TOPIC 4
Managing Work Hazards

Quick Find

In the previous section, we examined procedures and equipment used on mine sites to ensure a safe working environment. In this topic, we will look at how to identify hazards, how to assess the risks associated with those hazards and what controls we need to reduce the risks to an acceptable level.

In general, to control our work area so we can work safely, we need to ask 3 questions before we start any task. They are:

1. **What am I about to do?**
2. **What can go wrong?**
3. **How can I stop it going wrong?**

In asking these questions, we need to consider the machinery and equipment we are using, the work environment we are working in, the procedures or instructions we are using and our ability to do the task.

Throughout this section, reference is made to the Australian and New Zealand Risk Management Standard which is AS 4360.

Using the following major headings, we will first explore hazards and where the known hazards are, then we will measure the risks associated with these and see how we control them.

Identify hazards
⇩
Assess the risk
⇩
Evaluate the risk
⇩
Control the risk
⇩
Monitor effectiveness

DEFINITIONS

Before we get into the theory and practice of hazard identification and risk assessment, we need to consider the terms used. The following definitions will help you understand the concepts used.

Contents of this Topic

Contents of this Topic

- **Hazard**

A source of potential harm (AS4360) or a situation with a potential to cause loss. It can also be defined as energy sources over which control has been lost.

- **Hazard Identification**

The process of identifying sources of harm in the workplace. This harm is usually the potential for the release of energy.

- **Energy**

Energy can be categorised under a number of headings. The table below shows the various categories of energy, examples of each, and examples of the damage that can be caused when control over them is lost.

ENERGY TYPE	EXAMPLE	EXAMPLE OF POTENTIAL DAMAGE
Mechanical	Conveyor nip points.	Limbs caught in conveyor — amputation — death.
Pressure (fluids and gases)	Hydraulic systems, compressed air systems, high pressure water supplies.	Skin/tissue penetration, burns.
Electrical	Power supplies to electrical equipment.	Shock, burns, cardiac arrest.
Thermal	Hot engine coolant. Hot mechanical components. Fire.	Scalds — 1st, 2nd, 3rd degree burns — Burns to hands.
Chemical	Acids, Alkalis.	Skin/tissue damage — respiratory damage through fume inhalation.
Radiation	Ultra Violet (sun's rays), arc flashes, microwaves, lasers.	Sunburn, skin cancers, 'arc eye', tissue damage.
Gravitational	Suspended loads. Mechanically raised implements. Falling objects.	Crushing injuries — death
Acoustic/ Vibrational	Plant and machinery noise.	Loss of hearing (permanent or temporary), disorientation, dizziness.
Microbiological	Infection-causing micro-organisms.	Illness, permanent disability, death.
Muscular (bio-mechanism)	Muscle strain — Occupational Overuse Syndrome (OOS).	Aches, pains.
Psychological/ social stress	Discrimination, excessive work pressures.	Depression, nervous system disorders, cardiovascular disease.

- **Risk**

The chance of something happening that will have an impact upon objectives (AS 4360). Risk is measured in terms of consequence and likelihood. In the mining industry, there are many risks such as loss of production, interruption to process, equipment damage, etc. However, the main emphasis is, of course, injury and illness to people.

> ***Note:***
>
> ***Hazards and risks are NOT the same thing.***
>
> ***A hazard is a source with the potential to cause harm; this can include substances, plant, work processes and/or other aspects of the work environment and derive from the energy sources present in the work environment.***
>
> ***A risk is the likelihood that a fatality, injury or illness might result because of the hazard.***

- **Consequences**

The resultant outcome or effect of an action or an incident, which is usually an injury to people or damage to equipment.

- **Likelihood**

Used as a general description of probability and frequency. (AS 4360).

- **Probability**

The measure of a chance of occurrence expressed as a number between 0 and 1. (AS 4360)

- **Risk Assessment**

The process of identifying the hazard, assessing the risk associated with the hazard and evaluating the risk to determine acceptability or unacceptability

- **Risk Criteria**

The measure we establish to determine if a risk is acceptable or unacceptable.

- **Acceptable Level of Risk**

Is defined as being:

- within acceptable limits
- as low as reasonably achievable.

To decide whether risk is within acceptable limits and as low as reasonably achievable, regard must be given to-

- the likelihood of injury or illness to a person arising out of the risk, and:
- the severity (consequence) of the injury or illness

- **Unacceptable Level of Risk**

Means that, as a result of risk assessment, the level of risk is such that there is a high risk of injury or illness to a person or persons. Where this occurs, work should not continue without controls implemented to reduce the risk to an acceptable level.

- **Risk Evaluation**

The process of comparing the level of risk against risk criteria. (AS 4360).

- **Risk Treatment**

The process of selection and implementation of measures to modify risk. (AS 4360). This includes risk controls.

IDENTIFYING HAZARDS

Before we can manage work hazards effectively, we need to be able to identify hazards that exist in the workplace. There are several methods that can be used. The method or process used will depend on the type of work and the nature of the hazards involved in the work. The following sections provide details of some of the methods used. Remember the legislation states that we cannot put people at an unacceptable level of risk or work in a way that puts people at an unacceptable level of risk

Identify hazards ⇆
- **Hazard inspections**
- **Past records**
- **Task analysis**
- **Consulting workers**
- **Product information**
- **Examples of common hazards**

⇩

Assess the risk

⇩

Evaluate the risk

⇩

Control the hazard

⇩

Monitor effectiveness

- **Hazard Inspections**

Hazard inspections are normally conducted using a checklist containing those things that can be hazardous within the work area such as deteriorating walkways, unguarded machinery, faulty lifting equipment etc. The checklist also contains such things as fire extinguishers and signage checks.

Hazard inspections are usually planned on a regular basis (e.g. once per month) and are conducted by trained personnel.

- **Past Records**

Records of past events such as accident/incident reports, first aid records, and Significant Incident Reports may be useful sources of information. However, you should remember that these will not include examples of every type of risk or hazard.

> ***Caution:***
>
> ***Do not rely solely on past records to predict future incidents.***

- **Task Analysis**

Task analysis involves breaking the task down into smaller task steps and analysing each step to identify the hazards. This is a very common way of finding hazards as it is easier to analyse small 'bits' of the job in turn, rather than the entire job in one go.

- **Consulting Workers**

Legislation requires workers to be consulted about health and safety matters.

'Consultation' means discussion between the senior site manager or supervisors and affected workers about a matter with the aim of reaching agreement about the matter.

Consulting with other employees who have experience of working in a given area may be the source of some of the best information on workplace hazards. Often the people who know the job will know the hazards and be able to offer solutions to managing the risks.

- **Product Information**

A final source of information is that provided by the manufacturer/supplier. This includes Material Safety Data Sheets (MSDS), product labels, and manufacturer's instructions. If a product is being used outside of these guidelines, there is an obvious hazard/risk potential.

- **Examples of Common Work Hazards**

Hazards can be located at all locations on the mine site. The following list provides some of the tasks where you should be on the lookout for hazards and dangers.

1. housekeeping
2. static lifts - manual handling
3. working with electricity
4. using hand and power tools
5. working with hazardous substances
6. working with lubricants
7. using ladders
8. working at height
9. working around stationary equipment and machinery
10. working around conveyors
11. working with compressed air
12. working with hydraulics
13. working with process pumps
14. using cranes - slinging and lifting
15. working around explosives
16. operating vehicles and mobile equipment
17. towing
18. working around aerial work platforms
19. using scaffolding
20. using welding and gas cutting equipment
21. working in a confined space
22. working in a dusty environment
23. working near geotechnical hazards

The following pages provide information on each of the hazardous tasks listed above. Also listed are controls and correct methods of work associated with these hazards.

TOPIC 4
Managing Work Hazards

1. HOUSEKEEPING

Poor housekeeping in the work area can lead to the unnecessary creation of hazards. Rubbish and debris that is left laying around is unsightly, creates a fire risk, and can cause trip or slip hazards.

If the following general procedures are observed, the hazards resulting from the accumulation of rubbish can be minimised:

Oil on floor

- each worker is responsible for keeping his/her own work area clean and tidy
- all rubbish is to be placed in the appropriate bin as soon as it is generated
- aisles and walkways must be kept clear
- walkways for pedestrians should be wide enough to accommodate two-way flow
- material should always be neatly stacked on stable and level floors capable of carrying the weight of the stack
- all unnecessary items should be removed from the workplace
- food scraps should be placed in bins which have plastic liners.
- rubbish bins provided for the disposal of rags, oily materials or similar flammable materials, should be used
- used aerosol cans should be disposed of in the flammable materials bin provided
- separate bins for the collection of rubbish and scrap metal will be strategically located around the site and should be used.

2. STATIC LIFTS — MANUAL HANDLING

Between 60-80% of Australian adults will suffer from lower back pain some time in their lives. About 25% of all work-related injuries involve the back, with lower back pain as one of the major sources of permanent disability. Many of these injuries can be avoided by adopting simple lifting techniques.

You are the only person who can protect yourself against preventable back injuries. Before lifting an item, ask yourself the following questions:

- Should the load be moved? With careful planning and organisation, many lifts can be eliminated altogether. If the move can be avoided, there is no need to make the lift and the risk of injury becomes zero.

Load held close to body

- Should the load be lifted? Although the load should be moved, it may not need to be lifted. The alternatives to a lift may be that the load can be slid, pushed, pulled, rolled, poured or pumped. If any of these options are available they may be preferable to a lift and, once again, the risk of injury is minimised.

- Can the load be moved mechanically? If there is no doubt that the load should be lifted, the next question is whether it can be moved mechanically. The options to move a load mechanically include cranes, forklifts and pallet jacks. Do not move a load manually if a suitable mechanical lifting device is available.
- Can the load be reduced? If a suitable mechanical lifting device is not available, the next option may be to consider reducing the bulk or weight of the load. Improved packaging or containerisation of products will make future lifting tasks less hazardous.
- Can assistance be obtained? If the load must be lifted manually, it may be the case that its bulk and/or weight dictate that it should be a team lift. Do not attempt a solo lift where a team lift is clearly required.
- Is the load too heavy to lift safely? Even if assistance is available, this final question should be asked. If the answer is 'No', the lift may proceed using the safe lifting techniques. If the answer is 'Yes', then the lift should not proceed and an alternative should be found.

The amount of effort required and the weight placed on the spine when lifting a load are determined by three factors:

- The weight of the load
- The distance the centre of gravity of the load is from the body
- The height of the lift relative to your body

The least effort is required when the item is close to the body between waist and shoulder height and the greatest effort is required when the item is between ground level and ankle height, and away from the body.

The most common lift is from floor to knuckle height and this has been shown to be the greatest cause of back pain and injury. It is estimated that 11 times more energy is required to lift the same weight from the floor as it does from a bench top.

With this in mind, heavy articles should be stored at bench top height where possible, to reduce the incidence of back injury.

When you need to make a lift, keep the following points in mind:

- ✔ place feet apart for good balance
- ✔ get a firm grip using palms and fingers
- ✔ always carry the load close to the body – the further the object is away from your spine, the greater the forces on your spine.
- ✔ use mechanical lifting equipment such as trolleys, rollers, pallet jacks, forklifts or overhead cranes as an alternative to heavy manual lifting
- ✔ reduce the weight of heavy loads to be lifted by breaking the load into smaller parts where possible
- ✔ use team lifting but only when equal load sharing is guaranteed, and when mishandling by one person does not transfer the load onto the other person.

Correct lifting position

The following points list some of the more common unsafe lifting practices that should not be used.

- ✘ Do not lift or carry objects that are either too large or awkward.
- ✘ Do not attempt to lift objects that are too heavy.
- ✘ Never twist or move rapidly when lifting
- ✘ Do not attempt to carry objects over obstructed pathways or excessively uneven terrain.
- ✘ Do not attempt to lift objects by over reaching or by lifting from an unstable surface.

Load is too bulky

Remember that your natural physical ability should be taken into account. Obviously, the lifting capacity of a 70kg, 55 year-old will be different to that of a 100kg 23 year-old.

We should also remember that young persons are still developing until the age of 18 to 20 years. This means that lifting injuries to people under this age could have permanent and debilitating consequences.

Warning:

Only conduct lifting operations that are within your personal capacity.

3. WORKING WITH ELECTRICITY

In any work environment there is always the possibility of accidents involving electricity.

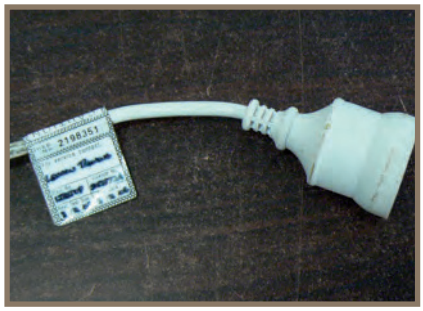
The following are some of the areas where potential electrical hazards can exist:

- flexible leads
- power tools
- switchboards
- exposed conductors
- motors
- generators
- substations
- supply cables

All electrical appliances must be assumed to be 'live' and are therefore dangerous. Any equipment faults that are noticed should be reported immediately.

The following minimum considerations should be observed when working around electrical equipment.

DO:



Tested and tagged lead

- ✔ Check that the electrical appliance has been tested and tagged before use on a mine site. Any equipment faults or electrical defects should be reported immediately.
- ✔ Ensure that portable electrical equipment has earth leakage protection
- ✔ Before connecting to a power source, check all leads, plugs, connectors, guards, cases, accessories, switches, etc., for damage, defects and expiry date — non complying equipment should be tagged and removed from use.
- ✔ Keep water away from electrical equipment.
- ✔ Treat extension leads carefully. Do not throw tools or other heavy items over leads. Ensure they are suitably protected against sharp objects, excessive tension, and vehicular or pedestrian traffic. Always fully uncoil an extension lead before use.
- ✔ Before operating an electrical switch, ensure that no person will be endangered by its operation.
- ✔ Always check for overhead power lines when operating vehicles or transporting high loads.
- ✔ Prior to the commencement of operations which include welding, drilling or digging close to power cables, ensure the circuit is isolated and disconnected or tagged and locked out. When isolation is impractical, an electrician should be present as an observer for the duration of the work.

DO NOT:

- ✘ Attempt any electrical repairs yourself — notify your supervisor or call an authorised electrician.
- ✘ Enter any electrical installation unless you are authorised to do so. Safety signage is displayed at electrical installations specifying the type of danger and the entry restrictions. You are required to comply with all posted restrictions.
- ✘ Open any electrical distribution box or electrical starter box unless you are certificated or authorised to do so.
- ✘ Open a cabinet to reset a piece of machinery — notify your supervisor or call a qualified electrician.
- ✘ Carry long tools, metal, wet objects or other conductors on your shoulder in the vicinity of overhead electrical wiring
- ✘ Start an electrical device if you have wet hands or are standing in water.
- ✘ Rely on rubber boots to give protection against electrical current.
- ✘ Use double adaptors.
- ✘ Burn or weld near electric cables unless they are protected to the satisfaction and approval of your supervisor.

Warning:

If you are in any doubt about the operation or state of repair of any item powered by electricity, you must refer the matter to an electrician.

Electrical work is nominated as a prescribed task under legislation. This means that additional competencies are required to be held by persons who are to conduct electrical work on coal mines. This means that unless you have these recognised competencies and are authorised, you are prohibited from carrying out any electrical work whatsoever.

Note:

Only authorised mine electricians are permitted to work on electrical equipment.

4. USING HAND AND POWER TOOLS

Many minor injuries in the workplace result from the misuse of hand and power tools. The following hints will help you to avoid such injuries.

DO:

- ✔ Always use hand tools for the purpose for which they were designed, e.g. do not use a screw driver as a chisel or a shifting spanner as a hammer. Hand tools are very safe when used correctly for the purpose for which they are intended.

- ✔ Always wear eye protection when hammering or chiselling, and when using power tools
- ✔ Always grind off any 'mushroomed edge' prior to hammering any tool.
- ✔ Ensure that all flexible cables attached to equipment and all extension leads are identified following testing. A colour-coded tag will indicate the date of the latest inspection.
- ✔ Ensure that all guards and shields are in place.
- ✔ Be prepared for jamming — the circular or rotating motion in tools such as drills, impact wrenches, saws, etc. can result in a strong twisting force.
- ✔ Ensure you have a good footing; use two hands, and be ready to release the power switch or trigger.
- ✔ Keep moving parts directed away from your body.
- ✔ Know the whereabouts of those near you and warn them of your intentions! Do not swing around with a power tool that is running — someone might be behind you.
- ✔ Tools should be numbered and logged in the appropriate register (note, this procedure may vary from site to site).
- ✔ Tools should be inspected and tagged at set intervals and the results recorded in the Register.
- ✔ Ensure that cutting wheel speeds conform to the manufacturer's recommendations.
- ✔ Always use portable earth leakage protection units with electrical equipment which is not otherwise protected.

DO NOT:

- ✘ Use a hand tool that is damaged, defective or excessively worn. Such tools should be appropriately tagged and a replacement obtained.
- ✘ Use the wrong tools for the job or tools without guards in place.
- ✘ Operate any power tool unless you have been trained in its use and are completely familiar with its operation
- ✘ Touch a powered part unless the power source has been correctly isolated.
- ✘ Hang cords or hoses over nails, bolts or sharp edges. Keep them away from oil, hot surfaces, chemicals and water.
- ✘ Leave the tool in an overhead position where there is a chance that a pull on its cord or hose, could cause it to fall.

5. WORKING WITH HAZARDOUS SUBSTANCES

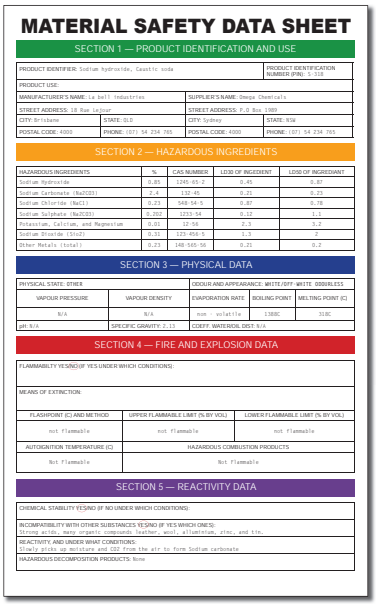
The term hazardous substances may include such items as:

- diesel and other fuels
- oils, greases and lubricants
- solvents
- cleaning agents, disinfectants and detergents
- pesticides
- flocculant
- reagents
- other sundry chemicals used for special purposes
- radioactive materials.

Material Safety Data Sheets (MSDS) are provided by the suppliers of chemicals and form an important part of the substance control system. The MSDS will provide important substance information such as:

- ingredients
- flammability
- health hazards
- handling precautions
- storage procedures
- disposal procedures
- first aid for injuries resulting from contact
- substance specific fire fighting techniques

The appropriate MSDS must be available before a chemical can be stored, transported, used, and disposed of on site. Copies of the MSDS must be readily available to workers and must be provided where the substance is stored and/or used. A copy will be kept by the Safety, First Aid, and Purchasing Departments or, where required, by the site's senior manager.


MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER: Sodium Hydroxide, Caustic soda			PRODUCT IDENTIFICATION NUMBER (PIN): 5-318
PRODUCT USE:			
MANUFACTURER'S NAME: Le bell Industries		SUPPLIER'S NAME: Omega Chemicals	
STREET ADDRESS: 18 Rue Lejour		STREET ADDRESS: P.O Box 1989	
CITY: Brisbane	STATE: QLD	CITY: Sydney	STATE: NSW
POSTAL CODE: 4000	PHONE: (07) 54 234 765	POSTAL CODE: 4000	PHONE: (07) 54 234 765

SECTION 2 — HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	CAS NUMBER	LD50 OF INGEDIENT	LD50 OF INGREDIANT
Sodium Hydroxide	0.85	1345-65-2	0.45	0.87
Sodium Carbonate (Na_2CO_3)	2.4	132-45	0.21	0.23
Sodium Chloride ($NaCl$)	0.23	548-54-5	0.87	0.78
Sodium Sulphate (Na_2CO_3)	0.302	1253-54	0.12	1.1
Potassium, Calcium, and Magnesium	0.01	12-54	2.3	3.2
Sodium Bromide (SiO_2)	0.31	123-454-5	1.3	2
Other Metals (total)	0.23	148-565-90	0.21	0.2

SECTION 3 — PHYSICAL DATA

PHYSICAL STATE: OTHER		ODOUR AND APPEARANCE: WHITE/OFF-WHITE ODOURLESS		
VAPOUR PRESSURE	VAPOUR DENSITY	EVAPORATION RATE	BOILING POINT	MELTING POINT (C)
N/A	N/A	non - volatile	1388C	318C
pH: N/A	SPECIFIC GRAVITY: 2.13	COEFF. WATER/OIL DIST: N/A		

SECTION 4 — FIRE AND EXPLOSION DATA

FLAMMABILITY YES/NO (IF YES UNDER WHICH CONDITIONS):		
MEANS OF EXTINCTION:		
FLASHPOINT (C) AND METHOD	UPPER FLAMMABLE LIMIT (% BY VOL)	LOWER FLAMMABLE LIMIT (% BY VOL)
not flammable	not flammable	not flammable
AUTOIGNITION TEMPERATURE (C)	HAZARDOUS COMBUSTION PRODUCTS	
Not Flammable	Not Flammable	

SECTION 5 — REACTIVITY DATA

CHEMICAL STABILITY YES/NO (IF NO UNDER WHICH CONDITIONS):
INCOMPATIBILITY WITH OTHER SUBSTANCES YES/NO (IF YES WHICH ONES): Strong acids, many organic compounds leather, wool, allumetals, zinc, and tin.
REACTIVITY, AND UNDER WHAT CONDITIONS: Slowly picks up moisture and CO2 from the air to form Sodium carbonate
HAZARDOUS DECOMPOSITION PRODUCTS: None

The mine must have a register of hazardous substances used at the mine. It must contain the material safety data sheet (MSDS) for each hazardous substance and be kept in a location that is easily accessible by each worker at the mine.

Site-specific systems incorporating Standard Operating Procedures for the storage, issue, use, decanting and disposal of hazardous substances are used to control hazardous substances. These SOP's must include appropriate first aid for a person affected by a hazardous substance. It is your responsibility to become familiar with whatever system is in use on any mine site on which you are working.

As well as the relevant MSDS, you will be alerted to dangers from substances by the presence of **HAZCHEM** signs on containers and in locations where the substances are stored and used.

It is in your interest to know the safety information for all of the hazardous substances with which you will be in contact. If you are in any doubt about the storage, issue, use, and disposal of substances, read the relevant MSDS or contact your Safety Officer or equivalent.

Note:

Ensure you familiarise yourself with the correct substance handling procedure for any substance that you use in your work area.

Radioactive Equipment/Materials

Radioactive materials are frequently used during construction and maintenance operations for the examination and testing of welds. They are also often used in plant instrumentation systems such as bin level controllers in coal preparation plants.

- Testing areas should be flagged off with yellow bunting and signposted at not more than six metre intervals
- Coal mine workers must keep well clear of the area at all times while testing is in progress
- No radioactive source is to be brought on to the site without the approval of the site's senior management and/or the Radiation Officer.

6. WORKING WITH LUBRICANTS

There are several potential hazards that may be encountered when working with or around lubricants. Some simple procedures and precautions will help to reduce the dangers.

DO:

- ✔ Remember, oil in operating machinery will be hot enough to cause serious burns.
- ✔ Rectify all oil leaks and know the location and correct use of fire fighting equipment. Oil leaking on to hot surfaces can cause fires.
- ✔ Be aware of slip hazards. Oil leaks and/or oily rags can be dangerous.
- ✔ Reduce skin contact with lubricants to a minimum by using suitable PPE and work methods.
- ✔ Use solvent repellent barrier creams.
- ✔ Ensure that you bathe as soon as possible following skin contact with lubricants — good personal hygiene is the best way to avoid skin-related health problems.
- ✔ Seek medical attention if any irritation or rash appears on the skin.

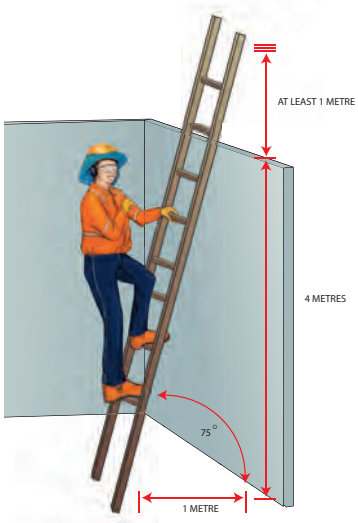
DO NOT:

- ✘ Smoke, or operate heating equipment in the vicinity of petroleum products. Oils, greases and hydraulic fluids can become highly flammable when they are hot.
- ✘ Put oily rags in trouser pockets.
- ✘ Wear any oil-soaked clothing longer than necessary.

7. USING LADDERS

Ladder Inspection

Inspect the ladder for damage before it is used. Any ladder that has broken or missing rungs, or splintered or broken side rails, is unsafe and should be appropriately tagged and taken out of service. All ladders should have non-slip foot attachments.



Angle of Use

When placing a ladder against a wall or structure, the distance between the base of the ladder and the wall/structure should be 1/4 of its vertical height, e.g. 4 metres vertical height = 1 metre base distance.

This should make the slope of the ladder approximately 75°.

Safety Points – Straight and Extension Ladders

DO:

- ✔ Ladders should be sited on a level and uncluttered base
- ✔ Always face the ladder when climbing up and down. Maintain three point contact. Place your hands on the rungs, not the sides.
- ✔ The ladder should be strong enough for its intended use and long enough to protrude at least 1 metre above the stepping off point.
- ✔ When a person is required to work off a ladder, the ladder should be footed and tied off at the top and the worker should use a safety belt. Any tools and equipment are to be carried in a shoulder or belt pouch, or raised in a container by rope.
- ✔ Ladder rungs should be kept free of slippery substances.
- ✔ Only one person at a time is permitted on a ladder.
- ✔ Extension ladders should be overlapped by a minimum of three rungs.

DO NOT:

- ✘ Use metal ladders and timber ladders with metal reinforcing where the work involves electricity.
- ✘ Carry any article in the hands when ascending or descending a ladder.
- ✘ Erect a ladder in a passage way without closing off access.
- ✘ Allow a fixed ladder to rise more than 6 metres without a landing or ladder cage.

Safety Points - Step Ladders

DO:

- ✔ Ensure that the correct length ladder is used.
- ✔ Make sure ladder spreaders are tight.
- ✔ Place the step ladder on a level, firm surface — ensure that it will not wobble, slip or sink.
- ✔ Replace any defective ladder immediately and do not attempt to use it, no matter how small the job appears.

DO NOT:

- ✘ Lean out past the confines of the ladder.
- ✘ Stand higher than the third rung from the top.

8. WORKING AT HEIGHT

Working at height describes any work being done from a ladder, platform, or scaffolding where a person, equipment or tools could fall.

There are two major safety factors to be considered when conducting work at height:

1. your own potential to fall
2. the potential to drop objects onto coal mine workers working below.

Fall Protection

Some work locations will stand out as clearly dangerous; others may carry a secondary risk, such as where a railing may not be of sufficient height to prevent a fall.

A coal mine's Safety and Health Management System must provide for minimizing a person's risk of injury from falling if they are required to work at a height greater than 2.4 metres. **Many mines adopt a lesser distance than 2.4m and you should ensure that you know the standard that applies at your mine.** In addition, there may be a requirement to wear fall protection PPE any time that you are working in a particularly dangerous work environment, irrespective of height eg above a hazardous machine or process, or in slippery conditions.

The system may utilize lift boxes, work platforms, scaffolding, barricades and handrails to reduce the risk of falling, and restraining or fall arresting devices to minimize the risk of injury if the person does fall. If the system provides for the use of lift boxes or work platforms, the system must state the circumstances in which the boxes or platforms may be suspended by crane.

Fall protection PPE includes a full body safety harness with shoulder and leg straps and a 'Dee' ring attachment point located between the shoulder blades. This is attached to an anchor point or static line (a horizontal line fixed between 2 anchor points) by either a lanyard or a fall arrester device. A lanyard is a cord of a fixed length – if you should fall, you can fall no further than the length of the lanyard. A lanyard brings you to an abrupt stop while a fall arrester, because of its design, cushions the fall to some extent. The fall protection equipment used must meet relevant Australian Standards.

If you are wearing a harness, ensure that you:

- ✔ check that it is in good condition
- ✔ adjust it for a correct and comfortable fit
- ✔ check that the lifeline is not frayed or chaffed
- ✔ secure the lifeline properly to a suitable anchor point that will support your weight.

If there is the slightest chance of you falling, the mine's SOP must be followed. This will specify what fall protection PPE must be worn, the attachment arrangements, and other procedures that must be followed such as machine isolation, barricading requirements, and so on.

- ✔ Wear the prescribed fall protection PPE.
- ✔ Remain constantly aware of the safe limits of the platform or structure on which you are working.

Protection Against Falling Objects

In some instances, work must be performed at a height where tools or equipment could fall. In these instances, safety measures must be taken before the work commences to protect personnel that have access to the area below.

Before Starting the Job

- ✔ Assess the extent of the drop zone — take into account the possible deflection of the dropped objects by structures, pipe work, or equipment in the area.
- ✔ Erect a tape barrier or physical barrier around the drop zone with caution signage on each side stating that overhead work is in progress.

While Working on the Job

- ✔ Try to ensure that no tools or equipment items are dropped — this includes small items such as bolts, retaining pins etc. If work is interrupted, secure all tools and equipment before leaving the area.
- ✔ Reassess the drop zone if the work area is extended beyond its original dimensions, and adjust the barrier accordingly before work recommences.

✔ No personnel, other than those engaged in the overhead work, shall enter the area enclosed by the barrier without first obtaining permission from the supervisor.

After Finishing the Job

- Ensure all tools and equipment are removed from height before the signs and barriers are removed.

Note:

All mines are required to have a system for working at heights

Ensure the appropriate Standard Operating Procedure is obtained and understood prior to undertaking such work.

9. STATIONARY EQUIPMENT AND MACHINERY

All rotating equipment should be fitted with a guard to ensure your safety. Guards may be in the form of physical barriers, covers, screens, railings, enclosures and so on.

There are some general procedures that should be observed when working with, or around, stationary machinery. These are:

DO:

✔ Inspect equipment before using it

✔ If the equipment becomes defective in any way, place an Out of Service tag on it at both the defective area and at its control switch panel. Advise your supervisor so that the defect can be rectified

✔ Know the limitations of the equipment you use. Do not exceed those limits

✔ Ensure that machinery safeguards are used. Report missing, faulty, defective, loose or ineffective guards to your work area supervisor

DO NOT:

✘ Ever operate a machine with a missing or defective guard

✘ Use the equipment for other than its intended purpose

✘ Work on equipment, belts, drives, or conveyors while they are in operation. They must be shut down and tagged, or safely immobilised

Note:

Stationary equipment and machinery is often controlled from a central location or by an automated system. Therefore it may start up, stop, or change its mode of operation unexpectedly. If you work on stationary equipment, ensure you have followed the correct tagging and isolation procedures.

10. WORKING AROUND CONVEYORS

Conveyors

One of the most common items of equipment you will encounter on a mine site is the conveyor. Unless extreme care is taken, conveyors can be a major source of workplace hazards.

Nip Points

Nip points are a major source of fatal or serious injury to persons working around conveyors. Once caught in a nip point, it is normally impossible to free yourself without stopping the conveyor. Many fatalities have occurred when shovels and other hand held tools have caught in nip points, dragging the user in before they can release their hold on the tool. Nip points also occur between a drive belt and pully, a chain and sprocket, and close rotating rollers.

You must not:

- ✘ remove any guard until you have contacted the appropriate persons, switched the conveyor off and used the correct isolation procedure for that particular conveyor.
- ✘ use a conveyor unless all guards are in position
- ✘ ride on a conveyor
- ✘ step over a conveyor while it is running (Use approved bridges or walkways when crossing conveyors)
- ✘ cross under conveyors except at designated walkways
- ✘ work on a conveyor while it is running
- ✘ wear loose clothing which may become entangled in a conveyor.
- ✘ stand in an area where you can be hit by falling material. You should be aware that material is likely to fall from a conveyor belt

All conveyors are provided with emergency trip wires, running the length of the belt. In the event of an emergency, pull hard on the trip wire to stop the conveyor.

> ***Note:***
>
> ***Trip wires must not be used to isolate conveyors. Their only function is as an emergency stop.***

11. WORKING WITH COMPRESSED AIR

Rupture to internal organs, ear drum damage, and air bubbles in the bloodstream (air embolisms) resulting in serious injury or death can occur through horseplay or using high pressure air for blowing down clothes.

Most compressed air is not clean — it contains tiny particles of scale, dirt, and rust as well as water and oil. These can be ingested or introduced into the body directly through

the skin or through wounds or body openings by improper use of compressed air and associated tooling. Compressed air can have an exit velocity from the air hose of up to 500 kilometres/hour. Any contaminant particle in the hose or air receiver, therefore, will be shot from the hose like a bullet and impact on anything or anyone in its path with considerable, and often devastating results.

Safety Points

- ✔ Isolate and depressurise the air line before removing it from its connection or when changing over tools. A tight connection could be an indication that residual line pressure remains in the hose.
- ✔ Always fit safety clips when connecting air lines to the air supply or tools to the air line.
- ✔ Air hoses larger than 25 mm ID (internal diameter) should be chained.
- ✔ Prior to using an air hose, direct the free end towards the floor away from other personnel, and purge the line by partially cracking the air tap. Air lines may have water, dirt, or particles present from previous use.
- ✔ Secure the free end of an air line to prevent whiplash and “snaking” when the air tap is turned on. When using compressed air, you are responsible for protecting other people in the area — notify them of your intentions.
- ✔ Not all hoses are suitable for compressed air use. Ensure the hose is of the correct type before using it.

12. WORKING WITH HYDRAULICS

The simplicity with which many hydraulic systems are controlled tends to mask the awesome power and mechanical forces that can be generated. One fraction of a second of carelessness, or a simple oversight can result in serious injury or death.

Only competent and authorized workers are permitted to dismantle and work on hydraulic systems. If this work forms part of your operational tasks, you will be given further specific training on site.

When working with hydraulic equipment you need to follow these basic safety rules:

DO:

- ✔ Use extreme caution when removing the breather or filler connected to a reservoir. Many units are pressurised to prevent the ingress of contaminants and will discharge hot oil unless they are properly relieved.
- ✔ Provide a flat, solid foundation when lifting a load with a hydraulic jack, and ensure the jack is not making an angled contact with the object that is to be raised.

DO NOT:

- ✘ Stand or work under a raised load
- ✘ Apply pressure to a hose that is kinked
- ✘ Wear oil soaked clothes or shoes for prolonged periods - reduce skin contamination to a minimum.
- ✘ Breathe oil mist or vapours.
- ✘ Attempt to disconnect hydraulic fittings, without first isolating the system and relieving any pressure by cycling the directional control valves through their full range of movement.
- ✘ Disconnect any hydraulic fitting on a system fitted with an accumulator, without first blocking it out of the circuit or discharging it completely.
- ✘ Use your hand to search for oil leaks — use a piece of cardboard.

Danger:

Oil escaping under pressure can have an exit velocity high enough to penetrate the skin.

This can cause gangrene and other skin complications. Don't stand in the line of fire.

13. WORKING WITH PROCESS PUMPS

Pumps may appear to be harmless enough, but the fluids they pump may not be. The following hazards can exist.

- The pump may be used to circulate corrosive, harmful, or hot fluids.
- There may be head pressures on the pump even though it has been turned off.
- The pump may have been running dry or "bogged" and consequently its components and any fluid remaining within its housing may be hot enough to cause scald injuries.

When working on a pump:

- know what type of fluid is being pumped and the correct procedures for working with that fluid
- correctly isolate the pump both electrically and physically
- relieve any remaining head or back pressures
- feel the housing of the pump to ensure it is not overheated
- proceed safely, carefully and wear the appropriate PPE.

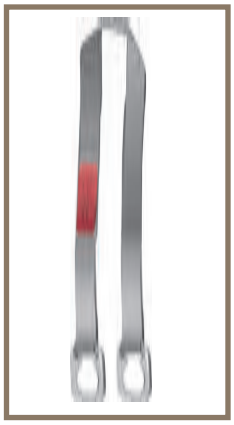
If you are in any doubt about a particular pump, ask for advice from your supervisor.

14. USING CRANES – SLINGING AND LIFTING

Crane operation, and slinging and lifting, are specialist tasks that must be undertaken by competent and authorized workers.

However there are some general principles that you should be aware of that may impact on your work and your safety.

- **Never walk, stand or work under a suspended hook or load.**
- A Risk Assessment (sometimes called a lift plan) must be conducted prior to any major crane lift.
- The crane's operational area must be suitably indicated using appropriate barricades and signage.



Sling with tag

You may perform a job which involves repetitive use of a small gantry or similar crane. You will be trained and assessed in the use of that crane to perform that particular task. There are three types of slings that may be used for lifting. These are flat webbing and round synthetic slings, wire rope slings, and chain slings.

All slings will be marked with a Working Load Limit (WLL). The WLL indicates the maximum load that may be applied to the sling. Synthetic slings are also colour coded to indicate their WLL. Depending on the application for which the sling is being used, the Safe Working Load (SWL — the maximum load that may be applied to the sling under the particular conditions of use) will most likely be less than the WLL.

Danger:

Ensure all equipment used has the appropriate Working Load Limit for the task.

Before using a crane, you should ensure that:

- you are authorised by the site's senior management.
- the SWL of the crane and sling are greater than the weight of the load being lifted.
- the sling and its attachments are in good condition and have not deteriorated as a result of abrasive wear, corrosion, heat, overloading, etc.
- all lifting equipment and tackle complies with Australian Standards.
- all hooks are equipped with a safety latch to prevent accidental disconnection of the load. Hooks with damaged safety latches should not be used.
- no welding, grinding, heating or repairs have been carried out on lifting hooks.

15. WORKING AROUND EXPLOSIVES

Explosives are regularly used on most mine sites. Clearly, there are many dangers and hazards present where explosives are in use.

The site Safety and Health Management System must have a standard operating procedure for the storage, use, handling, transportation and disposal of explosives.

Only persons who have completed an approved training course and been deemed competent, and who have been authorised by the site's senior management may store, issue, transport, use, and dispose of explosives.

You must not smoke or allow naked flames within 6 metres of any explosive, or take a radio transmitter or mobile phone within 10 metres of any explosive.

On the Shot

Blast areas will be barricaded with appropriately marked fencing materials and signage, and only authorized persons are permitted within the blast area. No smoking, naked flames or matches are permitted within the blast zone.

Prior to a blast being set off, sentries will be posted on roads and entries to the blast area. You are not permitted past a sentry into the blast area without the knowledge and approval of the person in charge of the shot. A siren will sound from just before the blast until the firing of the shot is complete.

At a certain time following the blasting operation, the person in charge of the shot will broadcast the 'all clear' In an underground mine, the Shotfirer will wait 10 minutes or as long as it takes to clear the fumes before inspecting the shot area and giving the all clear. No mine worker may enter a blast area prior to this announcement.

> ***Warning:***
>
> ***You must obey any instruction issued by the person in charge of the blast.***

Misfires

In most cases, misfires will be discovered by the blast crew during their post-blast inspection. However, it is possible that other coal mine workers may discover misfired blastholes at any time.

An SOP for misfires will be available at your mine site, and should be strictly adhered to.

A misfire may be identified by the presence of the following:

- Undetonated items or undetonated portions of explosive accessories including:
  - detonators
  - detonator cord
  - primers
  - delays.
- **The presence of white or pink slurry:** This could indicate the presence of explosive slurries or gels. ANFO is the most widely used bulk explosive.

Bulk explosives truck

- **The presence of intact gas bags:** Gas bags are frequently used in explosive operations. Under normal conditions, there is little or no residue of the gas bag following a blast. An intact gas bag might indicate a misfired blasthole.

If you discover a misfire during normal operations, you should proceed as follows.

1. Cease your present task.
2. Inform all coal mine workers in the immediate vicinity and have them evacuate the area.
3. Inform your supervisor, shift foreman, shotfirer and/or the OCE (ERZ Controller in an underground mine) and follow their instructions.

16. OPERATING VEHICLES AND MOBILE EQUIPMENT

Much of the work on mine sites is carried out using vehicles and mobile equipment. Topic 6 of this book provides detailed information on traffic hazards and procedures.

17. TOWING

Mines that allow towing to be conducted must have an SOP in place. You should ensure that you are familiar with the mine's SOPs before conducting such tasks.

18. WORKING AROUND AERIAL WORK PLATFORMS

Aerial work platforms are also known as Elevated Work Platforms (EWP) or 'man boxes' No person may operate an aerial work platform or 'man-box' unless they have been deemed competent and authorised by the site's senior management to conduct aerial work platform operations.

The following rules must be observed:

- ✔ Never walk under an aerial work platform.
- ✔ Never handle electrical cables, hoses, etc directly from a raised platform to the ground.

19. USING SCAFFOLDING

You must not construct, modify, or dismantle scaffolding unless you have been assessed as competent and appropriately authorised to do so.

You must not enter a scaffold unless the 'scaftag' is showing green.

20. USING WELDING AND GAS CUTTING EQUIPMENT

Welding and gas cutting operations require a high level of skill. Ensure you are appropriately trained in the operation of any welding or oxy/acetylene equipment to ensure that you become competent and authorized before performing these tasks.

If you are not deemed competent to weld or gas cut, you may be required to assist a person doing either of these tasks. You must be trained and deemed competent before assisting.

21. WORKING IN CONFINED SPACES

There are many hazards associated with working in confined spaces. You will find safety information on this in Topic 5.

22. WORKING IN A DUSTY ENVIRONMENT

Prolonged exposure to a dust laden environment can lead to a lung disease called pneumoconiosis. A section in topic 3 dealt with the cause of the disease and the precautions that should be taken.

23. WORKING NEAR GEOTECHNICAL HAZARDS

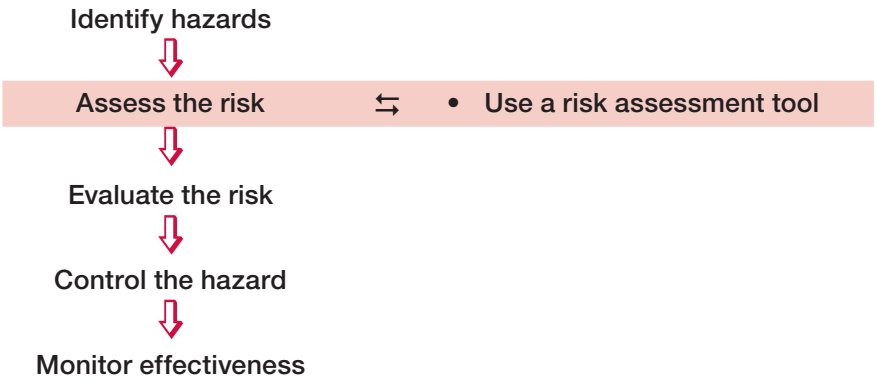
Specific hazards exist when working near a high wall or low wall due to potentially unstable rock and earth. There will be site specific rules to follow when working in these situations, such as a minimum parking distance from a wall. During your operational training you should also cover precautions that you must exercise, and indicators you should look for, when operating equipment in the vicinity of a high or low wall.

The Open Cut Examiner's (OCE's) report will highlight potentially hazardous conditions. This report should be read daily at the start of your shift.

It is important to understand that hazard recognition is vital to ensuring a safe work environment. As there are many hazards in everything we do on the mine site, unresolved hazards might exist. These could result in a severe impact on people's safety, and every effort needs to be taken to have a good understanding of the type and scope of these hazards and the effect they may cause.

Highwall failure

ASSESS THE RISK



Once the hazards have been identified, the next step is to assess the potential level of risk each one can cause.

When measuring injury and illness to people in the mining industry, we consider the 'worst reasonable outcome', i.e. what is the worst thing that can happen within reason to people whilst doing a task based on the hazards identified? This is called the consequence of the risk.

Once this is determined, we then measure the likelihood of it occurring. This will give a level of risk associated with doing the task.

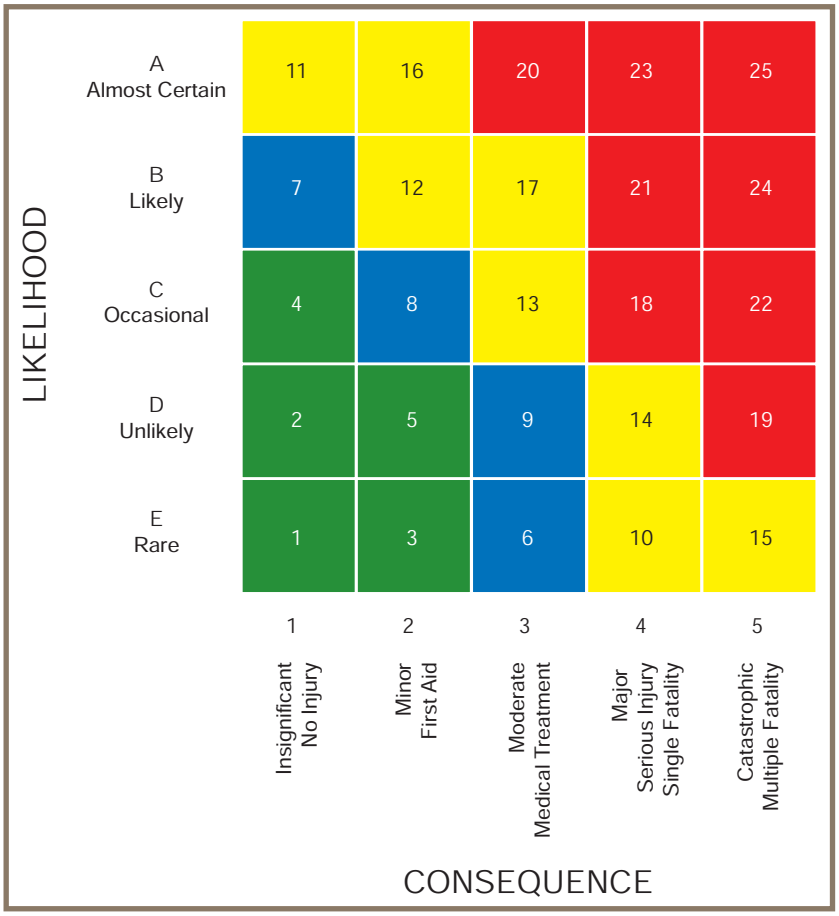
There are three levels at which risk assessments occur – by an individual, by a work crew, and by a wider group for high risk tasks.

- **By an individual:** Your mine will have a simple procedure for you to work through quickly and informally before you do a routine task in a normal environment eg. if you were about to change a roller on a conveyor. It will consist of a series of simple questions and may involve completing a tick sheet as evidence that you've done it. Some commonly used systems are 'Take 5', 'STOP', 'Slam', and 'Step Back'.
- **By a work crew:** If you are about to complete a complicated task (ie. not a routine task and/or not in a normal environment), or if your informal individual risk assessment concludes that the risk is above a specified limit, your work crew will need to conduct a formal risk assessment. Your site will have a set formal risk assessment procedure for you to follow. Commonly used systems include JSAs (job safety analysis) and JHAs (job hazard analysis).
- **By a wider group:** If your work crew is unable to introduce controls that reduce the risk to an acceptable level, management needs to become involved. An in-depth risk management exercise will be conducted.

There are a number of ways to assess risk. However, all are based on what can happen (consequence) and the likelihood of it happening.

In this section, we have used a simple risk assessment matrix which measures consequence and likelihood with the outcome being a low (1 – 5), medium (6 – 9), high (10 – 17) or extreme (18 – 25) risk level.

It is important to note that this is only one way of measuring risk. The mine site on which you work may use a different tool or model to assess risk, but the aim of risk assessment is to get an understanding of the risk level so that appropriate controls can be put in place to control the hazards.



To use the matrix you need to make two judgments. The first is to consider the hazards within the task you are about to do and what could happen as a consequence. Remember the consequence is measured as the 'worst reasonable outcome' if an incident does occur.

Of course an event could have multiple consequences such as injury, equipment damage, environmental damage, etc. However, for this exercise, we will only consider injury or illness to people.

Think about what has happened within the mining and heavy industries and determine whether this could happen to you. As an example, multiple fatalities have occurred in vehicle interaction incidents, so if the task is to transport workers on the mine site, we can assume that there is a possibility of having an incident where multiple fatalities can occur.

The matrix shows that the last column on the right is multiple fatalities (catastrophic), which is the one we choose.

The next step is to consider the likelihood of the event and associated consequences occurring taking into account the existing controls that we have in place on the mine site. This is determined by looking at the rows and considering which row fits best. Looking at our example, we would hope that a multiple fatality would be rare, which is row E.

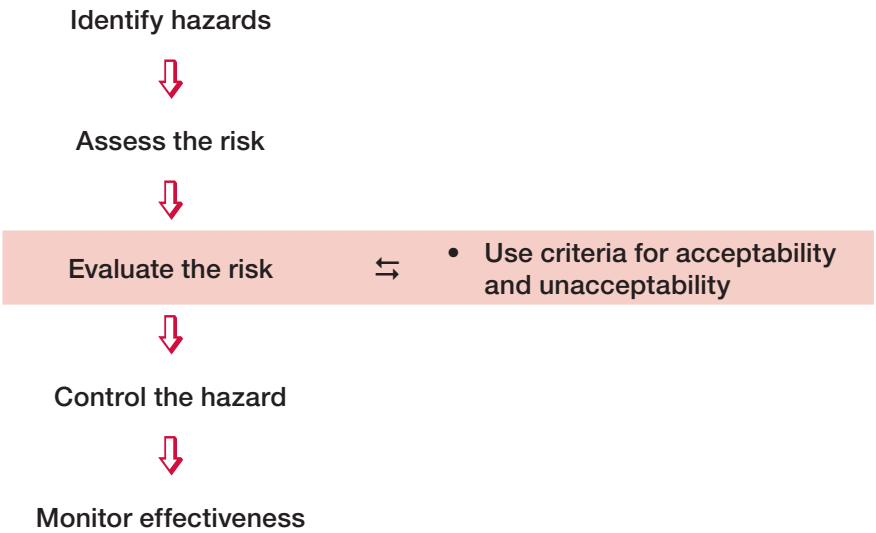
Using the matrix, this gives a score of 15, which is a high risk - therefore this is a principal hazard. Mine sites are required to have principal hazard management plans which include controls for such high risks.

Summarising Risk Assessment

The above sections have provided a brief outline of the identification of hazards and the assessment of risk. It is important to realise that no method can be flawless in uncovering hazards and assessing risks. All hazard identification and risk assessment methods only provide methods to help you make a 'considered opinion.

Remember that about 80% of accidents in this industry are caused because we fail to identify the hazards in the work place that we expose people to.

EVALUATE THE RISK



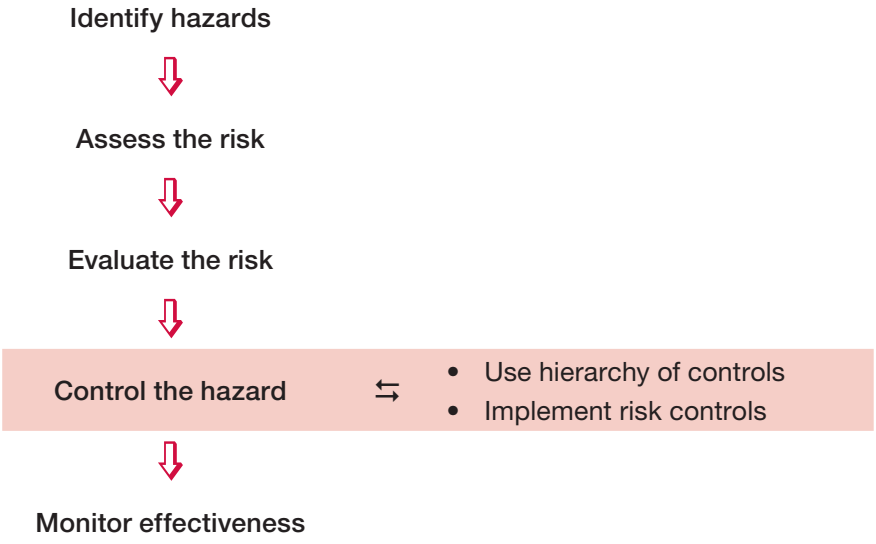
The purpose of risk evaluation is to make decisions, based on the outcome of a risk assessment, about which risks need further treatment (controls). If the risk is acceptable according to the definition on pages 3 and 4 of this topic, we can continue to do the task ensuring that the existing controls are in place.

If the risk is deemed unacceptable, further controls need to be put in place to reduce the risk to an acceptable level. Immediate action is required and may include evacuating workers to a safe place, or stopping the use of specified plant or substances, until appropriate controls are put in place.

Remember, if you think the risk is unacceptable, talk to your supervisor who will ensure that effective controls are put in place.

Each mine site has criteria for acceptability and unacceptability of risks based on the work the site does. It is important that you become familiar with this.

CONTROL THE RISK



During the design, installation and commissioning of equipment and the establishment of the work environment, management levels within the organisation usually undertakes appropriate design and re-design work to reduce the associated risks to acceptable levels. However the implementation of hazard control processes must continue on the job.

There are a number of controls that we need to consider when reducing risk levels on the job. They are known as the **'Hierarchy of Controls'** and are:

1. ***Elimination - modification to the task or material to completely eliminate the hazard.***
2. ***Substitution – replacing the material, substance or processes with a less hazardous one.***
3. ***Separation/Isolation – isolating the hazard from people by safeguarding or by space or time separation.***
4. ***Administration - developing procedures to do the task and training people on those procedures.***
5. ***Personal Protective Equipment (PPE) – using appropriately designed and properly fitting equipment where other controls are not practical.***

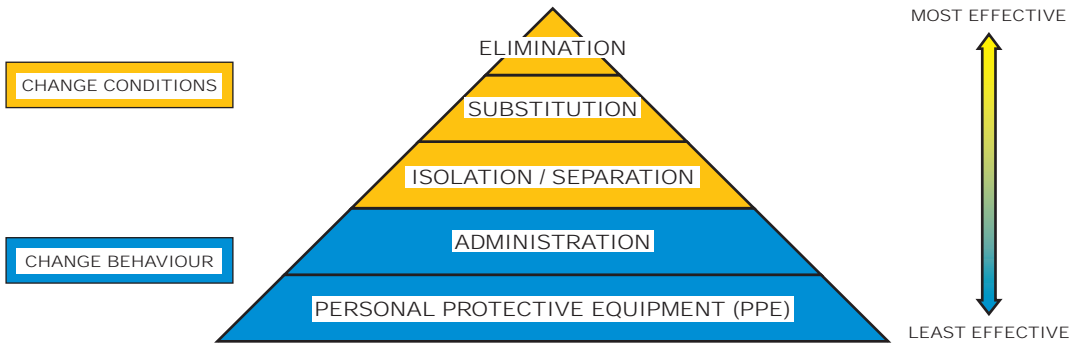
From this list, we can select one or more of the control measures to restore safe production in line with key elements of the work process model.

Caution:

A work area that fails to meet the criteria for safe production should be reported as a workplace hazard.

Implementing Hazard Controls

On the scale below, elimination is the most effective control and PPE is the least effective control. Administration and PPE rely on a change of behaviour, which leaves the possibility that workers may not follow the administrative procedure or wear the prescribed PPE. Therefore they may still be injured.



So when we implement controls, we start by trying to eliminate the risk, and then substitute the risk with one that has lesser consequence and so on down the list.

It is important to note that the level of consequence can only be reduced by implementing the top 3 control types from the Hierarchy of Controls - elimination, substitution and separation/isolation. We can only reduce the likelihood if we can only implement administration and PPE controls.

As an example of implementing the hierarchy of controls, imagine that as part of your job, you have to climb a ladder to check the level of liquid in a tank. Possible control options could include:

- Elimination – install a video camera above the tank and a monitor at the normal work level so that you don't have to climb the ladder at all.
- Substitution – replace the ladder with stairs.
- Separation/Isolation – have a cage built around the ladder to reduce the risk of falling backwards off the ladder
- Administration – develop an SOP that instructs workers to climb the ladder using 3 point contact while facing the ladder.
- Personal Protective Equipment (PPE) – prescribe minimum standards of tread on the soles of safety boots; prescribe fall protection devices.

The methods of reducing consequence and likelihood need to be carefully selected and any number may be used in combination to achieve an acceptable level of risk.

When considering controls, we need to consider the acceptability of these controls. If the control is one that is difficult to implement and it is unlikely to be accepted by the people doing the task, shortcuts will be taken to avoid the control. However, those risks that could result in severe illness or injury need very strict controls. A good example of this is entering a confined space. This needs to be controlled by specific training, entry permits and direct observation and authority.

Some controls may appear at first to be ideal, but will not work in practice. In the example above, a camera may not survive the physical conditions present above the tank; there may not be the room to construct stairs; and so on.

Importantly, risk reduction should be balanced against the cost of its implementation.

Similarly, the level of any technology used should be of a sufficient standard.

Deciding on the Final Course of Action

Once you have decided on which controls to implement, you must reassess the risk as if those controls were in place. If you have managed to reduce the remaining risk (known as the residual risk) to a level that is as low as reasonably achievable and the risk is therefore acceptable, you may proceed with the task. If the remaining risk is still unacceptable, refer the situation to your supervisor and do not perform the task until written instructions are received. A high risk task may still be able to be done based on strict hazard controls put in place by management to manage the remaining risk.

> *Remember:*
>
> ***Don't assume just because you've carried out a risk assessment that it is safe to proceed. You must have adequate controls in place first. If you are unsure how to control the hazard, don't complete the task. Ask your supervisor for assistance and guidance.***

There are two final points to consider when a decision is taken to conduct a risk assessment. The first is that for any identification of a hazard or for any assessment of a risk, **evidence must be able to be proved.**

The second point is that the originator or originators of an assessment must be prepared to justify their findings in a court of law. It is possible that a question of hazards or risks could be put before the courts.

MONITOR

Identify hazards

⇩

Assess the risk

⇩

Evaluate the risk

⇩

Control the hazard

⇩

Monitor effectiveness ⇆ • Records and reports

Irrespective of where we work on the mine site, it is our legal obligation to report hazards and incidents. **Therefore all hazards and incidents must be reported.**

This is to ensure that they are communicated to the relevant people so effective controls can be implemented and the information can be used to make future work safer.

Records can be in a number of forms which might include:

- Hazard reports
- Supervisor/deputy/OCE reports
- Incident reports
- Near miss reports
- Shift reports

The above records and reports are available in different formats on different mine sites. Each mine site has procedures on the completion of records and reports and it is necessary to become familiar with the ones that are relevant to you and the work you do.

Records also help us monitor the hazards and risk levels associated with the tasks we do. We need to monitor and review tasks to ensure continuous improvement of the methods of work undertaken.

We also need to review implemented controls to ensure they remain effective in controlling hazards. When this is done, the review process must be recorded and extra controls implemented if required, are recorded.

SUMMARY

We have covered the hazard identification and risk assessment processes associated with carrying out on the job tasks. This will give you the ability to control your local environment within the mine site and protect others who relate to the work you do and the environment in which you work.

Other risk assessments are conducted for wider job or task scopes. These are usually conducted in a group of people who are involved in the particular type of work by facilitators.

You will be required at times to be a part of these groups. However, the fundamentals of risk management remain the same and what we have covered in this section provides the basis for these higher level risk assessments.