

## Occupational Health & Safety Risk Assessment and Management Guideline

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### Introduction

This guideline has been developed to assist staff and students at the University of Queensland to identify, assess and manage risks. It is based on the **Risk Management Advisory Standard 2000: Department of Employment, Training and Industrial Relations – Workplace Health and Safety**. ([link to http://www.detir.qld.gov.au/hs/hs.htm](http://www.detir.qld.gov.au/hs/hs.htm))

“Risk management is recognised as an integral part of good management practice. It is an interactive process consisting of steps, which, when undertaken in sequence, enable continual improvement in decision making. Risk management is the term applied to a logical and systematic method of establishing the context, identifying, analysing, treating, monitoring and communicating risks associated with any activity, function or process in a way that will enable organisations to minimize losses and maximize opportunities. Risk management is as much about identifying opportunities as avoiding or mitigating losses.” Australian Standard AS/NZS 4360:1999 – Risk management.

All persons in the workplace have obligations under the Workplace Health and Safety Act 1995. To help meet these obligations the Workplace Health and Safety Act, Regulations, Advisory Standards including the Risk Management Advisory Standard 2000 and industry codes of practice have been made. These documents provide information about how to identify a variety of workplace hazards and how to manage exposure to the risks associated with these hazards.

The Occupational Health and Safety Unit at the University of Queensland provides advice on all aspects of Occupational Health and Safety including Risk Management. Information and advice is also given in the form of Guidelines, Policies, Hazard Alerts and Risk Management Programs which can be found at [www.uq.edu.au/ohs](http://www.uq.edu.au/ohs). Specialist staff at the Occupational Health and Safety Unit and Workplace Health and Safety Officers within Schools, Faculties and Centres can assist with the risk management process. The responsibility for ensuring risk assessments are completed, however, rests with the Supervisor at the workplace and should be performed by the person/s undertaking or performing the task.

## Overview of the Risk Management Process

Risk management is an ongoing process that should be undertaken:

- **Now**, if you have not done it before
- When **any new work** is planned including laboratory/workshop/course work
- When a **significant change** occurs
- **After an incident**
- At **regular** predetermined intervals

## Record Keeping

Adequate record keeping of the risk management process will help demonstrate to the Division of Workplace Health and Safety or in litigation, that you have been actively working to ensure safety at the University of Queensland. Records must show that the process has been conducted properly including information about the hazards, associated risks and that control measures have been implemented. Information should include:

- Hazards identified
- Assessment of the risks associated with those hazards
- Decisions on control measures to manage exposure to the risks
- How and when the control measures are implemented
- Evidence of monitoring and review of the effectiveness of the controls
- Any checklist used in the process

## Hazards and Risks

Hazards and risks are not the same thing.

A **hazard** is something with the potential to cause harm. This can include chemical substances, plant, work process and/or other aspects of the work environment.

**Risk** is the likelihood that illness, injury or even death might result because of the hazard.

If it is a **minor risk** the most likely outcome is a “minor consequence” and a “very unlikely event”.

A **minor consequence** is where the most likely consequence is a low cost/low impact outcome such as a minor first aid injury.

A **very unlikely event** is where the chance of the event occurring is very low.

The relationship between hazard and risk is illustrated by the examples below.

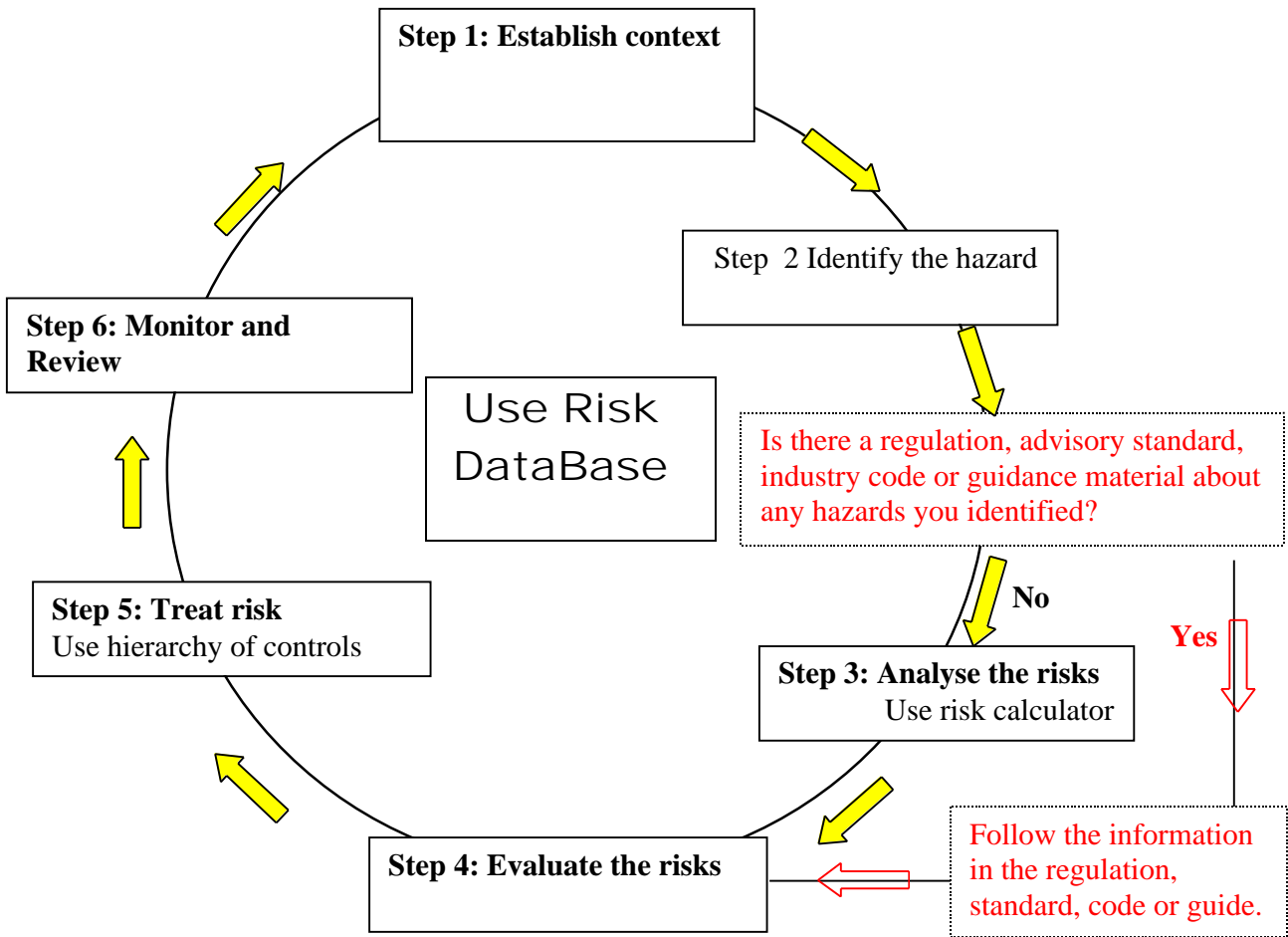
<b>HAZARD</b>	<b>RISK</b>
Substance: Carcinogen	The likelihood a researcher might contract cancer from the long term use of benzene being used as a solvent outside a fume cupboard
Energy: Electricity	The likelihood that a maintenance worker might be electrocuted because of exposure to a damaged electrical cord of a power tool and there is no earth leakage protection.
Manual Handling	The likelihood that a person might suffer back strain from manually lifting equipment that weighs 40kg.
Substance: infected blood	The likelihood that a worker might sustain a needlestick injury and become infected whilst taking a blood sample from a person with infected blood
Plant: circular saw bench	The likelihood that an Arts student might suffer a severe cut to the forearm while cutting timber for a project because the guard was removed

The University of Queensland Risk Management Database has been designed to assist in the Risk Assessment, Management and recording process. Use of the Risk Management Database is the preferred way of conducting and performing Risk Assessment and Management at the University of Queensland.

### **Basic Steps**

There are six basic steps in the risk management process.  
These are:

1. **Establish** the context
2. **Identify** hazards
3. **Analyse** risks that may result because of the hazard
4. **Evaluate** the risks
5. **Treat** the risks
6. **Review and Monitor** the risk



## Risk Management Step 1- Establish the context

What is the work process?

An understanding needs to be reached of the task.

This part of the process is essentially descriptive.

## Risk Management Step 2 - Identifying the Hazard

What is the hazard?

Knowledge of the workplace hazards will assist.

- *Is the risk associated with the hazard obviously a minor risk or can the hazard be fixed easily?*

If you can answer yes to this question you should note this as your assessment of the risk and/or fix the hazard immediately. Record your findings or action. You then need to monitor and review your findings at a predetermined date.

- *If it is not a minor risk has the Division of Workplace Health and Safety produced a regulation, advisory standard, or industry code of practice for this hazard?*

If there is a regulation, advisory standard, industry code of practice and/or guidance material from the Division you are to refer to the advice in that document(s).

## Risk Management Step 3 - Analyse the Risk

Analysing the risk involves determination of the:

- Consequences – outcome of an incident
- Exposure – interaction with hazard
- Probability – likelihood that consequences will occur once individual is exposed

**Process** - Use the Risk Score calculator for analysing and evaluating risk. The objective of analysing risk is to determine whether the risk is acceptable. It provides a qualitative tool that assists in prioritising risk. The Risk Score Calculator determines the level of risk by defining consequences, exposure and probability.

### How to use the Risk Score Calculator

#### Step 1 - Identify the Consequences

Identify the most likely outcome of a potential accident, including injuries, property damage and/or environmental damage and select the most appropriate [consequence category](#) from the Consequences Bar Line.

## Consequences

Category	Human injury	Financial cost	Work	Environment
<b>Catastrophe</b>	Numerous fatalities	Extensive financial loss (greater than \$5m)	Major disruption to operations	Extensive environmental damage
<b>Disaster</b>	Multiple fatalities	Significant financial loss (\$1-5m)	Major disruption to operations	Major environmental damage
<b>Very serious</b>	Fatality	Significant financial loss (\$500,000 to \$1m)	Significant production disruption	Significant environmental damage
<b>Serious</b>	Serious injury (permanent disability, amputation)	Substantial financial loss (\$50,000 to \$500,000)	Notable production disruption	Serious environmental damage
<b>Substantial</b>	Disabling injury requires medical treatment	Notable financial loss (\$5000 to \$50,000)	Slight production disruption	Minor environmental damage
<b>Minor</b>	First aid treatment – minor cuts, bruises or bumps	Negligible financial loss (up to \$5000)	No effect on work	Negligible environmental damage

### Step 2 - Estimate the Exposure

Estimate how often an individual interacts with a hazard and select the most appropriate [exposure category](#) from the Exposure Bar Line.

## Exposure

<b>Very Rare</b>	Not known to have occurred
<b>Rare</b>	Occurs rarely, but has been known to occur
<b>Infrequent</b>	Occurs between once per month and once per year
<b>Frequent</b>	Occurs approximately once per day
<b>Continuous</b>	Occurs many times per day

### Step 3 - Estimate the Probability

Estimate the likelihood that the consequences will occur once the individual is exposed to the hazard and select the most appropriate [probability category](#) from the Exposure Bar Line.

## Probability

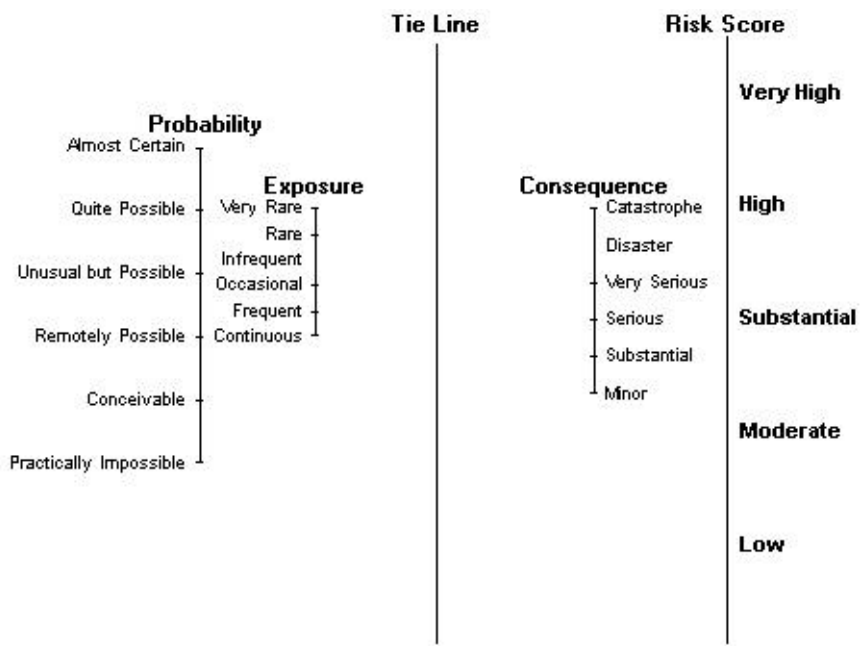
<b>Almost certain</b>	The most likely and expected result if the hazard – event takes place.
<b>Quite possible</b>	Quite possible, would not be unusual, even 50/50 chance
<b>Unusual but possible</b>	Unusual but possible sequence or coincidence
<b>Remotely possible</b>	Remotely possible coincidence
<b>Conceivable but unlikely</b>	Has never happened after many years of exposure, but is conceivably possible
<b>Practically impossible</b>	Practically impossible, has never happened before

### Step 4 - Determine the Risk

Select or mark the values for consequence, exposure and probability on the appropriate bar lines of the Risk Score Calculator.

If you have the electronic version of the Risk Score Calculator then it will automatically draw the line and determine the [risk level](#).

If using the manual version, draw a line from *probability* through *exposure* to the tie-line. Mark this point. Draw a line from the marked point on the tie-line through *consequence* to the Risk Score line to determine the risk level.





## Step 4 - Evaluate the risk

Using the risk calculator

The following table is used to determine the priority of treatment of risks.

Score	Action
High or very high	Do something about these risks immediately
Substantial or moderate	Do something about these risks as soon as possible
Risks perhaps acceptable	These risks may not need immediate attention

## Step 5 - Treat the Risks

In many cases, it will be necessary to use more than one control measure to manage exposure to risk. For example, to minimise exposure to a risk involving a chemical you could decide to replace the chemical with a less toxic one, implement safer work procedures and use a fume cupboard.

Some control measure that are lower control priorities may need to be put in place until a permanent solution can be achieved. For example, you may decide the best way to manage exposure to a risk is to purchase a safer type of machinery with better guarding. In the mean time it will be necessary to minimise exposure to the risk by increasing supervision, changing work procedures and erecting a temporary barrier.

Whatever control measures are being chosen, the “hierarchy of control measures” must be taken into account. Consider those at the top of the list, from elimination, and work down to personal protective equipment as the least desirable choice.

### Hierarchy of Control Measures

- **Eliminate** the hazard is the first choice

The ideal solution is to get rid of the hazard completely. This is the most effective control measure and should always be considered first.

If the hazard cannot be eliminated completely there are a number of control options that can be used to prevent or minimise exposure to the risk:

- **Substituting** a less hazardous material, process or equipment
- **Redesigning** the equipment or work process,
- **Isolating** the hazard through engineering – separating the worker from the hazard.
- **Administrative** controls involve minimising exposure to a risk through the use of procedures or instruction. This could involve limiting the exposure time to a particular hazard such as noise or radiation.
- **Personal Protective Equipment (PPE)** is used as a last resort when exposure to risk is not or cannot be minimised by other means. **PPE** is worn by people as a final barrier between themselves and the hazard. This measure does not control the hazard at the source but relies on behaviour modification for its success. The success of this control is dependent on the correct PPE being chosen, worn correctly, used correctly and maintained in good condition.

**Administration and the use of personal protective equipment are the lowest priority on the list of controls. These controls should NOT be relied on as the primary means of risk control until the options higher in the control priorities have been exhausted. These controls require management, enforcement, and commitment, together with behavioural modification.**

Once you have decided on the control measures the next stage is the implementation.

### **Implement the Control Measures**

You will need to develop work procedures in relation to the new control measures, which may involve clearly defining responsibilities of management, supervisors and workers.

You must inform all relevant persons about the control measures being implemented; in particular, the reasons for the changes.

You should provide adequate supervision to verify that the new control measures are being implemented and used correctly.

Any maintenance in relation to the control measures is an important part of the process. Work procedures should detail maintenance requirements and verification of the maintenance to ensure the ongoing effectiveness of the control measures.

## **Step 6 - Monitor and Review the Risk**

The final step in the process is to monitor and review the effectiveness of measures. **Set dates to review and record those dates.**

Ask questions to determine whether:

- Chosen control measure have been implemented, as planned
- Are chosen control measures in place?
- Are these measures being used?
- Are the measures being used correctly?
- Chosen control measures are working
- Have the changes made to control exposure to the assessed risks resulted in what was intended?
- Has exposure to the assessed risks been eliminated or adequately reduced?
- There are new problems.
- Have implemented control measures resulted in the introduction of any new problems?
- Have implemented control measures resulted in the worsening of any existing problems?

### **References:**

1. Risk Management Advisory Standard 2000: Department of Employment, Training and Industrial Relations – Workplace Health and Safety. (<http://www.detir.qld.gov.au/hs/hs.htm>)
2. Australian Standard AS/NZS 4360:1999 – Risk management.
3. Workplace Health and Safety Act 1995.
4. Workplace Health and Safety Regulations 1997.