

## CHAPTER 1

## InFocus

# APPLYING WHS PRACTICES

No one likes to be sick or injured. Even with the great advances in modern medicine, some of life's diseases still can't be cured, let alone prevented.

However injury, illness or even death caused at and through work can and should be prevented. This is what **Work Health and Safety (WHS)** is all about. With good work practices injuries, illnesses and deaths at work have gradually decreased.

Note: Some information contained in this session is based on the publication *Officewise – a guide to health & safety in the office* published by **Victorian WorkCover Authority** and is available for download free of charge from their website.

**In this session you will:**

- ✓ gain an understanding of common risks and hazards in the office
- ✓ gain an understanding of how to set up a workstation ergonomically
- ✓ gain an understanding of exercises you can do while working at a computer
- ✓ gain an understanding of factors that contribute to a healthy office work environment
- ✓ gain an understanding of anti-glare and radiation reduction monitors
- ✓ gain an understanding of various tips for more environmentally-friendly computing.

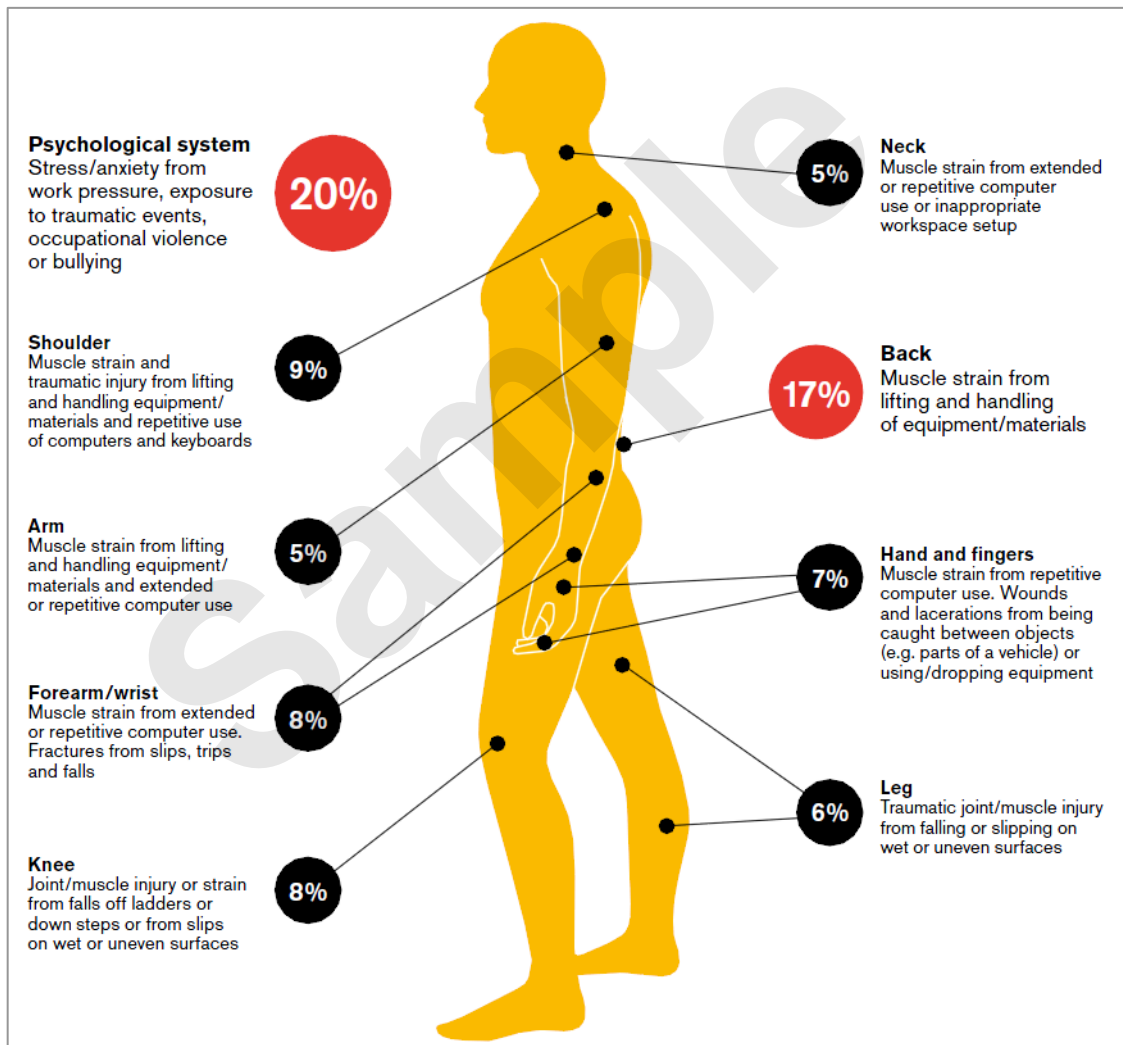
# RISKS AND HAZARDS IN THE OFFICE

The risk of injury in places such as factories, warehouses, and mines where heavy haulage and equipment is used is reasonably obvious. Most businesses and organisations have office

based work and while these environments may seem quieter, cleaner, and less hazardous than factories and mines, they too have their own health and safety risks and dangers.

## Typical Office Injuries and Hazards

Under law, any injury or illness sustained in the workplace must be reported. Using information collected over time it is possible to determine what the potential risk and injury areas are in an office environment. In June 2013 *WorkSafe Victoria* published the **Injury Hotspots** diagram. It is interesting to note from the diagram the number of injuries caused through the repetitive use of technology such as computers.



Many of the injuries above are preventable by adhering to ergonomic workstation design principles, by taking regular breaks and varying activities, by tweaking the office environment (things such as lighting, air flow, temperature, and the like) and in all cases, by a modicum of common sense.

# SETTING UP AN ERGONOMIC WORKSTATION

Many of the office-based injuries to the neck, arm and wrist can be prevented by having a properly set up workstation. This section presents some guidelines for you to work with in setting up a

safe computer workstation. However, common sense must always prevail and if you feel any pain or discomfort as a result of using a computer you should stop immediately.

1

## Chair

The chair should be a gas-adjustable type chair. Adjust the height of the chair so that feet are comfortably flat on the floor, the thighs are approximately horizontal and the lower legs approximately vertical. Position the backrest to the curve of the back – if not comfortable, lower the height several centimetres and try this position.

1



2

## Arm Rests

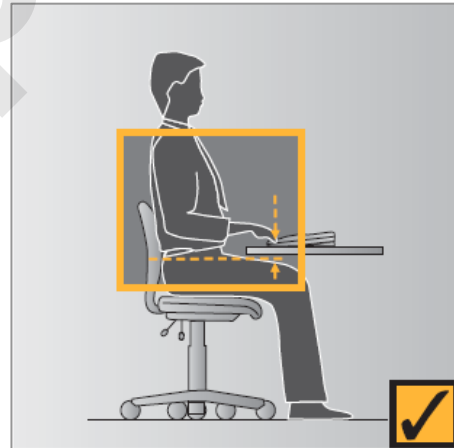
Arm rests are usually not recommended unless they are well out of the way.

3

## Desk

Having adjusted the chair as above, adjust the height of the desk (where available) so that the top surface is just below elbow height. Ensure that there is ample clearance under the desk and that the desk is not too cluttered.

3



4

## Keyboard

The common and preferred setting for the keyboard is where the feet (under the keyboard) are lowered so that the keyboard sits flat on the desk. Place the keyboard as close to the front of the desk as is comfortable so that the top half of the arms are approximately vertical.

5

## Mouse

Place the mouse directly beside the end of the keyboard. When your hand is on the mouse, place your forearm on the desk or on a wrist rest if you find the edge of the desk painful. Try to use the mouse both left-handed and right-handed and change hands regularly.

6



6

## Screen

Position the screen after you have positioned the chair and desk. The top of the screen should be level with or slightly lower than your eyes. It should be at an arm's length away from the user. Position the screen to avoid reflective glare from windows and lights.

7

## Document Holder

Try to place documents so that they are at eye level and just to the side of the screen.

8

## Laptop Computer

If you use a laptop for more than 2 hours per day connect a separate mouse and LCD screen and position both as directed above.

# ACTIVITY – ERGONOMIC WORKSTATIONS



Individual  
Activity



Group  
Activity

## Setting Up An Ergonomic Workstation

Have a think about the workstation components listed below and circle whether you think they're ergonomic or no.

Workstation Component	Ergonomic?
If you use a document holder, it should be placed just to the side of the monitor at eye level	Yes – No
The mouse should be placed on the desk approximately above your knee	Yes – No
Position the keyboard as close to the front of your desk as possible	Yes – No
When you look at the centre of your monitor, your eyes should be looking down at an angle of approximately 30°	Yes – No
The best office chairs are gas-adjustable and include arm rests	Yes – No
If you're using a laptop for more than 2 hours per day, connect a separate mouse, LCD monitor and keyboard	Yes – No
It doesn't matter which side you position a document holder as long as it is positioned just to the side of your monitor	Yes – No
Get the position of your monitor correct and then position the chair and desk	Yes – No
It is good to use the mouse both left-handed and right-handed even if you are right-handed	Yes – No
Adjust the height of your chair until your thighs are angled at approximately 30° below horizontal	Yes – No
Position the monitor so that it avoids reflective glare from windows and overhead lights	Yes – No
Adjust the backrest of your chair so that it is positioned in the curve of your back	Yes – No
The correct height of your desk places its top surface just above elbow height	Yes – No
When you sit at your desk, your top half of your arms and lower legs should be approximately vertical	Yes – No

# BREAKS AND EXERCISES

Prevention is definitely better than cure when it comes to any form of illness or injury. Here are a number of suggestions for rest breaks and stretching exercises for you to try while working

at the computer. Make sure that you relax and perform the exercises gently. You should stop immediately if you feel any discomfort.

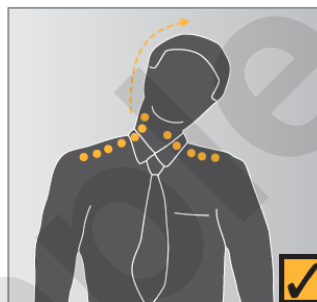
## Rests and Breaks

- Take a rest break away from the computer for 5 to 10 minutes every hour.
- Active rest during a break with some other type of activity, such as walking or stretching, is more beneficial than passive rest – get up off your chair and walk to the printer to collect those print jobs!
- Vary activities where possible interspersing computer tasks with non-computer tasks.
- Try to limit computer time to 5 hours per day – break this time up into segments.

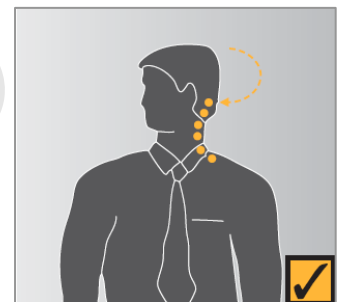
## Exercises

### Head Rolls

Gently lower ear to shoulder and hold for 10 seconds. Slowly roll chin to chest and up to other shoulder and hold chin for 10 seconds. Repeat several times and be careful not to extend your neck back too far.



Neck Stretch



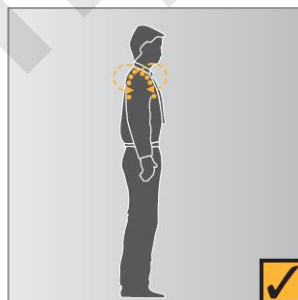
Head Turns

### Head Turns

Turn head to look over left shoulder and hold for 10 seconds. Turn head the other way and hold for 10 seconds. Repeat several times.

### Shoulder Rolls

Circle shoulders forward several times, then backwards. Repeat 3 to 5 times.



Shoulder Rolls



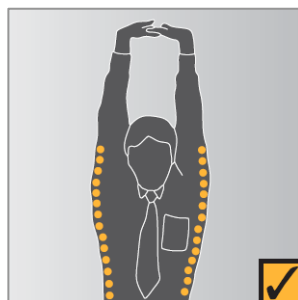
Wrist Stretch

### Wrist Stretch

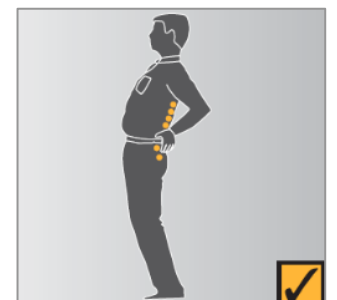
Interlace fingers, palms outwards, and straighten arms in front. Hold for 10 seconds and repeat several times.

### Upper and Lower Back Stretch

Interlace fingers and turn palms upward above head, straighten arms then slowly lean slightly from side to side. Repeat movement several times.



Upper and Lower Back Stretch



Back Arching

### Back Arching

Stand up and support your lower back with your hands then gently arch for five to ten seconds.

For a comprehensive range of exercises for office workers refer to **Appendix B** in *Officewise: A Guide to Health and Safety in the Office* published by **WorkSafe Victoria**. You can download a copy from the download link on the home page of **WorkSafe Victoria** (<http://www.worksafe.vic.gov.au>).

# RESEARCH – BREAKS AND EXERCISES



Individual  
Activity



Group  
Activity

## Research Task

<b>At Work</b>	If you are currently employed and sit for long periods at a desk, describe 3 types of exercises or breaks that you do during the day. If you don't sit for long periods, speak to someone who does so that you can complete this exercise.
<b>At School</b>	If you are still at school, ask an adult who is currently employed and who sits for long periods at a desk to describe 3 types of exercises or breaks that they do during the day.

## Exercise or Break

1.

2.

3.

# ENSURING A HEALTHY WORK ENVIRONMENT

General office environmental factors play a role in determining a safe and healthy office workplace. These factors include, but are not limited to, air quality and ventilation, furniture and

storage, lighting, noise levels, and temperature. These factors should be established according to published guidelines to ensure a comfortable office workplace setting.

## Air Quality

No-one likes to work in an environment where air is contaminated. In an office, air may be contaminated by the air conditioning system drawing in fumes, odours, or even micro-biological and chemical contaminants. A couple of the more documented contaminants that have resulted in injury or illness include Legionnaire's disease caused by exposure to legionella bacteria, and ozone gas produced by some photocopiers and laser printers.

Guidelines on air quality standards are contained in Australian Standards AS 1668:2 *The Use of Ventilation and Air Conditioning in Buildings: Ventilation Design* (2002).

## Furniture and Storage

The type of furniture found in an office, and where it is placed (office layout), can play a key role in preventing injury. It is recommended that each employee have at least 6 square metres for their desk, chair, filing cabinet, and other necessary equipment.

There should also be adequate walkways and pathways through an office to provide safe access at all times. Emergency exits should be clearly labelled and should never be blocked or have access hindered in any way.

Office storage should be sturdy in construction. Where reaching is required there should be adequate facilities, such as steps or purpose-built ladders to reduce unnecessary stretching. Above-desk storage such as shelving should be designed in such a way as to not hinder lighting or ventilation.

Ideally, floor surfaces should be carpeted with a wool-mix blend that reduces the build-up of static electricity. The carpet should be properly laid and maintained. Low pile carpet is preferred in offices where pushing or pulling of equipment is required.

## Lighting

Huge tomes have been written on office lighting. Lighting is measured by how much light falls on a surface – this is known as illuminance and its unit of measure is known as lux. The amount of lux in an area can be measured using a lux meter.

The optimum amount of lux in an office varies depending upon the activities being carried out. For example, a staff change room has a recommended lux of 80, waiting rooms have 160, areas of computer usage have 240, while routine office work areas have 400 lux. Areas where more difficult tasks are carried out, such as drawing offices or where proof-reading occurs, have a recommended lux of 600.

It is also desirable to minimise reflections of light from work surfaces. Highly polished floors and large glass-covered posters and paintings can be a nuisance. A constant source of annoyance to office workers is flickering lights which should be fixed immediately.

## Noise

Many non-office workplaces have strict guidelines for controlling the amount of noise – excessive noise can damage hearing. In an office it is unlikely that noise will damage hearing. It can however be distracting and annoying.

Office noise is much more subjective than industrial noise. It can include things such as a radio, music on-hold which may be heard by colleagues when you've placed your on-hold call on speaker phone, background music while working on the computer, even people talking.

Generally some consensus should be obtained from work colleagues as to what is appropriate to your office.

## Temperature

Temperature, or thermal comfort, in the office is another of those very subjective areas. What may be too hot for some will be just right for others and vice versa. General thermal comfort issues need to be addressed where problems are raised by many staff members. As far as individuals are concerned thermal comfort issues may be addressed by moving staff away from air-conditioning vents or doorways, providing personal heaters and possibly even clothing.

# RESEARCH – HEALTHY WORK ENVIRONMENT



Individual  
Activity



Group  
Activity

## Research Task

<b>At Work</b>	If you are currently employed, describe examples of how your employer has set up your workplace so that it is as healthy as possible. Group the examples under the headings shown below. If there are problem areas in your workplace, describe these as well.
<b>At School</b>	If you are still at school, ask an adult who is currently employed to describe examples of how their employer has set up their workplace so that it is as healthy as possible. Ask the person enough questions so that you can group the examples under the headings shown below. If there are problem areas in their workplace, describe these as well.

## Examples

1. Furniture and  
Storage

2. Lighting

3. Noise



# HEALTHIER COMPUTER SCREENS

Two types of computer monitors are currently available: the box-shaped CRT (cathode-ray tube) monitor and the thin, flat-screened LCD (liquid crystal display) monitor. Of these, the LCD

monitors are considered the healthier choice when it comes to minimising radiation exposure and reducing eye fatigue as you'll see here.

## Computer Monitors And Radiation

Electromagnetic radiation is all around us. It is emitted from power lines, electrical sub-stations, TVs, and other electrical and electronic appliances such as electric blankets and hair driers.

But if you are a computer user and spend your entire working day sitting in front of a computer screen, the radiation emitted from your computer and its various components may be your largest source of electromagnetic radiation. This could especially be the case if you sit close to and use a **CRT monitor**.

CRT monitors are designed to emit visible radiation (light) to create the display. But as well as emitting light, they also emit small amounts of other types of electromagnetic radiation. This radiation is also emitted (and in greater concentrations) from the sides and back of these monitors as well. **LCD monitors**, on the other hand, emit virtually no radiation, either from their fronts or backs.

There are many claims that the electromagnetic radiation emitted from computers can be harmful causing health problems such as eye problems, reproductive problems and cancer. Although these claims are not supported by scientific research findings or reliable epidemiological studies at this time (according to Worksafe's *A Guide to health and safety in the office*), we all know that electromagnetic radiation isn't good for us and that we should try to minimise our exposure to it whenever possible. And when dealing with computer screens, we can!

To minimise your exposure to radiation from your computer, change to using an LCD monitor. But if you still have to use a CRT monitor, move it as far away from you as possible and ensure that you are not located closer to the sides or rear of another user's CRT monitor than you are to your own.

## Anti-glare Computer Screens

An anti-glare computer screen is designed to cut down on the amount of light that reflects off the screen. Reflected light (or glare) is very fatiguing to the eyes and reduces the contrast, colours and sharpness of the display. An anti-glare computer screen makes viewing a display more pleasant, reduces eyestrain (general soreness or redness of the eyes) and sharpens the picture.

Most **LCD monitors** come standard with an anti-glare computer screen with either a matte or glossy finish. Both finishes have different advantages and disadvantages.

**Matte** This is the most common finish. This anti-glare computer screen works by using a rough matte surface to scatter light, rather than allowing it to reflect off a smooth surface. As a result of this, these screens don't get glare or reflections on them. However, this rough surface also scatters light coming out of the display which means that images will appear with less contrast and brightness and even slightly blurry to the viewer, which in itself is fatiguing to the eyes.

**Glossy** Glossy screens use a chemical coating over a smooth surface to cut down glare. Because of their smooth high gloss surface, glossy screens have vibrant colours and the highest contrast and brightness. Glossy screens are considered best for viewing movies and photographs and for gaming. However, strong lighting causes glare on these screens which is both annoying and tiring on your eyes if you have to stare at it all of the time. You can also see reflections on these screens.

A good way to choose between matte or glossy anti-glare computer screens is to consider the environment in which you will be using the computer. A glossy screen is probably well-suited for home use where there is mostly ambient light that you can control. In the workplace, where harsh overhead lighting is common, it may be less fatiguing to cut more glare with a matte finish than to maintain a crisper picture with a glossy display that will reflect more light.

Some **CRT monitors** also come with an anti-glare screen. If not, you can purchase an aftermarket anti-glare filter that blocks not only glare, but also harmful ultra-violet (UV) radiation. (UV radiation is not a problem with LCD screens.) Aftermarket anti-glare computer filters are available virtually everywhere computers are sold. Be sure to choose the right size for your display, and if buying for a CRT monitor, look for 100% UV blockage along with anti-glare properties.

# ACTIVITY – HEALTHIER COMPUTER SCREENS



Individual  
Activity



Group  
Activity

## Computer Screens

Have a think about the following and write your answers in the space provided beneath each question.

1.	If you could choose between using a CRT monitor and an LCD monitor, which one would you choose? Why?
2.	If you and the three people who share your office all use CRT monitors, what can you do to minimise your exposure to electromagnetic radiation?
3.	If you work in an office environment with a large amount of overhead lighting, which LCD monitor would be easier to use – matte or glossy? Why?
4.	If you spend a lot of your day looking at images and photographs, which LCD monitor would be best to use – matte or glossy? Why?

# ENVIRONMENTALLY FRIENDLY COMPUTING

Each year, millions of computers and computer-related components are purchased to replace equipment that's been superseded by faster, more powerful technologies. What

happens to the old equipment? And how can we cut our electricity usage? Below are some tips to make computing more environmentally-friendly.

## Conserving Power

Office equipment, led by computers, is one of the fastest growing electrical loads in the business world. And because much of the electricity is generated by burning brown coal, the more power we consume the greater the amount of greenhouse gases that will be released into the atmosphere. Just as an example, a typical desktop computer used eight hours a day generates over 600 kg of greenhouse gases each year.

Whether you own a business or simply run a computer at home, there are several ways in which you can minimise your energy usage, thereby helping to protect the environment plus save money on your power bills.

- Switch off computers, rather than leaving them in standby, when you are not using them for several hours (and particularly overnight and on weekends).  
If you are using **Windows Vista** or **Windows 8**, activate your computer's **sleep** mode when you leave your computer even for a very short period like a coffee break, because resuming your session when you return takes only a few seconds. The **sleep** mode saves your session both in RAM and on disk and then suspends the system into the low powered sleep state. As an example of how much power you can save, a typical PC with a 17" LCD monitor draws about 100 watts of power – the same PC in sleep mode draws just under 6 watts.
- Use an LCD monitor wherever possible. LCD monitors use less than half the electricity of conventional cathode ray tube (CRT) monitors, and reducing the brightness can lower energy use even further. An extra plus is that LCD monitors are better for your eyes than CRT monitors.
- Screen savers don't save power as the monitor is still on, they just protect the screen. Instead, shorten the length of time before Windows turns off the display as this will save power.
- Consider using a laptop computer. Laptop computers consume far less electricity than desktop computers (as much as 75 – 90% less). Also, only leave your laptop charger plugged in when required.
- Only turn on peripherals, like printers and scanners, when they are needed. Switch them off at the power point to avoid using energy in standby mode.

## Environmentally-friendly Disposal Of Computer Equipment

Investing in a new computer shouldn't have to mean dumping your old one at the local tip where it adds to the landfill problem and can cause environmental damage. For instance, CRT monitors contain lead, mercury, cadmium and arsenic that can leach into the groundwater. If your old computers aren't too old, consider donating them to a local school or charity. Alternatively, take them to a company that specialises in recycling computers – your old computer contains parts, such as circuit boards, RAM and a CPU that can be reused, as well as metal, plastic and other materials that can be recycled; they may even be able to refurbish your computer to suit someone else's needs perfectly. If your old computers are really out-of-date, take them to a company that will dispose of them in an environmentally-friendly and appropriate manner.

Printer cartridges are another item that are largely tossed in the bin. Don't! Recycle them instead. In Australia, for example, Planet Ark has made this very easy by placing boxes in thousands of post offices and shops, such as Officeworks, Dick Smith, JB Hi-Fi and The Good Guys where you can put all old printer cartridges for recycling. Currently, all components of the printer cartridges collected for recycling in these boxes are recycled with zero waste ending up as landfill! (For more information about this Planet Ark initiative, call 1800 2424 73 or visit [cartridges.planetark.org](http://cartridges.planetark.org).)

**NOTES:**



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