SOFTWARE PUBLICATIONS
WORK HEALTH AND SAFETY

by

The Software Publications Writing Team

Software Publications

Software Publications Work Health and Safety

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Software Publications Writing Team

Contents

Work Health and Safety Act 2011

Each State/Territory and the Commonwealth Government has a Work Health and Safety (WHS) Authority. Each authority is responsible for disseminating WHS information and enforcing health and safety requirements within its jurisdiction.

Up to 2012 each State/Territory also had its own occupational health and safety acts and regulations. At the beginning of 2012, these acts were repealed and replaced with the Work Health and Safety Act 2011. The term *occupational* health and safety has now been replaced with *work* health and safety.

Under the Work Health and Safety Act 2011:

(1)   A person conducting a business or undertaking must ensure, so far as is reasonably practicable, the health and safety of:

    (a) workers engaged, or caused to be engaged by the person, and

    (b) workers whose activities in carrying out work are influenced or directed by the person, while the workers are at work in the business or undertaking.

(2)   A person conducting a business or undertaking must ensure, so far as is reasonably practicable, that the health and safety of other persons is not put at risk from work carried out as part of the conduct of the business or undertaking.

(3)   Without limiting subsections (1) and (2), a person conducting a business or undertaking must ensure, so far as is reasonably practicable:

    (a) the provision and maintenance of a work environment without risks to health and safety, and

    (b) the provision and maintenance of safe plant and structures, and

    (c) the provision and maintenance of safe systems of work, and

    (d) the safe use, handling, and storage of plant, structures and substances, and

    (e) the provision of adequate facilities for the welfare at work of workers in carrying out work for the business or undertaking, including ensuring access to those facilities, and

    (f) the provision of any information, training, instruction or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking, and

    (g) that the health of workers and the conditions at the workplace are monitored for the purpose of preventing illness or injury of workers arising from the conduct of the business or undertaking.

While at work, a worker must:

    (a) take reasonable care for his or her own health and safety, and

    (b) take reasonable care that his or her acts or omissions do not adversely affect the health and safety of other persons, and

    (c) comply, so far as the worker is reasonably able, with any reasonable instruction that is given by the person conducting the business or undertaking to allow the person to comply with this Act, and

    (d) co-operate with any reasonable policy or procedure of the person conducting the business or undertaking relating to health or safety at the workplace that has been notified to workers.

Further Information

Standards, codes of practice, guidance notes can be accessed from Safe Work Australia
www.safeworkaustralia.gov.au

The following codes of practice are of particular importance for keyboard operators:

- National Code of Practice for the Prevention of Occupational Overuse Syndrome (NOHSC:2013 (1994)).

- Guidance Note for the Prevention of Occupational Overuse Syndrome in Keyboard Employment (NOHSC:3005 (1996)).

Ergonomics

Ergonomics is the study of the efficiency, comfort and safety of people in their working environment. In the office/computing equipment industry, the field of ergonomics plays an important role in the production of well-designed monitors, keyboards and furniture.

Learning how to sit at a desk and use your computer in an ergonomically sound manner will reduce the risk of health problems and keep you comfortable in your working environment.

Monitor

- The monitor should be positioned so that it is straight in front of the operator, an arm's length (40–90 cm) away from the eyes.

- The top of the viewing area of the screen should be just below eye level.

- The screen should be tilted so that the operator looks slightly downwards onto the screen.

- The height of the monitor should be adjustable; this may require using a monitor stand to adjust it at the correct height.

Top of the viewing area just below eye level

40–90 cm
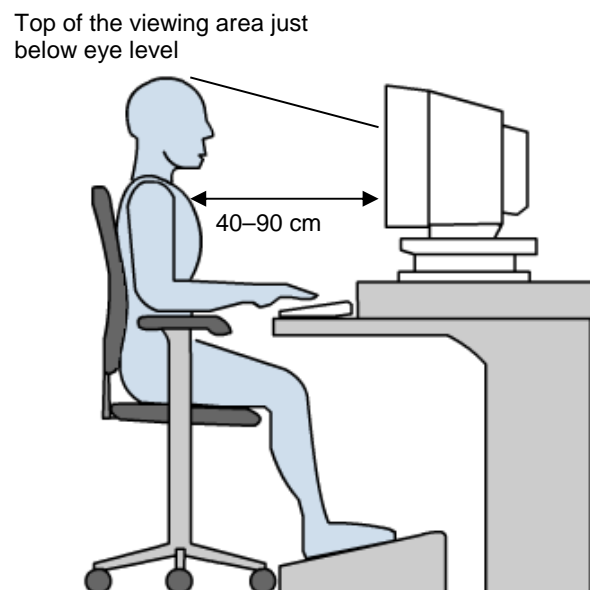
Keyboard

- The keyboard should ideally be separate from the computer body; if you are using a laptop computer consider attaching a separate keyboard.

- The keyboard should be thin; the 'ASDF' row should be 30 mm or less in height.

- The keyboard should be sloped slightly; no more than 12°.

- The keys should be sensitive enough so that they do not need to be hit hard. They should have a matt finish to reduce reflected glare.

- They should make a clicking noise when the key is pressed successfully.

To correctly position the keyboard on the workstation, place your hands over the centre of the keyboard and check the following:

- forearms are parallel with the ground

- elbows are at a 90° angle (forming an L shape between the upper and lower arms)

- fingers rest over the 'ASDF' row and all keys are able to be reached without stretching the fingers or forearms

- wrists are not raised or bent in an unnatural angle

- elbows are tucked in neatly by your sides

- fingers are curved in a natural position.

Keyboard Wrist Rest

The purpose of a wrist rest is to support the wrists in a natural, comfortable position. This is an important ergonomic consideration for many people who experience pain or tiredness in their wrists when using a keyboard. The wrist rest is positioned in front of the keyboard. Some keyboards have built-in wrist rests.

Mouse

The mouse needs to be positioned so that the operator can move it without having to stretch their arm. It should be placed on a flat surface such as a specifically designed mouse pad, which allows it to be moved easily.

The mouse should be shaped so that the hand rests on it comfortably. The buttons should be able to be used without cramping the hand. The pressure required to click the buttons should not be so hard as to make it tiring to use, nor so light that they are easily clicked in error. The mouse movement and click speed should be adjustable to suit the individual.

Some mice are designed specifically with ergonomics in mind. Wireless mice allow total freedom of movement. Other mice are shaped specifically to fit the hand and provide support.

Mouse Wrist Rest

In the same vein as keyboard rests, there is a huge range of wrist rests available to support the wrist while using the mouse. All are designed to keep the wrist in a relaxed, natural position to avoid discomfort and injury. Some mouse pads come with a built in wrist rest.

Document Holder

A document holder (also called a copy holder) is used to position documents so they can be viewed easily while typing. A well-positioned document holder reduces the need to bend the neck. There are different types of document holders; the most common are free standing devices which are positioned beside the computer screen. Others can be attached to the side of the monitor.

Chair

A well-designed, adjustable chair is one of the most important factors in preventing posture problems.
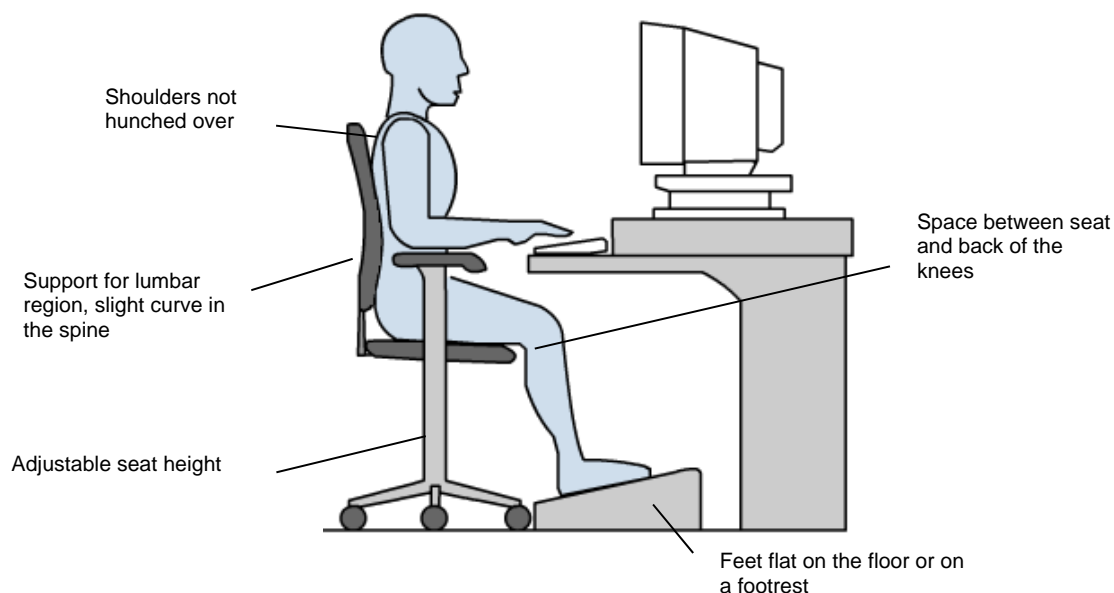
- Your chair should be adjustable vertically (usually between 450 mm and 520 mm in height). The chair should be at a height where you can sit comfortably with both feet on the floor, or on a footrest.

- The back rest should be adjustable for height and angle. The back rest should provide support for the lumbar region of the back.

- The recommended seat depth is between 380 mm and 480 mm. When seated in the chair you should be able to fit one hand-width between the seat and the back of your knee.

Position in the Chair

- Sit upright in the chair with your back pushed into the backrest, rather than slumped forward over the keyboard.

- Sit back into the chair rather than perching at the edge.

- Place your feet flat on the floor or on a footrest

- Ensure there is a slight curve of the spine in the lumbar region.

Footrest

A footrest is useful when the desk and chair cannot be adjusted and can be used to maintain proper posture. Ideally the foot rest slope should be comfortable; 0°–10° is recommended, with a flat surface area of 350 mm x 45 mm.

Shoulders not hunched over

Support for lumbar region, slight curve in the spine

Adjustable seat height

Space between seat and back of the knees

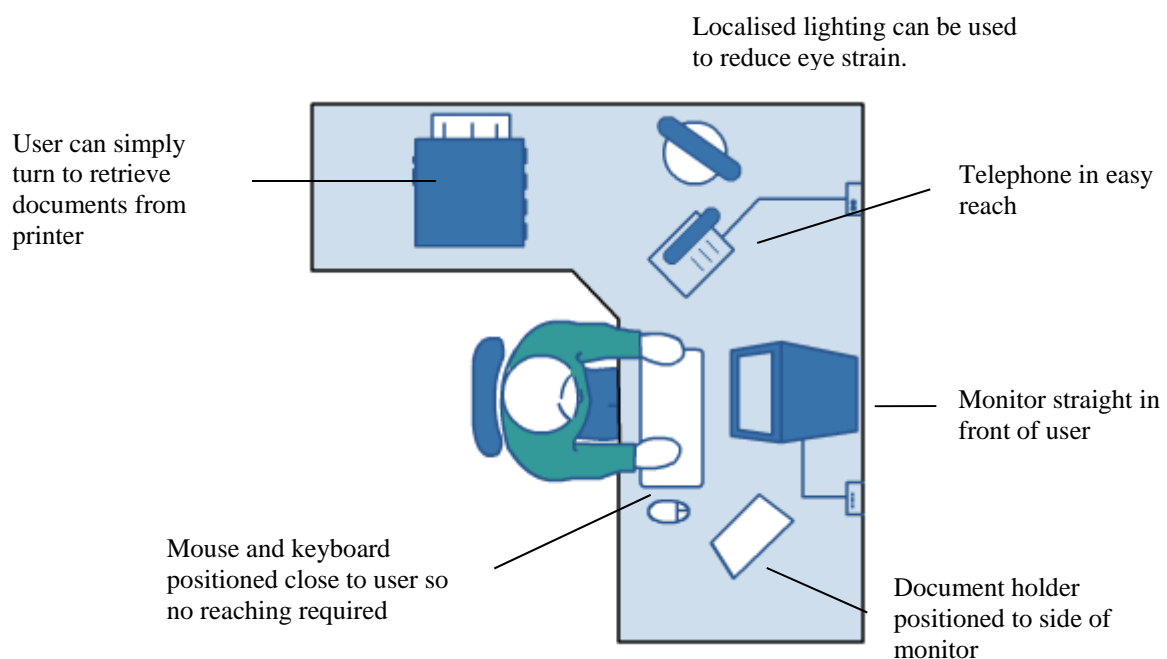Feet flat on the floor or on a footrest

Workstation

A workstation is simply the desk or table used when working on a computer.

- The workstation should be deep enough to allow the positioning of the keyboard and monitor correctly.

- The work surface needs to be big enough to allow the mouse, documents, document holder and any other items which are used regularly (telephone, desk caddy) to be within easy reach.

- It should also be as thin as practical, preferably less than 2.5 cm to give maximum knee room.

- Ideally the height of the workstation should be adjustable to suit the height of the operator. If it is not adjustable a foot rest may need to be used.

The equipment on the workstation needs to be arranged so that all equipment can be reached comfortably. Frequently used items should be within easy reach. A possible workstation layout is shown below.

Localised lighting can be used to reduce eye strain.

User can simply turn to retrieve documents from printer

Telephone in easy reach

Monitor straight in front of user

Mouse and keyboard positioned close to user so no reaching required

Document holder positioned to side of monitor

Workstation Location

The location of the workstation within an office needs to be chosen with care.

- The workstation should be positioned at right angles to windows, mirrors or other light sources to help reduce glare or reflections.

- Power cables need to be able to reach the computer safely, without being stretched or lying across access ways.

- In a large office, space or partitions between desks can help to give the illusion of having privacy in one's workspace.

The Office Environment

Room Space and Arrangement

In an office environment there should always be enough space for everyone to carry out their work safely. There needs to be clear access ways through the office so that people can access all working spaces without the risk of tripping over obstacles or bumping into furniture. Keep power cables tidy and out of the way. Take responsibility for the area around your own workspace and keep it clear and tidy.

Décor and Lighting

Bad office lighting can lead to work problems including poor performance, fatigue, blurred vision and headaches. The lighting must be strong enough to allow the worker to perform their duties without squinting and straining their eyes. Too much light from bright fluorescent lights, direct sunlight or reflections from windows can also cause problems.

In order to reduce glare, rooms should be decorated in pastel shades. Blinds should be used to prevent strong sunlight from entering the room. Workstations should be located away from windows and positioned to avoid reflections.

Temperature and Ventilation

Temperature and ventilation in an office needs to be monitored carefully. Temperatures that are too hot or too cold or inadequate ventilation, can lead to problems such as tiredness, headaches and dry eyes. For computer work, the temperature should ideally be kept between 20° and 24° Celsius.

Computers produce heat which can make your work space warmer than the rest of the office. Make sure the screen is not hard up against a wall or partition and that there is plenty of air flow around the unit. A small desk fan may be necessary if you are working in a confined space. Airconditioning can be used to regulate temperature but can also lead to a dry atmosphere.

Noise

People and equipment such as printers, photocopiers and phones, contribute to the noise factor within an office. Too much noise can make it hard to concentrate and can lead to health problems such as headaches and ringing in the ears.

Try to select equipment which makes the least noise possible. Noisy equipment can be enclosed in noise reducing covers or hoods. Padding can be used to stabilise vibrating equipment. Walls, floors and ceilings can be covered in sound absorbent materials. Noisy equipment can be positioned away from the working area and separated by noise reducing partitions. Heavy drapes can also help to absorb noise.

Dust

Dust can get inside a computer system unit and clog up the internal fans reducing heat protection capabilities. When dust settles on the monitor it makes images on the screen more difficult to view which can cause eye strain.

The best defence against dust is to have the office area cleaned regularly. Screen cleaners can be purchased which reduce the accumulation of dust on the screen. Dust covers can also be purchased for computer equipment to protect the computer while it is not in use.

Health Problems for the Computer Operator

The principal object of work health and safety is to prevent harm to employees at work. Your employer needs to take steps to protect your health and safety; however, all employees can play their part in keeping the work environment is safe.

Electricity

Faulty plugs, sockets and leads cause more electrical accidents than the appliances themselves. Electrical safety arrangements should include:

- providing sufficient socket outlets to avoid the use of adapters and long leads

- prohibiting the use of taped joints to connect leads

- not ignoring obvious tell-tale signs such as faulty switching or intermittent stopping. These may indicate an internal fault such as a loose wire

- switching off equipment before unplugging and before cleaning

- encouraging staff to report electrical equipment which is not working properly

Slips, Trips and Falls

Slips, trips and falls account for most of the accidents in offices, many of them when staff are moving or carrying loads. They happen because of the condition of floors, poor lighting or untidiness. Such accidents can easily be prevented by:

- not allowing trailing leads to create tripping hazards

- clearing up spills on floors quickly

- replacing or repairing torn floor coverings

- ensuring stairs are well lit

- keeping passageways and corridors tidy and clear of obstacles.

Lifting and Moving

Lifting/moving/large objects is a common office hazard which can lead to back injuries and pains in hands, wrists and neck. To reduce the likelihood of these types of accidents it is important to:

- remove the need for moving/lifting that could be the cause of injury

- identify those tasks where lifting cannot be avoided and assess the risk of injury

- reduce the risk of injury by rearranging the work being done (e.g. have paper delivered to the photocopier rather than manually carrying it)

- provide manual handling training to workers who need it.

OOS

Occupational overuse syndrome (OOS) is a collective term for a range of conditions which cause discomfort or pain and which are caused by performing repetitive tasks. Symptoms can include:

- fatigue
- pain in the muscles or tendons
- burning sensations
- stiffness
- weakness
- numbness and tingling.

People who work at a computer workstation for lengthy periods are particularly susceptible to OOS. Typing and using the mouse both require repetitive action which can result in pain in the hands, wrists, arms, shoulders and neck. OOS can also be exacerbated by inappropriate office furniture, poor workstation layout and poor work organisation.

Anyone who works for long periods of time at a workstation is at risk of developing OOS, but there are steps that can be taken to reduce this risk.

Create an Ergonomically Correct Workstation

A correct workstation layout can have big impact on OOS prevention. See how to create an ergonomically correct workstation on pages 2–5.

Vary Tasks

Try to organise your day so that you vary your tasks. Typing non-stop for a long time can be damaging. Take a break from your computer to do filing or make business phone calls.

Breaks and Micropauses

Operators should be given frequent breaks away from their computer in order to avoid eyestrain and posture problems. The recommended break is 5–10 minutes every hour worked where work is screen-intensive. Make sure you do not work through your lunch break.

A micropause is a short break from work for muscle relaxation. Generally it is a 5–15 second break every 5–10 minutes. Micropauses allow for the restoration of blood flow to muscles which have been held tense. Computer programs are available that remind you to take regular micropauses.

Computer Vision Syndrome (CVS)

The term Computer Vision Syndrome covers a range of vision-related problems caused by focusing on a computer display for long periods of time. Common symptoms of CVS include:

- eye pain/irritation
- headaches
- blurred/double vision
- dry, red eyes
- neck and shoulder pain.

Uncorrected vision problems (e.g. failure to wear glasses when needed or having the wrong lens strength) can make CVS worse.

Preventing CVS

Do the following to reduce the risk of developing CVS:

- See your optometrist and have an eye test; you may need glasses or to update your prescription.
- Ensure the monitor is positioned at an appropriate distance from your eyes.
- Position the monitor to avoid glare from lighting sources.
- Take regular breaks from computer work.
- Shift your vision for a few seconds – stare out the window, or study something on your desk.
- Make a conscious effort to blink regularly. Your blink rate may reduce while staring at a monitor.
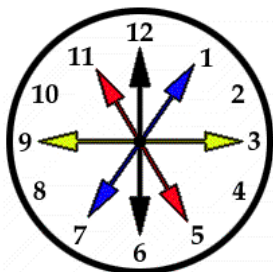
Physical Exercises

Physical exercises can be performed to and reduce the risk of OOS and CVS.

Exercises to Prevent CVS

Pretend you are looking at a giant clock. Move your eyes to look at the different hours on the clock face as listed below.

- 12 to 6 (from ceiling to floor)
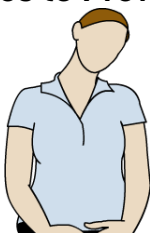- 9 to 3 (from one side of the room to the other)
- 1 to 7
- 11 to 5

Exercises to Prevent OOS

Exercises to prevent OOS are on page 10.

Activity 1

Try the exercises for preventing CVS and OOS. Think about how you could incorporate them into your working day.

Exercises to Prevent OOS

Side neck stretch
Slowly tilt your head to one side, stretching the side of your neck. Return your head to upright and repeat on the other side.

Head turn
Slowly turn your head to one side. Return to centre and repeat on the other side.

Bidirectional neck stretch
Bend your head forward and then turn your head to right. Use your right hand to gently pull your chin down towards your armpit. Repeat on the other side.

Shoulder roll
Lift both shoulders upward toward your ears and then down again slowly. Roll your shoulders gently backwards and forwards to ease tension in the neck.

Upper back stretch
Clasp your hands behind your head, keeping your elbows straight out to the side. Gently lean over the back of your chair, stretching your upper back.

Upper arm and shoulder stretch
Bend your right arm placing your right hand on your upper back. Hold your right elbow with your left hand and use this hand to gently push your right arm down. Repeat on the other side.

Chest and shoulder stretch
Interlace your fingers behind your back. Gently turn your elbows inwards, straightening your arms. Pause and then release.

Arm and rib cage stretch
Interlock your fingers; stretch your arms above your head, palms upward. Try to keep your shoulders lowered.
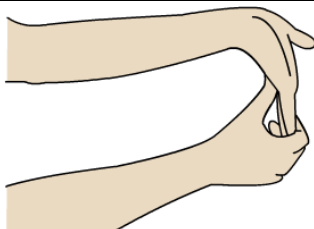
Finger spread
Hold your right arm out bent upward at the elbow. Spread fingers wide apart stretching the inner palm and fingers. Repeat on the other side.

Chair twist
Sit in a chair with your left knee crossing your right. Place your right hand on the outside of your left knee. Twist and place your left hand on the back of the chair. Hold and repeat on the other side.

Front wrist stretch
Hold your right forearm out straight, palm facing up. Take your fingers with your left hand and pull them back gently so the front of your wrist is stretched. Repeat on the other side.
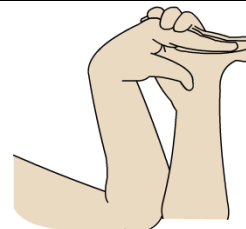
Back wrist stretch
Hold your right forearm out bent upward at the elbow. Take your fingers with your left hand and pull them gently downward so the back of your wrist is stretched. Repeat on the other side.

Activity 2

Apply the general principles of ergonomics to your workstation using this checklist.

Room/ equipment	Workstation environment and ergonomics checklist	Tick when checked
Temperature	Is the temperature and humidity level comfortable? Is there sufficient airflow around the computer equipment?	
Noise	Does the noise level detract substantially from concentration? Have steps been taken to reduce noise as needed?	
Lighting	Is the monitor position workstation out of direct sunlight? Does the monitor reflect glare from windows/objects? Is lighting adequate/satisfactory in relation to the tasks to be performed?	
Keyboard	Is the keyboard separate from the computer system? Is it thin with a comfortable slope? Are keys sensitive so they do not have to be hit hard? Do they have a matt finish and make a clicking noise when hit? Are your fingers positioned comfortably over the keys? Can you type without over-reaching?	
Mouse	Is the mouse positioned so that you can move it without having to stretch your arm? Is it positioned on a flat surface designed to facilitate smooth mouse movement?	
Chair	Is the chair adjustable and comfortable? Are your feet flat on the floor or on a footrest, with your thighs parallel to the floor? Can you fit one hand-width between the seat and the back of your knee? Are you sitting with your shoulders straight and a slight curve at the lumbar region? Is your back against the backrest?	
Monitor	Is the screen at a comfortable reading distance? Is it angled so you are you looking downwards slightly onto the screen? Are items on the screen easy to read?	
Workstation	Is the desktop wide enough so that the monitor and keyboard can be positioned correctly? Is there adequate space for all equipment (mouse, document holder, telephone) to be positioned within easy reach? Is there adequate leg room under the desk? Is the desk set at the correct height or is a footrest required?	
Work behaviour	Is my workload planned so tasks are varied? Do I take regular breaks? Do I perform exercises regularly?	

Energy and Resource Conservation

Best practice is being encouraged in businesses as we move towards creating 'green offices'. Regardless of the size or type of business, there is a general appeal to working on conserving resources and energy. Many companies have appointed committees to look at ways in which offices can put in place the three Rs of solid waste management:

REUSE REDUCE RECYCLE

Which Objects can be Recycled?

There are various products that can be recycled. Many of the following will apply to your home and/or work environment:

- aluminium
- batteries
- cans
- food waste
- glass
- green waste (grass and plant clippings)
- ink and toner cartridges
- paper (including cardboard, newspaper, old telephone books)
- steel
- tyres.

Each office will have its own procedure for recycling. A series of recycling bins can be used:

Desktop	Have a recycle tray on or under your desk to collect waste paper.
Lunchroom	Encourage staff to wash their plastic and glass waste and sort them into the correct bins.
Photocopier/printer	Place a paper recycling bin beside the printer or photocopier. If people realise they have made an error printing or photocopying, the waste paper can go straight in the bin.
Council recycle bins	All recycle bins from within an office should be emptied regularly into the main recycle receptacle. You may have separate bins for paper, metal and glass, or you may have one big bin for all recycled items.
	Different local councils have different methods for collecting recyclable items. Some may collect recycled items along with your rubbish. In some areas you will have to take the items to a depot.

Paper Wastage

Despite our growing dependence on electronic mail and document formats, a huge amount of paper is used every day in both homes and workplaces. Much of the paper we use is soon thrown away, adding to the demand for more paper and more landfill sites. One of the greenhouse gases, methane, is produced by rubbish rotting in landfills.

Trees, from which paper is made, are a vital part of our environment. Apart from providing food, fuel and raw materials, they absorb carbon dioxide (the gas responsible for about half the enhanced greenhouse effect that controls the Earth's temperature).

How can you Waste Less Paper?

Reuse paper	When you have finished with a document, turn the pages over and use the backs for note paper. Put waste paper through a document shredder and then use the shredded paper for packing material or give it to our local pet store.
Print and photocopy on both sides	Set up your printers and photocopiers for duplex printing (printing on both sides of the paper).
Recycle paper	Keep a cardboard box near your desk near photocopiers and printers to collect used paper. Note Always check paper to be reused or recycled does not have any confidential information printed on it.
Buy recycled	Some companies sell stationery made with recycled products.
Use a distribution slip	Send a document to different people in your office (each person reads the document, signs the distribution slip, then passes it on to the next person).
Avoid waste	Cut back on the use of disposable paper products by taking only as much as required to do the job, rather than taking extra just in case – the extra usually ends up being thrown out.
Reuse office products	For example folders, boxes and envelopes can be reused.
Edit on the screen	Check spelling and proofread on screen for errors instead of printing numerous copies.
Do not double up	If you do not need to keep printed copies of documents, store them in electronic format.
Send an email	Use email, the telephone or staff noticeboard for messages.

Conserving Energy

Conserving energy in your home and organisation can help the planet as well as save money on electricity bills.

Tips to Conserve Energy

- Turn office lights off at the end of the day.

- Switch off heaters and airconditioning units at the end of the working day. You may want to consider having these devices attached to a timer.

- Turn off your desktop computer at the end of the day. Do not turn off any central servers that run backups overnight.

- Turn off printers and photocopiers off at the end of the day.

Power Saving and Computers

Make use of the energy saving features built into your computer. You can adjust your power scheme settings to turn off items of hardware after they have been inactive for a period of time. The power saving options will vary depending on the type of computer.

Power Schemes

Power schemes can be changed from the computer control panel.

Turn off monitor	The monitor is one of the biggest energy consuming devices of a personal computer. You can select a time after which your inactive monitor will be switched off to save power. Move your mouse or press a key to reactivate the monitor.
Turn off hard disks	The hard disk is also a big energy user and it can be turned off when not in active use.
System standby	Enable this option to allow you to take short breaks from your work, then return to pick up from where you left off. The monitor and hard disk are shut down in standby mode but your work is still open on your desktop.
System hibernates	This is a longer version of standby in which the computer is almost completely shut down and will take longer to resume. The computer can safely be left in hibernation overnight, but what you were working on will still be available on resumption. Note You may need special privileges to change the power options on your computer if you are on a network.

Solving and Reporting Problems

If you identify a work health and safety problem in your place of work, it is important that you either fix the problem yourself or report it to an appropriate person. This is usually your supervisor or manager, but some companies may have a specific WHS officer who deals with these problems.

Minor problems you could fix yourself might include:

- changing the height of your chair

- changing the tilt of your monitor (you may have to ask for help – some monitors can be awkward)

- shutting draws left open

- cleaning minor spills

- drawing blinds or rearranging your desk to avoid window reflections

- removing items that may be a tripping hazard.

If you cannot safely and easily remedy the problem report it to the relevant person. Examples of issues to report include:

- loose carpet which needs tacking down

- poorly lit areas such as stairwells

- major pieces of furniture badly positioned

- major spillages or spillage of dangerous material

- serious electrical outages or faults

- serious temperature problems such as the failure of airconditioning unit

- serious noise problems.

Your company may have a form used to document WHS problems. You will be expected to provide a description of the problem, along with the date, time and location (if applicable).

Report OOS Related Problems

If you find you are developing any of the symptoms of OOS, it is important to report this to your supervisor as soon as possible. If changes are made to your workstation or work distribution, you may be able to avoid developing serious problems. Sometimes a new chair, a footrest, an ergonomically designed mouse or a rearrangement of your work duties are all it takes to prevent OOS. Similarly, if you find that your workload is impossible and that deadlines may be missed, it is important to inform your supervisor promptly.

Emergency Procedures

In the case of a life threatening situation (e.g. gas leak, fire or serious injury) telephone Emergencies **dial 000**.

Follow workplace procedures to inform the designated safety officer of the emergency and move to a safe location as outlined in the evacuation procedure.

Activity 3

Describe the current recycling policy in your organisation OR devise a recycling plan which could be implemented at your organisation.

List 3 ways you could conserve paper in your workplace or study environment.

List 3 ways you could conserve power in your workplace or study environment.

Describe how work health and safety issues should be reported in in your workplace or study environment.