HOW TO IMPLEMENT
EFFECTIVE AND COMPREHENSIVE

VOLUME - 4

WORK HEALTH & SAFETY

MAUS

MAUS BUSINESS GUIDE SERIES

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OCCUPATIONAL HEALTH & SAFETY

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Peter is one of this country's leading SME experts. He is a bestselling author and the designer of a number of multi-award winning business tools that are used by more than 60,000 companies around the world.

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LETTER TO BUSINESS OWNERS

Thank you *for joining the thousands of business people who have chosen this series of E-Guides and business information to assist them in managing their business.*

Your first step is to read this booklet cover to cover to give you a great overview of the process. Then at the end of the booklet I have included a list of next steps for you to consider.

On behalf of myself and the MAUS international network of advisors....Good Luck!

How to Implement Effective and Comprehensive OH&S

OCCUPATIONAL HEALTH & SAFETY

Contents

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OCCUPATIONAL HEALTH & SAFETY

What is an Occupational Health and Safety Plan?

Definition: It is an organised policies and procedures system for identifying potential workplace hazards and exposure to harmful substances and situations? It also incorporates the training of staff personnel in emergency preparedness, use of correct protective clothing and equipment and accident prevention and response. Once these factors are clearly identified the risk can be considerably reduced using an up-to-date OH&S Plan.

What is a Risk? What is a Hazard?

Risk is the possibility of injury, illness, damage or loss occurring as a result of a hazard. The following table gives examples of risks arising from a hazard.

Hazard	Risk
an unguarded gear wheel on a workshop grinding machine	the potential to draw clothing and limbs into the drive of the machine and cause serious bodily injury
electricity in an underground cable at an excavation site	the potential to be unearthed by earthmoving machinery and cause electrocution
an unlabelled container of caustic soda	the potential to cause severe skin burns if handled incorrectly
loose asbestos released during demolition work	the potential to cause lung cancer
noise from an uninsulated chainsaw	can reach levels of up to 110 decibels with the potential to seriously damage hearing
a badly designed shovel (for example, with a short handle and very large blade)	the potential to cause back injury
boxes piled in a passageway	the potential to trip someone and cause injury
waste oil from an engine	the potential to damage health through skin absorption, due to its carcinogenic properties

How Do You Manage Safety Risks at Your Workplace?

Key Steps in Risk Management

1. Identify the risks.
2. Assess the risks.
3. Control the risks.
4. Monitor and review the process.

Identifying Hazards & Risks

How Do You Identify Risks?

Risk identification involves the systematic investigation of all potential risks and identifying and recording the hazards which are causing them. In simple terms, it means identifying all of the possible ways in which people may be harmed. In order to understand what risk identification involves, it is first necessary to understand the nature of hazards.

Hazards may arise from:

- the workplace environment (e.g. a confined space where there may be an oxygen deficiency)
- equipment (e.g. an extremely noisy engine which has not been insulated)
- substances (e.g. hazardous fumes from solvents)
- work systems (e.g. the area surrounding a back hoe on a construction site being used as a thoroughfare for other workplace traffic).

Forms of hazards

- Physical – e.g. noise, electricity, heat and cold.
- Chemical – e.g. toxic gases, noxious fumes and corrosive liquids.
- Ergonomic – e.g. the height of a workbench, the shape of a vehicle's seat and the length of a control lever.

Risk Identification Procedure

There are different approaches to the task of risk identification. These include:

- hazard-based risk identification
- location-based risk identification
- task-based risk identification

Identifying plant-related risks

Step 1: Compile a plant register

a plant register is a log where all plant items are recorded according to their name, model, location and in-house registration number (which is allocated to the plant by the organisation when plant is first introduced into the workplace). Any additional information pertinent to the plant (catalogues, drawings, operating instructions, maintenance instructions) is then filed under the same registration number.

You are legally required to keep a plant register in many States and Territories, and it is also recommended practice in WorkSafe Australia's *NOHSC 1010 – National Standard for Plant*.

Step 2: Inspect the workplace, using the plant register

Check that each item of plant is included when you do your workplace inspection to identify risks associated with each plant.

Step 3: Record the results
You then consolidate your findings in a plant risk identification list.

Checklist

Plant-related risks may arise from the following types of hazards:

- mechanical action, e.g. pressing, cutting, grinding and rolling – carrying risks such as entanglement, severing and crushing
- impact, e.g. from a moving part, a flying object or particle, or powered mobile plant
- electrical exposure, e.g. from electrically powered plant, electromagnetic radiation, or electrostatic charge
- heat and cold, e.g. from ovens, large industrial machinery, freezers and liquid nitrogen containers
- noise and vibration, e.g. from the engines of earthmoving plant
- explosion e.g. from plant under pressure
- falls e.g. from an elevated platform.

Identifying Chemical Hazards

Step 1: Keep a chemical substances register

Identify all substances, their location and quantity. Determine which substances are hazardous – this can be done by checking the container storage label and the substance's MSDS – and develop a consolidated list of these substances.

Chemical substances registers are a legal requirement for workplaces using hazardous substances. The register must include a copy of all Material Safety Data Sheets (MSDS) for hazardous substances, as well as additional information relating to storage, preservation, disposal and handling of each chemical in the workplace.

Step 2: Inspect the workplace

Conduct workplace inspections to review the use, storage and handling of the chemicals in the register. The inspections must also record existing control measures (explained below).

> Tip
>
> Due to the range of their potential forms, chemical hazards can often be invisible or less obvious in the workplace environment.

Checklist

Chemical-related risks may arise from the following types of hazards:

- solids e.g. dusts, powders, smoke and fumes which may, for example, be inhaled causing health impacts including damage to the respiratory tract, fevers, nausea and cancer
- liquids e.g. mixtures and solvents which can be absorbed through the skin or swallowed, causing injuries such as tissue necrosis, burns, dermatitis and absorption of toxins resulting in damage to organs
- gases which may be inhaled, causing effects such as poisoning, fevers, headaches and nausea.

Identifying Manual Handling Hazards

Manual handling hazards have the potential to occur in almost every workplace activity.

Step 1: Develop a manual handling register

This is a log of all manual handling activities which are recorded and allocated a registration number.

Step 2: Inspect the workplace

Before starting the inspection, use the register to prepare a list of manual tasks and record existing control measures (explained below).

Location-Based and Task-Based Risk Identification

Risk identification based on location is where the workplace is broken down into work sectors and zones and all of the risks present in each zone are identified.

Risk identification based on tasks involves analysing workplace activities and breaking them down into individual tasks. An inventory is made of all of the tasks conducted in the workplace and each task is investigated to identify all of the risks and hazards involved.

These two methods are often combined – that is, the workplace is broken into sectors and then each task in the sector is analysed. The procedure for this follows.

Step 1: identify tasks in each location

For example:

Office tasks:

- photocopying
- word processing
- filing/retrieving files
- data entry
- window cleaning
- cash handling.

Woodworking shop:

- delivery of timber
- cutting timber on the circular saw
- using the spindle moulder
- using the planing/thicknessing machine
- using the tenoning machine
- gluing joints
- handling finished product.

Machine shop:

- delivery of stock
- using the lathe
- using the pedestal drilling machine
- pressing the sheet steel components
- polishing and grinding the components
- removing the components to the store.

New office construction area:

- bricklaying
- drain laying
- surveying
- scaffold erection
- pouring of concrete
- painting of external timber.

Vehicle repair workshop:

- replacing brake drums/pads
- changing oil
- welding repairs
- spray painting
- replacing exhaust systems
- road testing
- engine tuning
- testing exhaust emissions.

Step 2: analyse the tasks

Each activity must be analysed so that all of the hazards involved can be identified.

This may mean further breaking down some tasks into component elements. Each of these elements is then examined in terms of its activities, use of plant and equipment, use of substances and materials, processes, and the place where it is carried out.

The component elements of a task may include:

- individual activities
- substances and materials
- plant, tools and equipment involved processes
- characteristics of the place where the task is carried out.

The easiest method of breaking tasks down into elements is usually to consider how the task is undertaken step by step.

Example

The task of cutting timber on a circular saw involves the following elements:

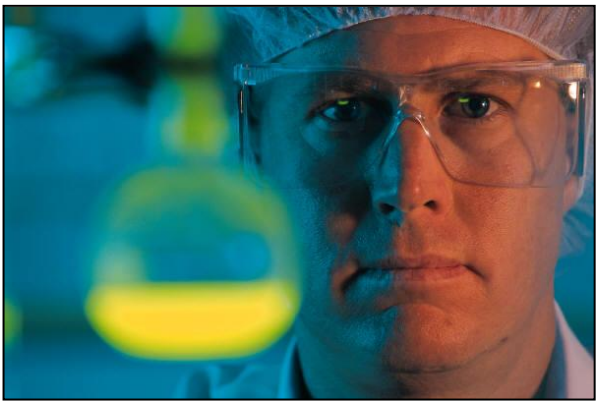
- moving timber to the saw
- setting the guides and guards
- feeding the timber into the saw
- cutting the timber
- removing the cut piece
- removing the waste
- transporting the cut timber to the next location
- dealing with jammed timber
- maintaining the saw.

Step 3: draw up the tasks inventory

Compile the tasks identified into a task inventory. Details which will be helpful in later risk management exercises should be included – such as any plant or substances involved and any specific operator competencies required (for example, a licence to operate a plant item). A sample form is provided below.

Step 4: identify the hazards

Now that all the component parts of each task are analysed and recorded, you can identify their hazards and their associated risks.



Sample Risk Identification Checklist

The following checklist can be used to identify risks. A fresh copy of the checklist should be used for each work zone considered. The checklist user should tick the "Yes" or "No" box as each factor listed is checked.

Risk identification checklist	*Yes*	*No*
Are substances used in particular tasks suitable for the tasks?		
Is there a register of hazardous substances, and an inventory of chemicals purchased or produced and material safety data sheet (MSDS) for each substance?		
Are hazardous substance containers adequately labelled?		
Are hazardous substances stored according to respective MSDS?		
Is plant and equipment suitable for the required tasks?		
Are all moving parts of plant and equipment guarded to prevent contact with people and property to minimise the risk of injuries and damage, such as crushing, stabbing, cutting, puncturing, shearing, and tearing?		

Are there systems in place to prevent injury from fragmentation of or flying particles from plant and equipment?		
Are there systems in place to prevent injury from falling plant and equipment?		
Are there systems in place to prevent injury from performing a task with plant and equipment in a confined space?		
Are there systems in place to prevent injury from inadvertent movement of plant and equipment?		
Are there systems in place to prevent injury from 'stored energy' in plant and equipment, for example compressed air or hydraulic pressure after turning off plant?		
Are there systems in place to prevent injury resulting from failure of plant and equipment due to the loss of contents, loss of load, unintended ejection of product, explosion, fragmentation or collapse of parts?		
Does plant and equipment have adequate power isolation, noise insulation, ventilation and fume extraction?		
Is the noise level of plant, equipment and the surrounding		

environment within the legislated noise level set down for your particular workplace?		
For people using vibrating hand-held equipment or operating vibrating controls (chain saws, sewing machines, grinders, pneumatic drills, and so on) are exposure levels within values recommended by *Australian Standard AS2763*?		
For drivers of vehicles and tractors, and helicopter and airplane pilots, are the vibration exposure levels within values recommended by *Australian Standard AS2670*?		
For operators of vibrating platforms on manufacturing/construction sites, are exposure levels within values as per *Australian Standard AS2670*?		
Are occupational exposures to Ionising radiation, such as X-rays, and gamma-rays equipment, within limits set by *WorkSafe Australia Network Health and Medical Research Council (National Standard Recommendations for limiting exposure to ionising radiation)*?		
Is plant and equipment that generates UV radiation, such as photocopiers, lasers, UV cured inks in the printing industry, and welding emissions enclosed?		

Are radio frequency exposure levels from TV/FM radios transmitters, radio, microwaves, plastic moulders, induction heaters and so on kept as low as practically possible?		
Are outdoor workers provided with personal protective equipment and work systems as per *WorkSafe Australia - guidance note on the protection of workers from UV radiation in sunlight*?		
Are tasks performed at temperatures between 16°C and 24°C for sedentary work, 4°C and 24°C for light work and – 7°C and 24°C for moderately heavy work?		
Are tasks performed for more than 2 hours and done so at humidity levels between 40% to 60%?		
Is electrical wiring installed according to *Australian Standard AS 3900*?		
Are electrical fixtures provided with adequate earthing or other residual current devices?		
Are any signs of damage to either cable isolation or other electrical fixtures rectified?		
Are there identified colour coded cable labelled isolators to all switchboards?		

Are employees prevented from performing tasks in metal enclosures or damp places using electrical tools?		
Is there a regular inspection of portable cords and extension leads?		
Are 'Danger' tags used by electricians when working on plant?		
Does electrical equipment comply with *Australian Standard AS3100 - General Requirements For Electrical Equipment*?		
Is adequate lighting provided according to *Australian Standard AS1680 – lighting levels for different types of work*?		
Is employees' eyesight assessed every two years to determine their ability to continue performing their tasks?		
Are hazardous conditions that are likely to arise during the use of plant and equipment as a result of friction, fire, explosion, moisture, vapour, gases, dust and ice controlled?		
Are access and egress arrangements for doorways, passageways, stairs, gangways and so on clear of obstructions, well lit, free of slip hazards and secure?		

Has lifting, carrying, pushing, and pulling been eliminated from all tasks?		
Has frequent bending, twisting and stretching been eliminated from all tasks?		
Has lifting of awkward loads been eliminated from all tasks?		
Has repetitive work using awkward or constrained postures been eliminated from all tasks?		
Have slip, trip and fall hazards been eliminated?		
Are all walkways free of obstructions?		
Are floors undamaged?		
Are ladders checked regularly for any damage?		
Are stairways well lit and properly maintained?		
Are work stations and benches adjusted to suit the physical dimensions of workers?		
Are safety devices and emergency back-up arrangements of plant equipment and systems suitable for the tasks being performed?		

Are plant, equipment, building areas and fixtures maintained and repaired?		
Are environmental conditions and terrain suitable for the plant and substances that are used?		
Are hazardous elements, such as electricity, water and incompatible chemicals, segregated?		
Are systems in place to address conflict between staff?		
Are systems in place to address poor job satisfaction?		
Are systems in place to address low job security?		
Have poor work conditions, such as noise, dust, lack of ventilation and so on been eliminated?		
Are visitors to the workplace provided with relevant safety information and are they supervised?		
Are the current work systems appropriate, for example, whether more or fewer people should be involved and whether work procedures need to be revised?		

Do workers hold the required competency requirements, such as licensing, certification and apprenticeships?		

Risk Assessment

How Do You Assess Risks?

Risk assessment is the process of assessing all of the risks associated with each of the hazards identified during the risk identification process.

<insert Picture>

Checklist

Risk assessment procedure

1. Evaluate the probability or likelihood of an accident occurring.
2. Calculate or estimate the severity of the potential consequences.
3. Based on these two factors, assign the risks priority for risk control through the use of a risk rating.
4. Set a time scale for acting on the risk assessment results.
5. Record the results.

Aids to Risk Assessment

There are many activities which can be undertaken to assist with the risk assessment process. These include:

- undertaking visual inspections of the work and its associated environment or conducting workplace walkthroughs
- conducting audits
- undertaking tests
- carrying out scientific or technical evaluations
- analysing accident, incident and near miss data
- acquiring information from designers, manufacturers and suppliers.

Step 1: evaluate likelihood

Evaluating likelihood just means working out how likely it is that a potential risk will actually happen. The method of determining likelihood may vary according to the type of workplace and operations involved. A basic system of evaluating likelihood is outlined below.

The following scale may be used as a model for rating likelihood using appropriate terminology and a basic numerical range of one to 10:

- certain or imminent (10)
- highly likely (8)
- likely (6)
- may happen (4)
- unlikely (2)
- highly unlikely (1).

Tip

In considering likelihood, it is important to review any information which was gathered during the risk identification stage.

Checklist

Factors to consider

- Frequency of occurrence – i.e. the number of times the situation occurs (e.g. how many times a day a construction worker is exposed to the hazard of manually handling 45 kg cement bags).
- Frequency of exposure – i.e. the number of people exposed to the hazard (e.g. how many construction workers at the site lift and carry 45 kg bags around).
- Any special characteristics of the people involved (e.g. a person who has had a prior back injury may be more likely to sustain another injury; a person who is already sensitised to solvents may be more likely to sustain health effects than another worker).
- The position of the hazard – are there issues such as distance from the hazard which may influence the likelihood of injury?
- Distractions such as time pressures or workplace conditions which may influence careful undertaking of a task (e.g. hectic activity in a hospital emergency area when a nurse is taking a blood sample could impact on the

likelihood of a needlestick injury).

- Duration of exposure – how long is the person exposed to the hazard?
- Quantities of materials or multiple exposure points involved.
- Environmental conditions – are there conditions which may increase the likelihood of an incident occurring (e.g. water in the vicinity of an electrical hazard)?
- Competence of people involved (e.g. does the worker have adequate training and experience?).
- Condition of equipment – defective equipment is more likely to be involved in an accident (e.g. a cracked guard on the power take-off shaft of a tractor may actually increase the likelihood of accidents rather than preventing them).
- Current controls – how effective are any control measures already provided? Are they being used? Control measures may not be used due to issues such as:
  - lack of training or supervision
  - failure to replace controls following cleaning, maintenance or repair work
  - difficulty or awkwardness in using or working with controls
  - Complexity of controls.

Step 2: estimate severity

Estimating severity means working out how much harm will be done if the risk is realised. The severity of a

potential injury, illness, damage or loss is also rated. Again, the method chosen to determine severity will depend on the unique needs and circumstances of the workplace. A basic system is outlined below.

Rate the severity

The following scale may be used as a model for rating severity using appropriate terminology and a basic numerical range of one to 10:

- multiple deaths (10)
- single death (8)
- major injury (6)
- lost time injury (4)
- minor injury (2)

Checklist

Factors influencing severity

- the number of people who may be affected in one incident
- special characteristics of individuals which place them at increased risk (such as lack of experience or medical conditions)
- concentrations of substances
- volumes of materials
- speeds of projectiles and moving parts
- heights and distances
- weights
- forces and energy values

Checklist

Information to consider

- Risk identification checklists (which will indicate the factors taken into consideration).
- Risk identification record forms (which will provide valuable information on circumstances surrounding the risk together with comments of the identification team or individual).
- Your organisation's accident, incident and first aid records (which should reveal trends or frequencies of injury).
- Accident investigation reports.
- Your organisation's workers compensation records.
- Plant maintenance and breakdown records (e.g. service books).
- Work systems and procedures documentation.
- OHS policies – both general and specific.
- Employee training records.
- Operators' manuals and equipment instruction booklets.
- National accident, injury and workers industry

Step 3: assign an overall risk rating

Once the likelihood and severity have been ranked or rated, these conclusions are used to rate the risks in priority order for control. Again, the method and terminology used in cross-referencing the likelihood and severity may vary. The simplest means of doing this is to rate the priority of the risks as follows:

- trivial ("Low" priority)
- adequately controlled ("Medium" priority)
- not adequately controlled ("High" priority).

For example, a risk which is "highly likely" to occur and may result in "major injury" would probably be rated as a "High" priority for control.

Tip

Sometimes you may find that a decision cannot be reached using a general risk assessment because the hazard is one for which special expertise or further information is required. It may be necessary, for example, to undertake some form of testing (such as workplace monitoring or health surveillance of employees) to make a precise determination on the risk. It may also be necessary to seek expert advice.

The Likelihood/Severity Matrix

On the table below, the severity rating and the likelihood rating numbers are multiplied to give a risk rating from 1 to 100. The higher the number, the greater the need for action to be taken to control the risk – that is, the higher the priority for risk control.

The likelihood/severity matrix						
Severity times Likelihood ↓	Multiple deaths (10)	Single death (8)	Major injury (6)	Lost time injury (4)	Minor injury (2)	Delay only (1)
Certain or imminent (10)	100	80	60	40	20	10
Highly likely (8)	80	64	48	32	16	8
Likely (6)	60	48	36	24	12	6
May happen (4)	40	32	24	16	8	4
Unlikely (2)	20	16	12	8	4	2

Highly unlikely (1)	10	8	6	4	2	1

Interpreting Results from the Matrix

The following guidelines may be used as a "rule of thumb".

- "Low" priority (trivial) risks are those with risk ratings of 6 and under.
- "Medium" priority (adequately controlled) risks are those rated as unlikely or highly unlikely.
- "High" priority (inadequately controlled) risks are those rated as certain or imminent or highly likely – further control measures will be required.
- "High" priority hazards are also those with ratings of 24 or above – these will require consideration of whether to suspend or start the operation until control measures are introduced.

The control measures provided for risk which are rated as likely or may happen must be examined against current standards to determine whether the risk is adequately controlled or not adequately controlled ("Medium" or "High" priority).

Step 4: set a time scale for action

The risk ratings determined during risk assessment enable decisions to be taken on the amount of effort to be expended in controlling risks associated with particular hazards. However, any risk that is "certain or imminent" or "highly likely" to cause harm must be attended to and the risk reduced even if the severity is low.

Those risks identified as not adequately controlled can now be itemised in a prioritised list for action using the risk rating numbers as a guide to those which will require urgent attention (and possibly suspension of operations), and those which can be listed for action sometime in the future.

One method of dealing with risk is to put time limit bands against the risk rating score, such as:

- "scores of 12 to 24 must be attended to within 12 months"
- "scores of 25 to 40 must be attended to within three months – interim controls will be put in place immediately"
- "scores of 41 to 100 must be attended to immediately – activities will be suspended until controls are in place".

Tip

In setting these timescales, remember that the control measures for risks associated with individual hazards will vary enormously as far as time, cost and other resources are concerned. It is essential for realistic time limits to be set for the various items to be dealt with – in the same way that other management objectives are given deadlines.

Ongoing Assessment

Once the risks associated with all of the hazards identified have been assessed and control measures have been introduced, the risk assessment exercise can be repeated to decide if the residual risk has been reduced to trivial or adequately controlled levels. Continual assessment forms part of the monitoring and review phase of risk management.

Step 5: recording the results

Once the risk assessment process has been completed, the results should be recorded in a systematic manner. This means itemising the:

- work sector, division or department involved
- name of the person heading up the risk assessment
- date on which the assessment was completed
- work zone or location of the hazard involved
- task, activity or work process involved
- hazard involved
- people who may be exposed to risks from the hazard
- likelihood ranking of the risk (e.g. "Certain or imminent (10)")
- severity ranking of the risk (e.g. "Multiple deaths (10)")
- risk rating assigned (the numerical value – e.g. 100 – together with the conclusion reached about priority – e.g. "High") timescale for risk control (e.g. "Immediate – activity to cease until control is effective"

Risk Assessment Control

Tip Any additional conclusions of the risk assessment which may be significant, together with any preliminary findings on improvements needed, and should be detailed in the comments section of the form. This will assist in the risk control phase of the risk management process.

Risk Assessment Records

In addition to the risk assessment record form, copies should be kept of all significant documentation used in reaching risk assessment conclusions.

Tip

Risk assessment records should be filed or cross-referenced with the relevant risk identification records for the individual hazards and work sectors. For ease of record keeping, you may prefer to merge the details from this form with those from a risk identification record form and a risk control record form, so that all of the details for an individual hazard are provided on one form. However, for the purposes of undertaking each of the steps in the risk management process, it may be more helpful initially to record the results separately.

Checklist

Examples of risk assessment documentation

- A copy of the likelihood/severity matrix or similar methodology used.
- Risk identification documentation (such as task inventory forms, risk identification checklists and risk identification record forms).
- Conclusions reached from analysis of any of the information sources listed in the checklist "Information to consider" above.

Checklist

The following checklist offers a brief overview of the elements which must be managed in undertaking risk assessment effectively, taking into account the needs and resources of the organisation. Tick off each action which has been undertaken. The answer to each relevant question should be "Yes" – a "No" answer indicates that a review and remedial action should be taken.

Risk assessment checklist		
Action taken	**Yes**	**No**
A competent person at an appropriate managerial level has been appointed to take overall responsibility for the risk assessment process.		
A decision has been made on the involvement of in-house personnel and outside consultants (where necessary) in the risk assessment process.		
A decision has been made on whether to use teams or individuals to undertake risk assessment activities.		
Competent people have been designated to carry out risk assessment activities.		
Appropriate training has been provided to all assessors.		
A dry run or practice risk assessment		

has been undertaken.		
Appropriate risk assessment techniques have been selected given the organisation's needs, available resources, the types of hazards and the degrees of risk involved.		
All relevant information (such as risk identification documentation) has been considered in undertaking risk assessments.		
The likelihood of harm occurring as a result of every risk identified has been evaluated.		
The severity of potential harm from each risk has been evaluated.		
Priorities (risk ratings) for risk control have been assigned based on the likelihood and severity conclusions.		
Based on the priorities (risk ratings), timescales have been outlined within which risk controls must be implemented		
Deadlines have been set for review of individual risk assessments.		
All relevant risk assessment documentation has been recorded and appropriately filed (including, for example, risk assessment record forms and any documentation used in reaching risk assessment conclusions, such as records of tests carried out).		

How are Risks Controlled?

Risk control is the process by which the risks associated with each of the hazards present in the workplace are controlled.

Aim

The primary aim of risk control is to eliminate the hazard giving rise to the risk(s), thereby eliminating the risk(s). Where this is not possible, risk control seeks to minimise risks by modifying or controlling the hazard and/or the associated work systems.

The risk control process starts by considering the highest ranked risks, working down to the least significant. However, this does not mean that lower priority risks which can be controlled quickly and easily should not be controlled simultaneously. The best available control measures should be put in place as soon as possible for all risks.

Each risk should be examined having regard to the "hierarchy of controls". This provides a method of systematically evaluating each risk to determine, firstly, if the causal hazard can be eliminated, and otherwise to find the most effective control method for each risk.

Hierarchy of controls

1. Eliminate the hazard.
2. Substitute with a lesser hazard.
3. Modify the work system or process.
4. Isolate the hazard.
5. Use engineering controls.
6. Use back-up controls (personal protective equipment and administrative controls).

In many cases, it will be necessary to use more than one control method. Back-up controls (such as personal protective equipment and administrative controls) should only be used as a last resort or as a support to other control measures.

Tip

In some cases it may be necessary to put temporary controls in place until such time as the proper controls can be instituted. Wherever there is a high risk and the control measures are not immediately available, temporary controls which reduce the risk(s) must be put in place or the activity must cease until adequate controls are implemented.

Level 1: Eliminate the hazard

The first control option to be considered is whether it is possible to completely eliminate the hazard – in which case, the associated risks will also be removed.

Example

A sandwich shop owner has an electric bread slicing machine with a rotating blade which is difficult to guard. The owner discards the machine and orders sliced bread instead, thus totally eliminating the hazard.

Level 2: Minimise the risk

Where it is not possible to eliminate a hazard, the next best option is to minimise the risks involved by:

- substituting with a lesser hazard
- modifying the work system or process
- isolating the hazard
- introducing engineering controls.

Substitute the hazard

In considering this option, ask: "Is it possible to substitute the hazard for a less hazardous option?"

Example

A water-based paint may be used instead of a toxic,

flammable solvent-based substance.

Acid for cleaning bricks on a construction site can be purchased in reduced concentration rather than full strength acid which have to be diluted on site.

Modify the process

In considering this option, ask: "Is it possible to modify the design of the work process or plant so that it no longer presents a hazard, or so the hazard is controlled?"

Example

Fit a plastic blade on a hover mower to reduce the severity of injury in case a person comes in contact with the blade.

Isolate the hazard

In considering this option, ask: "Is it possible to isolate the hazard so that workers are physically separated from it?"

Example

Fit a fixed, fully enclosing guard on a dangerous part of a machine (such as a shield on the power take-off shaft of a tractor).

Engineering controls

In considering this option, ask: "Is it possible to use engineering controls such as lockout procedures, process changes, presence-sensing systems, ventilation or machine guarding to reduce the risk?"

Example

Use a lock-out procedure to cut off power during maintenance work to high-powered machinery.

Install a local exhaust system in a workshop to extract fumes from a welding process at the source.

Level 3: Institute back-up controls

Back-up controls include:

- administrative controls and safe work practices
- personal protective equipment.

Example

Administrative controls and safe work practices

- Use written procedures to indicate:
  - how tasks are to be undertaken
  - who is permitted in the work area
  - what the requirements for operating different types of equipment are

- operator competencies
- any training and supervision needed.

- Rotate workers so that the same workers are not exposed all the time.
- Reschedule operations to times when there are fewer workers around.
- Provide one-way traffic flow to minimise traffic hazards.
- Instituting purchasing controls where a hazard has been eliminated to ensure that, for example, a solvent-based adhesive is not purchased by someone in the organisation who is unaware of the decision to use only the water-based alternative.
- Providing adequate training, instruction and supervision to ensure that employees undertake their work safely.

Example

Personal protective equipment (PPE)

- hard hats (or helmets) on building sites
- safety goggles in laboratories
- protective gloves in green keeping
- leather aprons in welding
- steel-capped boots in saw-milling
- respiratory equipment in spray-painting

Using a Combination of Controls

In many circumstances it may be necessary to adopt more than one of the control measures outlined above. In addition to the control methods already outlined, back-up controls such as the use of administrative solutions and personal protective equipment should very often also be provided. These should not be regarded as primary control measures, but only as supporting measures to bolster the main measures in place. They may also be used in the short-term as part of interim control measures until permanent measures are put in place.

Risk control procedure

Step 1: choose the control measures

Go back through each risk assessment record and start by considering the best control options for the highest priority risks, working through the medium priorities to the low priorities.

> Tip
>
> Remember, the lower priority risks that can be controlled quickly and easily should be controlled at the same time as the higher priority risks. The best available control measures should be put in place as soon as possible for all risks.

Step 2: draw up a schedule
A schedule should be drawn up outlining the deadlines by which each control measure must be implemented, and the people responsible. A sample schedule form is provided below. Depending on the needs of the workplace, more details can be added and a customised form developed.

Step 3: implement the controls
Where there is some delay in implementing a control, the reason must be given, initialled by the person responsible for the control measure and for the overall risk management program whatever control measures are used, it is important to assess their potential impact before they are put in place. Ensure that the control being introduced does not actually exacerbate the hazard or introduce new hazards to the area thereby increasing the risk of injury and/or damage to property. A new deadline set for the control to be put in place. All reasonable efforts must be made to ensure that temporary risk control measures are put in place. In less critical cases, PPE and administrative controls can be used. In critical cases, it will mean ceasing the hazardous activity completely until the controls are in place.

Tip
Technological progress means that what is not feasible today may be manageable in six or 12 months. Therefore, the decision that a certain risk control measure is the best available option today will not remain valid for the indefinite future. Risk control measures need to be kept under constant review to keep pace with technology. This means scheduling times to review and revise the measures in place.

Step 4: keep records of the process

A risk control record form is provided below to assist with record keeping. This record should be adapted for used within the individual workplace, copied and filled in as required, and filed in the risk management documentation filing system. Risk control records should be attached to, cross-referenced with, or otherwise filed with related:

- risk identification records
- risk assessment records.

Risk Control Checklist

The following checklist offers a brief overview of the elements which must be managed in undertaking risk control effectively, taking into account the needs and resources of the organisation. Tick off each action which has been undertaken. The answer to each relevant question should be "Yes" – a "No" answer indicates that a review and remedial action should be taken.

Risk control checklist		
Action taken	Yes	No
A person has been designated to coordinate the overall risk control process.		
A decision has been made about others who will be involved in determining and coordinating risk control activities, that is risk control team members.		
Everyone to be involved in risk control activities has been trained and fully understands their role and responsibilities.		
Priorities for risk control have been determined based on the results of the risk assessment process.		
All current control measures have been taken into account.		

Employees are consulted on the development of risk control measures relevant to them.		
All hazards which can be eliminated have been scheduled for elimination.		
All hazards which cannot be eliminated but which can be substituted for lesser hazards have been scheduled for substitution.		
All relevant work systems and processes have been scheduled for modification in order to minimise any hazards which cannot be eliminated or substituted for lesser hazards.		
All hazards which cannot be eliminated, or controlled by substitution or modification of work systems/processes, have been scheduled for isolation.		
All hazards which cannot be eliminated, or controlled by substitution, modification of work systems/processes or isolation, have been scheduled to be controlled by engineering methods.		
Where other control measures fail to effectively minimise the risks from a hazard, back-up controls (including administrative measures and provision of personal protective equipment) have been scheduled for use.		
Where necessary, a combination of the		

highest possible control options is used to provide the best level of control achievable.		
A master risk control schedule has been developed and is overseen by the risk control coordinator.		
Individual risk control team members have been assigned to check the implementation of controls within specific areas of the workplace.		
Individuals have been assigned to implement the scheduled controls within specified time frames.		
Where there is any delay in implementing a control measure, the person responsible for implementing the control documents the reason for the delay, together with the new deadline for introducing the control. This record is signed by the person responsible for the control and the risk control team member responsible for checking controls in that area.		
Deadlines and systems are established to ensure that risk controls are reviewed at appropriate intervals to ensure that they are (and remain) effective.		
Appropriate information, instruction and training are provided to ensure that all employees understand the controls in their area and their responsibilities with respect to these controls.		

Adequate supervision is provided to ensure that employees cooperate with the control measures in place in their area.		
Appropriate risk control records are made and maintained.		

Undertaking Monitoring and Review

Monitoring and review is the final stage in the risk management process. It is the means by which risk management is kept current and effective, as new risks and those overlooked in the original process are identified and controlled.

Checklist

Basic elements of monitoring and review

- Systematic re-implementation of the original risk management steps of risk identification, risk assessment and risk control, to ensure that the process was undertaken properly and that, in hindsight, the conclusions were correct.
- Ongoing monitoring of existing risk control measures to assess their effectiveness in light of changes and fluctuations in the workplace.
- Collection of data on any new risks which may have arisen and the formulation of new control measures.
- Reviewing the risk management process to ensure that all new risks identified are controlled.
- Monitoring external material (e.g. new legislation and amendments, codes of practice, guidance material, Australian Standards, manufacturer's and suppliers' information) to check that the standards defined by the organisation are still suitable to current best practice in OHS for their industry sector or area of operations.
- Documenting the monitoring and review process.

Next Steps

Self-Education & Self Help

Software: In terms of practical self help solutions. MAUS Business Systems has software that will help you to improve your business management systems. These include titles on Business Planning, Job Descriptions, Policies & Procedures, Performance Review, Information Memorandum Writer and more. The software can be found at www.maus.com. Free trial downloads are available.

Appoint an OH&S Consultant

You may need to appoint a number of advisors throughout the process. Some of the areas you may need professional help include:

Occupational Health & Safety
Quality Assurance
Environmental Planning
Policies & Procedures

We would strongly recommend that you appoint a HR Consultant to assist you with your HR strategies and planning. You will need to appoint someone that understands the entire Human Resource process. This person can then help you project manage the entire performance management process.

More Information

MAUS has an international network of Business Advisors that specialise in Occupational Health and Safety.

Contact

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Advisory Engagement Offer

We are willing to offer all prospective clients an initial free engagement meeting to determine any possible needs and brainstorm or propose solutions.

References

This publication was adapted from the wealth of information in the MAUS Business library.