches should be adjustable to accommodate the height differences of the range of people using them.

In general, a standing-height bench needs to be between 850 mm and 950 mm from the floor, but this will depend on the type of task performed.



Figure 5.5 Correct standing-height bench

### Sloped work surfaces

Some desk designs incorporate a sloped surface section. Otherwise an angle or sloped board enables the angle of a work surface to be adjusted. It is usually placed on top of a desk and used to raise the height and angle of documents so that the neck is in a more upright posture while reading and writing for prolonged periods (see Fig 5.6).

Eye strain can be decreased by positioning the document at a right-angle to the line of vision. The angle board needs to be adjustable and large enough to support several documents.



Figure 5.6 Angle Board

### The desktop

The layout of equipment and resources on a desk should be arranged so that they are within reach. Their proximity to the user should be prioritised according to the nature of the item and how it is used.

### Reach capacity

The desktop can be broken up into three broad sectors according to the capacity of the seated individual to reach to each sector (Fig 5.7).

The optimum reach sector is where the hands operate for most of the time. Equipment is usually brought into and out of this area as different tasks are performed. For example, when a typing task is finished the keyboard is moved to one side to make room for a writing activity, or the chair is moved to a different part of the desk so the hands can function close to the body. Frequently used items, such as the keyboard, mouse or telephone, should be used in the optimum reach sector.

The maximum reach sector involves an area that extends beyond optimum reach where, using the shoulder and arm, the user can reach with comfort. This sector should be where the hands retrieve and deposit equipment and materials on an intermittent basis. Reference manuals are an example of what can be kept in the maximum forward reach zone, but not in a high reach zone, where excessive force may be required to lift them down.

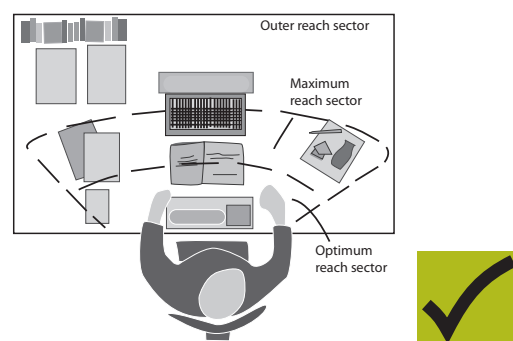


Figure 5.7 Reach Capacity

The outer reach sector involves extended reach where bending forward and even rising from the chair gains extra distance to reach an item. This area is usually only suitable for occasional reaches. Where possible, layout should be reorganised to bring frequently used objects closer to the user.

Alternatively, work can be relocated altogether to another desk or bench for better access. Locating rarely used items out of reach, requiring the user to get up from the chair, may encourage changes of posture.

### In/out trays

These trays can usually be placed in the maximum reach zone and stacked on top of one another or placed side by side. Placing the trays closer to the operator helps improve posture and movements by limiting the need for extreme reaching.

### Document holders

Reading source documents resting on the surface of the desk for prolonged periods may cause neck and shoulder strains through the adoption of poor posture. Document holders are designed to hold reference material so that they can be positioned according to the visual needs of the user (Fig 5.8).

Upright movable document holders can be positioned next to the screen at the same height and visual distance from the user as the screen. A-frame or flat document holders can be positioned between the screen and keyboard to support multiple or bulky papers. A-frames need sufficient adjustment to raise, lower and angle documents to accommodate different screen heights.

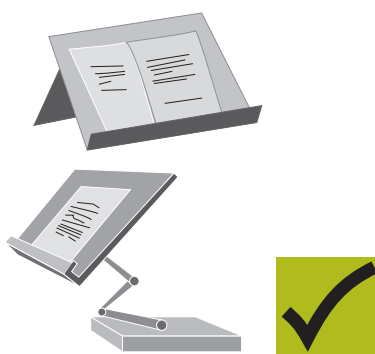


Figure 5.8 Document holder designs

### Monitor stands

Screens may need to be raised above desk height to reduce postural strain to the user's neck muscles. The top of the screen should generally be level with the user's horizontal eye level and at a distance

of approximately one full arm length when the operator is sitting in their usual position for keying.

A variety of stands are available to raise screens above desk height. Fixed-height stands tend to be suitable for single user workstations where the height of the monitor suits the individual's needs and the employee performs varied tasks, including keying, throughout the day.

Adjustable height and movable stands can be used to meet the needs of a variety of users or to provide space for other tasks an individual may perform over the day.

### Wrist or forearm rests

Wrist or forearm rests are incorporated in some keyboard designs or provided to support the forearm during pauses in keying work. In practice, however, people often use the rest while typing, causing the fingers to reach to the keys rather than the whole arm generating that movement. This may cause strain of the muscles and tendons at the wrist.

The use of a wrist rest also places the keyboard further away from the user, which can increase sustained load on the shoulders and cause discomfort or muscular strain.

Wrist rests should not be required if a workstation has been adjusted to meet the needs of the user (refer to APPENDIX A).

## Other Office Equipment

### Telephones

People in offices use telephones to varying degrees. Telephones should be situated so that the user can perform simple tasks, such as taking notes, without the need to twist or support the telephone on the shoulder. A long enough cord is usually sufficient to allow flexible positioning of the telephone to suit the user. Headsets should be used where the person has to regularly perform tasks such as keying information or taking orders while using the telephone, or does dedicated telephone work, such as in a call centre.

Use of a headset can assist in reducing the reach distance and the frequency of handling the receiver and eliminate awkward neck postures. When a headset is being purchased, the surrounding environment and the need for the user to attend to

other signals should be considered when deciding on the design and number of ear pieces. A hands-free phone may be used for occasions such as teleconferences, but they are not suitable in an open office environment.

### Mobile phones

Mobile phones are common for both office work and home use. Safety hazards, such as loss of concentration leading to accidents, arise when people try to perform additional activities at the same time as using a mobile phone, for example while driving. Noise in the office caused by ringing phones should be controlled by a policy of reducing volumes of phones in the workplace.

### MP3 players (also known as Ipods)

MP3 players are frequently used in the workplace as a means of cutting out background noise such as the conversations of co-workers. Employers have also identified the potential for MP3s to be utilized in the provision of induction training for new employees. Rather than new employees spending their first days in the organisation attending induction training, employees can refer to the relevant module on their MP3 as they encounter a particular issue.

Audiologists have raised concerns regarding hearing loss due to MP3s, factors which increase hearing loss in MP3 users are the ear buds used with MP3s which boost the sound signal by 6 to 9 decibels as the music is delivered directly into the ear canal. Also most MP3s have a maximum volume of 115 decibels; at this level hearing loss can occur in just 28 seconds per day. Risk of hearing damage is increased by many people who increase the volume on their MP3 to drown out background noise such as co-workers' conversations, or sounds of traffic on their way to and from work.

In the office occasional MP3 use can be positive as employees are able to concentrate on work without the distraction of background office conversation. However, listening to an MP3 may pose a risk for employees in the construction industry, or forklift truck drivers, as the MP3 may decrease their awareness of external events. This may be detrimental in situations where the employee is surrounded by moving people and objects. Also an employee listening to an MP3 at high volumes may not hear emergency warnings (for example, a fire alarm or a co-worker's warning shout).

The risks of hearing damage can be reduced by limiting the amount of time spent listening to the MP3. Researchers recommend that people use their MP3 for just 60 minutes a day on 60 percent(%) of maximum volume. Hearing damage may also be avoided by using headphones which eliminate background noise so that music can be listened to at a lower volume.

### Manual office equipment

Manual equipment such as staplers, hole punches and letter openers may place undue pressure on the hands and wrists. Electrical staplers and mechanical letter openers can reduce manual strain for activities which occur frequently or over a sustained period of time. Manual strain may also be reduced by selecting appropriate equipment for the task, for example choosing a hole punch with a longer lever for thicker documents. Manual stressing may also be avoided by alternating tasks so that equipment is used for short intermittent periods.

## Storage and Moving Systems

Storage system design should focus on the nature of items to be stored and the capabilities and limitations of the people required to use the system.

### Shelving systems

Users need to have clear access to shelving systems and the items stored on them. To achieve the required level of access, redesign or the provision of additional equipment will sometimes be required. For example, large shelving systems often have a top level of shelving that is above head height, or shelves may be too deep, requiring staff to bend to reach in. Redesign of the shelving and relocation of items between knuckle and shoulder height should be considered. If this is not practicable, some of the following controls should be considered:

- a safe means of climbing up to the required level (Fig 5.9)
- an intermediate support point to enable lifting or lowering in stages as users step to higher levels



Figure 5.9 . Control the risk of storing things at height.

Climbing shelves to access higher shelves is an unsafe practice and is a risk that requires control. Options for control of this risk may include providing small platforms on rollers (as often found in libraries), small sets of step ladders, platform ladders and rolling ladders. Steps should be stable and platforms and hand rails are required where the work includes access to high storage (Fig 5.10).



Figure 5.10 Controlling risk of storage at height.

### General principles for storage areas

- Large or heavy items should be stored at easily accessible heights to minimise the demands of manual handling. Frequently handled items should be placed within easy reach. Items carried on a trolley should remain on the trolley while in storage
- Smaller, lightweight and infrequently handled items may be stored in the lower or higher areas of a storage system
- It should be easy to place items into the storage unit and take them out

- The storage system should accommodate the size and shape of the item being stored. For example, dividers will secure files stored in shelving and improve access to them. Documents or small publications may be stored in suspension files or folders, making them easier to handle.

### Drawers

Mobile drawer units provide greater flexibility in the layout of a workstation to provide adequate space for the user's legs. Drawers need to be within comfortable reach and easy to use. Under desk drawers should not be used for the storage of heavy objects.

### Filing cabinets

Some common problems and solutions with the use of filing cabinets include:

- tightly packed files may contribute to muscle soreness and holding awkward postures; clear labelling and periodic review of the contents can help overcome overcrowding; offsite storage can be used to reduce overcrowding
- access to lower drawers users should use their legs to squat or alternatively adopt a kneeling posture in preference to bending
- where a cabinet is not level, the drawers may be difficult to open or close or even remain in an open position when not in use; this can be hazardous; placing the cabinet on a level surface can help; use a spirit level to make sure the filing cabinet is level.



Figure 5.11 Filing cabinets may be unstable when fully loaded and the top two drawers are open

Instability of a cabinet when more than one drawer is open at once can result in the whole cabinet falling onto the user. Prevention measures may involve attaching the filing cabinet to the wall or floor or purchasing filing cabinets which allow only one drawer to be open at a time (Fig 5.11).

### The computer

Computers are another form of storage system within the office and are the main means of generating and manipulating reference information. Their use as a storage base may lead to a reduction in physical storage requirements in offices, as well as improved efficiency in finding, reading and obtaining data. Backing-up of data is an essential component of effective information storage so that, in the event of a problem or equipment failure, the information is not lost or corrupted.

### Compactus or mobile storage

The compactus is a very efficient way to use storage space. There are several issues associated with the use of this equipment.

The size and placement of winding mechanisms or handles to open or close a compactus should not present a trapping hazard for hands. They are often designed to be used by one hand. Placing a second hand on the unit to help exert additional pushing or pulling force can result in the hand being caught between the units. The compactus should not require significant force to operate the handle. Proper installation and regular maintenance of the unit should ensure ease of operation. For large sets of frequently used compactuses electric controls remove the need to exert force to open and shut the compactus.

With a large compactus it may be possible for a person to become trapped between the shelves while it is being operated by others. Also, the raised platform or rails can create a tripping hazard as the individual moves into and out of the units. Consideration needs to be given to the operating and lock-out procedures, adequate lighting, signage and flooring.

### Lockers

Often lockers are used to store valuable equipment or materials. The location of each item in a locker should be decided according to the size and weight of the item and the frequency of its use.

### Photocopying and printing paper

Boxes of paper are often stacked on the floor in offices. They should be placed in a dedicated storage area close to the printer or photocopier. The size and weight of boxes may create a risk of injury from manual handling. Many suppliers now provide paper in boxes of 5 or 6 reams rather than 8 to 10 reams. This has reduced the risks from manual handling by reducing the weight and size of each box so that they can be handled closer to the body. Appropriate strategies to reduce risks from manual handling should be developed, for example raising the lower storage height above the ground to minimise bending; avoiding the handling of full boxes by removing individual reams from the box one at a time; or ordering smaller quantities of paper on a more frequent basis so that they can be stored on shelving with clear access.

### Using a trolley to handle stored materials

The use of a trolley to carry materials to and from a central storage area may be required to minimise the demands of this task. This should not just apply to large or heavy items but also to smaller items like files. When choosing a trolley an assessment should be made of the workplace requirements. These include the type of floor surface and what size and type of wheel is required, whether the trolley should be adjustable to allow for materials to be slid directly from the trolley to a shelf, how accessible the trolley is to get items into and out of, and whether there are large quantities of material to be shifted, requiring some form of motorised trolley. Items such as photocopy paper can be stored on a trolley close to the photocopier. This minimises storage at ground level and, as the trolley can be used for delivery, double handling is minimised. A waist height trolley can be placed in the delivery area so that couriers can place items directly on the trolley. The trolley can then be used to transport the items to the required area.

## Different Types of Office Work

Some office working environments may pose specific risks because of the type of work or the demands of work. Minimising risks in these environments depends on careful assessment of the effects on the people involved. Some examples are listed below.

### Customer-controlled or 'call centre' work

Working in call centres often require long periods of time to be spent in a fixed posture. Other OHS issues include hearing problems, what is known as acoustic shock, vocal problems and stress from irate or difficult customers. The design of call centre workstations and environments is the same in principle as for general office work, but special care must be taken with the design, provision and hygiene of essential equipment such as headsets. Easily adjustable furniture and equipment is important when employees have to move from workstation to workstation both within and between shifts. Given the constrained nature of the work, issues of job design must be carefully considered. These would include introducing some variety into the work, taking adequate breaks and 'time out' pauses for operators.

### Home offices

Home-based work is being used increasingly by many large organisations. Where people work at home, lack of social contact may lead to boredom, lack of motivation and loss of involvement in the decision-making within the organisation. Balance between work at home and contact at work in a larger office setting should be considered. Some health and safety issues to consider when setting up a home office include:

- conducting a risk assessment of the home as a work environment
- the suitability of the range and duration of activities for this environment; the suitability of the design of the home office, including workplace layout, provision of furniture, equipment and separation from other areas of the home; the environment, for example lighting and thermal comfort

- the selection, motivation and management of staff; training in safe working procedures; and involvement of the person in the planning and evaluation of work to provide them with control and feedback about their work and prevent isolation.

Policies and procedures should be developed to cover the occupational health and safety issues of working at home, including job design, hours of work, breaks and task variation. Further information on the psychosocial aspects of work are discussed in Section 3. Environmental issues are discussed in Section 4. General information about office workstation design and equipment is discussed elsewhere in this section.

### Off-site administrative or audit work

Intensive computer work can be required in circumstances such as reporting proceedings of conferences or corporate meetings, or during audits of organisations. These working environments may be poorly designed for the tasks with inappropriate furniture, lighting, noise and equipment. The work may be highly repetitive over a number of days. A policy should include provision by the host organisation of an appropriate workstation, equipment and environment or the employer should provide portable equipment, for example laptop stand, separate mouse and keyboard, and a trolley for equipment transport. Staff numbers should allow for regular breaks from intensive keyboard or mouse use or periods of high concentration. See Sections 2 and 3 and design issues in this section.

## Reception or counter areas

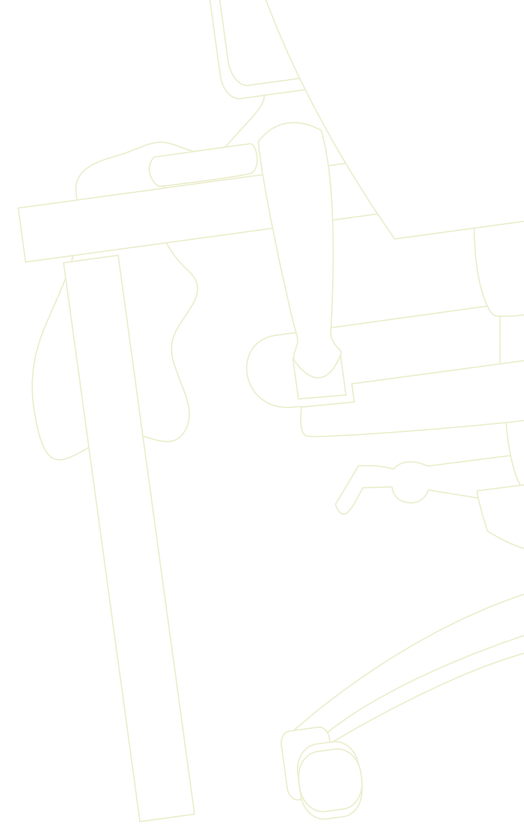
There are many office jobs that involve interaction with customers or clients. Where work involves a variety of users and tasks, including administrative and computing activities, adjustability is required to accommodate staff. Wider bench surfaces may be required for the placement of delivery items and to improve staff security, but care should be taken to avoid the need for reception or customer service staff to have extended periods of reaching up and forward. Security features, such as screens or emergency buttons, may be required. The design of reception areas should reflect the type of work involved.



Figure 5.12 Reception desk

Desks may need to be low to accommodate discussion and interviews, or high to separate staff from clients or customers. When the desk is high, thought needs to be given to whether staff need to be seated up high, possibly on a height adjustable chair with a footrest, or perhaps a false floor is required to raise the staff to the level of the customer (Fig 5.12).

The height should reflect the type of work and whether the worker is sitting, standing or both at the workstation. Work practices to allow variation in tasks and breaks from constrained posture and customer demands are important.





### Additional Reading

The following Comcare information can be found at: [www.comcare.gov.au](http://www.comcare.gov.au).

○ *Virtual Office (online)*

*Call Centres: A Guide to Safe Work, OHS 62*

### CHECKLIST – OFFICE LAYOUT, WORKSTATIONS AND EQUIPMENT

Is the design of the office suitable for the functions and tasks required, including:

- Personal and shared space and walkways?
- Floor surfaces?
- Partitions?
- Storage space?

Are the workstations designed to reduce risks from awkward postures and movements, including:

- Chairs?
- Desks and benches?
- Data input devices (keyboard, mouse)?

Are the risks from use of other equipment controlled as far as practicable, including:

- Telephones/mobiles?
- Laptops and electronic diaries?
- Peripheral equipment (such as forearm rests, document holders, staplers, etc)?

Are the risks from specific types of work controlled as far as practicable, including:

- Call centre work (repetition, noise, voice use, fatigue and shift work)?
- Reception or counter work (such as awkward postures and movements, constrained postures, threats to security)?
- Home offices (unsuitable environment, workstation design and space, isolation)?

Is storage designed to control risks from slips and trips and manual handling, including:

- Shelving and filing (inadequate space, too high or low, in walkways)?
- Inadequate desk space, lack of mobile trolleys?



## 6. WORKING WITH COMPUTERS

Good design of the computer, the environment, furniture and work practices will minimise the possible negative outcomes of computer use. The following section discusses health and safety issues relating to computer usage.

Working with computers involves health and safety issues directly related to sitting in front of screens, which have potential physical, visual and psychological impacts on human beings.

### Computer Hardware and Peripherals

#### Desktop (also known as the tower)

The desktop holds the hard drive and the hardware (for example mother board) needed to run the software programs. When setting up the workstation employees should consider how often they access their desktop and position it accordingly.

#### Flash drives (also known as a memory stick, thumb drive or USB drive)

A flash drive is a removable and re-writable memory storage device which is plugged into the USB port on the desktop to record and retrieve data. When using the flash drive and USB port, employees should be aware of their reach capacity and position their desktop in accord with their use of the USB port. Position the desktop closer for more frequent use to avoid excessive stretching.

#### Notebook and laptop computers

Laptop computers were designed for short-term or mobile use. The portable nature of the laptop and notebook results in them being used in a wide variety of situations and settings where there is limited capacity to adjust the desk. This can result in the work height being unsuitable. Lack of adjustability of the screen and keyboard can result in the arms being held too high or the neck bent to view the screen. If this position is adopted frequently or for long periods, discomfort may result. If the screen is tilted upwards to reduce the need to bend the neck to view the screen, reflections can be a

problem with some screens. The adverse effects of working on a laptop computer may be prevented by:

- docking the laptop or notebook into a desktop computer at an adjustable workstation
- connecting into existing computing equipment, such as the screen, keyboard and mouse
- transferring information from the notebook to the desktop computer for more extensive periods of work
- being aware of the importance of posture when using the notebook and frequently rotating between keying and other activities
- becoming keyboard literate to avoid periods of time looking down at the keys, which can contribute to neck discomfort.

The portable nature of these computers also means that they are frequently used where there is no suitable or adjustable workstation, for example, sitting the computer on the lap or on a kitchen table or using the computer in a cafe or motel. Prolonged use may contribute to discomfort. Carrying laptop computers may also contribute to back and neck problems.

#### Computer docking stations

Docking stations enable use of portable computers in a variety of locations without the need to continually transfer information to a desktop computer once at the office. The advantage of docking stations is the capacity to easily connect the portable computer to other peripheral devices, such as the screen and conventional size keyboard. This can improve the posture, actions and overall comfort of the user.

#### Electronic diaries or personal data assistants

These and other small electronic devices are normally used for short periods of time. Extended use of this type of keyboard is not recommended.

### Voice recognition software

Voice recognition transfers voice information to an electronic format. This technology has limited application at present, but if the voice becomes one of the major means of entering and controlling computer data, then reliance on the keyboard for input will be reduced.

### Software programs for OHS in the office

There are a number of software products on the market aiming to improve safety in the office. For example, there are screen savers which prompt rest breaks or promote good working postures or exercises; programs for assessing or improving workstations; and various checklists and user surveys for assessing OHS in the office. A poorly designed program may interrupt work and raise the user's annoyance levels. It is important to trial these in your own organisation before purchasing to ensure they will meet your needs.

## Keyboards

Use of keyboards in offices varies according to the task. Generally, the more a keyboard is used, the higher the risk of discomfort. This does not mean that people should not use a keyboard extensively in their work. However, job design (including variation in tasks and ability to take breaks from repetitive keying) and adjustable equipment and furniture are important considerations for people who use computers for extensive periods of time. Health and safety issues also need to be considered for notebook and laptop computers, and small keyboards such as palm types. To reduce keyboard work, voice recognition and handwriting recognition software can be appropriate for some users.

### Placement of the keyboard

The keyboard should be aligned with the computer screen (or document holder if it is the major viewing surface) and directly in front of the user so that there is no need to twist or rotate to use it. It should also be placed near the front edge of the desk to reduce the distance required to reach it. Reference documents should be placed between the keyboard and the screen or directly alongside the screen. They should not be placed between the keyboard and the front of the desk because this places the keyboard

too far away from the user and contributes to poor posture.

### Keyboard adjustment

Where possible, the feet at the rear of the keyboard should be maintained in a lowered position to minimise the height and angle of the keyboard and reduce unnecessary loading of the shoulder and wrist muscles. There should be sufficient space on the desk so that the keyboard can be easily moved away to create room for another task when it is not in use.

### Split keyboards

Split keyboards are split in half and angled to enable the joints of the upper limbs to adopt a neutral posture while keying.

### Separate numeric pads

As many users do not use numeric pads attached to keyboards, providing a keyboard without a numeric pad can reduce the keyboard width and allow the mouse to be operated closer to the user.

## Mouse

The mouse can come in a variety of shapes and sizes, with features such as a scrolling wheel. The key criteria for the use of a mouse should include:

- placement of the user's hand and upper limb in as neutral a posture as possible during use
- support of the weight of the arm by the desk and not by the user
- keeping the wrist flat during use
- allowing fingers to rest on the push buttons between actions
- ensuring mouse design fits the size of the user's hand.

### Use of a mouse

It is good practice to learn to use a mouse with each hand and periodically change between the hands to reduce or prevent discomfort through prolonged use. Many people are reluctant to try to share the use of the mouse between hands, but if practiced the skill to alternate between hands is often developed.

## Preventing discomfort when using a mouse

Sustained hand postures during use of the mouse can be reduced by greater utilisation of keyboard shortcuts, changing hands and by moving the mouse towards the middle of the desk. If a trackball or glide point is used, a mouse mat should be placed immediately beside the keyboard so that reach distance and the risk of discomfort is minimised. The computer's operating system can also be used to alter mouse settings, such as speed and acceleration. An optical mouse, which does not have a ball underneath, can be used.

## Maintenance of the mouse

If the cursor is difficult to control, cleaning the mouse ball and contact points with a suitable solvent (consult the manufacturer's instructions) and cleaning the mouse pad may make it easier and quicker to use.

## Alternative cursor controls

Alternatives to the standard mouse are designed to change hand and arm postures and increase efficiency. They include a diverse group of operations, including rollers, pens, balls, pads and glide points. The main difference between a mouse and these devices is that the hand and arm remain stationary while the wrist is at an angle and the fingers or thumb stretch. For long periods of use this way may cause finger, thumb or wrist discomfort. Lifting the hand off the keys while operating the pointing devices is preferable.

## Monitors

### Screen type

Liquid crystal displays (LCDs) have become an increasingly popular technology. LCDs offer many advantages including:

- greater postural variety during computer work
- freedom from flicker and geometric image distortions at the screen edges
- uniform screen brightness and substantially less glare
- thinner and lighter displays which require a narrower work surface at the same screen to eye distance and are easy to reposition

- low energy use and heat emission
- good screen privacy because they cannot be clearly viewed from acute side angle.

Cathode ray tube (CRT) screens were in common usage but are now being phased out in favour of the LCD screen.

### Screen use

Using a computer for a large part of the working day places increased pressure on the eyes and necks of employees. The following precautions may ease the pressure placed on the employee's body:

- screen should be placed arms length away from the employee, with the top of the screen just above eye level
- locate the monitor directly in front of the employee to reduce twisting of the neck and torso
- place the screen with a tilt of 15 degrees up from vertical
- spend a maximum of 30 minutes at any one time in front of the computer screen.

### Dual screens

The increasing use of electronically scanned files in the workplace has resulted in a corresponding increase in the use of dual screens. Dual screens enable employees to refer to one document while working on another. Many of the health and safety provisions for dual screens are the same as those for single screens; several specific precautions include:

- locating the two screens side by side to reduce back and neck twisting from one screen to another
- slightly angle the screens towards one another to further reduce twisting
- as focus is moved from one screen to another twist the chair rather than your torso
- sharing work tasks between the two screens; for example, use one screen for writing a document and the other for researching; if possible switch the tasks to the opposite screen after lunch.

## Health Effects

### Eye strain

- Reading without adequate light or reading small print over long periods of time can sometimes cause eye strain. It is generally believed that visual fatigue does not contribute to long-term deterioration of the ability to see, although eye strain can cause eye irritation, watering and reddening of the eye lids or blurred vision.

Some computer operators may suffer headaches associated with eye strain, particularly if the head and neck muscles are held in a static position. However, these complaints are also described by people performing other close visual tasks.

Looking away from the computer to a far spot, walking away from the screen and giving the eyes some exercise, such as blinking, can decrease the effects of long periods of concentrating on a screen.

A dry air conditioned environment can contribute to eye discomfort. People with pre-existing visual defects may be more likely to suffer eye strain from using screens than those with properly corrected vision.

Current research does not indicate evidence of screen use causing cataracts or other permanent eye problems.

### Eyesight testing

The purpose of eye tests for computer users is to identify and correct pre-existing visual defects that may cause discomfort as a result of the visual concentration needed for many screen-based tasks.

Some organisations have an agreement for vision testing for all computer users and others may provide a subsidy for prescription glasses.

### Spectacle use and computers

Many middle-aged workers suffer difficulty with close work, known as presbyopia, and require spectacles for correction. Bifocals are designed to correct vision when looking down through the lower portion of the lens for close work. This may be suitable for reading a document, however, when reading information on a screen, computer users are generally looking horizontally over the section of the lens designed to correct their vision.

Many users lean forward and tilt their chins up to look through the lower part of the lens. This unnatural posture is unsatisfactory and can result in neck discomfort.

In these circumstances, spectacles with full corrective or multifocal lenses should be used and working documents located between the screen and keyboard or alongside the screen to ensure the same focal distances for both.

This reduces the likelihood of the operator adopting unnatural neck postures. Computer users concerned about their vision or spectacles should seek advice from their medical specialist.

### Epilepsy

Approximately 0.5 percent (%) of the population has epilepsy. Up to 3 percent (%) of them (that is, 0.015 percent (%) of the total population) may be sensitive to flickering lights or certain patterns. Children are more likely to be affected than adults in this way.

LCDs should not affect epilepsy sufferers as they do not flicker. If a person with epilepsy is starting a job involving office work, consideration should be given to the many factors that may aggravate this condition. If there is concern regarding flickering of a screen or lighting, a medical specialist should be consulted.

The screen refresh frequency of CRT screens and of fluorescent lights is generally higher than the flicker frequency associated with this condition, so instances of this issue in offices are generally rare.

### Radiation and computer screens

Older computer screens based on CRT technology are designed to emit visible radiation (light) with a brightness that is adjustable by the operator.

In creating the display, small amounts of other types of electromagnetic radiation (EMR) are also generated at extremely low frequencies, including radio waves, infrared (heat), ultraviolet and X-rays.

Other sources of EMR in general life include electric blankets, hair driers and other electrical appliances used daily. LCD screens only emit visual radiation.

Possible health effects of radiation include:

- eye problems short-term visual discomfort may occur, but research so far does not indicate evidence of any permanent eye problems

- skin disorders ultraviolet radiation emissions from CRTs are extremely low and are not considered likely to cause skin disorders
- cancer although concerns have been raised that radiation from computers can cause cancer, research has failed to establish any causal link.

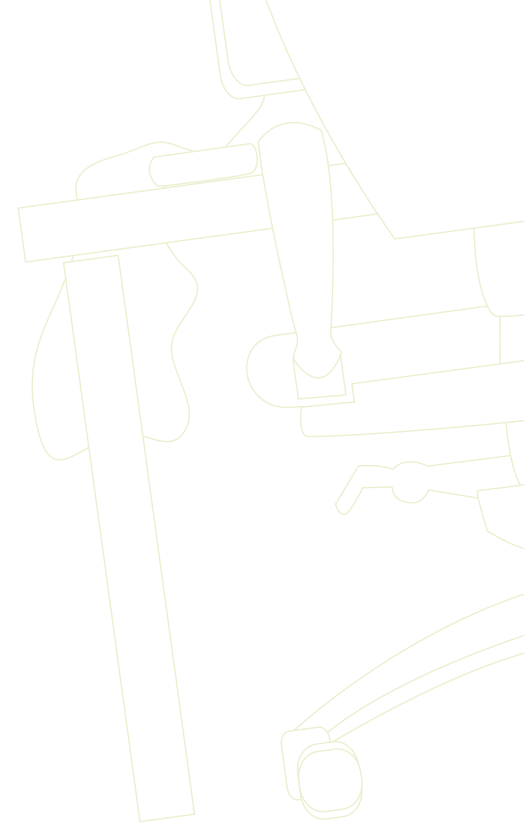
### Adverse pregnancy outcomes

There have been allegations of reproductive problems associated with working with computers.

Reliable epidemiological studies conclude that the incidence of adverse pregnancy outcomes among computer operators is not significantly different from women who do not work with computers, so there is no firm evidence to support these allegations.

Generally, exposure levels of computer operators to any radiation emissions are no different to those of other people in the community, since CRTs emit such low levels and LCDs only emit visual radiation.

There is currently no evidence of risk to either male or female reproductive systems.





### Additional Reading

The following Comcare information can be found at: [www.comcare.gov.au](http://www.comcare.gov.au).

○ *Virtual Office (online)*

*Guidance on the management of eye health in the workplace, OHS 63*

### CHECKLIST – WORKING WITH COMPUTERS

- Are employees provided with information about visual demands and radiation sources from screen-based work?
- Are employees informed about or given access to eyesight testing and prescription of relevant visual assistance for computer viewing where needed?

## 7. HEALTH AND SAFETY ISSUES IN THE OFFICE

This section provides information on some specific health and safety issues in offices, as well as hazards associated with office equipment, substances and housekeeping.

### Specific Health and Safety Issues

Specific policies can be developed and implemented for many workplace health and safety issues, including:

- management of blood-borne diseases
- drugs and alcohol
- injuries and first aid at work
- fire and bomb threat emergencies
- personal assault, harassment and bullying.

These policies and procedures should be developed to meet the potential issues in the particular workplace, not developed reactively following an incident.

#### Transmissible diseases

A policy for minimising the risk of transmission of blood-borne diseases such as hepatitis B and C and HIV will assist employers and employees to manage issues associated with these hazards. Most people in offices are not exposed to the risk of transmission of hepatitis, HIV or AIDS from work although the risk is increased in health and human service organisations. Increased risk may occur if the office worker is exposed to infected blood, body tissues or fluids. An example of this is during first aid procedures. Specific issues regarding freedom from discrimination and the confidential treatment of employees with infections need to be incorporated within the policy.

#### Drugs and alcohol

Alcohol and drugs can interfere with a person's performance at work. The effects of drugs and alcohol in the workplace include deterioration in productivity, quality of work, motivation and working relationships. A policy on the management of drugs and alcohol in the workplace can help ensure the health and safety of employees, minimise the cost of absences, prevent productivity problems, improve

working relationships and provide assistance to employees when required.

#### Bullying

Within the office environment there may also be issues of bullying. Workplace bullying is repeated, unreasonable behaviour directed towards a person or group of persons at a workplace, which creates a risk to health and safety. For further information see Section 3.

#### Emergencies in the office

An essential part of occupational health and safety is being prepared for emergency events such as fire, bomb threat and personal assault emergencies in case they occur. Some issues to consider in policy development include emergency evacuation procedures for staff and the public and arrangements with emergency services. Appointing, training and equipping floor wardens as coordinators between staff and these agencies can be a central step to handling emergencies well. Emergency evacuations should be practiced at regular intervals to ensure procedures are known by all employees. External advice may be sought in the development of procedures.

Security incidents in Australia involving suspect mail and possible biological contaminants have increased since the US 11 September 2001 bombing incidents. A range of information is available to assist agencies in relation to the handling of security incidents. The protective Security Coordination Centre, which is a division of the Attorney-General's Department, has issued a number of advices to Agency Security Advisers and SES officers responsible for security.

In some office environments, contact with members of the public may expose staff to aggressive or violent behaviour. In this type of situation, the use of duress alarms can provide a valuable safety net for staff. It is important that your office has a response plan for client aggression incidents if there is a likelihood of these occurring. Following serious emergencies, trauma counselling may be required for exposed staff. Arrangements for this service should also be a part of a well developed emergency response plan.

## Injuries in the office and first aid

Strains, sprains, cuts and bruises are the most common injuries occurring in the offices. Legislation requires employers to provide adequate facilities for the welfare of employees at workplaces. Commonwealth employers also have a duty of care to provide first aid arrangements in the workplace.

## Copying and office equipment

Copying and printing machines are commonplace in offices. They include photocopiers, facsimile machines and laser printers. Despite their widespread use, these machines pose little risk to employees' health and safety under normal circumstances.

Heat and light are produced during use of these machines. Some equipment may also result in the release of particles and gases into the environment. Awareness of these potential hazards will virtually eliminate any risk to health and safety from such equipment. Purchase of well-designed equipment will also assist in achieving this.

## Common issues

### Exposure to light from the photocopier

The lamp used in photocopiers produces a fairly intense light. This can affect what you can see for a short time, rather like a camera flash does. During normal operation, however, the thick glass plate between the lamp and the operator screens out any harmful light (such as ultraviolet rays). Nevertheless, continuous exposure to the bright light can lead to eye discomfort, even though damage is unlikely to occur.

### Ventilation for multiple machines

Often photocopiers, fax machines and printers are kept in one room. Adequate ventilation will ensure atmospheric contaminants do not build up to levels that may pose a risk to the health of employees around these machines. Normally, the door should be left open to assist air flow. If noise is a concern or the door is closed for other reasons, the effect on ventilation should be assessed and appropriate modifications made.

## Toner dust

The extremely low levels of impurities in toners are believed not to warrant concern for long-term health effects. Toner dust can enter the atmosphere during toner replacement or disposal of waste. If inhaled, the dust may irritate causing coughing and sneezing. A copy of the Material Safety Data Sheet (MSDS) from the manufacturer of the toner will provide the health and safety information needed to identify and assess the hazards. It will also provide handling and storage information.

## Ozone

Some photocopiers produce ozone, however, the concentration of ozone around copying equipment is insufficient to cause known adverse health effects.

## Physical factors

Possible discomfort from the light, heat and noise generated by copying equipment should be considered. Although exposure to the bright photocopier light has not been shown to cause eye damage, discomfort to operators or persons working in the vicinity is possible and should be prevented.

Unless ventilation is inadequate, heat from standard office copying equipment will have little effect on the office environment. Hot machine components, however, can pose a hazard to employees opening equipment to clear paper jams. Office equipment should not produce hazardous noise levels but can cause annoyance and distraction to employees working in the vicinity. If noise from equipment is a concern, see Section 4.

Consideration should also be given to the physical comfort of employees operating copying equipment and possible risk of musculoskeletal injuries from repetitive sorting and collating with less efficient equipment. See Section 3 for more information.



## Tips and recommendations

The following recommendations are designed to help safeguard the health and safety of employees working with copying and similar office equipment:

1. When purchasing new equipment:
  - choose machines that use sealed toner cartridges, filter exhaust air, recycle toner and have automatic cut-off when the waste container is full or when the machine is opened
  - purchase toner with specifications indicating minimal risks to health and safety
  - consider the noise emission and where the machine is to be located
  - equipment should have no exposed moving parts posing risk during normal operation
  - design must not allow contact with live electrical contacts for operators clearing paper jams.
2. Locate equipment in a well-ventilated area. Seek a location with the least disruption to surrounding employees. Machinery should not obstruct aisles or building exits. Ensure adequate space around the machine for operation and access for maintenance.
3. Install equipment in accordance with the manufacturer's specifications. Obtain appropriate operating diagrams, instruction manuals and MSDS and locate them near the equipment.
4. Specify personnel to carry out routine operations such as clearing paper jams and changing toner containers. Provide specific training to these employees and general appropriate training to all users of the equipment.
5. Procedures for safe use of the machine, together with the name of the person nominated as responsible for the machine, should be clearly displayed.
6. All copying and like machines should be regularly maintained to the manufacturer's specifications by authorised service personnel and a register kept of maintenance, repairs and replacements.

7. Consider the height and positioning of equipment and work surfaces to avoid operators sustaining awkward postures.
8. Always avoid looking directly at the light from photocopiers. Try and locate the equipment where it affects as few people as possible. The document cover should be closed wherever possible when photocopying.
9. Exercise appropriate safety precautions when clearing paper misfeeds. Beware of hot components and follow the manufacturer's instructions.
10. While spilled toner may not be hazardous, gloves should be readily available. Dispose of waste toner as recommended by the manufacturer.
11. Continuous photocopying and collating should be avoided. Schedule duties appropriately or allow for adequate breaks from such tasks.
12. Consider features such as automatic stapling, hole punching, collating and double sided printing to eliminate these manual tasks.
13. Tag out procedures should be used when equipment is faulty.

## Housekeeping issues in the office

It is easy to overlook housekeeping in a busy office environment. Good housekeeping practices protect people from a variety of possible injuries and illnesses, including injuries from manual handling, electrical and tripping hazards and infections. Good housekeeping also provides a pleasant clean workplace and a safe one! Housekeeping extends beyond a consistent approach to office tidiness.

### Identifying hazards and assessing risks

Identifying hazards is in the best interests of all staff. Since housekeeping covers a wide range of office activities and products, monitoring housekeeping can be a complex task. Checklists can help staff to be systematic in their approach to identifying hazards. A sample checklist can be found in APPENDIX A. Staff reports on housekeeping problems are also a valuable source of information about areas needing attention and should be

assessed regularly. Surveys of staff opinions and ideas can be useful for keeping information about the current housekeeping system and can be helpful in reviews. Investigations of occupational health and safety incidents or accidents should consider whether housekeeping was a contributing factor.

### **Developing, implementing and evaluating solutions for risks and hazards**

It is better to develop regular practices for housekeeping than to assume that a large, irregular clean-up will protect your health and safety. Housekeeping is a problem best approached as a small regular task.

### **Storage facilities**

Storage facilities need to be maintained and reviewed periodically to ensure that they are functioning safely and are being used to their best advantage. They should be easily accessible to relevant staff and organised so that handling risk is minimised. The storage of cleaning products is also important. Each product should be stored in an appropriate container and clearly labelled with the product name. It is easy to forget that common cleaning products can also be harmful chemical substances if an accident occurs.

Storage of stationery items, such as old telephone books and redundant files can take up valuable space unless someone takes responsibility to dispose of them. Broken equipment should be repaired or replaced rapidly and not allowed to accumulate in valuable storage space. A labelling system can assist the management of storage. Off-site storage can be used as an alternative.

Equipment and documents often move in and out of the office faster than people can deal with them. This can make the process of storing them awkward. It can be useful to set aside an area for items like cartons waiting to be packed or unpacked. This avoids the use of aisles and passages as a temporary storage space.

### **Waste paper**

The collection, disposal and recycling of waste paper should be planned and maintained to minimise disruption and hazards in the office. The location and use of paper shredding machines should take into account the noise they generate and the mess from spillage when they are emptied. The placement of paper into a shredder can be hazardous if items of clothing such as ties become trapped. Shredders with an angled entry chute should be used.

### **Food hygiene**

Ensuring that food hygiene is maintained is important. Harmful bacteria can be transmitted through poorly cleaned eating utensils and unwashed dishcloths. Old food in the work fridge is not only smelly it can introduce bacteria into the main food storage area. Develop a system for checking that unwanted food is thrown away at the end of the working week, and that adequate washing up facilities or a dishwasher are available.

### **Electrical safety**

Electrical extension cords on floors can be trip hazards. They are also easily damaged by trolleys and chair castors, and can then become an electrical hazard. The use of electric radiators in the confines of office workstations can be hazardous. Alternative appliances may be used on a temporary basis while the climate control in the office is under review, repair or maintenance, but these should be of a closed variety with no potential for causing a fire hazard.

Overloading power boards and using unauthorised or modified plugs can lead to electrocution or fire. Frayed power cords also increase the risk of these hazards. A qualified electrician should be engaged to provide additional outlets if many power boards are used and to test and tag electrical equipment at appropriate intervals.

If extension cables are used, they should be linked to power boards with built-in safety fuses and switches for each outlet. Cords and cables can be temporarily taped onto door frames and pillars to get them off the floor, but permanent power points should be installed as soon as practicable and cords and cables properly housed along walls or within partitions. It is wise to have a qualified electrician periodically review your power consumption against the load that the electrical function can provide.

## Slips, trips and falls

Slip and trip hazards are a major source of office accidents and injuries. Slips often occur when a person walks on a slippery floor. This can be avoided by the prompt clean-up of spilled materials. Trips often result from obstructions and uneven surfaces and can usually be avoided by ensuring that floor surfaces are clear and even. Falls are likely if chairs or shelves are used as steps to reach upper storage levels. Falls can also occur on poorly designed or badly lit stairwells or worn stair edges.

## Relocating offices and moving furniture and equipment

Relocation of office spaces can lead to OHS problems associated with manual handling of furniture and equipment. Often a poorly organised process can result in staff undertaking unusual and inappropriate handling tasks, such as lifting, carrying, pushing and pulling. Relocation requires a systems approach to the moving process. The following approaches are recommended:

- a move coordinator is appointed to organise a systematic, sequential process of relocation with allocated staff roles
- a consultation process is undertaken with employees and Health and Safety Representatives to get staff input and ensure a cooperative effort
- a hazard audit is performed to identify OHS issues in the move and decide suitable control measures
- the need for relevant moving personnel and/or equipment such as trolleys, ladders, boxes and protective equipment is assessed and organised
- staff are informed what manual handling they are not to undertake
- adequate notice is given to staff regarding timing of removal and delivery of furniture to allow staff to plan and organise ahead
- staff are given guidance on preparing for the move, assessing risky handling situations, using relevant equipment, keeping access areas clear for moving of trolleys and equipment, asking for assistance from the coordinator or moving team, employing safe techniques and not lifting and carrying excessive or awkward loads.

## Hazardous Substances

Some of the substances used in offices may be hazardous but they generally pose little risk under normal circumstances and conditions of use within the office environment.

Examples of such substances include cleaning fluids, liquid paper, glues, inks, solvents and cleaning agents. An up-to-date MSDS should be held for each substance used at the workplace (Fig 7.1).

Material Safety Data Sheets can be obtained from the supplier of the product.



Figure 7.1 Obtain information about hazardous substances

After doing a survey of materials being used in the office and obtaining MSDSs from the suppliers, copies should be assembled at one or more accessible points as a register.

For example, they could be kept in a ring binder and accessible to employees in the tea room or photocopier room.

An assessment of exposure should be conducted for each hazardous substance used in the office.

## CHECKLIST – GENERAL HEALTH AND SAFETY ISSUES IN THE OFFICE

- Is there a policy where necessary regarding drugs and alcohol in the workplace?
- Are the risks from copying equipment (such as light exposure, inhalation of fumes, heat) controlled as far as practicable?
- Are there documented procedures and regular practices for emergency management (such as fire, bomb threats)?
- Is there a system in place to manage the outcomes of traumatic events or violence in the workplace (such as a hold up, physical attack)?
- Is there adequate first aid equipment and trained first aid officers?
- Has exposure to any hazardous substance been assessed?
- Are Material Safety Data Sheets provided in an accessible place for all hazardous substances?
- Is appropriate, lockable and marked storage available to prevent risks from hazardous substances or equipment?
- Are electrical cables undamaged and regularly tested and tagged?
- Are there appropriate closed systems of paper disposal?
- Are cleaning procedures adequate to manage risks from biological hazards (such as food, toilets)?
- Are floor surfaces kept clear, no worn areas and cleaned regularly to prevent slips and trips?
- Is appropriate equipment available for accessing high shelving (such as ladders with platforms, stools with friction brakes) to prevent falls?
- Is a risk assessment made when furniture or offices must be moved and are the risks from manual handling controlled as far as possible?



## Additional Reading

The following Comcare information can be found at: [www.comcare.gov.au](http://www.comcare.gov.au).

*Relocating or moving office*

*Bullying in the workplace*

*The principles of effective OHS management*

*Identifying hazards in the workplace*

*OHS risks of smoking*

*Guide to preventing slips, trips and falls*

*Approved Code of Practice, Part 2 – First aid*

*Approved Code of Practice, Part 6 – Human immunodeficiency viruses and hepatitis B and C.*

*National Code of Practice for the Control of Work-related Exposure to Hepatitis and HIV (Blood-borne) Viruses [NOHSC:2010(2003)]*

## 8. APPENDICES

### APPENDIX A: Setting Up Your Workstation

Despite the availability and supply of adjustable workstation furniture and equipment, employees usually do not use these very well. The following checklist is a step-by-step approach designed to be used when employees are located at a new workstation or whenever their tasks change.

When setting up the position of this furniture and equipment it is important to try new positions to find the most comfortable arrangement for yourself. Give yourself a chance to get used to any changes, as it may take several hours or even days to determine the best position (Fig. A.1). Remember it may take a few tries to get the best arrangement, but it is worth the effort—and if a change doesn't work, you can always reset it.



Figure A.1 Find the most comfortable arrangement for you

#### Chair

When adjusting your chair refer to any instructions that are provided with the chair or have someone show you how to adjust it and use the controls. If there is no one available to assist you, work through this checklist with another person and observe each other's postures and body positions. Also, remember to try and avoid sitting for long periods of time. Some form of break from sitting every 20 to 30 minutes is helpful. Even getting up for 20 to 30 seconds to go to a printer or standing while talking on the telephone will provide some relief.

#### How to correctly adjust an office chair

- The chair height should be set so that the thighs are approximately horizontal and the feet rest comfortably on the floor (Fig. A.2).
- Combine chair and desk adjustments to position the work at elbow height. Where writing and mouse and keyboard tasks are performed, it may be necessary for the chair height to be adjusted slightly between these two tasks (that is, raised for keying or mouse work and lowered for writing).



Figure A.2 Your chair should be set correctly

- If the chair height is correctly set but the desk is too high, either lower the desk height or raise the height of the chair and use a footrest to make up the height difference.
- The backrest should be adjusted so that its convex curve fits into the curve of the lower back, centred about waist level. A slight backwards tilt of the backrest or forward tilt of the seat will allow an increase in the angle at the hip. This will decrease the force on the lumbar area.
- If the thighs are wedged between the chair and the under surface of the desk, or the knees bump into the front of the desk then either the desk is too low, the chair is too high, the desktop is too thick or the user is too tall for the chair and desk. An ergonomist can give advice in this situation.
- Small adjustments can be made as often as changes in tasks to adopt the most appropriate posture for the task.

### Back support

To adjust the height, start by raising the backrest to its maximum height and then sit in the chair and check the fit of the backrest to the curve of the lower back. If it's not comfortable, lower the height by several centimetres and try this position (Fig. A.3). Repeat this adjustment and try each new position until the most comfortable fit is found. Ensure that the backrest supports the curve of your lower back and is not placed too low. To correct the forward/back position, adjust the backrest until a comfortable pressure is exerted on the lower back area while seated in the usual working posture at the desk.



Figure A.3 Adjust your chair for good support

The backrest position should not feel as though it pushes you out of the seat or that you have to lean back too far to reach it. There should be a two-finger clearance between the front of the chair and the back of the knee. Trial a number of different positions until the best fit is achieved. A slight backward tilt is a preferred position as the force on the lower back is reduced. Some people prefer to sit upright. You can vary this angle to provide changes in posture from time to time.

### How to decide if you need a footrest

This will depend upon whether your desk is at the required height once you have adjusted your chair to suit your needs. If the desk is too high and it cannot be lowered, then raise the height of the chair and use a footrest to raise the height of the floor by the same amount. Footrests should have height and angle adjustability and be large enough to permit some movement while supporting the feet. A footrest should not be so big that it clashes with the chair base. Using a footrest limits mobility so it is preferable to have full adjustability of the desk and chair to avoid the need for a footrest.

### Armrests

Armrests are designed to allow people to support themselves when getting up or sitting down. They are suitable for people who perform a variety of tasks at a workstation, move frequently to and from their chair or sit back in their chair to talk to visitors. Armrests are usually not recommended unless they are short, fit under the desk or are adjustable. However, if your chair has armrests make sure that they do not prevent you from getting as close to the desk as you require or that they impinge on your elbows while you are working. If this is the case, either remove them by unscrewing them, or replace them with a smaller or adjustable option (Fig. A.4)



Figure A.4 Adjust your arm rests for good support

### Choosing between castors and glides

Castors allow chairs to be easily moved forwards and backwards, however, they are not suitable for use on non-carpeted surfaces unless fitted with friction brakes. Misuse of a chair with castors, such as standing on it, is hazardous. Glides or castors with friction brakes should be used where chairs do not need to be moved. For example, on a visitors' chair or where hard floor surfaces exist. Care must be taken not to provide slippery mats at desks where chairs with castors are in use.

### Desk

#### If you have a height-adjustable desk

Having first adjusted your chair to suit your body size, adjust the desk so the top surface is just below elbow height (Fig. A.5). To determine your elbow height, relax your shoulders and bend your elbows to about 90 degrees and check the elbow height against the desk height.

### If you don't have a height-adjustable desk

If the chair has been adjusted and the desk is higher or lower than the elbow, other forms of adjustment will be required. Start by measuring the height difference between the desk and your elbow.

### If the desk is too high

Raise the chair by the measured difference and use a footrest. Set the footrest platform so that it is the same as the measured difference (Fig. A.5) or lower the desk by cutting the legs down by the measured difference.



Figure A.5 Adjust your chair to the desk

### If the desk is too low

Raise the height of the desk by extending the leg length or sitting it on wooden blocks or something similar. Remember to ensure that any such changes are secure and stable.

### Clearance under the desk

General items, like computer hard disk drives, boxes of documents or files, rubbish bins and mobile drawers should not be stored under desks where they will decrease or interfere with the space required for the legs. This may force you to adopt a twisted or awkward posture of the spine (Figures A.6 and A.7).



Figure A.6 Avoid awkward postures when you are seated.



Figure A.7 Ensure good posture while seated

### Drawers

Most commonly used items should be placed in the top desk drawer to improve access and reduce reaching and bending movements. Where drawers are fitted to the desk, equipment such as the keyboard and computer screen should be arranged on the desk so that you can sit comfortably in the leg-well space.

### General storage on the desk

#### In/out-trays

Place trays at the outer reach sector (Fig. A.8). In-trays should not be located above shoulder level.

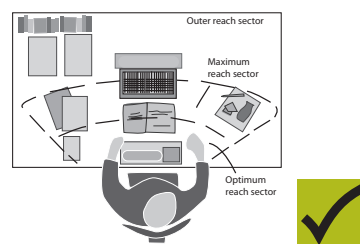


Figure A.8 Reach capacity and ideal desk layout

### Stationery

A variety of containers are available for mixed stationery items. These should also be stored at the outer reach sector (Fig. A.8) or in the top desk drawer.

## Reference books and folders

Large or heavy references such as telephone directories and manuals should either be stored within close reach or in a nearby position where you need to stand to access them. Handling of these items should not be conducted at the limit of your reach capacity while sitting, as this can result in undue strain on the back, shoulder and arm muscles.

## Keyboard

### Angle

Tilt the keyboard using the feet at the back to suit your level of comfort. The common and preferred setting is where the feet are lowered so the keyboard sits flat on the desk. This assists in preventing awkward postures of the wrists.

### Position on the desk

Place the keyboard as close to the front edge of the desk as is comfortable (Fig. A.8). Do not place documents between the keyboard and the front edge of the desk while using the keyboard as this increases the reach distance to the keyboard and may result in excessive bending of the neck to look at the documents. Ensure that there is room to put the keyboard to one side when it is not in use.

### Mouse

Place the mouse mat directly beside the end of the keyboard on your preferred side. Use the mouse in this position and always aim to keep the mouse on the mat during use. If you frequently use the mouse in your work you may wish to:

- learn to use it with both hands so that you can swap between the right and left sides for improved comfort
- set the tracking speed of the mouse to a setting that suits you
- maintain your mouse to keep it in good working order (for example, keeping it clean inside),
- where possible, try to avoid holding on to the mouse when not in use

## Computer screen

The screen should be positioned once the chair and desk heights have been established.

### Height

The screen should be positioned so that the top of the screen is level with, or slightly lower than, your eyes when you are sitting upright (Fig. A.9). If the screen does not have a raising device such as a monitor stand, you may be able to use telephones books to raise the screen height on a temporary basis.

### Distance from the eye

First place the screen so that it is approximately an arm's length away from your usual seated position (Fig. A.9). Trial this position and if necessary move it further away or closer as required.

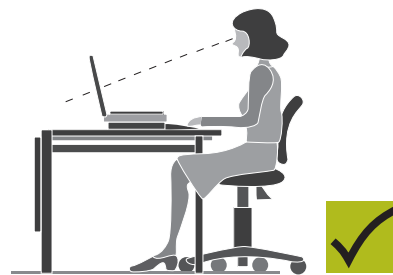


Figure A.9 Ensure correct height and distance from your screen

### Positioning the screen

The screen should be placed so that it does not face windows, catching reflections from the windows, or have a window directly behind it causing glare from the window (Figures A.10 and A.11).

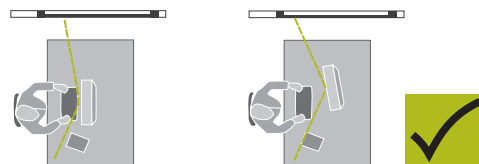


Figure A.10 Position screens correctly by windows



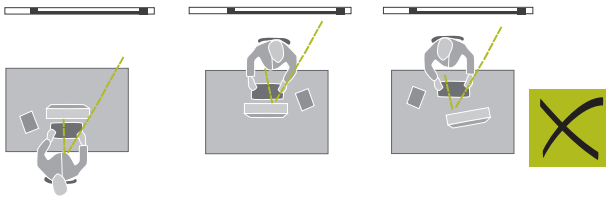


Figure A.11 Be careful how screens are placed near windows

### Document holder

The position of the document holder depends on your need to view and reach the documents and the type of document holder that is used. For continuous or frequent data entry where the source document is observed more than, or the same amount as, the screen:

- place the screen slightly to one side so that the document holder is directly in front of the user (Fig. A.12)
- place the document holder in a similar position to the screen where it is slightly to one side and you look evenly between the two (Fig. A.13)

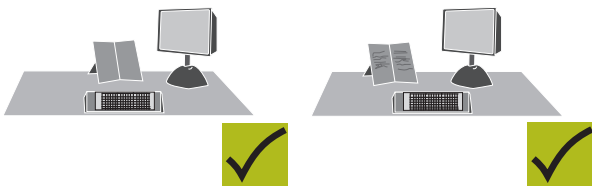


Figure A.12 Document setup-1 Figure A.13 Document setup-2

An A-frame style book rest that sits on top of the desk is the most practical and can be set at different angles. It is usually best placed so that it supports documents on an inclined angle between the keyboard and the screen (Fig. A.14). For further information, see Section 4.

A lever or swivel arm document holder suspends the document above the desk at eye level. Anchor it to the desk on either the left or right of the screen, according to your preference, and place it directly beside the screen. See page 34 for further information regarding document holders.



Figure A.14 Document setup-3

### Telephone

The telephone should be placed either within or at the limit of the optimum reach sector, depending on the amount of use (Fig. A.8). The placement should enable the user to operate the telephone without the need to move their trunk to grasp the handset or to operate the numeric and function buttons.

When making a lot of calls, it may be best to place the telephone on the same side as the dominant hand so that this hand can comfortably operate the numeric and function buttons. When mostly receiving calls, it may be more comfortable to place it on the non-dominant side. Learn and utilise the functions of your phone, such as redial and the storage of commonly used phone numbers, to improve the efficiency of its use. Also, where the phone is used very often or for prolonged periods, a headset should be used.

### Angled reading and writing surface

An angled board can improve neck comfort where a job involves a lot of reading and handwriting. It should be placed immediately in front of the user on top of the desk (Fig. A.15).



Figure A.15 An angled board should sit directly in front of you

## CHECKLIST – SETTING UP YOUR WORKSTATION

### Chair

Is the chair adjusted to fit you? Check that the:

- Backrest height and back tilt are adjusted to fit the curve of your back and allow a slightly reclined posture.
- Seat height and angle are adjusted so that you can sit with their feet flat on the floor, hips between 90 degrees and 120 degrees.
- An adjustable-height footrest is supplied if you need one.
- Have you been shown how to adjust the chair to correctly support your body?

### Desk/bench

- Has the desk height been adjusted so the surface is set just below your elbow height?
- If the desk is not adjustable, is the surface set just below your elbow height (e.g. chair raised slightly, footrest supplied)?
- Is the desk large enough to fit the task requirements of the job?
- Is the desk deep enough to allow the computer screen to be approximately at arm's length away from you?
- Is there adequate space under the desk to allow comfortable forward facing posture and ability to get in and out of the workstation?
- Are the desk corners and under desk space rounded, smooth and free of sharp edges (e.g. no keyboard, shelves under desk)?
- Are items such as disk drives, files, rubbish bins and desk drawers stored so that they do not interfere with available space under the desk?
- Are frequently used items on the desk stored within easy reach (e.g. keyboard, telephone)?
- Are large or heavy items stored within close reach and not above shoulder height, or nearby where you have to stand to access them?
- Is there a sloped desk surface or angle board for reading and writing tasks if required?
- For a standing desk, is the desk adjustable so the surface can be set just below the your elbow height?

### Computer

- Is the keyboard close to the front edge of the desk allowing space for the wrists/forearms to rest on the desk surface (about 12 to 15 cm)?
- Are the keyboard feet adjusted to position the keyboard as flat as possible on the desk?
- Have you been trained in touch typing to avoid the need to look down at the keys?
- Is the mouse or pointer positioned as close to the keyboard as possible?
- Have you been trained to operate the mouse as close as possible to the midline and not to hold the mouse when not in use?
- Has the screen been positioned at approximately arm's length from your seated position?
- Has the screen been positioned so you can look straight ahead and slightly down at the screen (top of screen level with or below eye level when you are sitting upright)?
- Has the screen been positioned directly in front of you (or close this position if document holder or second screen required)?
- Is there a document holder either beside the screen or between the screen and keyboard if required?
- Is the screen positioned to avoid reflections or glare from windows or lights (e.g. not facing or backing onto windows)?

### Telephone

- Is the telephone placed within the close reach sector on the side which is comfortable to use with other tasks and equipment?
- If there is considerable telephone work, is there a headset provided?
- Is the headset appropriate for the task (one or both ears) and comfortable to wear?
- Is the workstation appropriately positioned or partitioned to prevent interference noise?

## APPENDIX B: Exercises For Office Workers

### Stop, get up and move

Getting up and walking around is the best exercise you can get to provide a break from sitting, concentrating and using the muscles of the arms and hands. About every 20 to 30 minutes is a guide to how often it is helpful to move around. Even getting up for 20 to 30 seconds to pick up papers from the photocopier or get some water is a way to change your posture and give muscles a chance to recover.

### S-t-r-e-t-c-h and check!

Stretching exercises help to relax muscles which have been working and move those which have been in a fixed position. If possible, stand up to do your stretches. While you are exercising, read the notes alongside each instruction and consider whether your workstation is adjusted to suit you. Refer to Section 3 for information on job design.

- Do a few of these exercises a few times every day
- Dots show the muscles that you are exercising
- Make sure you relax and perform them gently
- Hold the stretch or repeat as indicated on the diagram
- Do not over-stretch
- Stop if you feel discomfort when performing an action
- Remember to do each side.

#### Chin tucks

Raise the head to straighten the neck. Tuck the chin in and upwards creating a double chin. This also results in a forward tilt of the head. Repeat several times (Fig. B.1).



Figure B.1 Neck stretch

## Neck

#### Neck stretch

Keeping your chin tucked in, gently lower ear to shoulder and hold for 10 seconds on either side. Repeat several times (Fig. B.2).

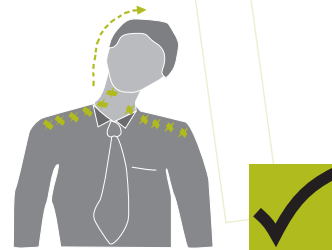


Figure B.2 Neck turns

#### Head turns

Turn head slowly to look over left shoulder. Turn head the other way. Repeat several times (Fig. B.3).

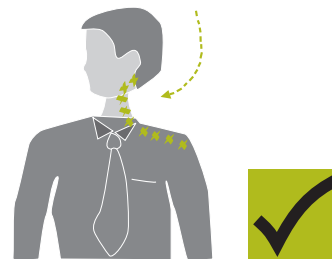


Figure B.3 Head turns

#### Check neck posture

- Position the top of your screen at eye level
- Use a document holder directly beside or below the screen—it saves you looking down.

## Shoulders

### Shoulder rolls

- Circle shoulders forward several times, then backwards. Repeat 3 to 5 times (Fig. B.4).



Figure B.4 Shoulder rolls

### Check shoulder posture

Relax your shoulders and rest your hands on your lap. Bend your elbows to no more than 90 degrees and check the height of your finger tips against your current work height. If the work (keyboard or desk) is higher than your hands you may be hunching your shoulders unnecessarily. If so, try and raise your chair height or lower your desk height and try to relax your shoulders while working.

## Wrists, hands and arms

### Wrist and elbow stretch

Interlace fingers, palms outward, and straighten arms in front. Hold for 10 seconds and repeat several times (Fig. B.5).



Figure B.5 Wrist and elbow stretch

### Wrist stretch

Straighten your arm in front and bend your wrist forward, gently assist the stretch with your other hand. Hold for 10 seconds then stretch your wrist back and hold for 10 seconds. Repeat with other arm (Fig. B.6).



Figure B.6 Wrist stretch

### Check hand and wrist posture

While keying, keep your wrist straight while your fingers are suspended over the keyboard.

Keep elbows at keyboard level. This may mean adjusting the desk or chair height.

Don't rest your wrists on the desk or keyboard while keying. Keep hands suspended.

Rest on the desk between periods of keying.

## Upper and lower back

### Upper and lower back stretch

Interlace fingers and turn palms upwards above head; straighten arms then slowly lean slightly from side to side. Repeat movement several times (Fig. B.7).



Figure B.7 Back stretch

## Back arching

Stand up. Support your lower back with hands and gently arch back and hold for 5 to 10 seconds. Repeat as often as is needed (Fig. B.8).



Figure B.8 Back arching

## Pectoral stretch

Raise both arms to shoulder height and bend elbows. Pull both elbows back slowly to bring shoulder blades towards each other. Repeat several times (Fig. B.9).



Figure B.9 Pectoral stretch

## Check back support

- Sit well back in your chair—if your feet need support, use a footrest
- Adjust the backrest on your chair to support your lower back.

## Legs

### Foot pump

Stand up, holding the chair for balance if necessary, and alternately raise heels and toes. Repeat 10 times (Fig. B.10).



Figure B.10 Foot pump

### Check leg comfort

If the seat of your chair is digging into the backs of your thighs check that it is not too high or whether it is tilted backwards.

If the seat is too high, lower the chair and desk or use a foot rest to support your feet.

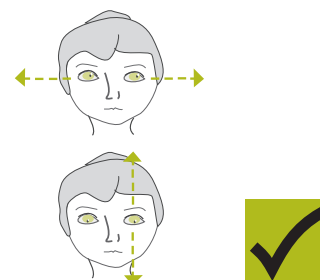
Also check the tilt of the seat and, if necessary, adjust it to a horizontal position.

## Eyes

### Eye exercise

Sit up straight, face forward and repeat this sequence several times without moving your head. Look up, then down. Look left, then right (Fig. B.11).

Figure B.11 Eye exercise



## Visual rest

Look up and away from the screen. Focus on a distant object (more than 3 metres away). For example, look out of the window or at a picture on a far wall. Shift vision back to screen and refocus (Fig. B.12).



Figure B.12 Visual rest

## Check eye comfort

- Is there enough light falling on your documents?
- Do windows or light fittings cause glare or reflection on the screen? If so, try turning the screen or blocking the path of the light.
- Use a screen with a light background when working with text. Software with a light background for text is more comfortable for the eyes.

## APPENDIX C: Glossary

CRT	Cathode Ray Tube
DWG	Designated Work Group
EAP	Employee Assistance Program
HSMA	Health and Safety Management Arrangements
HSR	Health and Safety Representative
LCD	Liquid Crystal Display
MSD	Musculoskeletal Disorders
MSDS	Material Safety Data Sheet
PPE	Personal Protective Equipment



