WORKPLACE HEALTH AND SAFETY

CONCRETE CUTTING AND DRILLING

INDUSTRY GUIDE 2001

Queensland Government
Department of Industrial Relations

Queensland Government
Workplace Health and Safety

INDUSTRY GUIDE FOR CONCRETE CUTTING AND DRILLING

CAUTIONS FOR USING HAND-HELD CONCRETE CUTTING SAWS

- **ALWAYS follow the designer's recommendations for the safe use of the saw.**
- **ONLY use correct blade size, as recommended by the saw manufacturer. Oversized blades are dangerous.**
- **NEVER use the saw with the guards removed.**
- **Do NOT hold hand-held concrete cutting saws any higher than shoulder height.**
- **Do NOT use hand-held concrete cutting saws for inverted cutting.**

ACKNOWLEDGMENT AND ENDORSEMENT

This Industry Guide is based on the Victorian document: *Industry Standard for Concrete Cutting and Drilling*. The Victorian Standard was produced by the Victorian WorkCover Authority with the assistance and support of the Victorian Employers' Chamber of Commerce and Industry (VECCI), Construction Forestry Mining and Energy Union (CFMEU), the Concrete Cutting Association and its members and the Industrial Diamond Association of Australia.

This Industry Guide for Queensland workplaces is endorsed by the Construction Industry Sector Standing Committee established under the *Workplace Health and Safety Act 1995*, and the Industrial Diamond Association of Australia.

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INDUSTRY GUIDE FOR CONCRETE CUTTING AND DRILLING

1. Introduction

1.1 WHAT IS THIS INDUSTRY GUIDE ABOUT?

This Industry Guide provides practical advice about managing exposure to health and safety risks arising from the use of diamond concrete cutting and drilling equipment.

This equipment is used in operations, such as:

- **Core drilling**

  This process is used for the drilling of circular holes in reinforced concrete, precast concrete, asphalt, brick, cinderblock and other structural materials. Usually, the holes are made for electrical, plumbing, heating, sewer and sprinkler installations. Other applications include holes to anchor bolts or lifting rods, to place explosive charges, to install load-carrying devices, or for analysis of the structure or rock.

- **Concrete slab cutting**

  This process is used when reasonably level and flat surfaces have to be cut and includes cutting through reinforced concrete, precast concrete and other structural materials. These surfaces include floors, roofs, bridge decks and suspended slabs. The surfaces are usually cut to provide expansion joints, to make openings for ducts, elevators, stairwells, machine pads, trenching and for demolition purposes.

- **Concrete wall cutting**

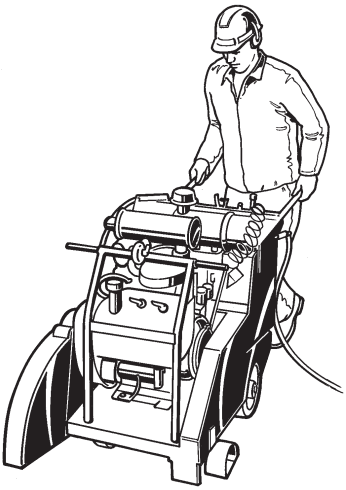
  This process is used for the cutting of openings in vertical surfaces and surfaces with slopes so great that flat saws can not be used. These surfaces are usually cut to provide for doors, windows, vaults, silos, chests, foundations, ducts or large diameter pipes, or to remove part or all of existing walls.

- **Asphalt cutting**

  This process is usually done for trenching, to provide expansion joints, to remove damaged pavement sections prior to patching or to clean and prepare random cracks for repair.

- **Safety grooving and texturing**

  This process is used to make concrete, asphalt and other surfaces more comfortable and safer to walk on. These surfaces include footpaths, stairs, public platforms and ramps.



1.2 WHO HAS WORKPLACE HEALTH AND SAFETY OBLIGATIONS?

The Workplace Health and Safety Act 1995 (the Act) imposes obligations on persons at workplaces to ensure workplace health and safety. Workplace health and safety is ensured when persons are free from the risk of death, injury or illness created by workplaces, workplace activities or specified high risk plant.

The Act places the responsibility for workplace health and safety upon those people who are responsible for workplace activities (such as employers, self-employed persons, persons in control of workplaces and principal contractors).

Concrete cutting and drilling activities are typically undertaken by either:

a) a *worker* who works for an *employer*; or

b) a contractor, known as a *self-employed person*.

When the concrete cutting or drilling operator is a *worker*, the person responsible for the concrete cutting or drilling activity (and therefore, responsible for workplace health and safety) is that worker's *employer*. When the concrete cutting or drilling operator is a *self-employed person*, that self-employed person has workplace health and safety obligations in relation to that activity.

In addition, the *principal contractor* (PC) has overall responsibility for ensuring health and safety on the site. A *person in control of a workplace* has responsibilities in relation to persons coming onto the workplace to work and to persons other than the person's workers. *Manufacturers and suppliers of plant*, such as concrete cutting and drilling equipment, also have certain workplace health and safety obligations under the Act.

Refer to Appendix 1 for details of the workplace health and safety obligations imposed on specific individuals.

1.3 MANAGING WORKPLACE HEALTH AND SAFETY

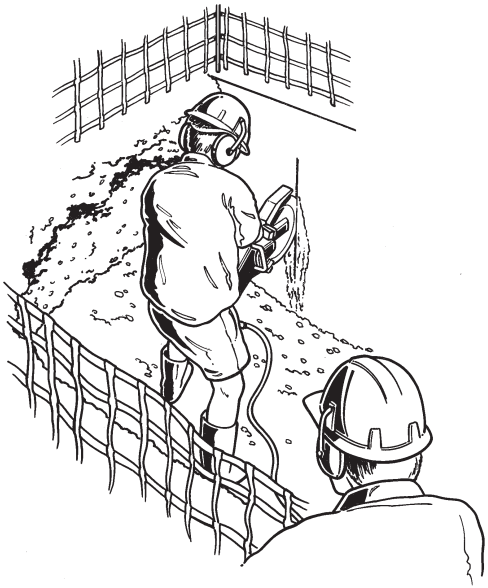
Under the Act, exposure to health and safety risks that arise from workplace hazards must be managed. This includes the health and safety risks arising from concrete cutting and drilling operations.

Section 22 of the Act describes a five-step process for managing workplace health and safety, known as the workplace health and safety risk management process. This risk management process should be undertaken BEFORE any concrete cutting or drilling starts on site.

Appendix 2 provides some general information about the workplace health and safety risk management process and describes how to use this process to manage exposure to the risks associated with concrete cutting and drilling operations. There might be health and safety risks arising from such concrete cutting and drilling operations that have not been specifically addressed in this industry guide. A risk management process should be undertaken to manage any risks not covered by this Guide, in order to meet the obligations imposed by the Act.

2. Working Safely on Site

2.1 PREPARING A SAFE SITE



Those people responsible for workplace health and safety must ensure that the work site is safe, based on the results of the workplace health and safety risk management process, as recorded in the *Job Safety Analysis* (JSA) or similar.

Site preparation for concrete cutting and drilling operations should include consideration of:

- weather/environmental conditions that can create hazards (eg. heat, rain)
- access to and from the work site
- barricades and warning signs
- provision of personal protective equipment
- specific health and safety instructions for the site
- whether the equipment is suitable for the work, is properly maintained and will be used according to manufacturer's recommendations

- provision of residual current devices (RCDs) for electrical equipment
- safe removal of cut pieces and cores
- a method to collect residue to prevent the surface becoming slippery and to prevent residue entering stormwater drains. Residue should be disposed of according to environmental protection requirements.

2.2 SETTING UP SAFELY: USING A SITE CHECKLIST

When setting up the site safely for concrete cutting and drilling activities, a *safety checklist*, such as the generic safety checklist printed on the following pages and reproduced in Appendix 3, should be used to make sure that:

- the work areas and/or work platform are suitable and safe
- the locations of all services are marked/disconnected
- the exact location of the cut or drilling is clearly marked
- the blade/equipment is of correct type and in good condition
- appropriate barricading and warning signs are erected
- the work area is adequately ventilated
- adequate lighting is provided, where necessary
- specific site hazards have been identified and safe systems of work are in place
- there is a method of collecting residue from the operation to prevent surfaces becoming slippery
- there is a method for safe removal or support of cut pieces or cores.

SAFETY CHECKLIST

Site and equipment safety

Contractor's name: _____

Type of job: _____

Site location: _____

Operator's name: _____

Check the SITE for SAFETY

On arrival at the site, tick the correct answer where relevant to the job. If the answer is NO the situation is unsafe. Alert the office.

	YES	NO	COMMENT
SITE EVACUATION			
Checked with client	☐	☐	
Located first aid/accessible	☐	☐	
SCAFFOLDING			
Erected as required	☐	☐	
SERVICES located/marked			
Electricity	☐	☐	
Gas	☐	☐	
Other	☐	☐	
VENTILATION			
Adequate	☐	☐	
LIGHTING			
Lighting in place	☐	☐	
CONTROL/PUBLIC SAFETY			
Barricades in position	☐	☐	
Warning signs displayed	☐	☐	
Traffic control in place	☐	☐	

	YES	NO	COMMENT
SAFETY EQUIPMENT			
Safety equipment is functional, clean and safe			

Check the EQUIPMENT for SAFETY

On setting up, tick the correct answer where relevant to the job and equipment. If the answer is NO the situation is unsafe. Alert your employer.

	YES	NO	COMMENT
FLOOR SAW			
Shaft nut secure			
Belt tensioned and undamaged			
Adequate water and waterways clear			
Flaps in place			
Guards in place			
HAND HELD SAW			
Belts tensioned and OK			
Flange locking nut secure			
Water supply adequate			
Guards in place			
WALL SAW			
Tracks securely fastened			
Blade secured			
Job wedged/securely supported			
WIRE SAW			
Pulleys secure			
Hydraulic pressure correct			
DRILLS			
Electric switch, plug and lead safe			
Water collar operable			
Carriage clamp and shims operable			

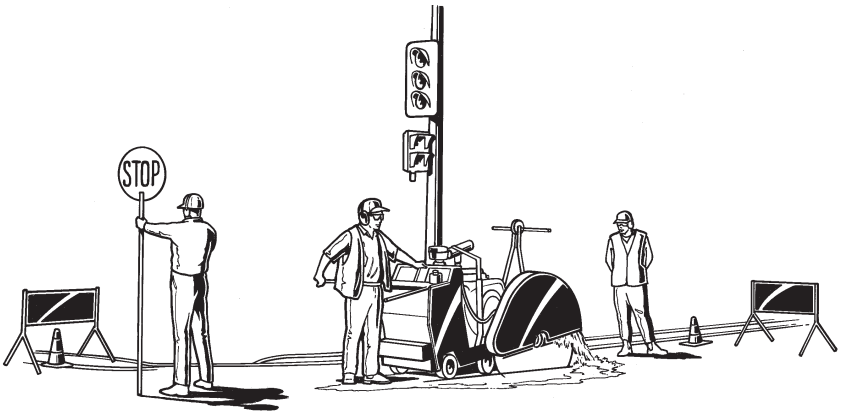
	YES	NO	COMMENT
BLADE AND BITS			
No undercutting evident			
Blades free of cracks & deterioration			
Blade is the right size and the right type for the machine			
All segments secure			
ELECTRICAL LEADS			
Plugs in good condition			
Outer casing intact			
Correctly tagged			
RCDs fitted			

2.3 USING CUTTING EQUIPMENT SAFELY

Before cutting with road, floor, wall and hand held saws, the operator should check that the equipment is safe. The general condition of the equipment should be checked by the operator before commencing each job to ensure that the cutting tool, guards, leads and hydraulic hoses are in good order.

The operator should ensure that:

- the cutting blade is the right size and right type for the machine
- the blade is in good working condition and is free from cracks and deterioration
- the specified blade speed matches the saw drive speed
- the shaft and flanges are clean and undamaged
- the blade fits securely over the shaft
- the shaft nut is tightened against the outside flange
- the blade guard is fitted and in good working order
- the drive belt is at the correct tension



- for wet cuttings, adequate coolant/water is available
- a trolley is used to support the cutting machine for horizontal work at low level, so that operators do not have to work on their knees
- other people on the site are not at risk
- safe removal or support of cut pieces or cores is provided
- the equipment is protected at the power outlet with a residual current device (RCD)
- the area behind the cut is barricaded and warning signs are posted when cutting through floors or walls, to prevent people entering that area
- safe operating procedures are in place when hand held saws are used in confined areas
- appropriate personal protective equipment is provided, where required.

During cutting, ensure that:

- the blade guard is in the lowered position
- when starting the machine, the operator and other people stand outside the path of the blade
- if the machine stalls, the blade is raised and the outside flange and nut are checked for tightness

- wall cuts are performed with the operator's back close to vertical and the hands do not move above shoulder height
- where possible, cut from a standing position with the feet braced and the body balanced. (In some circumstances, it may be necessary to kneel on one knee to enable cuts to be made close to the floor. In such circumstances, protection for the knee will be necessary.)
- when cutting horizontally across a wall, the operator's hand are at waist height
- the length of time the operator spends in a fixed positions is minimised
- the throttle lock is only used when starting the equipment. If the throttle lock is used during normal operation then the ability to cut power will be reduced.
- the equipment is stopped when changing grip to move between horizontal and vertical cuts
- when pre-cutting to 150mm and changing to a second blade, the blade is aligned with the previous cut on resumption of cutting
- the handles provided (rather than the belt guard) are used to support the equipment
- when using electrical equipment the electrical leads will not be cut during operation
- any person, who is providing assistance to the operator, is located where they will not be exposed to danger from sudden saw movement, ejection of material, a dropped machine or falling offcuts
- the saw is only used with blade rotating in the opposite direction to the cut and not used for inverted cutting
- plenty of water or coolant is used and that the coolant/water is suppressing dust at the point of generation (airborne dust is a health hazard)
- appropriate personal protective equipment is being worn.

In situations where the power pack for a hydraulic and compressed air wall saw is not easily accessible or the machine is not remotely controlled at the working head, a second operator should be available.

Using hand-held concrete cutting saws

Hand-held concrete cutting saws should only be used where the use of larger self-supporting saws is not practical. When it is necessary to use a hand-held concrete cutting saw, select one which:

- has handholds for the operator's non-trigger hand
- is as light weight as is practical for the type of work, to reduce manual handling risks
- has the best type of guarding around the blade
- is well balanced and has hand grips that are comfortable to use (poorly balanced machines might require operators to place their hands in dangerous positions near the blades to support the machine)
- has the least vibration when in use, so as to reduce the risk of damage to the operator's blood circulation
- can be used both left-handed and right-handed, and
- for horizontal cutting, can be used left-to-right and right-to-left without having to reposition the blade or guard.

The operator should be instructed in and competent at operating the saw safely. Where possible, the saw should be used with the operator's hands at waist height when cutting horizontally, and between shoulder to knee height when cutting vertically. It may be necessary for scaffolding or supports to be provided to ensure safe use of the saw.

Procedures should be put in place that require checking to ensure that hand-held concrete cutting saws have not been modified.

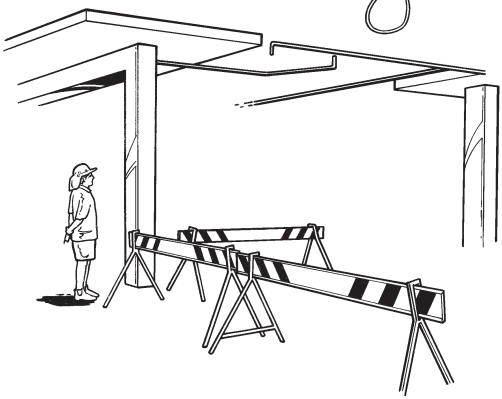
Cautions for using hand-held concrete cutting saws

- ALWAYS follow the designer's recommendations for the safe use of the saw.
- ONLY use correct blade size, as recommended by the saw manufacturer. Oversized blades are dangerous.
- NEVER use the saw with the guards removed.
- Do NOT hold hand-held concrete cutting saws any higher than shoulder height.
- Do NOT use hand-held concrete cutting saws for inverted cutting.

2.4 USING CONCRETE DRILLING EQUIPMENT SAFELY

Operators drilling concrete should ensure that:

- close fitting clothing is worn to avoid entanglement
- the drill is securely fastened to the work surface
- the area below or behind the operation is barricaded to prevent people entering during drilling
- warning signs are posted
- the drilling equipment is connected to a residual current device



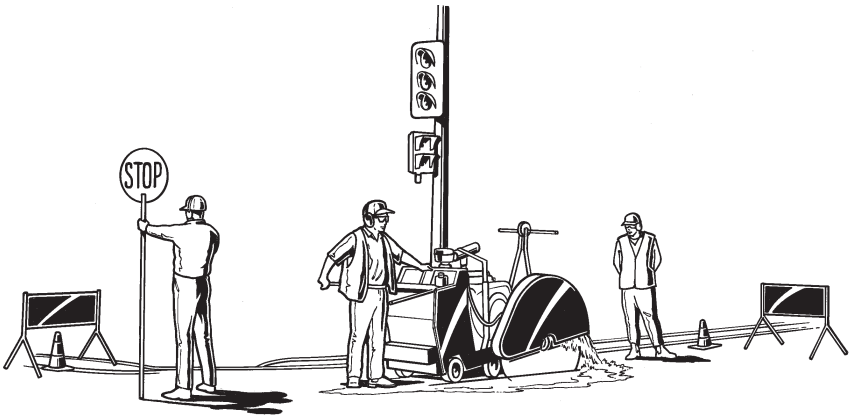
- appropriate personal protective equipment is provided and being used
- hydraulic, air or flexible drive units and a drill stand are used for inverted drilling
- supply of coolant/water is adequate to suppress dust.

2.5 PROTECTING THE PUBLIC

If cutting or drilling is carried out on a road or in a public place, the public must be protected and a safe route around the work area must be provided.

Public safety measures include:

- complying with local government requirements for road or footpath closure
- barricading or screening the work area to protect pedestrians and to prevent vehicle entry
- displaying warning signs and caution lighting where necessary
- lighting the area but ensuring there is no glare or shadows (where flood lighting is used, ensure it is positioned so as not to blind motorists)
- providing wheelchair access around the area.



3. Major Hazards & Suggested Controls

This section provides general information about the major hazards associated with concrete cutting and drilling operations. Following are some examples and suggested measures for controlling exposure to the risk associated with each hazard.

3.1 AIRBORNE HAZARDS

Airborne hazards affecting the health and safety of concrete cutting and drilling operators can arise in several different ways:

- from dusts created from the cutting or drilling of the concrete itself
- from exhaust gases generated by machines powered by internal combustion engines
- from work conducted in confined spaces
- from hazardous substances (chemicals or additives) used in the process.

(i) Inhaling dusts created by concrete cutting and drilling

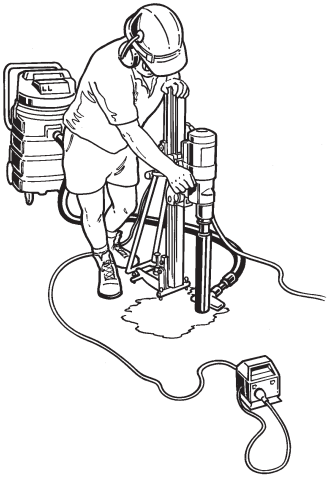
Concrete cutting and drilling can generate large quantities of dust, which can include respirable silica dust. Exposure to silica dust can result in silicosis, a stiffening and scarring of the lungs. It results in shortness of breath, coughing and chest pain. The effects are irreversible and lead to degeneration in the person's health, invariably resulting in death. The coarser rock and cement dusts fractions can cause upper airways irritation and symptoms such as bronchitis if extensively exposed over long periods of time.

Dry methods of concrete cutting and drilling produce the highest levels of respirable dust.

Control Measures

The Advisory Standard for Hazardous Substances 1998 provides practical advice on ways to manage specific risks that arise when hazardous substances are used or

produced at a workplace. This Advisory Standard also sets the minimum standard, which should be achieved for the health of operators exposed to these toxic dusts.



The *Silica dust in building and construction (1997)* brochure developed by the Division provides advice about dust control, dust extraction and dust monitoring at a workplace.

Wherever possible, concrete cutting and drilling equipment should be fitted with extraction devices to eliminate generated dust at the source.

Where dust extraction is not practical, wet methods should be used to minimise dust generation. Ensure that enough water/coolant is supplied to the operation to adequately suppress the dust. It might also be necessary to use respiratory protection for wet operations. A P1 particle respirator will provide adequate protection for respirable quartz concentrations up to 10 times the exposure standard of 0.2 mg/m^3 (i.e. 2 mg/m^3).

Where it is necessary to carry out the task dry, (e.g. due to the proximity of electrical fittings or machinery) ensure that particulate respirators with adequate protection (such as a P1 or P2 particulate respirators) are used.

Other people in the vicinity should also be protected from any dusts created by the cutting or drilling operation. Remove slurry before it dries, otherwise the dried dust can be redispersed to expose unprotected workers and others on the site.

If possible, workers should change into disposable or washable work clothes at the job site, shower (where available) and change into clean clothing after leaving the site to prevent contamination of cars, homes and other areas. Workers should not eat, drink, smoke or apply cosmetics (including sunscreen) in areas where there is dust containing crystalline silica.

Guidelines for airborne dust levels in workplaces can be found in the National Occupational Health and Safety Commission's *Exposure Standards for Atmospheric Contaminants in the Occupational Environment.*

(ii) Exhaust gases from machinery

Exhaust gases from equipment powered by internal combustion engines, including carbon monoxide, oxides of nitrogen and aldehydes, are all toxic. Carbon monoxide is a chemical asphyxiant, which can cause rapid loss of coordination, unconsciousness and death. Any engine operated in, or even close by, a poorly ventilated area can quickly produce dangerous levels of contaminants.

Control measures

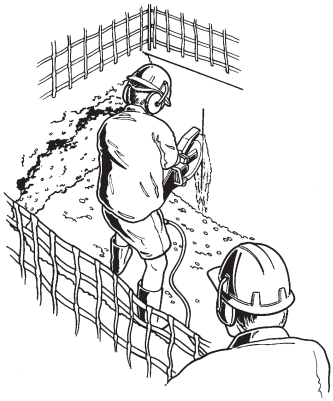
Because of the extreme risks from hazardous exhaust gases, equipment with an internal combustion engine should NOT be used in an enclosed or poorly ventilated space. Instead, use hydraulic, electric or pneumatic machines in poorly ventilated spaces. Attempts to use general dilution ventilation to remove exhaust gases are rarely successful because of the large amounts of contaminants produced and physical difficulties in producing and directing the flow of adequate fresh air supplies.

No attempt should be made to use conventional filtering type respirators to deal with general exhaust gases. There is NO filter to protect a wearer against carbon monoxide for regular respiratory protective equipment.

(iii) Working in confined spaces

Any work activity undertaken in a confined space can be hazardous. Hazards include:

- inadequate air quality caused by lack of oxygen (e.g. displacement by carbon dioxide)
- presence of toxic constituents of the atmosphere (e.g. hydrogen sulphide, carbon monoxide)
- presence of explosive air contaminants (e.g. methane)



Further (as noted above), for concrete cutting or drilling, the operation of an internal combustion engined machine may produce additional extremely toxic gases in the confined space.

Control measures

Part 15 of the *Workplace Health and Safety Regulation 1997* specifies requirements in relation to entry into confined spaces. This regulation, which calls up sections of AS 2865, covers designing, manufacturing and supplying a confined space; modifying a confined space; and using a confined space.

For concrete cutting and drilling, where entry into or on a confined space is needed, the atmosphere should first be tested to check for adequacy of oxygen, absence of both toxic contaminants and explosive gases or vapours. Where the atmosphere is not suitable for entry, it must be ventilated until it is shown by test to be suitable for safe entry. The Australian Standard 2865 specifies the requirements for oxygen sufficiency, explosive range and toxic contaminants appropriate for safe entry into a confined space.

Use of machinery in a confined space should be restricted to hydraulic, pneumatic or electric machines. All machines capable of causing sparks, (particularly electric ones), can provide a source of ignition in an explosive atmosphere.

Refer to AS 2865 for further guidance on eliminating or minimising the need to enter a confined space and on managing the health and safety of persons who need to enter or work in a confined space.

(iv) Hazardous substances used in the process

In some instances, chemicals or other hazardous substances may be added as aids in the cutting or drilling operations. The nature of the hazard and the risks will depend on the hazardous substance used.

Controls

Part 13 of the *Workplace Health and Safety Regulation 1997* specifies requirements in relation to hazardous substances and in particular, details the obligations of manufacturers, importers, suppliers, employers and self-employed

persons. This regulation also establishes the requirements needed for controlling exposure to a hazardous substance.

Relevant health and safety information can also be obtained from the MSDS for a hazardous substance.

3.2 NOISE

Noise from concrete cutting and drilling is a serious issue. An operator's hearing may be damaged by very loud noise over a relatively short period or by exposure to a lower level of loud noise over a longer period. In a normal working day, noise from concrete cutting or drilling equipment will lead to exposure to excessive noise for the operator and other nearby workers. The hearing ability of the operators and workers will therefore be at risk if no control measures are implemented.

Control Measures

Under Part 10 of the *Workplace Health and Safety Regulation 1997*, an employer must prevent risk to the employer's workers, from exposure to "excessive noise"[1] at work. The *Advisory Standard for Noise 1999* provides practical advice about identifying sources and levels of noise, addressing exposure to noise and eliminating or minimising noise exposure as a risk to health and safety at the workplace.

There are currently no cutting and drilling plant and equipment available which are quiet enough as not to create excessive noise with normal daily use. Modifications in the form of engineering noise control measures at the source also offer limited noise reduction.

Operators, nearby workers and bystanders therefore must, on the whole, protect their hearing through the wearing of personal hearing protectors. Employers providing hearing protectors must also provide training and instruction in the proper use and maintenance of such personal hearing protectors (and any other protective equipment) the employer requires the worker to wear. Consult the *Advisory Standard for Noise 1999* and/or AS/NZS 1269 - 1998, part 3 for detailed information on hearing protectors.

1. Excessive noise is defined as a level above-
a) an 8 hour continuous A-weighted sound pressure level of 85dB(A); or
b) an unweighted peak sound pressure level of 140dB(lin).

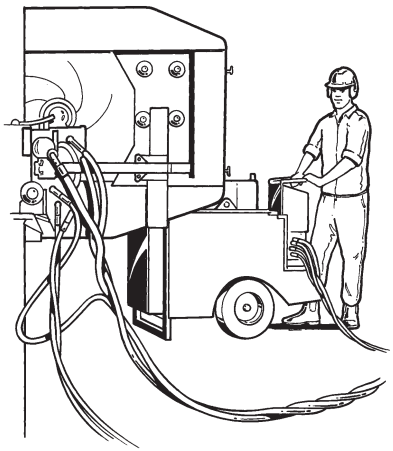
3.3 MANUAL TASKS INCLUDING MANUAL HANDLING

Awkward or static working postures and forceful exertions repeated or maintained for long periods increase the risk of injury by increasing loads on the back, other joints and soft tissues of the body.

Holding hand held equipment (such as hand held concrete cutting saws) over extended periods increases the loads on the body and the risk of injury.

Control measures

Use the workplace health and safety risk management process[2] to determine appropriate control measures. The first step in this process is to identify problem jobs/tasks that require investigating, as not all manual tasks are harmful. Then, analyse the problem jobs to determine the risk factors that are causing problems and develop solutions using the method of risk control detailed in the *Manual Tasks Advisory Standard 2000*. This Advisory Standard states ways to prevent or minimise exposure to risk factors that can contribute to or aggravate work related musculoskeletal disorders, particularly of the back and upper limbs.



Possible solutions include:

- suspending or supporting equipment in a frame to reduce the forces and the awkward and static working postures needed to position it
- reducing the range of movement of the equipment to minimise the effort or forces needed to guide and control it
- training workers in safe methods of work and in principles for handling the equipment.

2. For a detailed explanation of the workplace health and safety risk management process, refer to the Workplace Health and Safety Risk Management Advisory Standard 2000

3.4 VIBRATION OF THE WHOLE BODY AND/OR HAND ARM

Vibration transmitted from concrete cutting and drilling plant and equipment can affect the body as a whole or segments of the body such as the hands and arms of the operator. The harmful effects from whole body vibration are predominantly of a musculoskeletal nature, especially in the lower spine region. Other effects include fatigue, headaches, gastrointestinal problems and a reduction in job efficiency.

Hand-arm vibration may cause disturbances in the peripheral nerve and vascular systems of the hands resulting in Raynaud's Syndrome (known as vibration white finger) resulting in loss of senses of touch and heat, numbness and loss of grip strength. Other effects can include damage to tendons, bones and joints in the hands, wrists, arms, elbows and shoulders, and also carpal tunnel syndrome.

Control measures

Choose equipment:

- that vibrates less or does not have to be held or supported
- that is well-balanced, as light as possible and able to be held with either hand and different sized hands
- with vibration absorbing handles or with an even surface on the handles to distribute gripping force.

Lagging of metal handles of existing equipment with a soft resilient rubber can also be very effective in reducing vibration exposure.

Train workers in the use of the equipment with a minimum grip force while still able to perform the work safely.

The use of gloves has minimal effect on vibration exposure. The beneficial effects of the use of gloves are that they can improve grip on the equipment and can keep hands warm and thus increase blood flow to the fingers.

Refer to the *Manual Tasks Advisory Standard 2000* for further guidance on vibration.

3.5 WORKING SAFELY WITH EQUIPMENT

Absence of guards or ineffective guard operation and the incorrect fitting of blades on concrete cutting and drilling equipment can result in injury.

Accumulation of slurry may cause the work surface to become slippery.

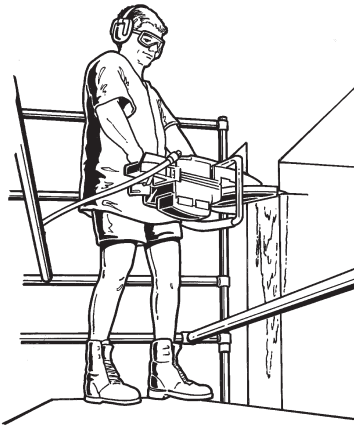
Control measures

The correct guards should be properly fitted and checked for operation. Only fit recommended blades, ensuring the rpm rating is suited for the operation. Never fit oversized blades.

Collect and remove slurry from the work area so the operator has a sure footing.

The *Plant Advisory Standard 2000* gives practical advice on ways to manage exposure to risks related to the use of plant, including its safe design, manufacture and installation. It outlines the obligations of persons involved with plant and provides information on risks and their control.

3.6 WORKING AT HEIGHT



Working at height with any concrete cutting or drilling equipment is dangerous. Heavy equipment cannot be used safely on an unstable platform and portable equipment should not be used from a ladder.

Control measures

Do not use ladders when operating concrete cutting and drilling equipment. All work at height should be done from safe working platforms, such as scaffolding and elevated working platforms.

Refer to the *Workplace Health and Safety (Falls from Heights) Advisory Standard 2000* for further guidance.

3.7 ELECTRICAL SAFETY

There is a risk of electrocution if extension leads, plugs and electric powered tools are used in the presence of water. Electrocution can also be caused by inverting hand held equipment when wet cutting.

Control measures

Part 16 of the *Workplace Health and Safety Regulation 1997* (Electrical Equipment and Installations) prescribes some of the ways to prevent or minimise exposure to the risk of death, injury or illness caused by electrical equipment and electrical installations used to carry out work.

Under the regulation, concrete cutting and drilling work would be described as 'class 1 work'. The following requirements for class 1 work are prescribed in the regulation. Employers and self-employed people must make sure:

- double adaptors and piggyback plugs are not used
- "specified electrical equipment"[3] is inspected, tested and tagged by a competent person at prescribed intervals
- specified electrical equipment is immediately withdrawn from use if it is not safe to use
- if there is no construction wiring, specified electrical equipment is connected to a type 1 or 2 residual current device or portable device (unless the electricity supply is provided by an unearthed output from a single phase portable generator)

3. "Specified electrical equipment" is equipment that meets any of the following criteria:
- *It is designed to be connected by the flexible cord and plug to low voltage supply and is used by a person to perform class 1 or 2 work eg. a bench grinder plugged in to a power point.*
- *It is designed to be connected by a flexible cord and plug to low voltage supply and is capable of being moved during its normal use for the purpose of its use eg. a hand held blow dryer, a portable power saw or a vacuum cleaner.*
- *It is an extension lead or powerboard.*

Specified electrical equipment does not include a portable residual current advice.

- portable residual current devices are tested at prescribed intervals
- residual current devices are withdrawn from use if they are not working properly.

In addition, suspend cords and extension leads on stands and use waterproof connectors where water may be present. Do not use electrical equipment for inverted cutting.

3.8 DAMAGE TO STRUCTURES

Operators risk injury and the safety of others on site by cutting through stressed components in buildings and any other components that could affect the integrity of the structure.

Control measures

If components, such as stressing tendons, must be cut, the person responsible for workplace health and safety must assess the risk. Advice and supervision from a structural engineer should be sought for all cuts to structural components. The relevant person responsible for workplace health and safety (usually the principal contractor) should locate and mark the location of all components that will affect the strength of a structure if cut, as part of initial planning for safety.

3.9 DAMAGE TO SERVICES

Operators risk injury and the safety of others on the site by cutting through gas, electricity or water services.

Control measures

The relevant person responsible for workplace health and safety on site (usually the principal contractor) should locate and mark the location of all services during initial planning for safety. If services are to be cut through, they must be disconnected and tagged. Disconnection should be confirmed and tagged by the relevant service personnel before the work begins. At conclusion of the work, the service personnel should remove their tags.

3.10 LOSS OF VACUUM

Operators using a vacuum assembly to anchor a core drill stand to the surface may risk injury if the vacuum pump fills with slurry. This can cause loss of vacuum, which can result in the drill stand breaking free and rotating around the drill.

Control measures

Use bolt down stands where practical. Ensure that the surface to be cut is sound and monitor the equipment to ensure that vacuum pressure is being maintained.

3.11 WORKING ALONE

When working alone it may be difficult to set up equipment on site.

Control measures

A second person should be available to assist in the setting up and relocating equipment on site.

4. Maintaining Concrete Cutting & Drilling Equipment

The *Plant Advisory Standard 2000* gives practical advice on ways to manage exposure to risks related to the use of plant, including maintenance of equipment. Maintenance can prevent plant from deviating from the design intention in a way which is a risk to health and safety.

Plant should be maintained according to the manufacturer's specifications for maintenance or, in the absence of such specifications, in accordance with other proven and tested procedures. Regular inspection and routine maintenance undertaken by a competent person will help to ensure safe and efficient operation of equipment. A suggested schedule is:

- the general condition of the equipment should be checked daily by the operator before use
- the equipment should be inspected and maintained by a qualified person at least every month or after 50 hours of operation.

Defects and repairs

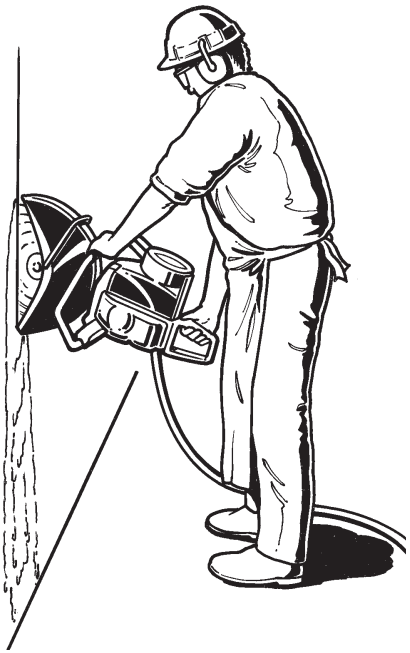
Defects to concrete cutting and drilling equipment should be reported immediately to the person responsible for maintaining plant. Because of their day-to-day experience, operators should be regularly consulted about the performance of equipment. Their suggestions for improvements should also be encouraged.

- A qualified person should carry out repairs.
- Ensure that equipment with defects that could endanger people is not used.

Keeping records

Complete records of any inspections, services or repairs carried out should be kept for all concrete cutting and drilling equipment. These records should include any faults identified in normal use. Records should be up to date and retained for the life of the plant.

5. Personal Protective Equipment



If the use of personal protective equipment has been identified as one of the control measures to minimise exposure to a risk, the person responsible for workplace health and safety must make sure such equipment is provided and that workers are properly trained and instructed in the correct use of the equipment, BEFORE starting any concrete cutting or drilling work.

Under the Act, a worker has an obligation to use personal protective equipment if the equipment is provided by the worker's employer and the worker is properly instructed in its use.

The following personal protective equipment (PPE) should be provided, where required:

- safety helmets
- hearing protection
- eye protection
- safety clothing such as safety boots, waterproof clothing, aprons, gloves and reflective safety vest
- respirators
- gloves to improve grip and reduce force.

In addition, operators working outside for long periods should be protected from harsh sunlight and/or reflected light by applying a sunscreen with a SPF rating of at least 15+. They should also wear hats, eye protection, long sleeve shirts and long trousers.

When selecting items of personal protective equipment, preference should be given to those which comply with the latest relevant Australian Standard.

Operators should not wear loose clothing, and long hair should be covered or tied back. All clothing needs to be comfortable and suitable for the work and the weather conditions.

Storage and maintenance of PPE

Store personal protective equipment in a clean and fully operational condition. Storage arrangements should ensure that the equipment is safe from interference and damage, and that it is easily accessible when needed. Items of personal protective equipment should also be inspected regularly, as specified by the manufacturer or supplier, to determine that they are in a serviceable condition, both during storage and in use.

Maintain personal protective equipment in a condition that ensures its continued effective operation. Repair or discard damaged or defective personal protective equipment.

Refer to *Supplement 1 (Personal Protective Equipment) of the Workplace Health and Safety Risk Management Advisory Standard 2000* for further guidance about PPE. This supplement provides general advice about using PPE to minimise exposure to risks associated with workplace hazards. It provides guidance on selecting, using, storing and maintaining such equipment.

6. Training & Instructing Operators [4]

All operators of concrete cutting and drilling equipment[5] must know how to work safely and should be able to demonstrate a certain level of competency before using this equipment. This includes employers and self-employed persons (who have an obligation to ensure their own workplace health and safety), and workers (for whom the obligation for training rests with the employer).

Employers must ensure their workers are trained in safe concrete cutting and drilling work practices and procedures, and are supervised by experienced people before carrying out this unsupervised work.

Training should include information and instruction on:

- workplace health and safety
- hazards and risks associated with work activities
- safe work practices and procedures, the safe handling (including lifting and moving) and safe operation of equipment and the control measures in place
- the safe use of plant and associated equipment, the safe use of hazardous substances, electrical safety, safety in confined spaces and other training required under hazard-specific regulations
- the correct use, fit, care and storage of personal protective equipment, tools and equipment and why the equipment is needed
- emergency and first aid procedures
- sun protection to prevent skin cancer
- fire protection
- information on dust, fumes and air quality
- recognition of poorly ventilated areas and confined spaces.

The operator should be monitored, as required to ensure safe work practices and procedures are being followed.

4. An accredited training manual, Introduction and Safety for Concreting Cutting, is available from the Industrial Diamond Association of Australia (IDAA).
5. This includes equipment that is obtained from a hire company.

7. Supplying Concrete Cutting & Drilling Equipment for Hire

Under the Act, a supplier[6] of plant at a workplace, such as concrete cutting and drilling equipment, has an obligation to take all reasonable steps to ensure appropriate[7] information about the safe use of plant is available.

Such information could include, for example:

- the use for which the equipment has been designed and tested
- the conditions that must be followed if the equipment is to be used safely and without risk to health
- manufacturer's instructions and or an operator's manual
- risk assessment, including information about any known residual risk, that cannot be eliminated or sufficiently reduced by design and against which guarding is not totally effective
- the control measures, for example training in safe operating procedures that should be used to reduce the risks associated with the equipment
- personal protective equipment that should be used
- ways in which experience or testing has shown the equipment should not be used.

6. 'Supply' includes hiring of plant.

7. Under the Act, information is "appropriate" if the information states:-
- the use for which the plant has been designed and tested; and
- the conditions (if any) that must be followed if the plant is to be used safely and without risk to health.

Appendices

1: Workplace health and safety obligations

2: The risk management process

3: Safety checklist - Site and equipment safety

4: Job Safety Analysis worksheet

Appendix 1: Workplace Health & Safety Obligations

Obligations of employers (section 28 of the Act)

An employer has the following obligations:

a) to ensure the workplace health and safety of each of the employer's workers at work;

b) to ensure his or her own safety and the workplace health and safety of others is not affected by the way the employer conducts the employer's undertaking.

Obligations of self-employed persons (section 29 of the Act)

A self-employed person has an obligation to ensure his or her own workplace health and safety and the workplace health and safety of others is not affected by the way the person conducts the person's undertaking.

Obligations of a principal contractor (section 31of the Act)

1. A principal contractor has the following obligations for a construction workplace:

a) to ensure the orderly conduct of all work at the construction workplace to the extent necessary:

i. to ensure workplace health and safety at the workplace; and

ii. to assist the discharge of workplace health and safety obligations of an employer or self-employed person;

b) to ensure that persons at the workplace are not exposed to risks from:

i. something that has been provided for the general use of persons at the workplace for which no other person owes a workplace health and safety obligation;

ii. a hazard at the workplace for which no other person owes a workplace health and safety obligation;

c) to ensure that workplace activities at the workplace are safe and without risk of injury or illness to members of the public at or near the workplace;

d) to provide safeguards and take safety measures prescribed under a regulation made for principal contractors.

2. In addition, the principal contractor has the obligation mentioned in subsection (3) if the principal contractor reasonably believes, or should reasonably believe:

a) an employer at the workplace is not discharging the employer's workplace health and safety obligation; or

b) a self-employed person at the workplace is not discharging the person's workplace health and safety obligation;

3. The principal contractor must:

a) direct the employer or self-employed person to comply with the employer's or self-employed person's workplace health and safety obligation; and

b) if the employer of self-employed person fails to comply with the direction - direct the employer or self-employed person to stop work until the employer or self-employed person agrees to comply with the obligation.

Obligations of person in control of workplaces (section 30 of the Act)

A person in control of a workplace has the following obligations:

1. to ensure the risk of injury or illness from a workplace is minimised for persons coming onto the workplace to work;

2. to ensure the risk of injury or illness from any plant or substance provided by the person for the performance of work by someone other than the person's workers is minimised when used properly;

3. to ensure there is appropriate, safe access to and from the workplace for persons other than the person's workers.

Obligations of manufacturers and suppliers of plant (section 32 of the Act)

1. A manufacturer of plant or specified high risk plant for use at a relevant place has an obligation to ensure that the plant is constructed to be safe and without risk to health when used properly.

2. A manufacturer of plant or specified high risk plant for use at a relevant place has an obligation to ensure that the plant undergoes appropriate levels of testing and examination to ensure compliance with the obligations imposed by (1) above.

3. A manufacturer or supplier of plant or specified high risk plant for use at a relevant place has the following obligations:

a) to take all reasonable steps to ensure appropriate information about the safe use of the plant is available

b) to take action to prevent the use of unsafe plant[8].

4. For subsection 3(a), information is "appropriate" if the information states:

a) the use for which the plant has been designed and tested; and

b) the conditions (if any) that must be followed if the plant is to be used safely and without risk to health.

Obligations of workers and others at a workplace (section 36 of the Act)

A worker or anyone else at a workplace has the following obligations at a workplace:

a) to comply with the instructions given for workplace health and safety at the workplace by the employer at a workplace and, if the workplace is a construction workplace, the principal contractor for workplace health and safety at a workplace;

b) for a worker - to use personal protective equipment if the equipment is provided by the worker's employer and the worker is properly instructed in its use;

c) not to wilfully or recklessly interfere with or misuse anything provided for workplace health and safety at the workplace;

d) not to wilfully place at risk the workplace health and safety of any person at the workplace;

e) not to wilfully injure himself or herself.

8. Refer to the section 32 (4) of the Act for guidance about this obligation.

Appendix 2: The Risk Management Process

HOW TO MANAGE WORKPLACE HEALTH AND SAFETY

This part of Appendix 2 provides some general information about the workplace health and safety risk management process.

THE FIVE STEP PROCESS

Section 22 of the Act describes a five-step process for managing workplace health and safety, known as the workplace health and safety risk management process[9].

The five basic steps of this process are:

1. **Identify** hazards
2. **Assess** risks that may result because of the hazards
3. **Decide** on control measures to prevent or minimise the level of the risks
4. **Implement** control measures
5. **Monitor** and **review** the effectiveness of the measures.

The workplace health and safety risk management process should be undertaken BEFORE any concrete cutting or drilling starts on site. The process should also be undertaken at various other times, including when a change occurs, if any health symptoms are reported by workers, and after an incident (and/or "near miss").

CONSULTATION

Consultation should occur at each stage of the workplace health and safety risk management process. This will help to achieve better health and safety outcomes from the process. For example, when planning the site layout and order of work, consultation (about the hazards of the work and how injury can be prevented) should occur between the principal contractor, the employer, other contractors, any workers and worker representatives.

The Act provides for consultation through workplace health and safety representatives (WHSR) and workplace health and safety committees.

9. For a detailed explanation of the workplace health and safety risk management process, refer to the Workplace Health and Safety Risk Management Advisory Standard 2000.

RECORD KEEPING[10]

Adequate recording of the workplace health and safety risk management process will help to demonstrate that the obligation holder has been actively working to ensure workplace health and safety, should they need to prove this[11]. Keeping records should also maximise the effectiveness of the process and provide a reference point for review and follow up.

The preparation of a *Job Safety Analysis* (JSA) is an example of an industry-accepted method for undertaking and recording the workplace health and safety risk management process. (Appendix 4 provides a generic JSA worksheet).

The JSA usually includes consideration of:

1. the type of equipment to be used
2. the hazards at the site
3. the degree of risks associated with identified hazards
4. the best ways to reduce the risk of injury
5. site safety instructions the operator must observe
6. safe access to & from the work area
7. barricades and warning signs for the work area
8. marking the location of the cut or drilling
9. identifying and marking any services such as electricity, gas and water
10. safe electrical practices for construction sites (including the location of cables and the power supplied to the work area)
11. the condition of the concrete to be cut
12. how to ensure the work does not weaken the building or structure
13. how to ensure equipment operators are competent
14. the safe removal of cut blocks and cores.

As a result of the JSA, a work method statement may be required. This statement describes how the work is to be done safely at a site. For example, it would be necessary to prepare a work method statement to describe how to undertake work safely when the work activities (such as cutting the concrete) could weaken a structure.

10. The Workplace Health and Safety Risk Management Advisory Standard 2000 provides sample forms to help with record keeping.
11. It is important to note that there are specific record keeping requirements for certain workplace hazards. If you have identified such hazards you must refer to the relevant regulations and advisory standards for details of the recording requirements.

USING THE RISK MANAGEMENT PROCESS

This part of Appendix 2 describes how to use the workplace health and safety risk management process to manage exposure to the risks associated with concrete cutting and drilling operations.

STEP 1: IDENTIFY HAZARDS

The first step in the workplace health and safety risk management process is to identify workplace hazards. A hazard is defined as *something with the potential to cause harm.*

The major hazards associated with concrete cutting and drilling operations have been identified as:

- airborne hazards, such as from:
  - inhaling dusts created by the process
  - exhaust gases from machinery
  - working in confined spaces
  - hazardous substances used in the process
- noise
- manual tasks (including manual handling)
- vibration of the whole body and/or hand/arm
- plant - concrete cutting and drilling equipment
- working at heights
- electricity
- damage to structures
- damage to services
- loss of vacuum
- working alone.

A description of these hazards and recommended control measures are provided in section 3 of this document.

Before proceeding to step 2 of the risk management process, the risks associated with each hazard should be identified and consideration should be given to whether any of these risks are:

- relatively minor; or
- issues about which there is a regulation, advisory standard or industry code of practice (made under the *Workplace Health and Safety Act 1995*) or guidance material (produced by the Division of Workplace Health and Safety).

If any of the risks are relatively minor and/or the hazard can be easily fixed, attend to these straight away. That is, it may NOT be necessary to work through the assessment method shown in step 2 before controlling the risk (step 3).

If there is a regulation, advisory standard, industry code of practice and/or guidance material made about the risk, refer to the advice provided in that document(s).[12] All other risks must be assessed using a method such as the one presented in step 2.

STEP 2: ASSESS THE RISK

The second step in the workplace health and safety risk management process is to work out which hazards need attention first. The risk associated with each hazard must be assessed.

The desired outcome of step two is a prioritised list of risks for further action. Various methods can be used to undertake a risk assessment. One method is presented below. Any risk assessment method can be chosen as long as the desired outcome (stated above) is achieved.

Risk Assessment Method[13]

1. For each of the risks:

a) Estimate the *likelihood* of an incident occurring at the workplace, bearing in mind existing control measures. Using the descriptive scale in the risk priority chart (below), nominate the likelihood of an incident occurring at the workplace.

b) Estimate the *consequences* of an incident occurring at the workplace, bearing in mind existing control measures. Using the descriptive scale in the risk priority chart, nominate the consequences of an incident occurring at the workplace.

c) Determine the "risk score" by plotting consequence and likelihood estimates on the risk priority chart.

2. Using the scores[14] obtained for the risks, develop a prioritised list of workplace risks requiring action.

12. Refer to the "For Further Information" section on page 50 for details of how to find out whether there are any regulations, advisory standards, industry codes of practice or guidance material for any of the hazards identified at the workplace.
13. This method provides rough means of ranking the risks. The risk scores derived should be interpreted with caution as the process by which they are obtained is subjective.
14. Note, the risk scores are useful for comparison purposes ONLY.

RISK PRIORITY CHART

LIKELIHOOD How likely could it happen?	CONSEQUENCES: How severely could it affect health and safety?			
	EXTREME - death, permanent disablement	MAJOR - serious bodily injury or work caused illness	MODERATE - casualty treatment	MINOR - first aid only, no lost time
VERY LIKELY Could happen frequently	1	2	3	4
LIKELY Could happen occasionally	2	3	4	5
UNLIKELY Could happen, but rare	3	4	5	6
VERY UNLIKELY Could happen, probably never will	4	5	6	7

The scores (1-7) in the risk priority chart indicate how important it is to do something about each risk, as follows:

Score	Action
1, 2 or 3	do something about these risks immediately
4 or 5	do something about these risks as soon as possible
6 or 7	these risks may not need immediate attention

STEP 3: DECIDE ON CONTROL MEASURES

Step 3 in the workplace health and safety risk management process involves deciding on control measures to manage exposure to identified risks.

Control Priorities

Start at the top of the list and work down.

Firstly, try to **eliminate the hazard.**

If this is not possible, **prevent or minimise exposure to the risk** by one or a combination of:

- *Substituting* a less hazardous material, process or equipment
- *Redesigning* equipment or work processes
- *Isolating* the hazard.

  (Note: These measures may include engineering methods.)

As a last resort, **when exposure to the risk is not (or can not be) minimised by other means:**

- Introduce *administrative controls*
- Use appropriate *personal protective equipment.*

In many cases, it will be necessary to use more than one control measure to satisfactorily manage a risk. Some control measures, which are lower control priorities, may need to be put in place until a permanent measure can be implemented.

The control measures selected should:

- adequately control exposure to the risk;
- not create another hazard; and
- allow workers to do their work without undue discomfort or distress.

Eliminate the hazard

The ideal solution is to get rid of a hazard completely. This is the most effective control and should always be attempted in the first instance. If a hazard is

removed from the workplace, the associated risk is completely eliminated. For example, eliminating the need to work in a confined space.

Prevent or minimise exposure to the risk

If a hazard cannot be eliminated, there are a number of control options that can be used alone, or in combination, to prevent or minimise exposure to the risk.

Substitution

- involves replacing the hazard with one that presents a lower (and more manageable) risk. That is, replacing the plant, product or processes that represent a hazard with something that does the same job but has less potential to cause harm. For example, using a hydraulic machine instead of electrical power because of water on the site.

Redesign

- involves changing the design of the workplace, equipment or work process. It involves thinking about ways the work could be done differently to make the workplace safer. For example, using damping or baffles to reduce exposure to noise and vibration; or using a track to hold a portable saw to prevent back strains or sprains.

Isolation

- involves isolating or separating the hazard from the person, or the person from the hazard. For example, installing guarding on equipment or operating machinery remotely.

When exposure to the risk is not (or can not be) minimised by other means

When exposure to the risk is not (or can not be) minimised by other means, administrative controls and personal protective equipment can be used. These controls are lowest on the list of control priorities. In general, these measures should only be used:

▶ when there are no other practical control measures available (that is, as a last resort);
▶ as temporary measures while a more permanent solution is found; and/or
▶ to supplement other controls (that is, as back-up controls).

Administrative controls

- involve minimising exposure to a risk through the use of procedures or instruction. It is often necessary to use these controls in conjunction with other measures. For example, posting warning signs or providing safety training.

Personal Protective Equipment[15] *(PPE)*

- is worn by people as a final barrier between themselves and the hazard. This measure does not control the hazard at the source. For example, using respiratory protection to minimise exposure to inhalation of silica dust.

STEP 4: IMPLEMENT CONTROL MEASURES

Step 4 involves putting selected control measures in place at your workplace. This means undertaking those activities necessary to allow the measures to function or operate effectively.

Implementing control measures involves:

- *Developing work procedures*

  Develop work methods and procedures in relation to the new control measures to make sure the control measures are effective. Management, supervision and worker responsibilities may need to be clearly defined in the work procedures. Ensure developed work procedures are documented and a copy is provided to those workers required to follow the procedures.

- *Communication*

  Inform workers and others about the control measures to be implemented. It is important to clearly communicate the reasons for changes.

- *Providing training and instruction*

  Provide training and instruction for the workers, supervisors and others in relation to the new control measures.

15. Supplement 1 (Personal Protective Equipment) of the Workplace Health and Safety Risk Management Advisory Standard 2000 provides advice about the selection, use, storage and maintenance of personal protective equipment.

- *Supervision*

  Provide adequate supervision to ensure that the new control measures are being used correctly.

- *Maintenance*

  Maintenance relating to control measures is an important part of the implementation process. Work procedures should spell out maintenance requirements to ensure the ongoing effectiveness of the new control measures. Keep records of maintenance undertaken.

STEP 5: MONITOR AND REVIEW

The final step in the risk management process is to monitor and review the effectiveness of measures. For this step, it can be useful to ask questions to determine whether:

- chosen control measures have been implemented, as planned;
- chosen control measures are working; and
- there are any new problems.

This may involve:

- consulting with workers, supervisors and health and safety representatives;
- measuring people's exposure (e.g. taking noise measurements in the case of isolation of a noise source); and
- monitoring incident reports.

Set a date to review the entire workplace health and safety risk management process.

Appendix 3: Safety Checklist - Site & Equipment Safety

SAFETY CHECKLIST

Site and equipment safety

Contractor's name: _____

Type of job: _____

Site location: _____

Operator's name: _____

Check the SITE for SAFETY

On arrival at the site, tick the correct answer where relevant to the job. If the answer is NO the situation is unsafe. Alert the office.

	YES	NO	COMMENT
SITE EVACUATION			
Checked with client			
Located first aid/accessible			
SCAFFOLDING			
Erected as required			
SERVICES located/marked			
Electricity			
Gas			
Other			
VENTILATION			
Adequate			

	YES	NO	COMMENT
LIGHTING			
Lighting in place			
CONTROL/PUBLIC SAFETY			
Barricades in position			
Warning signs displayed			
Traffic control in place			
SAFETY EQUIPMENT			
Safety equipment is functional, clean and safe			

Check the EQUIPMENT for SAFETY

On setting up, tick the correct answer where relevant to the job and equipment. If the answer is NO the situation is unsafe. Alert your employer.

	YES	NO	COMMENT
FLOOR SAW			
Shaft nut secure			
Belt tensioned and undamaged			
Adequate water and waterways clear			
Flaps in place			
Guards in place			
HAND HELD SAW			
Belts tensioned and OK			
Flange locking nut secure			
Water supply adequate			
Guards in place			
WALL SAW			
Tracks securely fastened			
Blade secured			
Job wedged/securely supported			

	YES	NO	COMMENT
WIRE SAW			
Pulleys secure			
Hydraulic pressure correct			
DRILLS			
Electric switch, plug and lead safe			
Water collar operable			
Carriage clamp and shims operable			
BLADE AND BITS			
No undercutting evident			
Blades free of cracks & deterioration			
Blade is the right size and the right type for the machine			
All segments secure			
ELECTRICAL LEADS			
Plugs in good condition			
Outer casing intact			
Correctly tagged			
RCDs fitted			

Job Safety Analysis (JSA) worksheet

Company name: Date: JSA No.

Site name: Permit to work required: ☐ Yes ☐ No

Contractor: Approved by:

Activity:

Activity/Tasks	Hazards	Risk Score	Risk Control Measures	Who is responsible
List the tasks required to perform the activity in the sequence they are carried out.	Against each task, list the hazards that could cause injury when the task is performed	Note the 'risk score' obtained from the Risk Assesment	List the control measures required to eliminate or minimise the risk of injury arising from the identified hazard	Write the name of the person responsible (supervisor or above) for implementing the control measure selected

Remember: Each JSA must be specific. Include all workers in the development of this JSA.

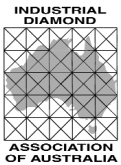
For Further Information

For further information and to find out whether there are any regulations, advisory standards, industry codes of practice or guidance material for any of the hazards identified at the workplace:

- contact the Division of Workplace Health and Safety on 1300 369 915;
- access the Department of Employment, Training and Industrial Relation's home page (www.detir.qld.gov.au) and then click on health and safety;
- contact your local district office of the Division of Workplace Health and Safety;
- refer to the Divisional publication, Publications Catalogue; and/or
- consult your union, employer body, professional association and/or health and safety consultancy.

Notes

Notes


INDUSTRIAL
DIAMOND
ASSOCIATION
OF AUSTRALIA


Queensland Government
Department of Industrial Relations

V.1/3/001