



Welcome to the safe@work Manufacturing Module.

Have you read the General Module, completed the test and printed your safe@work General Award of Attainment?

The Manufacturing Module should be done AFTER the General Module or Review Module.

If it is some time since you have completed the General Module you should read the Review Module. The test for the Manufacturing Module contains some questions based on the Review Module.

There are common hazards that exist in the manufacturing industry. It is important to learn about these hazards and how they can be controlled so that people at work are not exposed to risk.

The Manufacturing Module contains information on:

- Mechanical Equipment
- Forklifts
- Hazardous Substances and Dangerous Goods
- Manual Handling
- Slips, Trips and Falls
- Electricity, and
- Noise.

Within the manufacturing industry you may be involved in a range of work activities such as woodwork and turning, fabric dyeing and cutting, forming acrylic sheeting, resin casting, or working with fibreglass.

Your employer must make sure equipment is well maintained and that you are trained and supervised. You must also be provided with instruction regarding safe work procedures.

Key Point

It is important that you follow work procedures, not only for your own safety, but also for the safety of others.

Mechanical Equipment

A wide range of mechanical equipment is used in the manufacturing industry such as guillotines, wood working machines, bench saws, band saws, planers, routers and sanders.

Mechanical equipment can be hazardous. The most common injuries are to hands and fingers, which may be cut, sprained, dislocated, broken, crushed or severed by machinery or tools. These injuries can cause lengthy periods of time off work and sometimes they result in permanent disability.



Eye injuries caused by mechanical equipment accidents include being hit by an object (e.g. small particles such as metal shavings as well large objects or pieces of equipment), heat, radiation, hitting an object and falls, trips and slips.

The most serious injuries are from kickback (e.g. angle grinders) where the disc is thrust violently away from the object it is grinding, and back towards the operator. Kickback can result in severe cuts to hands, arms, head, torso and legs.

When mechanical equipment hazards cannot be eliminated or sufficiently reduced by engineering controls or safe working procedures alone, you may need to wear personal protective equipment (PPE) to improve protection. PPE may include safety glasses or goggles, earplugs or earmuffs, protective gloves, overalls or other close fitting clothing and safety shoes or boots with steel toe-caps to protect your feet if any items are dropped.

Your employer must

- have a maintenance program to make sure all equipment and machines are in safe working order and that where necessary, guards are fitted
- have a system in place for locking out and isolating machinery during maintenance, cleaning and repairs
- train you to operate any item of mechanical equipment before you use it, and make sure you are supervised when you use it. If you are in doubt about using any mechanical equipment, you must ask your supervisor for instruction, and
- provide any personal protective equipment (PPE) needed and tell you how to wear and use it correctly.

What you should do

When you are operating any mechanical equipment, you must follow safe work procedures as instructed by your employer or supervisor. These may include:

- wearing clothing that will not catch in moving parts
- wearing any personal protective equipment provided by your employer
- operating the machinery and equipment correctly and safely according to your training
- keeping all guards in place
- making sure any guards removed during maintenance, repair or cleaning are replaced by an authorised person before you use the machine again
- switching off machinery and equipment when it is not in use
- locking out and isolating machinery before any repair, adjustment, cleaning or maintenance is done
- concentrating on the job, as distractions can contribute to injuries, and
- keeping the area around the equipment or machinery clean.

Key Point

Keep all machinery guards in place - they are fitted to protect you from moving parts.



Current Department of Education & Training policy:

prohibits students undertaking tasks that include the use of machines such as:

- rip saw
- band saw
- buzzer
- thicknesser
- guillotine
- spindle moulder
- docking saw, and
- power wood shapers.

This list is comprehensive but not exhaustive.

No student should be asked to perform work on any machine which may present significant risks in operation. Work experience activity in such cases must be limited to observing, under supervision, trained and experienced operators.

The health and safety information here is designed to give students an understanding of the hazards and of the measures by which risks are controlled in the manufacturing industry.

Forklifts

Forklifts are often used in the manufacturing industry to load, unload and move materials around work places. They can be dangerous if not driven and operated correctly. Since 1985, 48 Victorians have lost their lives in forklift incidents and hundreds more have been seriously injured (VWA June 2002).

Key Point

Under Victorian law you must hold a Certificate of Competency to operate a forklift truck or an order-picking forklift truck, unless you are working under the direct supervision of a competent person (someone with a Certificate of Competency or equivalent qualification).

Employers must make sure employees are properly trained to operate a forklift and to follow safe work procedures.

Hazardous Substances

In the manufacturing industry, you may work with hazardous substances and dangerous goods such as paints, dyes, glues, fibreglass, wood dust, resins, solvents, as well as cleaning liquids and powders.

Fibreglass is a form of synthetic or man-made mineral fibre used mainly for insulation and in products such as surfboards. Some of the fibres used in insulation are fine enough to be breathed deep into the lungs and they can cause irritation to the eyes, nose, throat and skin.



Solvents are often used as cleaners or degreasers, and as ingredients in paints, inks, glue and varnishes. Solvents can enter the body when a person breathes in their vapour, through skin contact, or through the mouth from contact with food, fingers or other items such as cigarettes. They can impair memory and cause headaches, dizziness, weakness or tiredness, mood changes or nausea. Exposure to high levels of some solvents can cause liver damage, unconsciousness, death and cancer.

Spray paints and some other paints contain harmful substances. Inhaling paint fumes may cause occupational asthma. Long term exposure can affect the brain, damage the reproductive system and cause kidney or liver damage. Contact with the skin may cause dermatitis (an inflammation of the skin).

Wood dust is caused by jobs like floor sanding, furniture sanding, wood turning, routing, sawing, sweeping and emptying dust filters. Wood dust in work places can cause lung, sinus and throat irritations, asthma, bronchitis, shortness of breath, skin problems and even cancer. Your employer can reduce wood dust by using machines that are enclosed or fitted with local exhaust ventilation.

Key Point

Your employer should make sure you use hazardous substances according to the manufacturer's written instructions provided on the material safety data sheet (MSDS) and the agreed safe work procedures.

You should:

- always follow safety procedures
- not use solvents to clean your hands
- not enter confined spaces where fumes have collected
- not smoke near solvents or paints, and
- wear correct personal protective equipment (PPE) provided, such as a dust mask, protective overalls, suitable gloves and safety glasses.

Manual Handling

Lifting and moving equipment and materials, welding and painting, and operating levers on machinery are some examples of manual handling tasks you may have to do in the manufacturing industry. At times, your work tasks may involve bending and stretching as well as twisting sideways, or working with materials and equipment above shoulder height. All of these increase the risk of manual handling injury.

It is your employer's responsibility to assess and control manual handling tasks that may present risk, and to provide instruction, training and supervision for manual handling activities. Risk controls may include:

- organising the work to reduce the number of manual handling tasks involved
- providing mechanical lifting devices such as trolleys and hoists where appropriate
- making sure you do not work long shifts involving manual handling activity, and
- making sure the work place layout allows you enough space to move and work safely and comfortably.



Key Point

You must follow safe work procedures, and talk to your supervisor if you feel your job is too heavy, too difficult, too tiring or puts you at risk of manual handling injury.

Slips, Trips and Falls

Key Point

Slippery floors in the work place are a serious hazard and can result in far more serious accidents than simply slipping and falling over.

A slip or fall can cause injury to the arms, legs, back, neck or head. Neck and head injuries can cause damage to the spinal cord and nervous system. Many employees have suffered permanent disabling injuries or death as a result of a fall.

Your employer can reduce the risk of slips, trips and falls by providing a suitable non-slip floor surface, good lighting and safe work procedures. In some work places, floor surfaces can be chemically treated to increase traction and ramps provided where floor levels change.

You must follow instructions and safe work procedures provided by your employer, which may include:

- sweeping things like wood and metal shavings up regularly
- cleaning all spills immediately
- making sure there are no trailing electrical cords on the floor, and
- keeping floors and walkways free of materials, timber, boxes, equipment and rubbish.

Electricity

Note: Students on work experience must not operate powered tools or mobile plant. They must not undertake any task which may place them at risk from electrical sources. This information is designed to give students an understanding of the hazard and some of its risk control measures.

The machinery, equipment and tools you will use in the manufacturing industry are usually operated by electricity.

Your employer must make sure that all electrical machinery and equipment is kept in good working order, electrical plugs and switches are not damaged, cords are not split or frayed and are regularly checked for damage.

Key Point

There must be a system in place for locking out and isolating electrical machinery during maintenance, cleaning and repairs to prevent it being accidentally turned on.



You must follow instructions for using electrical equipment, which may require:

- switching off appliances at the power point before you pull out the plug
- disconnecting broken appliances and not using frayed cords or broken power points
- not using too many appliances from the same power point, and
- always keeping electrical cords off the floor, to reduce the risk of damage from drag or contact with sharp objects.

Noise

In the manufacturing industry, you may work with noisy power tools and machinery such as routers and planers and a variety of cutting and sanding tools. You may be exposed to noise levels exceeding 85 decibels or dB(A) that can lead to permanent hearing loss.

Your employer can reduce noise levels by isolating noisy machinery from employees not involved in its operation, enclosing it in a sound absorbing box or erecting sound absorbing barriers, and by keeping machinery and equipment in good order so it operates efficiently.

If the noise cannot be removed at the source or sufficiently reduced by other means, your employer must provide personal hearing protection (earmuffs or earplugs) in addition to other risk controls.

Key Point

Earpieces for portable radios and music devices do not provide protection from loud noise.

Self-Assessment Questions

Now try the self-assessment questions. Before starting the questions, be sure to enter your name and the name of the school exactly as you want it to appear on your Award of Attainment. We ask you to provide these details so that you can be issued with the Award of Attainment.

There are 16 questions. If you get 12 or more correct you can print online a safe@work Award of Attainment. The Principal of your school will then sign the Award of Attainment and validate it with the school stamp.