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OVERVIEW

Welcome to the Unit of Competence BSBOHS504B – Apply principles of OHS risk management. “OHS” and “health and safety” are used in this guide even though relevant legislation and guidance material in some jurisdictions uses “OSH” and “safety and health”.

This unit specifies the outcomes required to apply a generic approach to identify hazards and assess and control OHS risks. It addresses the underlying knowledge and skills required to provide a systematic approach to hazard identification, risk assessment and risk control. The emphasis is on eliminating risk or, where this is not possible, minimising risk. This unit also includes conceptual models for understanding the nature of hazards.

The unit provides a knowledge basis for the hazard-specific competencies in BSBOHS505 Manage hazards in the work environment, and BSBOHS506 Monitor and facilitate the management of hazards associated with plant. A more advanced approach to risk assessment, which identifies the separate elements of risk analysis and risk evaluation, is provided in unit BSBOHS603 Analyse and evaluate OHS risk.

This unit is underpinned by the competencies of units BSBOHS403 Identify hazards and assess OHS risks, and BSBOHS404 Contribute to the implementation of strategies to control OHS risk. Learning guides for these two units are also published on the SafetyLine Institute web site. It is desirable that the learner wanting to work through this learning guide for BSBOHS504 Apply principles of risk management will have already read, if not achieved, competency in the two OHS risk management units at the Certificate IV level.

The unit of competence consists of six elements and 32 performance criteria, which are reflected in the format of this learning guide. Each section covers a competency element and each sub-section covers a required performance criterion. You can access a copy of the actual competency unit from the National Training Information Service at: www.ntis.gov.au
It is important that you read the Course Guide before commencing this learning guide, as it contains essential information about learning and assessment. It is particularly important to read it if you feel you may already be able to provide evidence that you meet the performance criteria for this unit. You can access the Course Guide at: www.worksafe.wa.gov.au/institute

Assessment

Assessment is the process of checking your competence to perform to the standard detailed in each element’s performance criteria.

At the end of each element of the learning guide are activities designed to enable you to collect evidence for assessment. They are also listed in the assessment section at the back of the guide.

Note that to achieve competency in this unit you have to provide at least three examples of OHS risk management across a range of hazards. While there should be some access to a workplace, part of the assessment may be through simulated project activity, case studies or role-play.

While the case studies in the learning guide give examples of how to apply the OHS risk management process, where possible you should have an OHS practitioner as a mentor or coach to assist you to develop the practical skills to apply your knowledge.

When you have completed this learning guide you should contact a participating training provider (see www.worksafe.wa.gov.au/institute) who will, for a fee, be able to have your competency in this unit assessed by a qualified assessor and subject expert. The unit may be assessed alone or as part of an integrated assessment activity involving related units such as BSBHS505 Manage hazards in the work environment or BSBHOHS506 Monitor and facilitate the management of hazards associated with plant.
When collecting material for your assessment portfolio, please ensure that you protect the confidentiality of colleagues, workers and other persons, and block out any sensitive information. If you have any doubts about confidentiality issues, contact the organisation concerned.

**Required readings and resources**

The on-line Readings and Resources section at the SafetyLine Institute web site provides additional essential material to help you understand and complete the activities in this learning guide.

**Further information**


**Web sites**

Some useful web sites for information on OHS risk management include:

- [www.hse.gov.uk](http://www.hse.gov.uk) – OHS regulator for the United Kingdom
- [www.osha.gov](http://www.osha.gov) – US Department of Labour, OHS Administration
- [www.cdc.gov](http://www.cdc.gov) – US Centre for Disease Control and Prevention
- [www.osh.dol.govt.nz](http://www.osh.dol.govt.nz) – New Zealand health and safety information
- www.atsb.gov.au – air safety
- www.seacare.gov.au – Australian seafarers’ health and safety
- www.arpanса.gov.au – nuclear and radiation safety
- www.nopsa.gov.au – national oil and gas safety
- www.comcare.gov.au – responsible for workplace safety, rehabilitation and compensation in the Commonwealth jurisdiction
- www.workcover.act.gov.au – ACT occupational health and safety
- www.workcover.nsw.gov.au – NSW occupational health and safety except mines
- www.minerals.nsw.gov.au – NSW mining health and safety
- www.dme.nt.gov.au – NT mining health and safety
- www.whs.qld.gov.au – Queensland health and safety, except mines
- www.nrme.qld.gov.au – Queensland mining safety
- www.eric.sa.gov.au – SA occupational health and safety
- www.wst.tas.gov.au – Tasmanian occupational health and safety
- www.worksafe.wa.gov.au – WA occupational health and safety
- www.workcover.wa.gov.au – WA workers compensation body
- www.marcsta.com – WA mining OHS induction training body
- www.standards.com.au – the Australian standards organisation

Your feedback

We are committed to continuous improvement. If you take the time to complete the on-line Feedback Form at the SafetyLine Institute web site, you will help us to maintain and improve our high standards.

You can provide feedback at any time while completing this learning guide.
The criteria for this unit of competency include understanding certain OHS terms. Developing a glossary of terms is a useful way to ensure that you have the basic terminology correct. It is strongly recommended that you add to your glossary throughout this unit and the rest of your study.

Some terms relevant to this unit are defined below. Make sure that you are familiar with the Glossary of terms before going any further. When they are first used, glossary terms are indicated in the learning guide with an asterisk (*).

**ALARP (As Low As Reasonably Practicable)**
A basic concept where risks are kept as low as is ‘reasonably’ practicable where reasonable is determined taking account of social, technical, economic and public policy factors.

ALARP is not an exposure limit but a best practice approach that has the objective of attaining exposure levels as low as possible.

**Consequence**
The injury, ill-health or damage resulting from an event, or sequence of events, which may be expressed quantitatively or qualitatively. There may be a range of possible consequences for a specific event or scenario.

**Consultation**
A process of seeking information or the informed opinions from one or more people prior to decision-making. Should particularly include those who may affect the outcomes or be affected by the decisions made, but may also include specialist sources. Consultation does not necessarily mean reaching agreement.

**Due diligence**
The taking of all reasonable precautions in the circumstances to protect the health and safety of employees and others who may be affected by actions or omissions of the individual or corporation.
<table>
<thead>
<tr>
<th><strong>Event</strong></th>
<th>The point in time when a particular set of circumstances occur that results in loss of control of a hazard.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazard</strong></td>
<td>A source of potential harm in terms of human injury, ill-heath, damage to property, the environment or a combination of these. A source of potentially damaging energy.</td>
</tr>
<tr>
<td><strong>Hazard identification</strong></td>
<td>The process of identifying sources of harm.</td>
</tr>
<tr>
<td><strong>Hierarchy of control</strong></td>
<td>The priority order in which hazard and risk controls should be considered with the eventual outcome often being a combination of measures. The prime emphasis is on:</td>
</tr>
<tr>
<td></td>
<td>• elimination;</td>
</tr>
<tr>
<td></td>
<td>and where this is not practicable, minimisation of risk by:</td>
</tr>
<tr>
<td></td>
<td>• substitution; and</td>
</tr>
<tr>
<td></td>
<td>• engineering controls, including isolating the hazard from personnel; then, when these options have been implemented as far as is practicable by:</td>
</tr>
<tr>
<td></td>
<td>• administrative controls (eg, procedures; training); and</td>
</tr>
<tr>
<td></td>
<td>• personal protective equipment (PPE).</td>
</tr>
<tr>
<td><strong>Incident</strong></td>
<td>An event that has caused or has the potential for injury, ill-health or damage. (Note that ‘incident’ is the preferred term rather than ‘accident’). Refer also to ‘occurrence’.</td>
</tr>
</tbody>
</table>
Job Safety Analysis (JSA) - The process of breaking a task down into its key components and examining the hazards of each component to identify the required controls. The output of a JSA can be used in the development of written job instructions.

Similar processes may have a number of terms such as HIRA (Hazard Identification & Risk Assessment) or JSEA (Job Safety Environmental Analysis).

Key personnel - People involved in OHS decision-making or those who are affected by OHS decisions.

Likelihood - A colloquial term for ‘probability’. When related to risk, it is the probability of the stated consequence occurring, not the likelihood of the hazard or the particular scenario.

Likelihood is affected by how often and how long the person (or structure etc) is exposed to the hazard and the reliability of the controls in place.

Nomogram - An alignment chart arranged so that the value of a variable can be found without calculation from the value of one or two other variables that are known.

Occurrence - Process(es) which gives rise to damage, injury or ill-health.
Procedures

Documents that describe an approach and method for undertaking certain activities or processes. Those relevant to OHS may include:

- hazard and incident reporting, OHS communication, consultation, issue resolution and risk management;
- standard operating procedures, work instructions;
- operators manuals;
- employee and contractor handbooks;
- job/task statements;
- documents describing how tasks, projects, inspections, jobs and processes are to be undertaken;
- quality system documentation; and
- purchasing and contracting procedures.

Psychosocial hazards

Sources of potential harm that are related to the way work is organised, the relationships or interactions which operate within the work environment or specific events that may lead to post-traumatic stress.

Risk

The potential for unwanted, negative consequences of an event.

Risk assessment

A process to develop an understanding of the hazard and its associated risk involving analysing a hazard to:

- identify factors influencing the risk and the range of potential consequences;
- evaluate the effectiveness of existing controls;
- estimate the likelihood of the consequence, considering exposure and hazard level;

and combining these in some way to obtain a level of risk or to prioritise the risk for action.
Risk ranking  
A process of rating risks according to their severity and likelihood to determine the priority for treatment or control of risks. Also known as ‘prioritisation’. Risk ranking processes range from quantitative to highly subjective.

Risk register  
A document detailing:
- a list of hazards, their location and people exposed;
- a range of possible scenarios or circumstances under which these hazards may cause injury or damage;
- nature of injury or damage caused;
- the results of the risk assessment; and may also include
- possible control measures and dates for implementation.

Sometimes called a ‘Hazard Register’ but this is a narrow term implying the inclusion of only limited information relating to the sources of risk rather than the consequences and control measures.

Root cause  
A condition or circumstance that leads to an event which is identified by following the chain of causation back to the most distant cause that is controllable.

Stakeholders  
Those people or organisations who may be affected by, or perceive themselves to be affected by, an activity or decision. In workplace OHS, stakeholders include:
- managers;
- supervisors;
- health and safety and other employee representatives;
- OHS committees;
- employees and contractors; and
- the community.
INTRODUCTION

Required knowledge and understanding

As noted in the Overview, this unit of competency is underpinned by the OHS risk management units at the Certificate IV level: BSBOHS403 Identify hazards and assess risks and BSBOHS404 Contribute to the implementation of strategies to control OHS risk.

The Activities at the end of each element will guide you to achieve the performance criteria. However, you will also need to acquire and demonstrate the necessary knowledge and understanding. Therefore, you should include relevant notes and supporting evidence in your assessment portfolio and ensure you can explain:

- the legal background to OHS risk management, including the roles and responsibilities of employers and employees (including supervisors and contractors), the structure and forms of OHS legislation (including regulations), codes of practice, associated standards and guidance material, legislative requirements for OHS information and data, and consultation and methods of providing evidence of compliance with OHS legislation;
- the requirements under hazard* specific OHS legislation and codes of practice, and the concepts of ‘hazard’ and ‘risk’ including the difference between hazard and risk;
- the characteristics, mode of action and units of measurement of major hazard types, and basic physiology relevant to understanding the mode of action of physical, biological and chemical agents on the body and how they produce harm;
- the basic principles of incident* causation and injury processes;
- sources of OHS information and data;
- types of hazard identification* tools and limitations of generic hazard and risk* checklists and risk ranking* processes;
- the principles of OHS risk control including the hierarchy of control* and considerations for choosing between different control measures and a knowledge of standard industry controls for a range of hazards;
the principles and practices of systematic approaches to managing OHS and the role of other functional areas that impact on the management of OHS;

the basic principles of organisational behaviour and culture as it impacts on OHS and on change, and

ethics related to professional practice and professional liability in relation to providing advice.

As you work through the activities, also include in your assessment portfolio any reports and memos for which you have been asked. You should also have evidence of the relevant documents accessed or downloads collected. This may be through a resource file including electronic copies of the documents accessed. Also you should clearly reference your work with full citations for any quotes or references and a list of all materials that provided background material for completion of an activity.

Required skills and attributes

You will also need to show you have the necessary skills and attributes for this unit. To do this, you should include in your assessment portfolio as much evidence as possible to show you can:

- manage your own tasks within a time frame;
- undertake basic research, including applying basic computer and information technology skills to access internal and external sources of information and data on OHS;
- analyse relevant OHS information and data, and make observations of workplace tasks and interactions between people, their activities, equipment, environment and systems in order to carry out OHS risk management activities;
- interpret information and data, including the use of simple arithmetic calculations and graphical techniques, to identify areas for improvement;
- employ consultation and negotiation skills, particularly in relation to developing action plans and implementing and monitoring designated actions;
- contribute to the assessment of resources needed for effective OHS risk management and, where appropriate, access the resources;
• prepare reports for a range of target groups, including a safety and health committee; safety and health representatives; and managers and supervisors, using language and literacy skills appropriate to the task;
• communicate effectively with personnel at all levels of the organisation, and with OHS and other specialists;
• relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities, and
• provide advice to others in the workplace and explain specialist advice that has been obtained.

The OHS risk management process

OHS risk management is often described as having three basic steps: hazard identification, risk assessment and risk control.

However, communication and consultation* with stakeholders, key personnel and expert advisers is vital in each stage of the OHS risk management process, as is ongoing monitoring of the outcomes of each stage and of the overall OHS risk management process.

The risk management process that provides the basis for this learning guide is modified from that defined in AS/NZS4360-2004, Risk Management (Standards Australia, 2004a) to more closely reflect the language and approach in the OHS legislation.

**OHS RISK MANAGEMENT PROCESS**

- **IDENTIFY HAZARDS**
  - Communicate & consult
- **ASSESS RISK**
- **CONTROL RISK**
- Monitor & review
Element 1: ACCESS INFORMATION AND DATA TO IDENTIFY HAZARDS

Hazard identification is all about good quality information. This information is gleaned from a number of sources and may be considered in two categories:

- historical or ‘second-hand’ data; and
- data obtained by direct observation or analysis of a particular workplace.

This first element initially considers ‘big picture’ data from outside the workplace (performance criterion 1.1) then examines information available in the workplace (performance criteria 1.2 and 1.3) including changes within the workplace (performance criterion 1.4). Performance criterion 1.4 also considers changes outside the workplace.

In order to complete the first element of the competency unit successfully, you will have to show that you have satisfied the following performance criteria:

1.1 Access external sources of information and data to assist in identifying hazards.

1.2 Review workplace sources of information and data to access and assist in identification of hazards.

1.3 Seek input from stakeholders, key personnel and OHS specialists.

1.4 Conduct formal and informal research to ensure currency of information with workplace issues.

Hazards and energy

While a hazard is often defined as ‘a source of potential harm’ the learning guide to the competency unit BSBOHS403 Identify hazards and assess OHS risks examined the energy damage concept, which is based on the following principles:
Energy

Injury and damage are caused by energy.

**Energy can be controlled by a barrier**
Energies do not normally create injury or damage. Their potential to cause damage is normally controlled by the physical, organisational and/or behavioural features of work and workplace design, environment or processes.

**For energy to do damage it has to penetrate the barrier and transfer to the recipient.** For example, sound transfers through the air to your ear; a person places their arm in the trapping space of a machine.

Whether there is damage, and the extent of the damage, depends on whether the amount of energy exceeds the damage threshold of the recipient. Fatalities usually result from occurrences involving high amounts of energy such as being struck by moving plant, entrapment in machinery or falls from heights. High severity injuries may also result from cumulative energy exchange.

Thus the definition of a hazard is refined to be:

A *hazard* is a source of potentially damaging energy.
While this definition does not apply equally well to biomechanical and psychosocial hazards*, the discussion generated by the model is still useful in generating a better understanding of how the hazard causes damage.

The term ‘hazard’ is often misused by using it to refer to any feature of the physical, organisational and/or behavioural environment, such as a spill on the floor, lack of training or poor work practices, which contribute to an incident or the severity of the outcome. Also, hazards are sometimes referred to as ‘potential’ hazards. Hazards are sources of ‘potential harm’, therefore they are either present or not present. The potential is in their ‘risk’ not in the hazardous nature.

Such misuse of the term ‘hazard’ often leads to poor, or wrong, analyses of OHS problems and therefore a failure to identify effective controls. Andrew Hopkins identified that confusion over the difference in meaning of ‘hazard’ and ‘risk’ hindered the investigation into the Longford explosion (Hopkins, 2002).

**Factors such as inadequate work practices, lack of training, or fatigue, are NOT hazards but are failures in controls, or conditions, that may result in injury or damage.**

While you now identify a hazard as a source of potentially damaging energy, it is important to realise that energies do not normally create injury or damage. Their potential to cause damage is usually controlled by the physical, organisational and/or behavioural features of the design, environment or process. It is not enough just to identify a hazard – you also need to be able to identify the circumstances and preconditions that lead to the loss of control of the potentially damaging energy.

The learning guide for BSBOHS403 *Identify hazards and assess OHS risk* introduced the Systems Approach to Occurrence Causation (SAOC). In this approach, the time sequence for an occurrence is divided into three time zones where the event* is the point in time at which control is lost over the potentially damaging properties of the energy source (What happened?). There are usually many reasons for this loss of control (How the loss of control of the energy happened?) and conditions that led to these reasons for the loss of control over the energy (Why it happened?) develop over a period of time.
The conditions that lead up to the loss of control may come directly from, or through the interaction of, one or more of five sources:

- the organisational and management environment;
- physical environment;
- equipment;
- procedures*; and
- people and human error.

There are also many variables that affect the outcomes and consequences. The Systems Approach to Occurrence Causation is described in the diagram below.
An example is given below of the outcome of applying the Systems Approach of Occurrence Causation (SAOC).

**Worker entrapment in bag packing machine**

A maintenance worker was called to rectify a fault with a proximity switch on a bag lifter vibrator conveyor. Access to the proximity switch was through a small access door located on the side of the guard on the machine. The main guard is secured by a captive key safety locking system; however, there was no provision to ensure safe access via the small door.

The worker placed his head and shoulders through the small access door while the machine was energised and in operation. The bag conveyor activated, causing a stainless steel panel to rotate and trap the worker between the plate and the frame.

<table>
<thead>
<tr>
<th>Why did it occur?</th>
<th>How did it occur?</th>
<th>What happened?</th>
<th>What was the outcome?</th>
<th>What was the damage?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organisation &amp; Management environment</strong></td>
<td>No risk assessments conducted on plant</td>
<td>Worker gained access while machine operating</td>
<td>Panel rotated toward worker</td>
<td>Worker's neck caught in trapping space between steel panel and door frame</td>
</tr>
<tr>
<td><strong>Physical environment</strong></td>
<td></td>
<td></td>
<td></td>
<td>- Crush, contusion to right side of neck</td>
</tr>
<tr>
<td><strong>Equipment</strong></td>
<td>Design of guard allowed access to machine</td>
<td></td>
<td></td>
<td>- Medical treatment required</td>
</tr>
<tr>
<td><strong>Procedures</strong></td>
<td>Maintenance procedures did not address work on operating plant</td>
<td></td>
<td></td>
<td>- Lost time</td>
</tr>
<tr>
<td><strong>People</strong></td>
<td>Worker not aware of hazards and lacked skills in risk assessment*</td>
<td></td>
<td></td>
<td>- Lost production</td>
</tr>
</tbody>
</table>

These concepts of ‘hazards as sources of potentially damaging energy’ and the ‘systems approach to occurrence causation’ are basic prerequisites for effective hazard identification. If these concepts are new to you, or you think you need a refresher, then read the learning guide for the unit BSBOHS403 *Identify hazards and assess OHS risks.*
1.1 ACCESS EXTERNAL SOURCES OF INFORMATION AND DATA TO ASSIST IN IDENTIFYING HAZARDS

Identifying hazards is all about good quality information. We must look outside the workplace for the ‘bigger picture’ on legislative requirements, guidance information, industry practice and advice. As part of your research for identifying hazards, you should also be seeking information on the characteristics of the hazard and how it interacts with the body to cause injury or ill-health.

This section requires you to identify the sources outside the workplace that may provide information that, combined with information from within the workplace, can be applied to identify hazards. Having identified the sources of information, you are also required to critically evaluate the reliability and credibility of the source and the information.

Identify sources of external information

Sources of information external to the workplace include:

- legislation;
- codes of practice, standards and guidance material;
- industry-specific information;
- international information;
- databases; and
- OHS specialist advisers.

OHS legislation

OHS acts and regulations set the obligations and rules for managing OHS. Hazard-specific regulations, such as those for hazardous substances, noise, plant and manual handling, give information on the obligations for identifying specific hazards. In some cases this information is general (ie, identify hazards); in other cases the regulations give specific information and the circumstances and type of hazards to be identified.
For example:

- The Western Australian Occupational Safety and Health Regulations 1996 have a general requirement to identify hazards of falling from one level to another (S3.49). They also specify particular requirements for anchorage; fall prevention systems; protection for the person and fall protection systems where welding is being done; protection where there are holes and openings; and safe access and safe working platforms where work is being done on brittle roofs.

- The Victorian Occupational Health and Safety (Falls from Heights) Regulations 2003 have a general requirement to identify tasks with a fall hazard but also list six examples of the types of tasks requiring attention.

**Codes of practice**

Codes of practice are an invaluable source of information for hazard identification as they give information on the hazard, the factors that contribute to the risk and what is acceptable/not acceptable. At this level of studying OHS you should be familiar with the hazard-specific codes of practice for your state.

**Standards and guidance material**

Colloquial references to ‘Standards’ are usually taken to be those published by Standards Australia. Standards Australia is an Australian not-for-profit organisation with links to similar organisations internationally. It develops standards for a range of topics through a consensus-based process with its stakeholders*. Australian Standards generally set the basis for minimum requirements but they have no formal authority unless ‘called up’ in regulations.

Safe Work Australia, OHS regulators and industry bodies also produce standards and guidelines that provide information for hazard identification.
Industry-specific information

The web sites for Safe Work Australia and the various state OHS regulators all have industry-specific information. WorkSafe Victoria also has regular e-mail bulletins targeting the manufacturing and construction industries. (To subscribe go to the industry-specific areas of the WorkSafe Victoria web site [www.workcover.vic.gov.au](http://www.workcover.vic.gov.au) and then to the e-mail bulletin.)

Australia has a number of industry bodies which focus on technical safety. Some examples are Farmsafe, the Welding Technology Institute of Australia, and the Australian Council for Safety and Quality in Healthcare (which is concerned with patient safety rather than occupational safety).

Employer and union bodies often produce industry-specific and hazard-specific OHS information. The OHS page on the ACTU web site ([www.actu.asn.au](http://www.actu.asn.au)) has a good selection of hazard-specific information. The Australian Chamber of Commerce and Industry (ACCI) is the peak body for employer groups and produces some OHS guidance information. Industry-specific employer bodies such as the Australian Hotels Association, the National Retailers Association, the Master Builders Association and the Victorian Automobile Chamber of Commerce are examples of employer bodies that provide some industry-specific OHS information.

International experience

As we need to look outside the workplace for the ‘bigger picture’ on hazards, we should also look outside Australia for information on hazards generally and also industry-specific information.

For example, the carcinogenic nature of asbestos was well-known by the 1960s and asbestos abatement programs were being introduced in many countries by the 1970s, with the first bans on the use of asbestos being introduced by Iceland in 1983. Bans have existed in nine other European countries for much of the nineties (Norway 1984, Denmark 1986, Sweden 1986, Austria 1990, Netherlands 1991, Finland 1992, Italy 1992, Germany 1993, France 1996 and the United Kingdom 1999) [Australian Council of Trade Unions, 2003].
By comparison, in Australia, which has the highest incidence of mesothelioma in the world, asbestos mining did not cease until 1984 and a total ban on the use of asbestos was not implemented until 2003.

**Databases**

Injury databases provide information on the causation and frequency of injuries, and so give an indication of hazards that may be present.

The *Compendium of Workers' Compensation Statistics, Australia*, series of publications, presents nationally comparable workers' compensation statistics, based on the national data set.

The Compendium Series provides an overall picture of Australia's OHS performance by industry and occupation as well as some trend data. The series also provides information on the circumstances surrounding work-related injury and disease occurrences, presenting high-level information predominantly at the national level. More detailed information to supplement the statistics in the series is available from Safe Work Australia’s *Online Statistics Interactive Database of National Workers' Compensation* (NOSI):


The *Safe Work Australia NOSI database* contains workers' compensation statistics, based on the National Data Set for Compensation-based Statistics). Users can interrogate the database to produce a variety of reports to their own design on the number, incidence and frequency of workers' compensation claims in Australia.
The table below gives an example of the output from the NOSI database:

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Pre school</th>
<th>School</th>
<th>Post school</th>
<th>Other education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls, trips and slips</td>
<td>21.3</td>
<td>27.4</td>
<td>16.5</td>
<td>27.9</td>
<td>26.2</td>
</tr>
<tr>
<td>Hitting objects with part of body</td>
<td>0</td>
<td>3.5</td>
<td>2.8</td>
<td>np</td>
<td>3.3</td>
</tr>
<tr>
<td>Being hit by moving objects</td>
<td>8/9</td>
<td>10.9</td>
<td>5.8</td>
<td>9.8</td>
<td>10.2</td>
</tr>
<tr>
<td>Sound and pressure</td>
<td>0</td>
<td>0.8</td>
<td>3.5</td>
<td>np</td>
<td>1.1</td>
</tr>
<tr>
<td>Body stressing</td>
<td>52.6</td>
<td>24.0</td>
<td>31.1</td>
<td>34.7</td>
<td>25.9</td>
</tr>
<tr>
<td>Heat, electricity and radiation</td>
<td>np</td>
<td>0.6</td>
<td>np</td>
<td>np</td>
<td>0.6</td>
</tr>
<tr>
<td>Chemicals and other substances</td>
<td>np</td>
<td>0.6</td>
<td>1.7</td>
<td>0</td>
<td>0.9</td>
</tr>
<tr>
<td>Biological factors</td>
<td>np</td>
<td>1.7</td>
<td>0.0</td>
<td>0.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Mental stress</td>
<td>8.0</td>
<td>24.3</td>
<td>27.2</td>
<td>15.5</td>
<td>23.9</td>
</tr>
<tr>
<td>Other and unspecified</td>
<td>8.0</td>
<td>5.9</td>
<td>10.2</td>
<td>6.9</td>
<td>6.4</td>
</tr>
</tbody>
</table>

Thus, by interrogating the NOSI database we find that for the education sector the most common ‘mechanisms’ resulting in claims are:
- falls, slips and trips;
- body stressing; and
- mental stress.

But the picture is somewhat different if you want to 'drill down' to identify the most frequent ‘mechanisms’ for the different levels of the education sector.

The Australian Bureau of Statistics (ABS) has collected information on work-related injuries, illnesses and disease via the Population Survey Monitor. Information includes the number of work days lost and how much work performance is reduced due to work-related injuries. Additional information was gathered from those people who were unable to find work because of work-related injuries (Safe Work Australia formerly ASCC/NOHSC, 2000).

Some information is available free through the ABS web site, www.abs.gov.au, further information is contained in reports that can be purchased or through their on-line subscription service.
NICNAS is Australia's National Industrial Chemicals Notification and Assessment Scheme. It is the Australian Government regulator for industrial chemicals and is located within the Australian Government Health and Ageing portfolio, in the Office of Chemical Safety. Established in 1990, NICNAS provides a national notification and assessment scheme to protect the health of the public, workers and the environment from the harmful effect of industrial chemicals. Industrial chemicals include dyes, solvents, plastics and photographic materials, as well as some chemicals used in the home, such as paints and cleaning agents.

The NICNAS assesses all chemicals new to Australia and assesses those chemicals already used (existing chemicals) on a priority basis in response to concerns about their safety on health and environmental grounds. The assessment considers toxicity, exposure and use to assess the environmental, public health and occupational health and safety risk.

In addition to over 1,400 scientific assessment reports, the NICNAS produces a number of useful publications including a newsletter, general information sheets and information sheets on specific chemicals. (www.nicnas.gov.au).

A range of other databases are maintained by Australian authorities. The National Catalogue of State and Industry Based OHS Data (Safe Work Australia formerly ASCC/NOHSC, 2000) lists a wide range of databases and their salient features, such as the purpose of data collection, data items, sources of information, frequency and methodology of data collection, and who to contact. Some 75 databases are listed in the catalogue with a small sample given below.

- Australian mesothelioma register;
- Coal industry accident data and health surveillance data (NSW);
- Safety performance for Australian paint manufacturers;
- Australian Petroleum Production and Exploration Association incident database;
- Lead workers surveillance (NSW);
- National tractor death register; and
- National monitoring of occupational exposures to blood and body fluids among healthcare workers.
OHS specialist advisers

It is not only practically important, but it is an ethical responsibility for all OHS practitioners to recognise their own professional limitations and when to call in specialist advice. OHS is a multidisciplinary function so it is impossible for a practitioner to be equally competent across all areas of OHS.

OHS specialists may include:

- safety professionals;
- ergonomists;
- occupational hygienists;
- occupational health professionals;
- audiologists;
- safety engineers; and
- toxicologists.

Safety professionals provide advice on development and implementation of systematic approaches to managing OHS and OHS risk management. The Safety Institute of Australia (SIA) is the professional body for safety professionals with members agreeing to abide by a code of practice and continuing professional development as part of their professional approach. Many professionals who are members of other specialist bodies are also members of the SIA. (www.sia.org.au)

Ergonomists use scientific and technical knowledge about human capabilities, functions and requirements to look at the design of jobs, systems, machinery and equipment and the environment where work is done. They aim to match the work to the needs of people, for safety, productivity and work satisfaction. The web site for the Human Factors and Ergonomics Society of Australia (HFESA) (previously the Ergonomics Society of Australia) can be found at www.ergonomics.org.au

Occupational hygienists apply a scientific and technical approach to identification, assessment and control of chemical physical and biological agents that may affect the health of people at work. The web site for the Australian Institute of Occupational Hygienists (AIOH) is www.aioh.org.au
Occupational health professionals include occupational physicians, occupational health nurses, occupational therapists, occupational physiotherapists and health physicists.

In selecting an OHS specialist to provide advice on hazard identification, it is prudent to consider the following points summarised from the publication *Getting Started with Workplace Health and Safety – An Introduction to Hazard Management, Workplace Inspections and Selecting a Health and Safety Consultant* (Victorian WorkCover Authority, 1997):

- **Education and qualifications** – What is their level of qualification? Where was the qualification obtained?
- **Previous work experience and experience in the particular industry** – What is the length and variety of their experience? Do they have referees?
- **Professional affiliations** – Are they a member of a relevant professional body, do they work to a code of ethics? Do they undertake continuing professional development?
- **Special capabilities** – Does the consultant specialise in particular areas?
- **Business practice** – What are their fees? Do they have professional indemnity and public liability insurance? Are there any issues of confidentiality or conflict of interest? (Victorian WorkCover Authority, 1997)

**Researching and evaluating information**

So you are looking for information to assist you in identifying hazards in the workplace. From the preceding section you can see that there is a broad range of types and sources of information. You need to have a clear understanding of what it is you are trying to find out or determine. Clearly defining the objective of your research will assist you in obtaining useful and relevant information.

As you carry out your research you may need to redefine the objectives as what may seem like clear objectives at the beginning may eventually be quite complex, too broad or not address the issue.
Many sources of information are complex and sometimes quite detailed. It may also be in a format that requires some 'processing' to obtain the required information. It is important that you have the skills to be able to search for information, retrieve what you need and organise it in a way that is useful for your needs.

To be of maximum benefit, information must be:

- accurate (true, correct and up to date);
- complete (no gaps that would affect accuracy in relation to the purpose); and
- relevant (assist in achieving the research objective).

It is important to know that the information retrieved is accurate and reliable. Basing hazard identification or risk assessment activities on unreliable information is not only a waste of time but may have tragic outcomes.

You may need to verify information by talking with people, or checking another source. The most common place for unreliable information is the Internet. Much of what is on the net is opinion and not fact. You need to check that information taken from the Internet is from a reliable source (eg, electronic journals; enforcement authority web sites, etc).

Monitoring information may mean that you constantly check that the information you have is the most up to date. For some information, such as incident statistics, you need to sample over a period of time to obtain reliable information. Being 'up with the latest' is vital regarding legislation and hazard information. You may also need to modify information you have collected already based on new data.

Collecting relevant information is probably the most difficult aspect. Sometimes we do not know if information is relevant until we interrogate it and try to relate it back to our research objective (in this case, hazard identification). As you practise information collection, you will become better at initially collecting only information that is relevant to your needs.
When organising information, it is important to focus on:

- the purpose or objective for collecting and organising the information;
- the information itself; and
- the intended audience.

There are many ways to organise information depending on what you have gathered. Electronic information can be collated on a spreadsheet or stored in a specific folder on the computer hard drive. Hard copy information can be put into files or stored in a specific area of the workplace. Sometimes it is useful to group information into topics or categories that are related back to the original objective. Grouping information can help you identify gaps, and possibly areas where you have too much information.

We may make assumptions in our data analysis, and it is important you recognise where assumptions have been made. Do not assume too much or your results may be skewed accordingly! If you do make assumptions, make sure you state them clearly in your results. Any conclusions you make must be supported by evidence.

Having identified and accessed information for hazard identification, evaluated the relevance and reliability of the data and organised the data into a format for easy reference it is now time to turn to the workplace for information on hazard identification.
1.2 REVIEW WORKPLACE SOURCES OF INFORMATION AND DATA TO ACCESS AND ASSIST IN IDENTIFICATION OF HAZARDS

This section requires you to identify the sources of information within the workplace that assist in identifying hazards and also to look at the limitations of the information.

What information in the workplace will enable us to identify sources of potential harm?

We have defined hazards as 'sources of potentially damaging energy'. What information is required to identify such sources? In the simplest approach we could walk through the workplace using an energy checklist such as the one below.

- Can it move?
- Can it fall?
- Can people fall or trip?
- Is it powered?
- Is it sharp?
- Does it make a noise?
- Is electricity supplied?
- Is it hot or cold?
- Is it a chemical?
- Is it a source of ignition?
- Does it give off radiations (X-ray; UV etc.)?
- Are there ‘bugs’ (bacteria; viruses; other)?
- Are people walking, running, swinging limbs?
- Are people in awkward or fixed postures?
- Are people likely to overload muscles or work at a high pace?
- Are people likely to be hit/attacked by another (purposefully or inadvertently)?

While this approach will give us useful information on what is happening at the time, there is much that we would miss. We need to make sure that we address historical records as well as present information, workplace and task documentation and analyses of the work processes.
We also need to make sure that we have input from a range of people, including experts and those involved in the work processes. This ‘people’ component of the information is examined in section 1.3.

Sources of information for hazard identification that you should find in most workplaces include:

- hazard, incident and injury reports;
- investigation reports;
- workplace inspections;
- maintenance records;
- minutes of meetings;
- Job Safety Analyses (JSA) and risk assessments;
- work procedures, including standard operating procedures (SOP);
- reports and audits;
- sick leave and personnel records;
- organisational data such as insurance records, enforcement notices and actions, workers’ compensation data;
- collated information such as trend analyses of incident and injury reports, OHS performance data;
- Material Safety Data Sheets (MSDS) and chemical registers;
- manufacturers’ manuals and specifications; and
- employee handbooks.

Each type of information has its limitations. Minor injuries occur much more frequently than serious injuries or fatalities; but the value of addressing minor severity incidents as a means of preventing more serious injuries or fatalities is questionable. However, occurrences resulting in relatively minor consequences* still need to be evaluated to assess the potential for high severity injury. Historical data from the workplace also has limited predictability value as changes to the workplace may result in changes in exposure.

Some sources of information will be more useful for particular hazards. Maintenance records will be important for plant hazards; and sick leave and personnel records may indicate psychosocial hazards.
Activity 3 in BSBOHS403 *Identify hazards and assess OHS risks* asked you to access and evaluate a number of sources of OHS information in the workplace. If you completed this activity you will find the results of that activity valuable at this stage of your OHS risk management activity.

### 1.3 SEEK INPUT FROM STAKEHOLDERS, KEY PERSONNEL AND OHS SPECIALISTS

You have now collected information from state, national, and possibly, international sources and, with this information as a background, you have examined workplace information and records to identify hazards.

This section requires you to identify and access a third source of information – people.

While various documents are vital for identifying hazards and the pre-conditions that may lead to the loss of control of the hazard – do not forget people.

Those who do the work (operators; maintenance personnel; cleaners) have a wealth of practical experience that can contribute to identifying hazards. Those who have technical knowledge about the work (designers; engineers; chemists; and technician roles) can add another perspective together with expert OHS advisers. Anybody who may have a stake in the work or safety outcomes has something to contribute and the right to be involved.

Effective hazard identification requires input from all three sources. Hazard identification based only on technical information will be incomplete, as will any hazard identification that only takes account of the people doing the work without a sound knowledge and research base.
The following checklist is a useful tool for ensuring that stakeholders, key personnel and OHS specialists are consulted as required. Some people will have information that is more relevant to certain hazards. Remember there may be a number of ways that you can obtain the information – informal discussion or more formal processes such as meetings, focus groups, surveys or interviews.

### PEOPLE SOURCES OF INFORMATION FOR HAZARD IDENTIFICATION

Stakeholders – those people or organisations who may be affected by, or perceive themselves to be affected by an activity or decision.

Stakeholders in workplace OHS include:

- managers
- supervisors
- health and safety and other employee representatives
- OHS committees
- employees and contractors
- the community.

Key personnel are:

- people who are involved in OHS decision-making or who are affected by decisions.

OHS technical advisers are persons providing specific technical knowledge or expertise in areas related to OHS and may include:

- risk managers
- health professionals
- injury management advisers
- legal practitioners with experience in OHS
- engineers (such as design; acoustic; mechanical; civil)
- security and emergency response personnel
- workplace trainers and assessors
- maintenance and trade persons.

OHS specialists are persons who specialise in one of the many disciplines that make up OHS including:

- safety professionals
- ergonomists
- occupational hygienists
- audiologists
- safety engineers
- toxicologists
- occupational health professionals.
The types of OHS specialists that may provide expert information for hazard identification were discussed in section 1.1. Element 2 of the learning guide for BSBOHS403 Identify hazards and assess OHS risks introduced a Hazard Hunting Worksheet to assist in bringing together the information from various workplace sources of information for hazard identification. You may find it useful to refer to this chart at this stage.

1.4 CONDUCT FORMAL AND INFORMAL RESEARCH TO ENSURE CURRENCY OF INFORMATION WITH WORKPLACE ISSUES

Changes to the workplace, work practices or organisation of work frequently introduce new hazards or may increase the risk of existing hazards. When collecting information on hazards in the workplace, the sources of information should enable identification of:

- changes in work practice;
- changes in equipment including technology; and
- changes in the organisation of work including:
  - contracting
  - hire arrangements
  - casualisation
  - supervisory arrangements
  - rosters, shift work, work hours, and
  - reporting arrangements and work relationships.

Changes external to the workplace may also include new knowledge about specific hazards and/or may impact on the hazard identification process. These changes may include:

- changes to legislation or standards;
- outcomes of court rulings; and
- changes to what is accepted industry practice or community expectation.

Sources of information and processes for collecting information and data need to ensure that the hazard identification process recognises these changes and is based on current information.
Competency check for Element 1

Key issues for each performance criterion in Element 1 are as follows.

1.1 Access external sources of information and data to assist in identifying hazards:

- Identify and access state, national and international sources of information on hazards relevant to the specific type of industry and work.
- Collect data that is accurate, complete and relevant.

1.2 Review workplace sources of information and data to access and assist in identification of hazards:

- Identify sources of workplace information relevant to identifying hazards.
- Recognize the limitations of workplace information due to limited numbers of reports, time frame and/or changing circumstances.

1.3 Seek input from stakeholders, key personnel and OHS specialists:

- Identify the legal right for various groups to be involved in hazard identification.
- Identify the groups/individuals within the workplace to be involved in hazard identification.
- Facilitate the involvement of the various groups/individuals who should be involved in hazard identification.

1.4 Conduct formal and informal research to ensure currency of information with workplace issues:

- Identify external and internal changes that may impact on hazards.
- Identify and source data on the changes and any resultant impact on safety.

The following case study gives an example of how accessing and reviewing information to identify hazards may be applied in practice.
Case Study 1 - Plastering

A case study will be followed through the learning guide to demonstrate how the competency is applied in a real situation.

The case study is based in a small plastering company of two tradesmen and one apprentice. The company works mainly in residential construction with most of its work coming from four or five small to medium-sized building companies.

Plastering involves fixing sheets of plasterboard to the wall and ceiling framing, and then ‘stopping’ the joints by filling with a jointing compound and then sanding or ‘finishing’. This case study looks at the task of ‘stopping’ the joints on ceilings where the worker has to work above floor level. This involves applying a first coat of jointing compound into which jointing tape is embedded. The joint is then skimmed to remove air bubbles and excess compound. A second coat is applied when the first is dry. The final stage is ‘finishing’ by sanding the join. This last stage is omitted for the purposes of the case study.

The task is shown in the pictures below.
Access information to identify hazards

External sources of information

The following information was obtained by searching the web and from a research report on manual handling and plastering (S Cowley, Culvenor, Leggett, & Saunders, 2004).

<table>
<thead>
<tr>
<th>Legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastering is not specifically noted in any legislation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code of Practice,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code of Practice Prevention of Falls in Housing Construction (Vic).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidance material</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry-specific information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls prevention in construction WorkSafe Victoria Focus program.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>International information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of international literature (S Cowley et al., 2004).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victorian WorkCover claims (Victorian WorkCover Authority, 2001).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OHS specialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research project by University of Ballarat together with Association of Wall &amp; Ceiling Industries, Victoria (S Cowley et al., 2004).</td>
</tr>
</tbody>
</table>

- Falls <2m, falls >2 m
- Manual handling (general for plasterers)
- Falls from heights
- Manual handling, sprains & strains
- Manual handling
- Falls
- Sprains & strains
- Falls from heights, especially from ladder
- Manual handling
- Falls
Internal workplace information

Energy checklist

- Can it move?
- Can it fall? (jointing mix; dust; 'hawk'; trowel; plaster sheet)
- Can people fall or trip?
- Is it powered?
- Is it sharp?
- Does it make a noise?
- Is electricity supplied?
- Is it hot or cold?
- Is it a chemical? (jointing compound contains silica)
- Is it a source of ignition?
- Does it give off radiations (X-ray; UV etc.)?
- Are there 'bugs' (bacteria; viruses; other)?
- Are people walking, running, or swinging limbs?
- Are people in awkward or fixed postures?
- Are people likely to overload muscles or work at high pace?
- Are people likely to be hit/attacked by another (purposefully or inadvertently)?

Workplace documents

This company has not been particularly good at documenting incident reports and reports of pain/discomfort (often considered to be 'just part of the job'!). They have not had any serious injuries from manual handling or falls, but one worker sprained an ankle as a result of 'jumping' off the end of a trestle.

Consultation

The following information was obtained from workgroup discussions and from comments in recent inspections by government inspectors and a visiting OHS adviser.

<table>
<thead>
<tr>
<th>Worker</th>
<th>Manual handling</th>
<th>Falls from trestle</th>
<th>Dust and jointing compound in eyes dust in lungs</th>
<th>Fatigue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspector</td>
<td>Manual handling</td>
<td>Falls &lt;2M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OHS adviser</td>
<td>Manual handling</td>
<td>Falls &lt;2 M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Changes

Workplace changes
A recent increase in the work load of the building companies has meant an increase in work hours for all trades, including plastering, with the result that the plasterers are frequently working weekends. The plasterers report that they like the extra pay that overtime brings, but they get very tired and often have neck and shoulder pain.

Industry changes
The plasterers report that in the past they sometimes used stilts instead of working from trestles. However, as the stilts were considered to have a high risk of falls (WorkSafe Victoria, 2004) they have changed to working only on trestles.

Summary

Hazards associated with ‘stopping’ in plastering are likely to be:

- manual handling/musculoskeletal disorder;
- falls; and
- dust and foreign bodies in eyes.
Activity 1

Keep a copy of this Activity for your Assessment Portfolio.

Access information to identify hazards

Assessment for this unit requires that you provide at least three examples of OHS risk management activity across a range of hazard types. This may be demonstrated by carrying out hazard identification, risk assessment and risk control for a number of hazards associated with a single task or across a number of different tasks.

*Identify a task(s) in your workplace then:*

1. As background research to identifying hazards associated with this particular task, access and review relevant external information to source information on hazards that may be associated with the task.
   (You should consider legislation, codes of practice, guidance material, industry sources, research information, international sources, databases and OHS specialists.)

2. Examine workplace sources of information for evidence on hazards associated with the task as it is carried out in this workplace.
   (Consider a broad range of information including claims and injury reports, first aid reports, incident reports and hazard reports, investigation reports, maintenance records/breakdowns, workplace inspections, non-compliance reports, HR/personnel reports, minutes of meetings, hazardous substances/dangerous goods registers, MSDS, manufacturer's manuals, specifications, risk registers*, JSAs, risk assessments, procedures and surveys.)

3. Identify the stakeholders who may have information on hazards and/or who have a right to be consulted as part of the hazard identification process. Seek input from these stakeholders as part of the hazard identification.
4 Identify any changes in the workplace, the industry or other areas that may impact on the hazards identified or the process for identifying hazards.

5 Collate your results in a format suitable for sharing with others in the workplace. Include in your summary a comment on the reliability and accuracy of the data.
Element 2: ANALYSE THE WORK ENVIRONMENT TO IDENTIFY HAZARDS

The first element in this unit of competency required you to access a range of information for hazard identification. The resultant hazard identification was based on 'second-hand' data. This section requires you to analyse the work environment, and thus gain 'first hand', or immediate, information.

Analysing the work environment requires:

- recognising when hazard identification is required;
- identifying and sourcing tools to assist in the hazard identification; and
- applying the tools to identify hazards.

In order to complete the second element of this competency unit successfully you will have to show that you have satisfied the following performance criteria:

2.1 Define, document and communicate occasions when action for hazard identification is required.

2.2 Source tools to assist in analysing potential hazards.

2.3 Examine task demands and task environment for impact on the person to identify situations with a potential for injury or ill health.

2.4 Examine workforce structure, organisation of work and work relationships to identify situations with a potential for injury or ill health.

2.5 Examine work environment for agents with a potential for injury or ill health.

2.6 Seek input from stakeholders to clarify and confirm issues.
The work environment includes:

- the task environment (organisation and management environment, physical environment and equipment); and
- the task demands (procedures; physical demands, etc).

The concept map on the following page summarises the sources of hazards and factors that may contribute to hazards. Each of these categories and factors are examined in detail in the following sections.
CONCEPT MAP SUMMARISING FACTORS IN IDENTIFYING HAZARDS

![Concept Map](image-url)
2.1 DEFINE, DOCUMENT AND COMMUNICATE OCCASIONS WHEN ACTION FOR HAZARD IDENTIFICATION IS REQUIRED

A number of OHS regulations specify requirements for hazard identification. These regulatory requirements, together with practical requirements, mean that hazard identification should be considered:

- at design or pre-purchase of buildings, equipment and materials;
- at commissioning or pre-implementation of new processes or practices;
- before new forms of work or changes to the organisation of work are implemented;
- before changes are made to the workplace, equipment, work processes or work arrangements;
- as part of planning major tasks or activities, such as equipment shutdowns;
- following an incident report;
- when new knowledge becomes available;
- at regular intervals during normal operations; and
- before disposing of equipment, buildings or materials.

Different methods may be used depending on the stage in the life cycle of the process and the nature of the work and the hazard.

Having determined hazard identification is required:

- Are the requirements documented and incorporated into procedures, checklists or approval forms (eg, purchasing or capital expenditure approval forms)?

- Are processes in place to check that the hazard identification occurs?

There are three stages in conducting the hazard identification:

1. Identify and source the most appropriate tools and techniques.
2. Review the selected tools and techniques to ensure applicability to the workplace.
3. Apply the tool and technique to identify hazards and preconditions that may lead to loss of control of the hazard.
2.2 SOURCE TOOLS TO ASSIST IN ANALYSING POTENTIAL HAZARDS

In Element 1 you accessed and collated information from sources external to the workplace. Then, together with documented information from the workplace, and input from stakeholders, key personnel and (when required) OHS specialists, you identified hazards in the workplace.

The next step is to analyse the work environment to confirm the results from the first stage of the hazard identification and to ensure that all hazards have been identified.

Commonly used tools for analysing the work environment to identify hazards include:

- informal ‘walk throughs’;
- interviews, questionnaires, surveys;
- hazard-specific workplace inspections;
- ‘housekeeping’ inspections;
- job and work safety analysis (JSA);
- ergonomic tools such as task analysis checklists;
- workplace monitoring using occupational hygiene practices; and
- process analysis techniques such as flow charting.

The outcomes of these processes together with the input of managers, health and safety representatives, the health and safety committee and others, enable identification of hazards in a specific work environment.

These tools and techniques may be:

- internally or externally developed;
- customised to the particular industry and workplace;
- scheduled or unscheduled; and
- undertaken by individuals or small groups.
It is not good enough just to find what looks like a good hazard identification tool. It needs to be checked to ensure that it:

- is relevant to your industry or type of work;
- suits your workplace;
- addresses all the required areas or items; and
- is usable by the people in your workplace.

The people who should be involved in the review include:

- those who will use the checklist;
- those who do the work;
- specialist advisers related to the work; and
- OHS advisers.

Similarly, other hazard identification tools, such as interviews or surveys, should be checked with those who know the work and also with any technical or specialist advisers. Interpreting hazard, incident and injury reports requires the input of those who made the report, others who know the work, and technical advisers.

We are learning more about workplace hazards and their action all the time. All hazard identification tools and techniques should be reviewed on an ongoing basis to ensure they allow for emerging issues and that they reflect current industry knowledge and practice.

**Informal ‘walk throughs’**

‘Walk throughs’ of the workplace by managers and supervisors not only provide an opportunity to identify hazards and circumstances that may lead to loss of control of the hazards, but remind everybody that all levels of the organisation should be involved in hazard identification.

The report on the Ladbroke Grove rail crash in the United Kingdom (Cullen in Hopkins, 2004) noted that:

“... best practice suggests that at least one hour per week should be formally scheduled in the diaries of senior executives for (regular site walk arounds and talk informally with front line staff about safety issues). Middle ranking managers should have one hour per day devoted to it, and first line managers should spend at least 30% of their time in the field.”

(Hopkins, 2004a)
Interviews, questionnaires and surveys

Interviews, questionnaires and surveys enable a large number of people to have direct input to hazard identification and are a useful screening tool to assist in identifying tasks requiring further investigation. Interviews, questionnaires and surveys may also provide information on specific tasks such as when assessing work stations, monitoring health or seeking feedback concerning the working environment.

Two examples are given below. The first is an extract from a questionnaire used to evaluate the level of back pain in a workgroup. The second is a simple questionnaire that has been used broadly to identify manual handling tasks for risk assessment.

**BACK PAIN, WORK AND HEALTH QUESTIONNAIRE**

1. Have you ever experienced any back/shoulder pain (incl. neck, thoracic or lumbar)?
   - Yes 1
   - No 2
   *If 'No', thank you for completing the questionnaire. Please place in the box.*

2. When did you first experience back/shoulder pain? ___(Year)

3. Has your back/shoulder pain recurred since this first episode of pain?
   - Yes 1
   - No 2
   *If 'No', or only minor pain, go Q 6.*

4. Does this pain currently trouble you on a long-term basis?
   - No 1
   - Not continuously but yearly 2
   - Not continuously but monthly 3
   - Not continuously but weekly 4
   - Not continuously but daily 5
   - Continuously 6

5. Does your pain interfere with the following?
   1=Never, 2=Occasionally, 3=Frequently, 4=Always
   (i) Work
   1 2 3 4
   (ii) Domestic tasks
   1 2 3 4
   (iii) Daily living tasks
   1 2 3 4

6. Do you consider that certain work tasks or conditions aggravate your back/shoulder pain?
   - Yes 1
   - No 2

7. In your own words briefly describe the situations or activities that aggravate your back/shoulder pain.

(Pryor, 1999)
A prioritised list of ‘risky tasks’ for further investigation is obtained by giving the A, B, C, responses a 3, 2, 1, weighting then collating the responses.

(Pryor, 1999)
Hazard-specific workplace inspections

By their definition, codes of practice give guidance on how to comply with regulatory requirements. Most hazard-specific codes of practice include one or more tools to assist in hazard identification. These tools may be generic or may be adapted to suit specific industries.

While codes of practice should be followed unless there is an equal or better way, the hazard identification tools still need to be adapted to ensure that they are relevant to your industry or type of work, suit your workplace, address all the required areas or items, and are usable by the people in your workplace.

‘Housekeeping’ inspections

One of the most commonly used and useful hazard identification tools is the ‘housekeeping’ workplace inspection. However, it is also a much ‘misused’ tool. Checklists are useful, but it is how they are used that is important. The ‘tick and flick’ approach will result in a pile of paper but little effective hazard identification. Housekeeping inspections are discussed in detail in the learning guide for the competency unit BSBOHS403 Identify hazards and assess OHS risks.

Ergonomics tools

Anthropometry is the science dealing with the comparative measurement of the size and proportions of the human body and the range of movement of limbs as a basis for improving safety and functionality in design and in ergonomic evaluations. Anthropometric tables provide useful information for assessing the design of equipment and its suitability for different groups of people. Anthropometric data has enabled the development of a range of ergonomic tools, such as force limit tables for manual handling strength, ergonomic software such as 3D static strength programs and the well-known NIOSH lifting equation. (For further information refer to the Canadian Centre for Occupational Health and Safety (2002).
Specialist OHS advisers may use tools such as the 3D Static Strength Prediction Program, developed by the University of Michigan. This is used to simulate the posture and peak exertion of a worker in three dimensional space to obtain predictions about the capabilities of a population for performing a task based on the posture, exertion requirements, and the anthropometry of the workforce. For further information see: www.engin.umich.edu/dept/ioe/3DSSPP

Workplace monitoring

Occupational hygiene monitoring techniques are frequently used to measure the levels of physical, chemical and biological agents in the workplace as part of risk assessment. While Cowley (1990) raises concern regarding the emphasis on monitoring as possibly detracting from the desired focus of achieving effective control, the measurement or sampling of agents in the workplace is important for specific hazardous agents.

Agents and types of workplace monitoring are discussed in section 2.5.

Process analysis techniques

As you become more experienced in hazard identification, you will find that you look beyond the standard tool or checklist and take a more analytical approach to hazard identification.

Your understanding of hazards as sources of ‘potentially damaging energy’, together with some knowledge of manual handling, issues associated with work posture and psychosocial hazards, is vital to this analytical approach.

One of the process analysis techniques is the Job Safety Analysis* (JSA), which is discussed in detail in section 3.3 Evaluate adequacy of current controls of this learning guide.

Flow charts are useful in describing and understanding a work process and so assist in hazard identification.
2.3 EXAMINE TASK DEMANDS AND TASK ENVIRONMENT FOR IMPACT ON THE PERSON TO IDENTIFY SITUATIONS WITH A POTENTIAL FOR INJURY OR ILL HEALTH

You have now:

- collected the historical and second-hand information (Element 1);
- identified when hazard identification is required (section 2.1); and
- identified the tool(s), or type of tool(s) (section 2.2).

The next step is to analyse the task environment and the task demands. This section, together with sections 2.4 and 2.5, takes you through the next phases of hazard identification.

Task environment

In Element 1, it was identified that the reasons for loss of control of a hazard may come from one or more of five sources within the work environment:

- the organisational and management environment;
- physical environment;
- equipment;
- procedures; and
- people and human error.

Organisational and management environment

The leadership provided by management and their approach to managing OHS plays a critical role in the organisational culture or what Schien refers to as “the way we do things around here” (Schien in Hopkins, 2004a). This, in turn, affects all other parts of the work environment including the physical environment, the equipment, procedures, and skills and competence of the workers.

Hopkins gives an in-depth analysis of the organisational factors that contributed to a number of disasters including Longford, the Glenbrook train derailment and the cumulative exposure of
Airforce maintenance personnel to toxic fumes (Hopkins, 2004a). One of the overwhelming observations from these analyses is that when organisations focus only on ‘good news’ and are not looking for the potential for failures (being ‘mindful’), they ignore opportunities to identify hazards and the circumstances that may lead to loss of control of hazards.

This mindfulness is a feature of the organisation rather than of individuals, as the organisation must create a climate of being aware of the potential for a failure in controls and encourage reporting of such circumstances. There must also be demonstrated constructive action as a result of the reporting.

Audits, either internal or external, provide information on the management approach and organisational environment. Surveys and questionnaires are another tool for collecting information in this area. The extract below gives an example of a questionnaire designed to obtain feedback on the management approach and organisational environment.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff safety is given a priority equal with production at the management level.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>It takes a longer time to get something done about health and safety problems compared with other operational problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I feel that I can have a real say in improving safety in the workplace.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>My supervisor immediately follows up any safety issue or poor work practice.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The work load on the unit is appropriate.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The staff work as a team.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>When an injury is reported, there is usually a follow-up and changes to the workplace, work practice or equipment that reduces the risk of future injury.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

(Pryor, 1999)
Physical environment

The physical environment includes factors such as:

- design of buildings;
- condition and maintenance of the physical building;
- space, layout and design of workstations;
- lighting;
- air quality;
- heat and cold
- colour schemes;
- signage; and
- floor surfaces.

For outdoor workers the environment includes factors such as:

- sunlight and UV radiation;
- temperature and weather conditions;
- isolation;
- flora and fauna; and
- underfoot conditions.

Monitoring the physical environment for hazardous agents is addressed in section 2.5. ‘Housekeeping’ inspections also provide good information on the status of the physical environment. Housekeeping inspections are discussed in detail in the learning guide for the competency unit BSBOHS403 *Identify hazards and assess OHS risks*.

Equipment

Equipment is frequently associated with hazards; the most common being due to moving parts (mechanical energy), noise or vibration, fluids under pressure, and electricity.

Equipment that is sufficient and ‘fit for the purpose’ requires that OHS implications be considered as part of design and purchasing. Equipment must also be available in sufficient numbers and readily available to those who require it. Equipment must also be maintained appropriately.
Audits of management’s approach to OHS should include purchasing and commissioning of equipment and maintenance processes. There should be routine checks/inspections of equipment. Pre-start checks should include the operability and condition of the equipment.

**Procedures**

Rules and procedures are designed to direct, standardise, restrict and control behaviour when working with equipment or carrying out a task. Rules and procedures must be relevant, appropriate, available and suitable as well as understood by those who are required to use them.

While procedures are necessary there must also be an awareness that procedures cannot address every possible circumstance. Any attempt to do so will usually result in overly complex and unworkable procedures and rules. Therefore, people also need to be aware of the risks associated with specific tasks.

**People**

Workers who are exposed to hazards need knowledge about the hazards and what is required to maintain risk controls. Workers also require skills to operate equipment or to carry out work tasks, and be able to follow procedures and rules in a safe system of work.

Section 4.2 of the learning guide for the competency unit BSB0HS404 *Contribute to strategies to control OHS risk* discusses strategies for monitoring compliance with procedures.

**Task demands**

Hazards may be associated directly with the demands of the task and the risk exacerbated by task demands. The hazard identification process should go beyond just recognising agents (such as sources of potentially damaging energy) to include factors such as:

- physical or physiological demands;
- required skill, precision or accuracy;
- machine pacing or time pressure to complete the task;
- arousal and alertness; and
- repetitive nature of the task.
Not only might these factors be a source of potential harm in themselves, but they exacerbate the effect of other hazards encountered in the task.

**Physical and physiological demands**

Work requiring great physical exertion also involves high energy consumption and may include cardiac and respiratory stress, with the level of stress varying with the intensity, duration and frequency of the exertion. Other factors such as the environment, fitness and acclimatisation of the individual also affect the physiological demands on the person. Static loads, such as working in a stooped position or holding or carrying objects, add to the physical exertion.

**Skill, precision and accuracy**

Skilled manual tasks call for a high degree of:

- quick and accurate regulation of muscular contraction;
- coordination of the movements of the individual muscles;
- precision movements;
- concentration; and
- visual control.

(Grandjean, 1982)

Learning a manual skill requires the ‘imprinting’ of a mental template in the brain and adaptation of the muscles and other body organs to the skilled task (Grandjean, 1982). During the ‘learning’ period the novice will not only be less experienced in recognising the hazards of the task, they will be more susceptible to the hazards and face additional risk as the body is adapting to, and learning, the new task.

Where a required level of precision or accuracy is added to a task, the risk may be increased. For example:

- The transfer of an object from a trolley to a table may be associated with certain hazards depending on the weight and shape of object, the height of the trolley and the table. However if the object must be located in a certain way on the table so that locator pins on the table fit into slots on the object the risk (force) associated with the task may be greater.
• a person monitoring a radar screen is required to note any moving blips, if the moving blips are incoming missiles, and so life threatening, then the required intensity, level of concentration and task demands are different.

**Arousal and alertness**

The time it takes for a person to react in a task increases with the information processing demands of the task. Also, mental processes become less effective with increasing time spent on a task. (Can you continuously sit and read this learning guide and take it in, or do you need to take the occasional break?)

The ability to concentrate for sustained periods depends on task factors, such as becoming accustomed to the stimuli (habituation), a reduced response by the sense organs (adaptation) and the emotional motivation promoting (or resisting) attention to the task. Alertness is also affected by the level of stimuli associated with the task, the intellectual demands of the job and the ‘job satisfaction’. ‘Boredom’ has been defined as the reaction to a monotonous environment (Grandjean, 1982), and is usually characterised by feelings of weariness, lethargy, reduced alertness and often ‘negative feelings’.

Fatigue also affects the ability to concentrate and there may be task factors that impact on fatigue such as the level of physical and mental effort.

**Repetitive tasks**

Hazards are associated with repetitive tasks due to physical and physiological demands but also due to the potential issues associated with arousal and alertness (or lack of).

While audits, inspections, surveys etc are vital tools in hazard identification, all workplaces should consider seeking expert input to the hazard identification process, especially at key times such as:

• at design or pre-purchase;
• before new forms of work and organisation of work are implemented; and
• before changes are made to the workplace, equipment, work processes or work arrangements.
2.4 EXAMINE WORKFORCE STRUCTURE, ORGANISATION OF WORK AND WORK RELATIONSHIPS TO IDENTIFY POTENTIAL FOR INJURY OR ILL HEALTH

In the previous section you examined the task environment and task demands. The workforce structure, the way work is organised and the work relationships are also part of the overall work environment and may expose workers to hazards or exacerbate the effects of other hazards.

Some of these hazards may be physical (eg, noise; manual handling) but the majority of hazards associated with the organisation of work are psychosocial hazards. These hazards are often referred to as ‘work-related stress’ and many OHS specialists and the various state OHS regulators anticipate that work-related stress will become an increasing problem in future years.

While Australia is recognising the problems of work-related stress, the European Union has been working on the problem for some years and there is some good guidance information available.

An EU ‘Facts Sheet’ (European Agency for Safety and Health at Work, 2002) states that more than one in four workers in the EU are affected by work-related stress. The Facts Sheet defines work-related stress as being experienced when the demands of the work environment exceed the workers’ ability to cope with (or control) them. The Facts Sheet emphasises that work-related stress is NOT a disease but rather a symptom of an organisational problem. However, intense and/or prolonged stress can lead to mental and physical ill-health.

The Health and Safety Executive (HSE) in the United Kingdom commissioned a research report (Rick, 2002) to provide information for the development of management standards for work-related stress. The resultant management standards (Health and Safety Executive, no date), list six areas of action which are also reflected in diagnostic questions framed for employees in the EU facts sheet (European Agency for Safety and Health at Work, 2002). These questions are listed below.
### IS THERE A PROBLEM WITH WORK-RELATED STRESS IN MY WORKPLACE?

**Atmosphere**
- Do you feel that you have to work long hours to keep your job or get promoted?
- Is suffering from stress seen as a weakness or is it taken seriously?
- Are your work and suggestions valued?
- Is there a constant feeling of pressure to do more, faster?

**Demands**
- Have you got too much work to do in too little time?
- Do you find your work too difficult?
- Is your work satisfying?
- Does your work make you bored?
- Is your workplace too noisy, is the temperature comfortable, and what about ventilation and lighting?
- Are you worried about hazards in your workplace, such as the use of chemicals?
- Do you feel at risk of violence from customers, clients or members of public?

**Control**
- Can you influence the way your job is done?
- Are you involved in making decisions?

**Relationships**
- Is your relationship with your boss OK?
- How about your relationship with colleagues, or your staff if you are a manager?
- Are you bullied by anyone in your workplace, by for example experiencing insults, offensive behaviour or that your bosses abuse their power?
- Are you harassed because of your colour, sex, ethnic origin, disability etc?

**Change**
- Are you given information about changes in your workplace?
- Are you involved in making changes to your job?
- Are you given support during changes?
- Does it feel like there is too much change, or maybe not enough?

**Role**
- Are you clear about what your job is and your responsibilities?
- Remember – work-related stress is a symptom of an organisational problem, not an individual weakness!
- Do you have to do tasks which you think are not part of your job?
- Do you ever have conflicting roles?

**Support**
- Do you have the support of your boss and colleagues?
- Are you praised when you do a good job?
- Do you receive constructive comments or do you feel you only get criticism?

**Training**
- Do you have the right skills to do your job?

(European Agency for Safety and Health at Work, 2002)
While this diagnostic questionnaire assists in identifying stressors, the relationship of the existence of a stressor and a resultant impact on health is not simple. An HSE report (Rick, 2002) identified that:

- individuals vary in their response to stressors;
- the response to stressors is non-linear (incremental changes in stressor do not necessarily lead to a proportional change in the response); and
- where there are multiple stressor they combine in their effects.

Also, while high job demands (workload, job complexity or general job demands) and low job control (decision latitude or general job control) combine in their negative effects, high levels of social support were found to protect against the negative effects.

2.5 EXAMINE WORK ENVIRONMENT FOR AGENTS WITH A POTENTIAL FOR INJURY OR ILL HEALTH

The physical environment as a source of hazards was introduced in section 2.3. This section requires you to investigate the work place for hazardous agents, which may be chemical, physical, biological, biomechanical or psychosocial in nature. You are not required to carry out any monitoring as part of this section, but you should be able identify when monitoring might be required.

The knowledge and skills for using basic equipment to monitor the work environment is addressed in the competency unit BSBOHS406 Use equipment to monitor the work environment; however, it is vital for OHS practitioners to recognise their own limitations and the need for specialist knowledge in this area. Also, as noted by Cowley, environmental measurement and monitoring may be valuable in confirming the presence of a hazard but, once a hazard is identified the focus should be on control rather than intensive monitoring (S. Cowley, 1990).
Chemical hazards

Chemical hazards may include hazardous substances, dangerous goods, hazardous atmospheres and combustible and explosive materials.

Chemicals may be present in the work environment as solids, liquids, gases or vapours. They may affect the health of workers due to their toxicity or irritant effects, by the displacement of oxygen in the breathable air or they may cause injury and damage by their explosive or flammable properties.

Chemicals may enter the body through the respiratory system, but they may also enter the body by absorption through the skin or, less frequently in the work environment, the digestive system. Detection of chemicals in the breathable atmosphere may be difficult, especially where there is no odour.

While there are sophisticated occupational hygiene techniques and equipment for identifying and analysing chemicals in the work environment, colorimetric tubes provide a simple indication of exposure to specific chemical contaminants, provided their limitations are recognised. Limitations of colorimetric tubes include:

- false positives from cross sensitivity with other contaminants;
- storage requirements and limited shelf life of tubes; and
- the need to select the correct tube.

The most widely used colorimetric chemical detection tool is the pump and tube system.
Other techniques for identifying and monitoring chemical hazards include biological monitoring techniques (such as urinalysis and blood analysis). These techniques measure the actual uptake of a substance by measuring the level of the substance, or a metabolite of the substance, in the body. Biological monitoring is required by legislation for some chemicals (eg, organophosphate pesticides) but factors to be considered in any biological monitoring program include:

- invasiveness of the collection procedure;
- frequency of collection;
- acceptability by the target group;
- interpretation of findings and resultant actions;
- professional advice; and
- confidentiality and access to results.

**Physical hazards**

Physical hazards are numerous and include:

- thermal hazards (hot/cold objects; hot/cold environments);
- noise and vibration;
- fluids under pressure;
- airborne particulates (dust; fibres);
- mechanical (mobile plant/load shifting equipment; machinery with moving parts; sharp/cutting edges);
- gravity (underfoot conditions; falling objects; falling people);
- electricity; and
- radiations.

Dust and fibres and noise are discussed below as two examples of physical hazards.

**Dusts and fibres**

Workers have been suffering dust-related disease for centuries, with the impact of the dust being dependent on its ability to penetrate the lungs (size) and, in some cases, composition (toxicity). Dusts are categorised according to their particle size as ‘inspirable’ (those small enough to enter the bronchial tree) with the particles of even smaller size that that can enter the alveolar region of the lungs being ‘respirable’.
A bright light source (ie, torch) and simple photographic techniques will show the presence of dusts, but specialist hygiene techniques and equipment are required to collect dust samples to determine the size and nature of the hazard.

**Noise**

While noise is present in all environments, excessive or prolonged exposure to noise can lead to hearing loss and other health effects. The impact is usually apparent only after cumulative and prolonged exposure.

Noise can be measured in a number of ways and using a range of equipment of varying sophistication. However, a recognised simple test as to whether noise is at a hazardous level is if a person has to raise their voice to be heard when they are standing one metre from the person with whom they are talking. A simple noise meter may also be used to obtain a measurement of the actual noise level.

Occupational hygienists may undertake more sophisticated noise measurements as part of noise surveys or noise mapping or to identify suitable noise control techniques.

**Biological hazards**

Biological hazards may include fungi, protozoa, bacteria and viruses, some of which are beneficial, while others cause disease (ie, are pathogenic). These organisms may be present in ventilation systems, the work process or in other aspects of the work environment. Biological hazards may also include insects, spiders, snakes and larger animals. In some occupations, plants may be biological hazards (ie, there is an allergic response to some plants).

With the exception of the animals, most of these hazards are not detectable until they produce signs or symptoms of disease in people, animals or plants. Samples to detect the presence of such organisms may be taken from air, liquids or surfaces with techniques including settling plates (agar plates), surface sampling using swabs, centrifugal samplers, electrostatic samplers and membrane filtering.
These techniques require specialist input, not only to supply and use the equipment and interpret the results, but to ensure the safety of those undertaking the testing. Sampling may concentrate the pathogens and could place those handling the equipment at high risk unless appropriate control measures are taken.

**Biomechanical hazards**

Biomechanical hazards are found wherever muscles are used for doing work, including lifting, pushing, pulling, holding, restraining or where work involves repetitive use of muscles. Biomechanical hazards are also associated with static work postures such as working at visual display screens and working postures that involve bending or stooping. The most common injury is muscle strain which is referred to as ‘muscloskeletal disorder’ (MSD) in recent legislation and codes of practice.

Biomechanical hazards are concerned with more than manual handling. ‘Biomechanics’ implies that the principles of engineering, physics and the biology of the human body are brought together to examine and address the forces applied to the body.

The human body is very adaptable. However, the workplace and the work task often require people to put their bodies through postures or movements, or subject them to forces, for which they are not suited.

The major risk factors are one or more of:

- repetitive or sustained force;
- repetitive or sustained awkward posture;
- repetitive or sustained movement; and
- high forces or loads.

These risk factors are exacerbated when the body is required to work outside its neutral or natural posture and/or there is a requirement for both precision and strength.

Measurement of biomechanical hazards can be complex and require specialist equipment and techniques. The level of risk associated with the biomechanical factors of a task are determined by factors such as force on the joint, the angle at which the force is applied, the frequency and duration with which the force is applied and other demands on the body at the time.
The appropriate approach and measurement technique and the equipment used depend on the tasks and the reason for making the measurements. However, quantification is not the most important requirement for biomechanical hazards. It is more important to identify tasks and conditions that are hazardous to the body and the role of human variation in the impact of such tasks and conditions.

Psychosocial hazards

Psychosocial hazards are sources of potential harm that are related to the way work is organised, the relationships or interactions which operate within the work environment or specific events that may lead to post-traumatic stress. Psychosocial hazards may be direct contributors to incidents (such as in fatigue) or may, over time, lead to physical conditions such as hypertension, coronary heart disease, ulcers or psychological illnesses such as depression.

Psychosocial hazards related to the way work is organised and the relationships within the work environment (often referred to as work-related stress) were examined in section 2.4

Fatigue is a psychosocial hazard that is receiving increased attention. In 2004 there were several landmark prosecutions relating to fatigue\(^1\) \(^2\) and a number of initiatives on fatigue management were launched including:

- Western Australia released a Code of Practice for fatigue management for commercial drivers;
- WorkSafe Victoria's Good Practice Guide for occupational health and safety in call centres addressed voice and visual fatigue;
- a fatigue management guideline was released for Victorian forestry workers;
- the Australian Railway Association released a draft Fatigue management national code of practice; and
- as a result of the review of extended work hours, the Western Australian government is working on an OHS work hours code of practice.

\(^1\) Inspector Campbell v James Gordon Hitchcock [2004] NSWIRComm87
\(^2\) Lesley Charles Bonner, trading as LC Bonners Transport, was fined $10,000 for his drivers exceeding maximum work times
While some of the usual sources of workplace information for hazard identification (ie, hazard and incident reporting; minutes of meetings) are useful for psychosocial hazards, identification of these hazards often requires alternative methods such as surveys, questionnaires and interviews.

2.6 SEEK INPUT FROM STAKEHOLDERS TO CLARIFY AND CONFIRM ISSUES

Having brought together all the information from within and outside the workplace and analysed the work environment to identify hazards, it is important to do a ‘reality’ check.

You sought information from a range of people in the initial data collection stage and probably involved a range of people (including supervisors and health and safety representatives) in the process (refer section 1.3). It is now useful to go back to these people with your findings to clarify any queries, confirm your findings and offer an opportunity for further input based on the findings.
Competency check for Element 2

Key issues for each performance criterion in Element 2 are as follows.

2.1 Define, document and communicate occasions when action for hazard identification is required:

- Not only are the occasions when hazard identification is required identified and documented, but key personnel are aware of the requirements and there are checks to ensure that hazard identification is carried out as specified.

2.2 Source tools to assist in analysing potential hazards:

- Appropriate tools/checklists to assist in hazard identification are identified and obtained.

2.3 Examine task demands and task environment for impact on the person to identify situations with a potential for injury or ill health:

- All aspects of the task environment, including management and organisational environment, physical environment, equipment, procedures and people, are examined for hazards, and factors contributing to hazards and risks.
- Task demands, including physical and physiological factors and skill, precision and accuracy requirements, together with arousal and alertness factors, are considered for hazards and factors contributing to hazards and risks.

2.4 Examine workforce structure, organisation of work and work relationships to identify situations with a potential for injury or ill health:

- Factors that are either hazards in themselves or contribute to work-related stress are identified.
2.5 Examine work environment for agents with a potential for injury or ill health:

- The workplace is systematically examined to identify hazards with consideration given to chemical, physical, biological, biomechanical and psychosocial agents.
- The need for workplace monitoring or sampling is identified and the appropriate types of monitoring defined.

2.6 Seek input from stakeholders to clarify and confirm issues:

- The need for stakeholder input to effective hazard identification is recognised and actions taken to obtain/facilitate the input, especially feedback on the results of the hazard identification.

The OHS risk management diagram can now be expanded to include the detail of hazard identification.
Case Study 2 – Plastering

The plastering case study begun in Element 1 of this learning guide is continued here.

Analyse work environment to identify hazards

The following tools were used to analyse the work environment for hazards.

*Manual handling*
Manual Handling Hazard Identification Form (Safe Work Australia formerly ASCC/NOHSC, 2005).

*Falls*
Purpose-designed Hazard Identification and Risk Assessment Form.
Manual Handling Hazard Identification Form  
(Safe Work Australia formerly ASCC/NOHSC, 2005)

<table>
<thead>
<tr>
<th>Description of work location: Residential housing construction</th>
<th>Date: 11-04-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description: Plaster stopping</td>
<td></td>
</tr>
<tr>
<td>Identification by: John Smith</td>
<td>Participants: Jim Jones</td>
</tr>
</tbody>
</table>

Questions

1. Is this a new task that involves manual handling? ☑Yes ☐No
2. Is this an existing task where manual handling risk identification has not occurred? ☑Yes ☐No
3. Is this an existing task where manual handling has changed? ☑Yes ☐No

If you answer Yes to any of the questions above, please continue to answer the following questions.

4. Have there been any incidents associated with manual handling in this task or this use of the item or system of work (including slips, trips, falls or dropped objects)? ☑Yes ☐No

5. Have any worker(s) reported the task, item or system of work as being difficult, awkward or causing pain or discomfort, or have any other health concerns been raised? ☑Yes ☐No

6. When observing the task or considering the use of the item or system of work, are any of the following factors present?
   (a) twisting, stooping, awkward or one-sided postures ☑Yes ☐No
   (b) fixed, sustained, rigid, prolonged (including prolonged sitting) postures of part or all of the body ☑Yes ☐No
   (c) unvaried, repetitive movements ☑Yes ☐No
   (d) handling loads away from the body ☑Yes ☐No
   (e) using high or sustained force ☑Yes ☐No
   (f) handling heavy or awkward loads (depends on weight of bucket of jointing compound) ☑Yes ☐No
   (g) whole body vibration (eg, driving where bumps occur; leaning on vibrating equipment) or upper limb vibration (eg, using vibrating hand tools) ☑Yes ☐No
   (h) continuous handling without a break ☑Yes ☐No
   (i) high speed or long duration or time pressures ☑Yes ☐No
   (j) work environment factors (eg, lighting; heat; cold; walking surfaces; steps; ladders) ☑Yes ☐No
   (k) handling of people or animals ☑Yes ☐No
   (l) other factors (risk of falls) ☑Yes ☐No

If you answer Yes to any of the questions above, you should undertake a risk assessment.
Falls Risk Assessment for Plasterers Working in Residential Construction

This checklist is developed based on material from the Victorian Code of Practice for Prevention of Falls in Housing Construction and the Western Australian Code of Practice for Prevention of Falls in Workplaces. This checklist is an aid to identifying falls hazards for plasterers. There may be falls hazards that are not addressed in this checklist and each site should be considered individually.

<table>
<thead>
<tr>
<th>Description of work location: Residential housing construction</th>
<th>Date: 11-04-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description: Plaster stopping</td>
<td>Participants: Jim Jones</td>
</tr>
<tr>
<td>Identification by: John Smith</td>
<td></td>
</tr>
</tbody>
</table>

### TASK ENVIRONMENT

#### Physical environment

- There are obstructions that may interfere with access to and movement around the area where plastering is to occur
- There is a need to work above floor level
- The surface where trestle is to be located is uneven and/or trestle is not on a stable base
- There are unguarded openings or holes such as stairwells
- Height of ceiling, or other factors, requires work above 2m from floor/ground
- Lighting is inadequate for the task

#### Equipment

- Access to trestle does not provide three points of support
- Surface of trestle is slippery, width not sufficient for safe footing, or not horizontal
- Trestle is of insufficient strength for the span or the weight of the person(s) it is required to support
- Trestles does not have handrails
- Ladder brackets are used to support planks at heights >2m
- Ladders are used for work at >2m
- Trestle planks do not have a physical marker indicating the end of trestle to minimize risk of stepping off the end of trestle
- Workers on ladders are standing above 2nd top step or leaning outside the stiles of the ladder
- Stilts are used

#### People

- Workers are inexperienced
- Worker is uncomfortable working above ground level or has a medical condition that may affect their balance
- Workers’ footwear is not suitable for the task

#### Organisational & management environment

- Other trades are working in the area possibly resulting in congestion or other factors which increase the risk of falls

### TASK DEMANDS

- Fatigue associated with physical demands of task may increase susceptibility to falls hazards
- Repetitive nature of task may lead to lowered awareness of falls hazards

### ORGANISATION OF WORK

- Long work hours either as long days or weekend work

### WORK RELATIONSHIPS

- There is pressure to complete the task on a deadline
Activity 2

Keep a copy of this Activity for your Assessment Portfolio.

Analyse work environment to identify hazards

In Activity 1 you identified a task in your workplace and then researched information both external and internal to the workplace to identify hazards. This activity requires you to continue the hazard identification for the task by analysing the particular workplace and the task for hazards.

1 Give reasons why you selected this task for hazard identification and any recent events or circumstances that indicate it as a priority for hazard identification.

2 Identify any existing tools or checklists to assist in analysing the workplace for hazards. Where required, modify these tools to suit your workplace, the task and the people who are required to use the checklists. Explain the reasons for any modifications.

3 Use the tools/checklists and any other processes you consider appropriate, together with input by relevant stakeholders and others, to analyse the task and the work environment for hazards. (Hint: consider the hazard identification concept map to ensure that you have considered all relevant factors.)

4 Present the outcomes in a format suitable for discussion with the work group.

Remember that to demonstrate competency in this unit you have to carry out OHS risk management activities for at least three hazards, which may be associated with one or more tasks.
Element 3: ASSESS RISK ASSOCIATED WITH A HAZARD

The terms ‘hazard’ and ‘risk’ are often confused. A hazard is either present or not present, while risk is variable depending on the environment and circumstances. A hazard does not pose a risk unless people are exposed to it and a risk arises when people are exposed to a hazard.

Risk is a measure of the potential for unwanted, negative consequences of an event.

The concept of ‘risk’ was explored in detail in the learning guide for the competency unit BSB403 Identify hazards and address OHS risks. Some points are noted below as a refresher.

Risk is variable depending on the circumstances and conditions. It is measured in terms of the consequences of the possible outcome and the probability (level of certainty or likelihood*) that the consequences will occur.

People’s estimates of the level of risk are influenced by factors such as previous experience and knowledge, especially about the way the hazard causes injury or damage.

One of the difficulties in risk management is that we will have least information about the risks that may cause the most damage.

Generally:

- the damage that occurs more frequently is the least serious damage, and
- the damage that happens less frequently is the most serious damage.

‘Risk smart’ practitioners will focus their attention on the activities represented in the shaded area of the graph below.
The objective of risk assessment is to develop an understanding of the hazard and its associated risk. In this unit, risk assessment is defined as analysing a hazard to:

- identify factors influencing the risk and the range of potential consequences;
- evaluate the effectiveness of existing controls;
- estimate the likelihood of the consequence, considering exposure and hazard level; and
- combining these in some way to obtain a level of risk or to prioritise the risk for action.

In some organisations, risk assessments are treated as an end in themselves, but they should be just part of the three-step process of:

- hazard identification;
- risk assessment; and
- risk control.

In order to complete this element successfully you will have to show that you have satisfied the following performance criteria:

3.1 Identify factors contributing to risk.

3.2 Identify current risk controls for each hazard.
3.3 Evaluate adequacy of current controls (if any), taking account of relevant standards and knowledge.

3.4 Identify discrepancies between current controls and required quality of control.

3.5 Prioritise hazards requiring further control action.

3.6 Document method and outcomes of risk assessment.

3.1 IDENTIFY FACTORS CONTRIBUTING TO RISK

Element 2 introduced four groups of factors to consider for hazard identification:

- task environment;
- task demands;
- organisation of work; and
- work relationships.

These factors, which were outlined in a concept map and discussed in some detail, need to be revisited to identify factors contributing to risk. An additional factor, exposure, must be considered as a factor influencing risk. Exposure is affected by the:

- frequency that the task is carried out or the times a person is exposed to the hazard;
- duration of the exposure; and
- the number of people exposed/involved in the task.

Risk assessment (or hazard analysis) tools are usually hazard-specific and examples are available in many codes of practice, standards and guidance information. You will find that there are many situations where the pre-existing risk assessment tools are not useful in analysing the hazard to identify risk factors. A worksheet to assist you in identifying risk factors in these situations was introduced in the learning guide for the unit of competency BSBHOHS403 Identify hazards and assess OHS risk and is provided on the following page.
# RISK ANALYSIS WORKSHEET
(for use when there is no hazard-specific tool available)

<table>
<thead>
<tr>
<th>TASK</th>
<th>LOCATION</th>
<th>DATE</th>
</tr>
</thead>
</table>

## Risk factors

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Task Environment</th>
<th>Task Demands</th>
<th>Organisation of work</th>
<th>Work relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>• People exposed</td>
<td>Organisational &amp; management environment</td>
<td>Physical environment</td>
<td>Equipment</td>
<td>Procedures</td>
</tr>
</tbody>
</table>
3.2 IDENTIFY CURRENT RISK CONTROLS FOR EACH HAZARD

As risk is a measure of the potential, or probability, of harm occurring, then the effectiveness of any controls in place is a major factor in determining the probability or likelihood of a specific outcome. Therefore, the next step in the risk analysis process is to identify the controls, if any, that are currently in place.

3.3 EVALUATE ADEQUACY OF CURRENT CONTROLS (IF ANY), TAKING ACCOUNT OF RELEVANT STANDARDS AND KNOWLEDGE

History developed from investigating occurrences and workplace OHS issues shows that there are six predictable ways in which risk controls fail:

- inadequate initial design;
- inadequate installation;
- incorrect usage;
- inadequate maintenance;
- changing parameters of the problem such as changes in personnel, materials or work methods; and
- authorised or unauthorised modifications to equipment or processes.

In the Introduction to Element 1 of this learning guide, it was identified that the conditions that lead up to the loss of control of the hazard may come either directly, or by the interaction of, one or more of five workplace factors:

- the organisational and management environment;
- physical environment;
- equipment;
- procedures; and
- people and human error.

Risk controls fail when there is an interaction of one or more of the workplace factors to create one or more predictable causes of risk control failure.
Understanding the effectiveness of risk controls is addressed in detail in Element 4 Control risk of this learning guide. In this section, you will apply three criteria for evaluating the effectiveness of risk controls as part of risk assessment. The three criteria are:

- the hierarchy of control;
- legislation and other standards; and
- effectiveness of monitoring processes.

**Hierarchy of control**

The hierarchy of control and its application was addressed in detail in the learning guide for BSBOHS404 Contribute to the implementation of strategies to control OHS risk.

The hierarchy of control gives the priority order in which hazard and risk controls should be considered with the eventual outcome often being a combination of measures. The prime emphasis is on:

- elimination of the hazard;
  and where this is not practicable, minimisation of risk by:
  - substitution;
  - engineering controls including isolating the hazard from personnel;
  then, when these options have been implemented as far as is practicable:
  - administrative controls (eg, procedures; training); and
  - personal protective equipment (PPE).

This hierarchy can be presented as a triangle where the area of the triangle represents the effectiveness or reliability of the control and the area outside the triangle indicates the opportunity for the control to fail.
The ‘traffic light’ colouring is a reminder of the priority of the control option. For a task assessed as HIGH RISK:

- the use of PPE as a sole risk control, or even PPE and administrative controls is a STOP (not acceptable);
- engineering controls, including isolation, may be acceptable but should be used with CAUTION; and
- elimination or substitution are the control options of choice and should be considered GO.

Legislation and other ‘standards’

In addition to using the hierarchy of control as a guide when evaluating effectiveness of controls, other factors to consider include whether:

- the law is satisfied;
- the controls meet or exceed industry standards; and
- the controls take account of currently available knowledge.

Hazard-specific legislation may require specific risk control actions, such as fall injury prevention systems, specified in regulations governing working at heights. Common law cases also establish standards for risk control.
The case of Linfox Armaguard Pty Ltd v Lee [2004] SAIRC 74 (September 2004) emphasises the requirement to employ engineering controls rather than administrative controls such as procedures.

An employer has failed to prove that it did all that was reasonably practicable to comply with an improvement notice … finding that it implemented no engineering controls but instead relied on workers to change their behaviour in order to minimise a known risk.

OHS Alert 29th October, 2004
(Engineering controls must take precedence in risk management, 2004)

As noted in section 1.1 of this learning guide, codes of practice provide examples of recommended levels of control, while Australian Standards establish minimum levels of practice.

Current industrial practices are also used as an example of minimum standards. This is applicable particularly when there has been a major shift in industrial practice. The adoption of no lifting practices in the healthcare industry is a good example of a previously accepted practice becoming unacceptable. Conversely though, the general use of a low level of control by an industry does not justify the use of low level controls.

In the case of Abigroup Contractors Pty Limited v WorkCover Authority of NSW (Inspector Maltby [2004] NSWIRComm 270 (24 Sept 2004) the judgement (which was upheld on appeal) rejected the proposition that ‘industry practice’ could be used to alleviate the gravity of OHS offences.

OHS Alert 28th September 2004,
(NSW largest OHS penalty lowered on appeal, 2004)

The recent controversy regarding the exposure to beryllium of personnel in the armed services highlights the need to consider current knowledge in evaluating the adequacy of controls as part of risk analysis. Reports indicate that there was knowledge of the risk in 1980 (Osborne, 2005) but beryllium-based equipment was used until 1985 (Borger, 2005). Also, exposure standards for a range of chemicals are frequently revised, usually resulting in a lowering of the ‘acceptable’ level for the chemical – an example of the impact of considering current knowledge when determining adequacy of controls.
Monitoring processes

The third factor in considering the adequacy of risk controls as part of risk analysis is the monitoring processes:

- Are the support systems and management processes in place to ensure that controls in place are effective and reliable?
- What processes are in place to warn when the controls may be breaking?
- Will these warnings or alerts be heeded?

Section 1.2 of this learning guide listed sources of workplace data for identifying hazards which included:

- hazard, incident and injury reports;
- investigation reports;
- workplace inspections;
- minutes of meetings;
- Job Safety Analyses (JSA) and risk assessments;
- work procedures including standard operating procedures (SOP);
- maintenance records;
- organisational data such as insurance records, enforcement notices and actions, workers’ compensation data;
- reports and audits;
- collated information, such as trend analyses of incident and injury reports, OHS performance data;
- Material Safety Data Sheets (MSDS) and registers;
- employees’ handbooks; and
- manufacturers’ manuals and specifications.

The information which you collected and analysed for hazard identification will also provide information on the effectiveness of controls.

The other important factor to remember when evaluating the effectiveness of controls is that the preconditions leading up to injury and damage may take a long time to develop. Therefore, the indicators for potential failure may not be evident in the workplace data. This is where workplace analysis of compliance with procedures and awareness of risk is important. These approaches are sometimes called behavioural safety, risk awareness or safety culture and are usually measured by surveys (of managers as well as those carrying out tasks identified as risky).
Hopkins (2000) in *Lessons from Longford*, highlighted this issue of ‘warning signs’ that indicate the potential for failure and the need for the organisation to be ‘mindful’ and attentive to the warning signs.

### 3.4 IDENTIFY DISCREPANCIES BETWEEN CURRENT CONTROLS AND REQUIRED QUALITY OF CONTROL

While no activity or environment can be 100 per cent risk free, there is a legal obligation to minimise risk as far as is practicable. Thus the question becomes:

‘What is a practicable level of control?’

A common approach (Standards Australia, 2004c) is to divide risks into three bands as below.

```
<table>
<thead>
<tr>
<th></th>
<th>GENERALLY INTOLERABLE</th>
<th>BROADLY ACCEPTABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk</td>
<td>Risk cannot be justified except in extraordinary circumstances</td>
<td>Risk reduction not likely to be required as resources likely to be grossly disproportionate to the reduction achieved</td>
</tr>
<tr>
<td>ALARP* or Tolerable</td>
<td>Reduce risk until it reaches acceptable region. Residual risk tolerable only if further risk reduction is impracticable</td>
<td></td>
</tr>
<tr>
<td>Basic safety limit</td>
<td>Basic safety objective</td>
<td></td>
</tr>
<tr>
<td>Negligible risk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

The concept of ALARP (As Low As Reasonably Practicable) encompasses the ideas of practicality (can something be done?) and also the costs and benefits of action or inaction (is it worth doing something in the circumstances?). These two aspects need to be balanced carefully in determining ‘practicability’.

Another concept associated with practicable is that of ‘reasonable’. Employers, people in control of workplaces, and those who influence the ‘supply chain’ such as designers, manufacturers and importers are expected to take steps that are practicable and reasonable to ensure the safety of employees and others.
In summary, the controls are acceptable where:

- the law is satisfied;
- the cost of putting safeguards in place is measured against the consequences of failing to do so, not whether employers consider they can afford the safeguards;
- controls take account of currently available knowledge and meet or exceed industry standards; and
- the people exposed to or affected by the risk feel comfortable about it.

A key point is that knowledge and technology change; therefore, what was an acceptable level of risk control yesterday may not currently be acceptable.

Having decided what is the practicable or required level of control, the hazards requiring further action can be identified. In most cases there will also be the issue of limited resources, so there may be a need to prioritise risks for allocation of resources.

### 3.5 PRIORITISE HAZARDS REQUIRING FURTHER CONTROL ACTION

This section looks at the problems associated with prioritising or ranking risks. The criteria and a process for prioritisation are then considered together with the limitations of such processes and outcomes.

**Problems in prioritising risk**

As discussed earlier, risk assessments are a tool. They assist in identifying and prioritising tasks for risk control but they should not be the sole driver.

There are problems associated with the validity and reliability of risk assessments and the way in which they are used. The validity and reliability is affected by:

- the perceptions of the people undertaking or contributing to the risk assessment; and
- communication about risk in the workplace.
Risk perception

People’s perception of risk is influenced by their background, experience and knowledge as well as by in-built biases that we all carry.

People tend to judge an event as frequent or likely if the event is easy to imagine or recall (eg, dramatic causes of death or personally encountered events, such as the death of a friend). These events are usually overestimated compared with more common, less dramatic events. People also downgrade the risk if the threat will not be experienced until later in life.

Another problem is the assumption that an event is not likely to occur, if no information on frequency is provided to counter this assumption. This is further complicated by many people’s difficulty in dealing with large numerical values when estimates of risk are usually represented in large numbers such as 1 in 1,000,000 or $10^6$.

People’s estimates of risk may be based on particular information that stays in their mind and often persists in the face of new and more convincing information.

These factors influence people’s estimates of risk, including those made by experts. Accepting that risk perception is subjective is an important basis for ensuring that risk assessments are as objective and equitable as possible.

Another aspect of risk perception is the concept of ‘safe’ or ‘acceptable’ risk. ‘Safe’ is an often misused term as no activity or environment can be 100 per cent risk free. ‘Safe’ is generally taken to mean that the level of risk is as low as reasonably practicable, does not breach any OHS legislation, is equitable and has the informed approval of those exposed to the risk.

Acceptability of risk as been debated for years. The key questions are:

- Acceptable to whom?
- According to what criteria?
People are more likely to accept risks that are perceived as voluntary such as driving the car to work or playing sport. However, workers may ‘accept’ a degree of risk that they otherwise would refuse if they perceive that their job or their level of pay is threatened should they refuse. Therefore, the matter of choice (voluntary or imposed risk) is not appropriate for work-related risks. One of the key factors in ‘acceptability’ of risk is seen to be the level of control that people feel that they have over the source of the risk.

The concept of ALARP was discussed in section 3.4. The problem with this approach is that the people who are exposed to the risk are often not those who reap the benefits. (eg, those living near chemical plants may be exposed to higher risk than the rest of the community; yet it is the community which shares the benefit from the output of the plant; workers exposed to risk do not usually derive profits from the work.)

There is no technical answer to what is an acceptable risk as it is a complex interaction of technical, commercial and social factors. Recognition of the subjectivity of risk perception enables us to move on in the prioritisation of risks.

**Communication about risk**

Hopkins noted the role of communication (or lack of) as a factor in the failure to identify the development of the pre-conditions that led to the Longford explosion. He points out that:

“… one of the recurrent findings in disaster research is that information that something was wrong was available somewhere within the organisation but was not communicated to relevant decision makers.”

(Hopkins, 2000)

Workers are often aware of information which might indicate a problem, but may not pass it on because they are unable to articulate the problem or they feel that it will not be well received. It is vital that stakeholders and key personnel are offered the opportunity to provide input in a receptive environment.

It is also important to recognise that knowledge of the work task does not necessarily mean knowledge of the risk associated with the task. Therefore a ‘team’ approach is important where those doing the work, those affected by it and those who are knowledgeable about the hazard and risk all have input and where there is opportunity to explore the viewpoints of others.
Use and interpretation of outcomes from risk prioritisation tools

Issues regarding the uncertainty and variability of people’s estimates of consequence and likelihood are reflected in the findings of several writers who have queried the reliability of a range of risk assessment tools; for example:

“For each tool, there was considerable variation in the assessments made by different individuals. Furthermore, there was only a moderate degree of correlation between the assessments made by the same individual using different tools.”

(Harvey, 2002)

The issues are well summarised by Cross and Tretheway:

“Current practice in risk assessment is highly unreliable … a simple qualitative description of the magnitude of risk does not perform the function (of requiring managers to understand and take responsibility for the risks in their workplace). ….. Legislation requires employers to eliminate hazards or minimise all risks to health and safety. Ranking risks should be purely an administrative convenience to allow sensible consideration of where to start when a range of actions are required. (But) it has become the core of OHS risk management activity.”

(Cross & Tretheway, 2002)

An example of such problems occurred in a large multinational organisation that required all risks assessed at ‘10’ or greater to be reported to head office. Examination of the risk assessments found that 90 per cent of risks were assessed at ‘9’!

The reliability and interpretation problems associated with risk assessment tools are further exacerbated in assessing risk of hazards with long latency or cumulative exposure.

Risk analysis tools may be quantitative (ie, number based) or qualitative (ie, word based). Quantitative analysis tools have similar limitations to those of qualitative tools but the existence of a number is sometimes used to imply a level of precision that cannot be justified.
Andrew Hopkins comments on the management emphasis sometimes placed on quantitative risk assessments:

"... it should never be allowed to over-ride sound professional judgements about necessary risk reduction measures. It can, however, have more modest uses, such as helping to determine priorities."

(Hopkins, 2004b).

Summary

While there is no clear, technical answer, the important outcomes from this discussion are that:

- risk assessments are subjective and have limitations which should be taken into account when they are the basis for decisions;
- efforts need to be made to ensure that risk assessments are as informed and equitable as possible; and
- risk assessments are a tool to support management decision-making, they should not be the sole driver of such decisions.

The implications of risk perception, risk acceptance and assuming that knowledge of the task equalled knowledge of the risk were tragically highlighted when an employee of a national packaging company died as the result of being pulled into the rollers of an unguarded paper-making machine. In handing down the judgement in a prosecution, the judge commented that:

"... while it was a classic industrial accident, a risk assessment had described it as a 'remote possibility'."

The AGE newspaper, 29 October 2004 (Leung, 2004)
Process for prioritisation – risk assessment

How can we take account of the issues of validity and reliability and the problems in the way risk assessments are used?

The following process was introduced in the learning guide for the competency unit BSBOHS403, Identify hazards and assess OHS risk.

<table>
<thead>
<tr>
<th>RISK ASSESSMENT AND PRIORITISATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Estimate the potential for damage where there are no controls:</td>
</tr>
<tr>
<td>HIGH = death or permanent impairment</td>
</tr>
<tr>
<td>MEDIUM = temporary impairment</td>
</tr>
<tr>
<td>LOW = only minor inconvenience</td>
</tr>
<tr>
<td>2. Estimate the effectiveness of the controls in place.</td>
</tr>
<tr>
<td>3. Estimate the likelihood of being injured when proper controls are in place:</td>
</tr>
<tr>
<td>• What could happen if...?</td>
</tr>
<tr>
<td>• Is it possible that .....?</td>
</tr>
<tr>
<td>• Could someone...?</td>
</tr>
<tr>
<td>• Has anybody ever...?</td>
</tr>
<tr>
<td>• How often...?</td>
</tr>
<tr>
<td>Do not say, “It could not happen”!</td>
</tr>
<tr>
<td>4. Estimate the consequences or seriousness if injury occurred.</td>
</tr>
<tr>
<td>5. Prioritise the risks.</td>
</tr>
<tr>
<td>Stage 1 of prioritisation:</td>
</tr>
<tr>
<td>is it cheap and easy?</td>
</tr>
<tr>
<td>is it a must do?</td>
</tr>
<tr>
<td>is it a should do?</td>
</tr>
<tr>
<td>is it a could do?</td>
</tr>
<tr>
<td>required by law, practicable</td>
</tr>
<tr>
<td>recommended by code of practice or standards</td>
</tr>
<tr>
<td>based on standard cost-effective analysis</td>
</tr>
<tr>
<td>Stage 2 of prioritisation:</td>
</tr>
<tr>
<td>Where required, rank the ‘should do’ and ‘could do’ risks.</td>
</tr>
</tbody>
</table>

Technically, no further prioritisation is required for the ‘must do’ risk. In reality there may be a ranking for action, but employers who postpone a ‘must do’ leave themselves open to legal action, whether or not an injury occurs.
Tools for risk prioritisation

Identifying risks that are ‘intolerable’ is easy where there are published standards such as for noise or exposure standards for chemicals. It is not so easy where a judgement is required. In such cases people often resort to nomograms* or matrices to assist in considering the combined effect of consequence and likelihood. One of the factors influencing the reliability of such tools in prioritising risk is the variation in how different people view the risk associated with a particular situation.

Where ranking is required for ‘should do’ or ‘could do’ risks, then one of the risk ranking tools may be used to assist the process. However, care should be taken to ensure that the ranking criteria are modified to have meaning for the particular work situation, and that the people involved have a common understanding of the criteria.

For example:

<table>
<thead>
<tr>
<th>How would you interpret descriptors of likelihood such as:</th>
</tr>
</thead>
<tbody>
<tr>
<td>almost certain</td>
</tr>
<tr>
<td>likely</td>
</tr>
<tr>
<td>moderate</td>
</tr>
<tr>
<td>unlikely</td>
</tr>
<tr>
<td>rare?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What about descriptors of consequence such as:</th>
</tr>
</thead>
<tbody>
<tr>
<td>insignificant</td>
</tr>
<tr>
<td>minor</td>
</tr>
<tr>
<td>moderate</td>
</tr>
<tr>
<td>major</td>
</tr>
<tr>
<td>catastrophic?</td>
</tr>
</tbody>
</table>

Ask five people how they would interpret these terms. How much variation do you get in the responses?

How could you allow for cumulative exposure in the likelihood descriptors?

Section 6 of the handbook for AS 4360:2004, Risk Management (Standards Australia, 2004c) and Appendix B of the OHS Risk Management Handbook (Standards Australia, 2004b) discuss the use of risk analysis (assessment) tools. Some examples of risk ranking tools are also given on the following page.
Sample Risk Ranking Tools

1 AS/NZS4360:1999 Risk Management (Appendix) (Standards Australia, 1999)

Qualitative measure of consequence:

<table>
<thead>
<tr>
<th>Level</th>
<th>Descriptor</th>
<th>Example detail description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Insignificant</td>
<td>No injuries; low financial loss</td>
</tr>
<tr>
<td>2</td>
<td>Minor</td>
<td>First aid treatment; on-site release immediately contained; medium financial loss</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
<td>Medical treatment required; on-site release contained with outside assistance; high financial loss</td>
</tr>
<tr>
<td>4</td>
<td>Major</td>
<td>Extensive injuries; loss of production capability; off-site release with no detrimental effects; major financial loss</td>
</tr>
<tr>
<td>5</td>
<td>Catastrophic</td>
<td>Death; toxic release off site with detrimental effect; huge financial loss</td>
</tr>
</tbody>
</table>

Qualitative measures of likelihood:

<table>
<thead>
<tr>
<th>Level</th>
<th>Descriptor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Almost certain</td>
<td>Is expected to occur in most circumstances</td>
</tr>
<tr>
<td>B</td>
<td>Likely</td>
<td>Will probably occur in most circumstances</td>
</tr>
<tr>
<td>C</td>
<td>Possible</td>
<td>Might occur at some time</td>
</tr>
<tr>
<td>D</td>
<td>Unlikely</td>
<td>Could occur at some time</td>
</tr>
<tr>
<td>E</td>
<td>Rare</td>
<td>May occur only in exceptional circumstances</td>
</tr>
</tbody>
</table>

Qualitative risk analysis matrix – level of risk:

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Insignificant</th>
<th>Minor</th>
<th>Moderate</th>
<th>Major</th>
<th>Catastrophic</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Almost certain</td>
<td>H</td>
<td>H</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>B Likely</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>C Moderate</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>D Unlikely</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>E</td>
</tr>
<tr>
<td>E Rare</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>H</td>
</tr>
</tbody>
</table>

Where:
E: Extreme risk: immediate action required.
H: High risk: senior management attention needed.
M: Moderate risk: management responsibility must be specified.
L: Low risk: manage by routine procedures.

Refer also to Section 6 of the Risk Management Handbook. (Standards Australia, 2004c)
2 Nomogram (Kinney & Wiruth, 1976)

To use the nomogram:
1. identify the estimated value for the variables 'likelihood' and 'exposure'; then draw a straight line through the estimated value of each variable and extend the line to the tie line;
2. estimate the possible consequences; and
3. draw a straight line from the point on the tie line through the estimated possible consequences and extend the line to the risk score.

Involve stakeholders and key personnel

OHS legislation establishes a legal right for those who may be exposed to a risk (or their representatives), to be informed and consulted as part of the risk assessment.

Risk assessments are subjective and have limitations which should be taken into account when decisions are based on the outcomes of the assessments. Therefore, efforts need to be made to ensure that risk assessments are as informed and equitable as possible.
It is vital that stakeholders and key personnel are offered the opportunity to contribute in a receptive and consultative environment. As noted earlier by Andrew Hopkins, the role of communication (or lack of) was a factor in the failure to identify the development of the pre-conditions that led to the Longford explosion (Hopkins, 2000). Workers are often aware of information which might indicate a problem but may not pass it on because they are unable to articulate the problem or they feel that it will not be well received.

It is also important to recognise that knowledge of the work task does not necessarily mean knowledge of the risk associated with the task. Therefore, there should be a consultative ‘team’ approach, where the members of the team all have input and there is opportunity to explore the viewpoints of others. The team should include representatives of those who:

- do the work;
- are affected by the risk;
- are knowledgeable about the hazard; and
- are knowledgeable about the risk.

Thus, those involved in the risk assessment process should include:

- stakeholders (those people or organisations who may be affected by, or perceive themselves to be affected by an activity or decision);
- key personnel (managers from related areas; people involved in decision-making or who are affected by the decision);
- technical advisers; and
- OHS advisers.

Stakeholders, key personnel and experts may be involved in the risk assessment process in a range of ways, including through:

- OHS committees;
- focus groups;
- workplace inspections;
- hazard and other reporting processes;
- scenario and ‘what if’ analyses; and
- technical hazard and risk analysis processes, such as HAZOPS operational modelling.

Not all persons will be involved in all stages of the risk assessment process. The level of involvement of experts and advisers will vary depending on the
purpose and complexity of the process and the potential consequences of the risk being assessed.

The subjective nature of risk perception, and therefore risk assessments, has been discussed earlier in this section. The subjectivity can be minimised by involving a broad range of people in the risk assessment. This may make the risk assessment process more complex; however, the benefits gained in attempting to reach a common understanding of the risk include a greater understanding of the risk, the risk factors and possible ways of controlling the risk.

### 3.6 DOCUMENT METHOD AND OUTCOMES OF RISK ASSESSMENT

You have now:

- identified hazards in the workplace;
- analysed tasks for risk factors; and
- where required, prioritised risks for action.

In this section, you will address the legal and practical reasons for documenting risk assessments and their outcomes.

Most of the hazard-specific legislation requires that risk assessments are documented and records retained, usually for five years or until a new assessment is conducted. (eg, Victorian regulations on manual handling and hazardous substances.)

The extent of documentation required depends on the circumstances. Where a preliminary risk analysis is being carried out to eliminate minor risks from detailed consideration, then a note on why the risk was considered to be low is sufficient. Where a more detailed analysis is required, more information is needed to demonstrate due diligence* and inform others about the risk.

The risk analysis and criteria for any ranking should be recorded in sufficient detail to allow the analysis to be checked or repeated by others and to enable third parties to verify the way the analysis was done.

- **In what ways do you think risk assessments might be used in a legal context?**
The objective of all this activity is to actually improve safety in the workplace (reduce risk). So there has to be some action. The documentation of the risk assessment should also be an action planning tool.

Generally, at the level required by this unit of competency, documenting the risk assessment will mainly involve recording the:

- completed hazard-specific analysis tool obtained from a code of practice or other source of information;
- analysis of the reliability of controls including any assumptions;
- rationale behind any prioritisation;
- people involved in the process;
- outcomes of the assessment and prioritisation; and
- further actions.

Methods and formats of documentation may vary. Risk registers are discussed in detail in section 5.1. The Job Safety Analysis (JSA) is also an often used method of documenting the outcomes of risk assessments.

**Competency check for Element 3**

Key issues for each performance criterion in Element 3 are as follows.

3.1 Identify factors contributing to risk:

- Risk factors for the task environment, including the organisational and management environment, physical environment, equipment, procedures and people, together with exposure parameters, are identified.
- Risk factors associated with task demands, organisation of work and work relationships are identified.

3.2 Identify current risk controls for each hazard:

- Hierarchy of control, legislation, standards and current knowledge together with monitoring and support systems are considered.

3.3 Evaluate adequacy of current controls (if any), taking account of relevant standards and knowledge:

- Hierarchy of control, legislation, standards and current knowledge, together with monitoring and support systems, are considered.
3.4 Identify discrepancies between current controls and required quality of control:

- The concept of ALARP is used to evaluate the required level of control.

3.5 Prioritise hazards requiring further control action:

- Limitations of risk assessments are identified.
- Hazards and risks that are a ‘must do’ for further control are identified.
- A risk ranking tool is used to prioritise other than ‘must do’ risks.
- Equity and reliability of risk assessments is maximised by including appropriate persons in the risk assessment team and consulting with appropriate groups.

3.6 Document method and outcomes of risk assessment:

- Documentation addresses legal and practical requirements and provides a basis for further control action.

The detailed diagram for the OHS risk management process now looks like this:

```
OHS RISK MANAGEMENT

IDENTIFY HAZARDS
- Access information to identify hazards:
  - external to workplace;
  - workplace-based; and
  - consider internal & external change.
- Analyse work environment:
  - task environment;
  - task demands;
  - organisation of work; and
  - work relationships.

ASSESS RISK
- Identify factors contributing to risk.
- Identify current controls.
- Identify where further control is required.
- Prioritise hazards requiring further control.
- Document methods and outcomes of risk assessment.

CONTROL RISK

Communicate & consult

Monitor & review
```
Case Study 3 - Plastering

The case study examined in Elements 1 and 2 is continued here.

Risk Assessment

Identify risk factors

These tools were used to identify factors contributing to risk.

Manual handling
Manual Handling Risk Assessment Form (Safe Work Australia formerly ASCC/NOHSC, 2005).

Falls
Refer to Risk Falls Assessment in Element 2.
MANUAL HANDLING RISK ASSESSMENT FORM

<table>
<thead>
<tr>
<th>Occupation:</th>
<th>Plastering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job:</td>
<td>Stopping ceiling joints</td>
</tr>
<tr>
<td>Task:</td>
<td>Stopping ceiling joints</td>
</tr>
<tr>
<td>Location:</td>
<td>Residential housing construction</td>
</tr>
<tr>
<td>Date:</td>
<td>11-04-05</td>
</tr>
<tr>
<td>Assessed by:</td>
<td>John Smith</td>
</tr>
<tr>
<td>In consultation with:</td>
<td>Jim Jones</td>
</tr>
</tbody>
</table>

**How to carry out this assessment:**

1. Describe the task or item you are assessing. You may find it useful to draw a map of the work area and map the workflow. Consider the flow of materials, people and products.

2. Use this form to assess the risk factors. Tick or highlight the boxes that best describe the situation in your workplace.

3. As you go through the form, write down any notes or ideas about the risk factors that will assist in planning the control. Also note whether you need more information on some aspect of the task or item to make decisions on hazard elimination and other forms of risk control.

MSD risk factors often interact to increase the risk of injury. For example, awkward postures will often occur at the same time as high force exertion. As you work through this form, it is likely that you will identify factors in several of the risk tables. The risks are grouped in traffic light colours. The yellow and red columns show increasing risk. The green column indicates good practice and good principles of design. The yellow column indicates factors that require action in the near future, as injury is likely. Factors in the red column indicate high risk and require immediate action. To reduce the risk of injury, think about how the risks can be changed to the green group, especially if risks are present in more than one of the risk tables.

1. **DESCRIBE THE TASK OR ITEM** (including equipment used):

   Plastering involves fixing sheets of plasterboard to the wall and ceiling framing and then ‘stopping’ the joints by filling with a joint compound and then sanding or ‘finishing’. This risk assessment is limited to ‘stopping’ the joints. This involves applying a first coat of jointing compound into which jointing tape is embedded. The joint is then skimmed to remove air bubbles and excess compound. A second coat is applied when the first is dry.

   Stopping of ceiling joints requires standing on a trestle or other elevated work platform, working above head height while holding a board with jointing compound in other hand. The plasterer needs to mount and dismount the trestle frequently to keep up the supply of jointing compound.
### 1. Postures

<table>
<thead>
<tr>
<th>BODY PART</th>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Back and neck</strong></td>
<td>Upright, no twisting.</td>
<td>Back and/or neck – moderate bending or twisting. Sitting with no support, or leaning forward, reaching or twisting.</td>
<td>Extreme twisting or side bending of neck and/or back. Prolonged holding heavy load at full arms length. Prolonged lying or semi-lying while working overhead. Extreme backwards bending of neck and/or back.</td>
<td>Bending forward to fill ‘hawk’. Looking upward to ceiling. Carrying trestle.</td>
</tr>
<tr>
<td></td>
<td>Well supported seated posture.</td>
<td>Carrying heavy object with one hand.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shoulder</strong></td>
<td>Relaxed with arms by the side.</td>
<td>Tasks include holding the elbows out from the side. Tasks include one or both hands above shoulder height. Frequent reaching across the body. Throwing objects or regular throwing movements.</td>
<td>Prolonged or very frequent holding of arms out from the side. Prolonged or very frequent holding the hands above shoulder height. Frequent reaching behind the body, or at or below floor level. Prolonged or frequent reaching to full arms length. Prolonged holding or restraining a heavy object, person, animal or tool. Throwing heavy objects or frequent throwing movements.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arms well supported if in other positions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hand and arms</strong></td>
<td>Relaxed posture with variety of movements. Neutral posture when gripping hand tools (handshake position).</td>
<td>Task includes holding the wrist in a bent posture for prolonged periods. Regular twisting, turning, grabbing, picking or wringing actions. Elbow is bent beyond 90° for prolonged periods when working. Gripping heavy objects with the palm of the hand facing down.</td>
<td>Extreme wrist bending for prolonged periods. Exerting excessive force with one hand or hitting an object. Frequent twisting, turning, grabbing, picking or wringing actions. Gripping an object between the finger pads or with fingers wide-spread for prolonged period. Holding a heavy object or tool for prolonged periods. Prolonged or frequent reaching to full arms length.</td>
<td>Holding ‘hawk’ for long periods but hand position is neutral. Carrying trestle with palm down. Wrist bent while applying and smoothing mix.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lower limbs</strong></td>
<td>Changing posture at will while standing or seated. Walking is an alternative to standing or sitting.</td>
<td>Standing for prolonged periods with little or no walking. Standing for long periods with most of the weight on one leg. Sitting with the feet unsupported for long periods. Repeated side stepping.</td>
<td>Crouching, kneeling, squatting, kicking, jumping, while holding a load for prolonged periods. Repetitive use of a foot pedal while standing. Repetitive climbing of ladders or stairs.</td>
<td>Load on ankles, knees &amp; hips. Load increased by ‘side stepping’ along trestle with one foot turned – to feel the way along edge of trestle.</td>
</tr>
</tbody>
</table>
### 2. Forces exerted

When considering the forces exerted in the task, look at each of the body parts used, as forces may create risks for different body parts.

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal force required.</td>
<td>Forces exerted take considerable effort from some or most workers.</td>
<td>Some or most workers required to constantly exert their maximum force.</td>
<td>Sustained effort on shoulder, elbow &amp; wrist (holding ‘hawk’).</td>
</tr>
<tr>
<td>Thumbs or fingers not used to exert excess forces.</td>
<td>Thumbs or fingers used to exert frequent forces.</td>
<td>Forceful exertions involving jolting, jerking or rapid changes in speed or direction of movements.</td>
<td></td>
</tr>
<tr>
<td>Power grip (handshake position) is used to grip an object requiring force.</td>
<td>Force needs to be sustained for prolonged periods.</td>
<td>A sustained or awkward action is needed while in an awkward posture.</td>
<td></td>
</tr>
<tr>
<td>Regular striking or hitting objects using the hand.</td>
<td>Rapid striking or hitting objects with high force using the hand.</td>
<td>2 or more people are needed due to excessive weight, size or stability of an object.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frequent striking or hitting objects with high force using the hand.</td>
<td>Excessive force required to be exerted by fingers or thumb.</td>
<td></td>
</tr>
</tbody>
</table>

### 3. Repetition of movements

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle times of 5 minutes or more.</td>
<td>Cycle times of 30 seconds to 5 minutes.</td>
<td>Cycle time less than 30 seconds.</td>
<td>Repetitive arm and wrist movements.</td>
</tr>
<tr>
<td>Intermittent periods of mouse or keystroke work with opportunity for muscles to relax.</td>
<td>Constant keystroke or mouse work with little change or recovery periods.</td>
<td>Constant repetition of same movement within 10 seconds.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rapid keystroke or mouse work with no change or recovery period.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4. Speed of movements

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️ Workers can work at their own speed.</td>
<td>Maintain the work speed for prolonged periods with little chance of muscle relaxation.</td>
<td>Work speed is extremely demanding (or slow) where the worker has little or no control to change.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work is excessively slow requiring constant attention to maintain output.</td>
<td>Task requires constant repeated and rapid speed of movements for prolonged periods.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speed of task is beyond individual capacity resulting in fast jolting movements.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rapid speed of movements are combined with highly accurate or precise task demands.</td>
<td></td>
</tr>
</tbody>
</table>
## 5 Vibration

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✔ No vibration to the hands or body of the worker.</td>
<td>Mild hand/arm vibration from tools for prolonged periods. Leaning against vibrating equipment for prolonged periods. Mild whole body vibration while sitting on a seat of equipment, machinery or vehicle.</td>
<td>Severe and prolonged exposure to hand/arm vibration from tools. Severe and prolonged exposure to whole body vibration from equipment, machinery or vehicle.</td>
<td></td>
</tr>
</tbody>
</table>

## 6 Length of time the task is done

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual task done for short periods with changes to posture and activity. No exposure to vibration between manual tasks. Adequate breaks are taken at regular intervals during the work period.</td>
<td>Manual tasks that are demanding on the body (considering postures, forces, movements and exposure to vibration) are done for more than half the working day or shift. Some changes to other tasks from time to time.</td>
<td>✔ The same demanding manual tasks or ones using similar postures, forces, movements or exposure to vibration are done for most or all of the day or shift. ✔ Additional hours of demanding manual work required regularly on overtime.</td>
<td></td>
</tr>
</tbody>
</table>

## 7 Workplace or workstation layout

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate space is provided to perform the tasks, considering the postures, forces, movements and nature of objects.</td>
<td>Mild restrictions to the tasks or movements due to the area layout or workstation design.</td>
<td>✔ The area layout or workstation design severely restricts the tasks or movements of the workers.</td>
<td>Working on trestle and in some corners, small rooms such as bathrooms, pantries…</td>
</tr>
</tbody>
</table>

## 8 Other aspects of the work environment

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✔ No ‘core’ MSD risk factors (Tables 1 to 5 above) are increased by the work environment:</td>
<td>✔ Some ‘core’ MSD risk factors (Tables 1 to 5 above) are increased by the work environment such as:</td>
<td>✔ ‘Core’ MSD risk factors (Tables 1 to 5 above) are increased significantly by the work environment such as:</td>
<td>Narrow trestle Underfoot conditions may make trestle unstable or increase risk of injury when dismounting trestle.</td>
</tr>
<tr>
<td>✔ Lighting is acceptable for task demands. ✔ Work surfaces are even and in good repair. ✔ Comfortable temperatures. ✔ No obstacles present.</td>
<td>✔ Rough, unstable, hard, slippery floors. ✔ Variations of floor levels. ✔ Adverse climate conditions ie, hot; cold; wet; wind. ✔ Lighting issues eg, glare; insufficient light. ✔ Poor housekeeping.</td>
<td>✔ Lighting is unsuitable for the task. ✔ Uneven hazardous work surfaces. ✔ Extremes of temperature. ✔ Obstacles severely affect safe performance of task.</td>
<td></td>
</tr>
</tbody>
</table>
### 9. Characteristics of objects, equipment, tools, persons or animals

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>The core MSD risk factors not increased by the characteristics of the objects, people or animals handled.</td>
<td>✓ The core MSD risk factors are mildly increased due to:  - object is unpredictable, unstable or moving;  - object is hot, cold, slippery, sharp or fragile;  - weight of the object;  - uneven distribution of object weight;  - bulky shape or awkward size of object;  - poor or absent handles; or  - poor equipment design for the task such as:  - constant force or repetitive movement with the object; or  - design of object dictates poor technique for user.</td>
<td>The characteristics of the object, people or animal significantly increase the core MSD risk factors for the user.  Extreme reduction of object handling ability due to need to wear PPE; for example, reduced “feel”, difficult grip, reduced visibility or restricted movement.</td>
<td></td>
</tr>
</tbody>
</table>

### 10. Location of objects, equipment, tools, persons or animals

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>The core MSD risk factors are increased if:  - The manual handling can be done with an upright forward-facing posture.  - There is no need to twist any parts of the body to do the manual handling.  - There is no need to reach above chest height or below knee height when manual handling.  - The distance over which manual handling occurs are short.</td>
<td>✓ The object, tool, equipment, person or animal requires periods of:  - repetitive twisting of the body to do the work;  - bending, stooping or reaching above shoulder;  - working at floor level below knee height; or  - movement over long distances.</td>
<td>The object, tool, equipment, person or animal imposes:  - excessive twisting of the body while performing the task;  - prolonged bending, stooping or reaching above shoulder;  - prolonged work below knee height; or  - excessive movement or carrying demands.</td>
<td></td>
</tr>
</tbody>
</table>
## 11 Work organisation and systems of work

<table>
<thead>
<tr>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
<th>NOTES or ideas</th>
</tr>
</thead>
</table>
| Work is organised to:  
- eliminate any prolonged periods of demanding physical or mental work; OR  
- provide short, intermittent changes to allow for recovery from demanding physical and/or mental work; and  
- allow variation or control in the pace or nature of work.  
Where external pacing cannot be avoided, the pace of work is set, or can be altered to suit the needs of the worker(s).  
There are effective procedures for workers to report unsafe work, equipment or environmental conditions.  
Workers have task-based manual handling training as part of their induction. Programs to ensure ongoing manual handling and risk management skills are developed for all staff.  
Systems are in place to enable worker(s) starting on this task, or returning from absence or injury to have a period of adjustment to the work demands. | Workers undertake some periods of demanding physical or mental work, for example:  
- repetitive, sustained or forceful work;  
- high mental demands; and  
- little control of work pace.  
The work rate is demanding due to:  
- occasional occurrences where there are insufficient worker(s) to complete the tasks, increasing exposures to physical and mental demands;  
- regular excessive customer demands;  
- regular tight deadlines;  
- regular bottlenecks in production;  
- regular excessive peaks of work;  
- high demands imposed by work measurements (eg, piece work; quotas; bonuses);  
- moderately awkward postures and moderately forceful movements regularly sustained for moderate periods to keep up with work rates;  
Inadequate procedures to report MSD risks;  
Induction has little task based MSD training;  
Inadequate ongoing MSD prevention training; or  
Little provision for adjustment when returning from injury or prolonged absence. | Workers have excessive physical or mental demands from the organisation of their work due to:  
- the physical risk factors (as assessed in questions 1-5) or mental demands;  
- no flexibility with breaks;  
- no pauses in work pace; or  
- no control over work pace.  
☑ Excessive demands from work rate risk factors:  
- Frequent occurrences where there are insufficient worker(s) to complete the tasks OR extreme risk due to increased physical and mental demands.  
- frequent excessive customer demands;  
- frequent tight deadlines;  
- frequent bottlenecks in production;  
- frequent excessive peaks of work;  
- extreme demands imposed by work measurements (eg, piece work; quotas; bonuses); and  
- extreme awkward postures and highly forceful movements frequently sustained for prolonged periods to keep up with work rates.  
No provision of MSD training, skills practice or development in induction or ongoing training.  
No adjustment when returning from injury or prolonged absence.  
As a finishing trade, any delays in earlier construction processes results in plasterers having to work at high pace to make up time |
## JOB SAFETY ANALYSIS

<table>
<thead>
<tr>
<th>Steps in Task</th>
<th>Hazards</th>
<th>Factors contributing to risk</th>
<th>Normal controls</th>
<th>Adequacy of current controls</th>
<th>Priority for further action</th>
<th>Further controls required</th>
<th>Person responsible</th>
<th>Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Filling the 'hawk'</td>
<td>Manual handling/MSD</td>
<td>- Posture (bending back to fill 'hawk')</td>
<td>- Experience</td>
<td>- MEDIUM potential for injury</td>
<td>Should do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Carrying the trestle</td>
<td>Manual handling/MSD</td>
<td>- Carrying load with one hand (palm down)</td>
<td>- Experience</td>
<td>- MEDIUM potential for injury</td>
<td>Should do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Risks</td>
<td>Contributing Factors</td>
<td>Potential for Injury</td>
<td>Controls</td>
<td>Action</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>------------------</td>
<td>-------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Climbing on trestle</td>
<td>Falls</td>
<td>Need to work above ground, Not 3 points of contact, Fatigue/work hours</td>
<td>MEDIUM</td>
<td>Low level controls</td>
<td>Should do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSD</td>
<td>Force on ankles, knees &amp; hips</td>
<td>MEDIUM</td>
<td>Low level controls</td>
<td>Should do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Hand-trowelling the ceiling</td>
<td>Manual handling</td>
<td>Posture (neck – looking up; hands above shoulder; wrist bent), Sustained force (holding 'hawk'), Repetitive task, Continuous task</td>
<td>HIGH</td>
<td>Low level controls</td>
<td>Must do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Falls</td>
<td>Trestle does not have hand rails, Fatigue/work hours, Repetition</td>
<td>HIGH</td>
<td>Low level controls</td>
<td>Must do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foreign bodies in eyes</td>
<td>Working above head height, Looking up</td>
<td>LOW</td>
<td>Low level controls</td>
<td>Could do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Climbing down from trestle</td>
<td>Falls</td>
<td>Not 3 points of contact</td>
<td>MEDIUM</td>
<td>Low level controls</td>
<td>Should do</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- It is difficult to estimate the potential for injury associated with individual manual handling tasks as the effects are cumulative.
- Practices described in the case study are standard practices in the industry.
- Legislation for manual handling and for falls requires that risk be assessed and the risk controlled as far as in reasonably practicable. The respective codes of practice give examples that are relevant to this case study.
Prioritise hazards and risks

<table>
<thead>
<tr>
<th>Step in task</th>
<th>Hazard</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Filling the ‘hawk’</td>
<td>Manual handling/MSD</td>
<td>Should do</td>
</tr>
<tr>
<td>2 Carrying the trestle</td>
<td>Manual handling/MSD</td>
<td>Should do</td>
</tr>
<tr>
<td>3 Climbing on trestle</td>
<td>3A Falls</td>
<td>Should do</td>
</tr>
<tr>
<td></td>
<td>3B MSD</td>
<td>Should do</td>
</tr>
<tr>
<td>4 Hand-trowelling the ceiling</td>
<td>4A Manual handling</td>
<td>Must do</td>
</tr>
<tr>
<td></td>
<td>4B Falls</td>
<td>Must do</td>
</tr>
<tr>
<td></td>
<td>4C Foreign bodies in eyes</td>
<td>Could do</td>
</tr>
<tr>
<td>5 Climbing down from trestle</td>
<td>Falls</td>
<td>Should do</td>
</tr>
</tbody>
</table>

‘Must do’ tasks require no further prioritisation. ‘Should do’ and ‘could do’ tasks are prioritised below.

AS/NZS 4360 – 1999 Appendix (Standards Australia, 1999)

<table>
<thead>
<tr>
<th>Step in task</th>
<th>Hazard</th>
<th>Likelihood*</th>
<th>Consequence</th>
<th>LEVEL OF RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Filling the ‘hawk’</td>
<td>1 Manual handling/MSD</td>
<td>Possible (C)</td>
<td>Moderate (3)</td>
<td>HIGH</td>
</tr>
<tr>
<td>2 Carrying the trestle</td>
<td>2 Manual handling/MSD</td>
<td>Possible (C)</td>
<td>Moderate (3)</td>
<td>HIGH</td>
</tr>
<tr>
<td>3 Climbing on trestle</td>
<td>3A Falls</td>
<td>Likely (B)</td>
<td>Moderate (3)</td>
<td>HIGH</td>
</tr>
<tr>
<td></td>
<td>3B MSD</td>
<td>Possible (C)</td>
<td>Moderate (3)</td>
<td>HIGH</td>
</tr>
<tr>
<td>4 Hand-trowelling the ceiling</td>
<td>4C Foreign bodies in eyes</td>
<td>Possible (C)</td>
<td>Insignificant (1)</td>
<td>LOW</td>
</tr>
<tr>
<td>5 Climbing down from trestle</td>
<td>5 Falls</td>
<td>Likely (B)</td>
<td>Moderate (3)</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

In this case study, ‘likelihood’ is taken to relate to the working life of the plasterer rather than to individual occurrences.

Kinney & Wiruth (1976) Nomogram
<table>
<thead>
<tr>
<th>Step in task</th>
<th>Hazard</th>
<th>Risk score</th>
<th>Further action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Filling the 'hawk'</td>
<td>1 Manual handling/MSD</td>
<td>Possible risk (50)</td>
<td>Attention indicated</td>
</tr>
<tr>
<td>2 Carrying the trestle</td>
<td>2 Manual handling/MSD</td>
<td>Substantial risk (80)</td>
<td>Correction required</td>
</tr>
<tr>
<td>3 Climbing on trestle</td>
<td>3A Falls</td>
<td>High risk (140)</td>
<td>Immediate correction required</td>
</tr>
<tr>
<td></td>
<td>3B MSD</td>
<td>Substantial risk (100)</td>
<td>Correction required</td>
</tr>
<tr>
<td>4 Hand-trowelling the ceiling</td>
<td>4A Manual handling</td>
<td>Must do</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4B Falls</td>
<td>Must do</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4C Foreign bodies in eyes</td>
<td>Possible risk (30)</td>
<td>Attention indicated</td>
</tr>
<tr>
<td>5 Climbing down from trestle</td>
<td>5 Falls</td>
<td>High risk (178)</td>
<td>Immediate correction required</td>
</tr>
</tbody>
</table>
Activity 3

Assess risk associated with a hazard

1 Research on-line resources and your own contacts to access a range of formats for recording Job Safety Analyses (JSA). Identify a format that suits your organisation and also enables you to document your OHS risk assessment activities as required in the following questions. You may wish to modify the format as you go.

Using a JSA approach to document the outcomes, complete the following activities.

2 Select a suitable tool(s) to enable you to identify the risk factors. Apply these tools (and any other required processes) to identify the risk factors associated with the task(s). [Ensure that you consider the task environment (including organisational and management environment, physical environment, equipment, procedures and people), task demands, organisation of work and work relationships.]

3 Identify the current controls in place (if any) for the hazards and risk factors.

4 Identify whether further control is required by:
   - identifying how the existing controls could fail;
   - determining whether the existing controls meet legislative requirements; and
   - determining whether the risk is reduced as far as is practicable.
5 Prioritise the risks requiring further action using the ‘must do’, ‘could do’, ‘should do’ classification. Give reasons for your classification.

6 Use a risk ranking tool to further prioritise any ‘could do’ and ‘should do’ risks. Explain how you applied the risk ranking tool and the descriptors used.

7 Write a report for the OHS committee with the results of the JSA to date and explaining how you conducted the risk assessment and the people consulted and involved.
Element 4: CONTROL RISK

You have now identified hazards and analysed the risk to identify risk factors and prioritised the risks for further action. This element deals with identifying and implementing risk controls.

The objective of OHS risk management is to make the workplace as safe as practicable. The risk control strategy selected is the key to achieving this objective.

Safe place vs safe person

The argument that has become known as safe place vs safe person is one that has engaged OHS personnel for many years. A ‘safe place’ approach focuses on risk controls incorporated in the design of equipment, work environment and processes whereas the ‘safe person’ approach focuses on the behaviour of the person.

A review of the literature (Culvenor, 1997 Chap 2) shows that discussion of the relative role of the ‘place’ or the ‘person’ as the causative factor in incidents and injuries has raged with a varying tempo since the 1920s.

An interesting quote:

“To sum up, much as been done towards accident-prevention by the use of mechanical safeguards, and a little more may possibly be accomplished by this means .... The problem of accident-prevention today is largely a psychological one.”

Stevenson in (Culvenor, 1997)

When do you think this was written? Last week? Last month? Last year? In fact, it was written in 1926.

A person will always be close by when an incident occurs, so it is easy to focus on the person (and their behaviour or personal factors) as the ‘cause’ of the occurrence.

What is the cause? Person or place?

The scenario described below is an actual incident. What do you think are the causes – human behaviour, design of the workplace, the work system, or training and supervision?
Entering Pressurised Filtration Room

Worker is required to clean filters in a pressurised filtration room.

Worker has been doing the job for 19 years; however, this time he forgot to depressurise the room before entry.

When he opened the door it flew back due to the pressure and crushed him against the brick wall.

The worker died as a result of the incident.

What is your decision on cause – person or place?

The allocation of the relative importance of ‘place’ or ‘person’ for causation will depend on the approach taken when analysing the information.

Analysis of errors by military and civilian pilots found that most of the incidents could be attributed to ‘pilot error’. However, rather than embarking on training or awareness programs it was found that incidents based on human error could be reliably prevented, or mitigated by focusing on design [Fits in (Culvenor, 1997)].
It is human to lose concentration, to take a short cut or to occasionally take the wrong action, either intentionally or unintentionally. The work system should not rely on the perfect worker and the perfect worker cannot be created by training or awareness programs.

Try this: How many ‘f’s are in the sentence:

FINISHED FILES ARE THE RESULT OF MANY YEARS OF SCIENTIFIC STUDY COMBINED WITH THE EXPERIENCE OF MANY YEARS

How many did you count? The correct answer is 6.
Did you make an error? (Did you miss the Fs in the ‘OF’s?)
Why do so many people make this error?

Control at source

Another concept of risk control that you will hear about is ‘control at source’. This concept is illustrated by the energy damage model introduced in the Introduction to Element 1.

This model described an occurrence as arising when there is loss of control of the potentially damaging energy. Injury or damage occurs when the energy transfers to the recipient and the energy level is greater than the injury or damage threshold of the recipient.

(D. Viner, 1991)
The opportunities for intervention to control the risk are as below:

1. Eliminate or reduce the amount of energy
2. Improve the reliability of the barrier
3. Prevent transfer of energy or separate energy and people
4. Protect the person

Where the risk controls are close to the source of the energy there is greater scope for back-up or supplementary controls. Where the foreseeable outcome may be death or serious injury then high reliability controls are applied. High reliability controls are those that act closest to the source of the energy.

While personal protection provides a shield between the hazard and the person and so may prevent the energy damaging the person, it has low reliability. Personal protection is a last line of defence, as there is no back-up.

**Addressing the hazard at the source focuses on the ‘safe place’**.

The argument is not that people are part of the sequence leading to an injury, but that this approach does not assist in the development of effective risk control strategies. Rather, *focusing on the person when developing options for risk control creates a barrier to effective controls as it diverts attention from the actions that can achieve the greatest effect.*

Why then, has there been, and still is, such an emphasis on the ‘person’ factors?
Kletz, an engineer and well-known writer in safety, wrote that attributing accidents to human failing is:

"… comforting to managers. It implies that there is little or nothing they can do to stop most accidents."

Kletz in (Culvenor, 1997)

This attitude is not restricted to managers. Many workers also attribute the cause of injury to the worker rather than to actions of people, such as designers or installers, who may have laid the foundation for the problem.

When developing control options, the best guideline for resolving the place vs person discussion is given by the following guideline:

“Accident prevention strategies should thus be directed at, first bringing about a reduction in the objective danger in the workplace, and second, increasing the perception of risk on the part of the individual worker. This is brought about, in the first case by the use of ‘safe place’ strategies and in the second case by the ‘safe person’ strategies. (emphasis added).”

Stranks in (Culvenor, 1997)

This safe place/control at source approach is in line with current legislation in Australia; however, it is not always the focus in the workplace where a strong commitment to the ‘safe person’ is still evident in many organisations.

In order to successfully complete this element of the competency unit you will have to show that you have satisfied the following performance criteria:

4.1 Develop a range of control options in consultation with stakeholders, taking account of the outcomes of the risk assessment and the hierarchy of control.

4.2 Identify potential factors impacting on the effectiveness of controls.

4.3 Seek advice from OHS specialists and key personnel if required.

4.4 Identify and seek appropriate authority and relevant resources to initiate and maintain controls.

4.5 Identify and document actions required to achieve change.

4.6 Analyse extent of change and reduction in risk, as a result of controls.
4.1 DEVELOP A RANGE OF CONTROL OPTIONS IN CONSULTATION WITH STAKEHOLDERS, TAKING ACCOUNT OF THE OUTCOMES OF THE RISK ASSESSMENT AND THE HIERARCHY OF CONTROL

In this section, you will use the hierarchy of control to develop a range of options for risk control and then check those options to ensure that legislative requirements are met.

Outcomes of risk assessment

The risk assessment and development of risk controls should be an integrated process. However, for training purposes the process has been split. You should have the outcomes of the risk assessments at hand while developing the risk controls to ensure that the selected controls address the factors identified as contributing to the risk.

Hierarchy of control

The hierarchy of control was introduced in section 3.3. It combines the two concepts of ‘safe place’ and ‘control at source’ to give a tool for developing options for risk control. The hierarchy of control gives the priority order in which hazard and risk controls should be considered with the eventual outcome often being a combination of measures. The prime emphasis is on:

- elimination of the hazard;
- and where this is not practicable, minimisation of risk by:
  - substitution, and/or
  - engineering controls, including isolating the hazard from personnel;
- then, when these options have been implemented as far as is practicable:
  - administrative controls (eg, procedures; training); and
  - personal protective equipment (PPE).

This hierarchy can be presented as a triangle where the area of the triangle represents the effectiveness or reliability of the control and the area outside the triangle indicates the opportunity for the control to fail. Labels representing the safe place/safe person and control at source approaches show how the principles of control are all consistent.

The greater the risk, or the more serious the potential consequences, the more the emphasis should be on options higher in the hierarchy of control.
The ‘traffic light’ colouring is a reminder of the priority of the control option. For a task assessed as HIGH RISK:

- the use of PPE as a sole risk control, or even PPE and administrative controls is a **STOP** (not acceptable)
- engineering controls, including isolation, may be acceptable but should be used with **CAUTION** and
- elimination or substitution are the control options of choice and should be considered **GO**.

The hierarchy of control is not a fixed set of rules but a problem-solving tool to promote creative thinking when developing options for risk control. The hierarchy is represented in many forms in most hazard-specific legislation.

The most effective time to apply risk controls at the higher level of the hierarchy of control is at the design phase of a product, equipment or work process. ‘Safe design’ is a concept that is being promoted nationally.

- Go to the Safe Work Australia web site [www.ascc.gov.au](http://www.ascc.gov.au) and use the key words ‘safe design’. Review the publications and resources and select at least three publications that may be relevant to your work. Note these publications in your resource file.
Access a copy of CHAIR (NSW WorkCover, 2001) at www.workcover.nsw.gov.au

Review the CHAIR process. While this is designed for major construction projects, use the process to develop some suggestions how OHS could be considered in the ‘design’ phases of your work.

The risk controls developed by applying the hierarchy of control will be a ‘package’. Even when a high level risk control is applied there is still a need for organisational and management processes, procedures and people to support the control.

Legislation and standards

Legislative requirements for risk control are based on the hierarchy of control.

A brief comparison is given below of the risk control principles in hazard-specific legislation in two states. In each case the emphasis is on elimination, and where this is not possible sequential consideration of the options further down the list.

<table>
<thead>
<tr>
<th>Hazardous substances</th>
<th>Western Australia OSH Regulations 1996</th>
<th>Victoria OHS (Haz Subs) Regs 1999</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Prevent exposure</td>
<td>• Eliminate risk</td>
</tr>
<tr>
<td></td>
<td>• Reduce risk by means other than PPE</td>
<td>Reduce as far as is practicable by:</td>
</tr>
<tr>
<td></td>
<td>• PPE in addition to other means</td>
<td>• Substitution with less hazardous substance or form</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Isolating employees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Engineering controls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Administrative controls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PPE</td>
</tr>
<tr>
<td>Plant</td>
<td>One or a combination of:</td>
<td>OHS (Plant) Regs 1996</td>
</tr>
<tr>
<td></td>
<td>• Substitution of plant by less hazardous plant</td>
<td>• Eliminate risk by design, maintenance</td>
</tr>
<tr>
<td></td>
<td>• Modification of design of plant</td>
<td>• Substitute with plant with a lower level of risk</td>
</tr>
<tr>
<td></td>
<td>• Isolation of plant</td>
<td>• Engineering controls (with specific requirements for guarding, controls )</td>
</tr>
<tr>
<td></td>
<td>• Engineering methods to change physical characteristics of plant</td>
<td>• Isolation of people</td>
</tr>
<tr>
<td></td>
<td>• Systems of work</td>
<td>• Maintenance, inspections, tracking changes to plant</td>
</tr>
<tr>
<td></td>
<td>• Administrative controls</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PPE</td>
<td></td>
</tr>
</tbody>
</table>

What are the regulatory requirements for risk control for these hazards in your state?

Codes of practice give guidance on how to comply with the regulatory requirements.
Does your state have a code of practice for plant and for hazardous substances? If not, access a code of practice for these two hazard types from another state. Compare the level of detail given for risk controls in the code of practice with that in the legislation.

Standards give guidelines for risk control which are usually more descriptive and extensive than those in regulations. ‘Standards’ may be national standards developed by Safe Work Australia, Australian Standards or standards developed by industry bodies. Guidance information published by the OHS regulator may also be considered as ‘standards’.

Access the National Standard for Plant and the Australian Standard on machine guarding. Compare this information with that given in your state regulations and code of practice for plant.

Input from stakeholders and others

Who should be involved?

In section 3.5 it was identified that those involved in the risk assessment process should include those who:

- do the work;
- are affected by the risk;
- are knowledgeable about the hazard; and
- are knowledgeable about the risk.

This also applies when developing risk controls and so those involved in developing risk controls should include:

- stakeholders (those people or organisations who may be affected by, or perceive themselves to be affected by an activity or decision);
- key personnel (managers from related areas, people involved in decision-making or who are affected by the decision);
- technical advisers; and
- OHS advisers.

Why should they be involved?

Those who do the work, those who have technical knowledge about the work and anybody who may have a stake in the work or safety outcomes all have something to contribute and the right to be involved. Many expensive mistakes could have been avoided by including those who do the work in the development of risk controls. It is not only a practical requirement to ensure that the broadest range of options are considered and that the eventual
outcome will actually work, but there is a legal obligation to involve those who may be affected by the risk control decisions.

The checklist *People who may be involved in the development of risk controls*, which was introduced in section 1.3, is a useful tool for identifying the stakeholders, key personnel and other OHS specialists who should be involved in the development of controls.

Some people will have information that is more relevant to certain hazards. Remember there may be a number of ways that you can obtain the information. It may be informal discussion or more formal processes such as meetings, focus groups, or interviews.

Obtaining input from OHS specialists is discussed in more detail in section 4.3.

**Techniques for generating options**

Let us look at how the stakeholders and others can apply the hierarchy of control creatively to develop a range of controls.

The first step is to ‘brainstorm’ possible risk control options. This may be done in a group or by an individual. Groups with people from a broad range of backgrounds are usually better as they generate a wider range of options.

There are a few DOs and DON’Ts for brainstorming:

**DO:**
- clearly define the problem (for risk control this means identifying the hazard; if you do not get this right you will come up with the wrong controls);
- explore broadly, be enthusiastic and uncritical, have fun; and
- have some resources at hand to prompt discussion.

**Do NOT:**
- say “it can’t work” or “it’s too expensive”;
- be critical of, laugh at, or denigrate any suggestions; and
- evaluate the suggestions (this may limit the range of thinking).
Before any brainstorming session, check that the problem has not already been solved by somebody else or whether there is a solution that may be modified to suit your needs or provide a stimulus for an even better solution.

- Go to web sites such as:
  - www.ascc.gov.au
  - www.europe.osha.eu.int and search on 'practical solutions'
  - www.cdc.gov/niosh and search on 'practical solutions'
  - www.hse.gov.uk

Let us now look at a case study:

**Worker falls through skylight**

A 27–year-old refrigeration mechanic apprentice was seriously injured when he fell through a skylight.

The apprentice was in the process of installing evaporative air conditioners on the roof of a factory. He was moving about on the roof and walked onto a fibreglass skylight which broke under his weight.

The skylight had been painted over and was identical in colour to the steel corrugated roofing sheets. A person not aware of the existence of the skylight could not distinguish it from the roof.

(Worksafe Victoria)

- **What was the hazard that caused the injury to the refrigeration mechanic apprentice?**

- **What options for risk control can you generate to prevent a reoccurrence of injury from falling through fragile parts of roofing?**

You may use the hierarchy of control as a prompt during the ‘option generating’ process.
What did you come up with? How does your brainstorming compare with that below? (Remember that we have yet to evaluate the options, this is just a brainstorming list.)

*The hazard is the gravitational energy associated being on the roof (the potential to fall.)* If the apprentice was not at a height then there was no hazard.

<table>
<thead>
<tr>
<th>Possible risk control options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elimination</td>
</tr>
<tr>
<td>• No access to roof, work done on the ground.</td>
</tr>
<tr>
<td>Substitution</td>
</tr>
<tr>
<td>• No skylights or material that may degrade in roofs.</td>
</tr>
<tr>
<td>• Use an elevating platform (cherry picker) to access roof area so that there is little need to walk on the roof.</td>
</tr>
<tr>
<td>Engineering</td>
</tr>
<tr>
<td>• Defined walkways on roof where one can walk safely.</td>
</tr>
<tr>
<td>• Safety mesh installed beneath skylight to break fall.</td>
</tr>
<tr>
<td>Administration</td>
</tr>
<tr>
<td>• Skylights not painted over.</td>
</tr>
<tr>
<td>• Warning signs to indicate fragile roof.</td>
</tr>
<tr>
<td>• Training in recognising fragile roofs.</td>
</tr>
<tr>
<td>• Inspection of roof before commencing work.</td>
</tr>
<tr>
<td>PPE</td>
</tr>
<tr>
<td>• Fall arrest system.</td>
</tr>
</tbody>
</table>

Note that the largest number of options is in the administrative control category. This is often the case and it is important to review the list to stimulate ideas for options in the upper categories of the hierarchy of control.

Refer to section 1.3 of the learning guide for BSBOHS404 *Contribute to the implementation of strategies to control OHS risk* for other case studies and the brainstorming of risk controls.
4.2 IDENTIFY POTENTIAL FACTORS IMPACTING ON THE EFFECTIVENESS OF CONTROLS

What works in one organisation or work environment may not work in another. Organisational factors that may influence the effectiveness of risk controls include:

- workplace culture related to OHS;
- commitment by managers and supervisors to OHS;
- level of compliance with procedures and training;
- profile of the workforce such as cultural diversity, language, literacy and numeracy skills; and
- workplace organisational structure and geographic location, especially for remote workers or multi-site organisations.

Failure of risk controls

The failure of risk controls is usually predictable.

Risk controls fail when there is an interaction of one or more of the workplace factors to create one or more predictable causes of failure in risk control.

In section 3.3, the six predictable ways in which risk controls might fail were identified as:

- inadequate initial design;
- inadequate installation;
- incorrect usage;
- inadequate maintenance;
- changing parameters of the problem such as changes in personnel, materials, work methods; and
- authorised or unauthorised modifications to equipment or processes.
These ways in which the controls might fail are the result of deficiencies in one or more of five workplace factors:

- the organisational and management environment;
- physical environment;
- equipment;
- procedures; and
- people and human error.

Identifying such limiting factors and predictable ways in which controls might fail does not mean that a risk control option is rejected, but rather it enables actions to be put in place to address the potential problems.

In this section, you will build on sections 4.1 of this learning guide to work with a group to identify factors that may limit the effectiveness of risk controls and so inform the decision on the ‘package’ of controls and, where required, develop strategies to address these limitations.

**Impact on specific work roles**

One way of managing people’s input to identify potentially limiting factors for risk control is to seek ‘role-specific’ input.

For example, collect together the manager, finance/purchasing officer, human resources manager, maintenance officer, supervisor and heath and safety representative.

Using the preferred risk control option, each person then answers the same three questions from their perspective:

- How will this make my work easier or have a better outcome?
- How will this make my work more difficult or reduce the quality outcome?
- Do the benefits outweigh the disadvantages?

By examining the issues from a range of points of view you are now equipped to decide whether that risk control may work and the actions that have to be put in place to make it work.

You may need to do this for a range of risk control options.
For the case study in section 4.1, where the refrigeration mechanic apprentice fell through the roof, it could work like this:

**Possible risk control – Use an elevating platform to access roof area.**

<table>
<thead>
<tr>
<th>If this control is implemented:</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Possible resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager</td>
<td>May be able to take on greater variety of work with bigger units. Worksite is safer, so less liability for business.</td>
<td>Will cost money to purchase or hire equipment.</td>
<td>I would like to see a costing for hire of equipment. Information on site problems encountered that could be overcome by planning would be useful.</td>
</tr>
<tr>
<td>Engineer/works planning</td>
<td>Required planning process may assist in better planning and quoting.</td>
<td>Will require more time in planning. May not suit some jobs.</td>
<td>We could trial with a hire unit to see if a planning process can be implemented.</td>
</tr>
<tr>
<td>Supervisor</td>
<td>Work may be more efficient due to planning.</td>
<td>Jobs may take longer.</td>
<td>Happy to trial so long as there is a process for addressing risks where bucket cannot be used.</td>
</tr>
<tr>
<td>Worker</td>
<td>I will feel more secure. I will get less tired walking up &amp; down ladder.</td>
<td>Some areas may be difficult to access.</td>
<td>Happy to trial so long as there is a process for addressing risks where bucket cannot be used.</td>
</tr>
</tbody>
</table>

The contribution by a range of people has highlighted the additional information required and the associated actions to introduce the risk control.

**Creative thinking**

In his book *6 Thinking Hats*, Edward de Bono introduced the technique of ‘6 thinking hats’ to force people to go outside their habitual thinking style to look at a decision from a number of perspectives. (De Bono, 1987). The application of creative thinking to generating and evaluating OHS risk control solutions was examined by Culvenor and his thesis is interesting reading for those seeking further information ([www.culvenor.com](http://www.culvenor.com)) (Culvenor, 1997).

In a group situation, different people may take different positions or alternatively each position or ‘angle’ could be considered in turn by the group. This approach can be used on your own or in a group to structure the thinking so that a broader approach is applied. It is also a tool to promote involvement by a range of people.
A summary of this approach is outlined below.

<table>
<thead>
<tr>
<th>Thinking role</th>
<th>General description</th>
<th>Risk control application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rational, factual</td>
<td>What information do we have? Where are the gaps? Can we fill in the knowledge gaps or do we allow for them?</td>
<td>What are the legislative requirements? Are there any relevant codes of practice or standards? What are other organisations doing about the problem? What are the trends in our organisation? What other information do we have such as inspections or audits?</td>
</tr>
<tr>
<td>Emotional</td>
<td>What is the ‘gut reaction’? Will it work? Will it be well-received?</td>
<td>How will the risk control be received at management level? What will the workers think? Does it seem like more work? Will it require ‘selling’?</td>
</tr>
<tr>
<td>Pessimistic</td>
<td>What are the negatives? Why won’t it work? What are the weaknesses?</td>
<td>What if….?</td>
</tr>
<tr>
<td>Optimistic</td>
<td>What are the benefits?</td>
<td>What will/could be the OHS benefits? What could be other benefits for productivity, product quality, financial, staff morale?</td>
</tr>
<tr>
<td>Creative</td>
<td>Where do we go if we think outside the square?</td>
<td>What about…? Another way would be..?</td>
</tr>
</tbody>
</table>

The outcome from such an approach allows emotion and scepticism, as well rational thinking, to be part of the risk control decision-making and to overcome either persistent pessimism or unrealistic optimism. As a result, decisions should result in sounder, more effective risk control and include good contingency management.

### 4.3 SEEK ADVICE FROM OHS SPECIALISTS AND KEY PERSONNEL IF REQUIRED

For a risk to be tolerable, the controls in place have to:

- comply with the law;
- take account of the severity of the most probable outcome and the reliability of the controls;
- be based on currently available knowledge; and
- meet or exceed industry standards.
The only way that you can be sure that the current or proposed controls will meet these requirements is to consult technical and OHS advisers. The extent to which such specialist advice is sought will depend on the knowledge of the group developing the control options and the severity of the risk. (The greater the risk the more expert should be the advice.)

Specialist OHS advice may be obtained from persons internal to the organisation or external, such as consultants.

When seeking specialist advice it is important to evaluate the expertise and relevance of the consultant’s experience to the particular industry, the problem and the work context. It is also important to clarify how the specialist will interact with the workgroup to obtain the required information. A specialist working in isolation, without the input of the people doing the work, may well come up with erroneous evaluations and inappropriate recommendations.

In reviewing the prosecution of an occupational hygienist in the UK, Piney identified a range of common errors in hygiene analyses which combine to result in inadequate control. These errors include:

- failure to identify all exposed work groups;
- inappropriate sampling techniques;
- incorrect use of exposure standards; and
- poor understanding of the action of the hazard.

(Piney, 2002)

While this case applied to hygiene surveys, these types of errors may occur in any OHS hazard survey and subsequently result in inappropriate or inadequate control measures.

The OHS legislation for most Australian states and territories includes the requirement to “employ or engage persons suitably qualified in occupational health and safety”. In order to prevent similar situations to that in the UK prosecution, an organisation should have guidelines for obtaining OHS specialist advice. Information on engaging OHS specialist advice is available in publications such as:


- Need help on health and safety?  [www.hse.gov.uk](http://www.hse.gov.uk)
4.4 IDENTIFY AND SEEK APPROPRIATE AUTHORITY AND RELEVANT RESOURCES TO INITIATE AND MAINTAIN CONTROLS

OHS practitioners may not be in a position to authorise change or to commit resources.

The role of the OHS practitioner is to identify the appropriate level of authority within the organisation to address the risk and, where required, facilitate the 'issue resolution processes' to resolve any 'bottleneck' or difference of opinion on actions required for OHS risk management.

The OHS practitioner also needs to be able to prepare appropriate documentation to seek the required resources.

Level of authority

Health and safety representatives and health and safety committees, or other consultative processes, will usually be involved in decision-making about risk. However, it usually requires decisions by management to authorise actions and commit resources.

Making decisions about addressing risk, especially the allocation of resources is all about 'due diligence'. Spending nothing is not good enough, spending too much does not make good business sense.

This raises the question of 'responsibility' compared with 'authority' and 'accountability'. Responsibility ('the buck stops here') cannot be delegated to others. The responsible manager may delegate the authority to act while setting up accountability processes to ensure that the actions are appropriate and completed.
All levels of decision-making have their own responsibility but the responsibility is greatest at the top of the organisation, even though at this level the actual role in risk control may be limited (although of vital strategic importance). This comparison of responsibility compared with time commitment and ability to influence health and safety is shown below.

The key to deciding the level of management responsibility that should make the decision regarding risk control actions is to consider the level of management that would be held responsible if the injury or damage were to occur.

Put another way, a manager who is able to authorise expenditure up to $5,000 should not refuse a proposal for expenditure of, say, $10,000. This should be done by a manager with a level of authority which at least extends to $10,000. If this manager also refuses the expenditure, the decision should be reviewed by the manager who would be held responsible if the injury or damage occurred. Generally, the greater the injury or damage, the higher in the organisation is the manager who has to answer the questions.

The legislation in most Australian states recognises that there may sometimes be differences in opinion about the need for risk control decisions and the actions required for effective risk control, thus creating 'bottlenecks' in risk control decision-making. Hence, there are regulatory requirements addressing the need for procedures for resolution of OHS issues. Issue resolution procedures are considered as part of the consultative processes in BSBOHS501 Participate in the coordination and maintenance of a systematic approach to managing OHS.
Resources and commitment

The required resources may be:

- financial;
- personnel, including time allocation;
- equipment;
- specialised resources or advice; and
- access to other information and resources such as OHS publications, industry-specific information, OHS internet sites.

Having identified the role and level in the organisation which can authorise the resources, obtaining the resources requires:

- presenting a submission for resources in a format and style that is appropriate to the level of authority and the organisation; and
- obtaining evidence of the commitment of resources and authority to proceed.

To obtain the commitment of resources, you will usually need to submit a report justifying the expenditure. Preparing a report on risk management, especially where authorisation for change or commitment of resources is required, is not a matter of sending a quick e-mail. You need to get organised, allow time to plan, draft and review to make sure that your message is clearly and easily understood.

Written communication occurs in several stages.
Communication may break down at any stage but most commonly at the coding or decoding stages. The most common reasons for a breakdown in communication are:

- the sender and receiver do not understand each other’s words (especially where jargon is used);
- the message is blurred by too many words or irrelevant information;
- the sender does not get the receiver’s attention;
- the receiver does not know how to respond; and
- the receiver ‘blocks out’ the message because the communication arouses hostility.

These breakdowns can be compared with a radio broadcast where effective communication does not occur because of:

- weak signals;
- poor reception; and
- excessive noise (static) on the air waves.

The stages in report writing can be listed as below.

1. Determine the reason for the report.
2. Identify the recipient.
3. Decide on approach – clarify objective, identify response you need, consider the matter from the receivers’ point of view.
4. Research and collect facts.
5. Organise information.
6. Write first draft.
7. Revise draft – including have somebody else read report. (Check for sentence length, wordy expression, spelling, use of technical or jargon terms, sexist language, allocating blame or anything that may arouse hostility in the recipient.)
8. Write final draft.
4.5 IDENTIFY AND DOCUMENT ACTIONS REQUIRED TO ACHIEVE CHANGE

You have identified a range of options for risk control and examined the various options for factors that may impact on their effectiveness. You have involved stakeholders in this process and also sought specialist advice.

The next steps are to decide on the ‘package’ of options to be implemented and document the actions required.

Identify actions for change

The key points to remember when selecting the ‘package’ of risk controls are:

- Where do the individual risk controls sit on the hierarchy of control? (How close to the source of the hazard will the control operate?)
- What is the severity of the most likely outcome? (The more serious the likely outcome the more reliability is required in control.)
- What are the factors that may impact on effectiveness of controls?

GUIDELINES FOR EFFECTIVE WRITTEN COMMUNICATION

Know your reader
Who will read the report? What do they know about the problem? What do they need to know? How can the information best be provided so that they can make an informed decision?

Keep to simple language
Using fancy, big or technical words will only blur your message.

Keep the report short while still giving the information
The value of the report is not measured by its size. The more wordy the report, the more likely that the message will not be received, or will be clouded.

Do not use long rambling sentences
If a sentence has more than 17 words see if you can express it in a different way.

Present only the facts
Do not use emotive language. State the source of your facts.

Make sure your recommendations and the required actions of the reader are clearly stated
Do not leave the reader guessing as to what you want them to do.
The reality is that the trade-off between the cost of implementing the risk control and the benefit achieved will also be a factor in deciding the priority of the interventions.

The time frame for implementation is also an important factor in deciding the risk control package.

Where possible, the ‘safe place’ controls should be implemented as the first priority. But, if it will take six months to implement such changes (as in the case study in section 4.1), it is not acceptable to continue with an unsafe system of work while waiting to implement the preferred control. What actions could be taken in the short term to mitigate the risk? Short term may be a few days to few months but care should be taken that ‘short term’ measures do not become long term.

This is where we return to the hierarchy of control. Administrative controls and PPE can be implemented quickly to reduce the risk while the preferred controls further up the hierarchy are put in place. The administrative controls and PPE may then be unnecessary or may provide back-up. This relationship between time and the hierarchy of control is shown below.
Document actions for change

The risk register (refer to section 5.1) and the Job Safety Analysis are key documents for initiating change. The document that specifies the changes required is the risk control action plan.

To prepare the risk control action plan the process must be broken down into sequential steps with the actions for each step listed. The steps will cover:

- planning;
- Implementation; and
- monitoring.

While monitoring is addressed in section 6 of this learning guide, it is useful to think ahead now as to how you will monitor effectiveness and what processes need to be put in place to allow for monitoring.

A risk control action plan is not only essential for the effective and systematic introduction of risk control actions, it may also be a legal defence that you have a plan in place and are working towards a target. (Provided the target dates are appropriate considering the severity of the risk and that the target dates are being met.) Remember to compare the levels of the risk control hierarchy with the time frame when determining target dates (refer to the earlier sub-section ‘Identify action for change’).

The risk control action plan should include:

- actions required for the risk controls to be effective;
- responsibility for actions (by name AND position);
- target date for completion;
- expected outcome; and
- budgets.

You will find some suggestions on how to format a risk control action plan in some of the codes of practice and also in the Risk Management Guidelines (Standards Australia, 2004c). However, you should develop the format of your risk control action plan to suit the organisational structure and management style of the organisation.
4.6 ANALYSE EXTENT OF CHANGE AND REDUCTION IN RISK, AS A RESULT OF CONTROLS

In this section, you will identify the information required to confirm that change has actually occurred and whether there has actually been a reduction in risk.

Extent of change

The first question is: **Has the risk control action plan been implemented?** You cannot expect change if the implementation actions have not been completed.

While it is not the role of the OHS practitioner to manage change, the practitioner should monitor the implementation of change in association with the responsible manager. Risk control action plans should be updated on an ongoing basis and any actions that are delayed or ‘blocked’ should be reviewed, the reasons for the delay identified, and appropriate action recommended by the practitioner.

The second question is: **Did the planned risk controls result in change?**

The nature of the indicators routinely used to measure OHS performance in the workplace will impact on the availability of information to answer this question. Performance indicators are considered in detail in BSBOHS502 *Participate in the management of the OHS information and data systems*.

Does the organisation rely on ‘negative’ or ‘lag’ indicators of OHS performance?

Measures such as numbers or frequency of injuries or claims costs are ‘outputs’ of the OHS risk management processes. The impact of changes in risk control on such measures usually takes considerable time (or ‘lags’) behind the implementation of any improvement strategy.

Performance measures that assess how successfully a workplace is developing or improving OHS, by measuring the activities that drive or ‘lead’ the safety performance, are more responsive to change and results appear earlier in time than for the ‘lag’ or outcome measures. These lead indicators, or process drivers, are also termed ‘positive’ performance measures.
Lead indicators may be either:

- a quantitative indicator that can be counted or measured and is described numerically (for example, number of safety audits conducted); or
- a qualitative indicator that describes or assesses a quality or behaviour (such as rating of management commitment to achieving ‘best practice’ in OHS).

Where a workplace has performance measures that focus on the ‘drivers’ of OHS change and recognise achievement, it is not only easier to measure change but key personnel are motivated to achieve the change or desired actions. This reinforces a basic principle of organisational behaviour: -

“What interests my managers absolutely fascinates me!”

Favourite saying of Professor Dennis Else (formerly Chairman of National Occupational Health and Safety Commission)

Procedural changes

Where changes to procedures are part of the risk control package, you need to check that actual practices change or whether the changes are only in the documentation. In his analysis of the Longford disaster and the Glenbrook train crash, Hopkins identifies that changes in documentation may have little impact on the workplace (Hopkins, 2000, 2004a).

The Safety Behaviour Survey of the Western Australian Mining Industry (Mines Occupational Safety and Health Advisory Board, 2002) identified some interesting differences in the perceptions of managers and workers regarding compliance with procedures.

When asked to comment on certain statements, there was wide disagreement in the perceptions of managers, supervisors and the workforce:

<table>
<thead>
<tr>
<th></th>
<th>Managers disagree %</th>
<th>Supervisors disagree %</th>
<th>Workforce disagree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees take short cuts to meet production demands.</td>
<td>71.6</td>
<td>64.5</td>
<td>51.0</td>
</tr>
<tr>
<td>The work practices in my workplace are not the same as the written (safe) work procedures.</td>
<td>82.8</td>
<td>75.2</td>
<td>58.4</td>
</tr>
</tbody>
</table>

Such differences in perception should be taken into account when evaluating compliance with procedures. In your opinion, which of the groups in the survey would have the most realistic view of the level of compliance? Why?
Achieving change is often difficult. There may be resistance, and also habits are hard to break. Changes in procedures may require training. Has everybody been trained in the new procedure?

One strategy used to monitor compliance with procedures is ‘workplace sampling’. Workplace sampling involves:

- selecting a procedure;
- selecting a time period;
- observation of the work practices for the selected period; and
- recording of compliance/non compliance during the selected period.

The observations can be expressed as the percentage of non-compliant practices compared with the number of times the procedure was undertaken.

There are some important rules to follow if you undertake workplace sampling:

- The results should not identify any persons who are non-compliant, or be used for discipline purposes.
- Workers should understand the reasons for the survey and that they will not be identified.
- Workers should know that the surveys will be undertaken but not the time period.

Should an unacceptable level of non-compliance be observed, there should be clarification of whether:

- the workers were aware of the procedure;
- the workers were capable of performing the procedure;
- there were factors that prevented/discouraged the workers complying with the procedure;
- there are strategies that can be introduced to make it easier for the workers to comply with the procedure; and
- the employees had a reason for not complying with the procedure and the nature of the reason.

The follow up actions will depend on the reasons identified for non-compliance and may include:

- changes to the procedure;
- changes to the workplace or equipment;
- training;
- changes to supervisory practices; and
- counselling.
Reduction in risk

Having identified that the risk control action plan has been implemented and that change has occurred, the third question is: **Did the planned risk controls result in actual risk reduction?**

- Is the control in place?
- Are there any bottlenecks hindering implementation? Difficulties? Resistance?
- Did the risk controls actually achieve a reduction in risk?
- Has the change created any new hazards or unanticipated effects?
- What is the level of compliance with any new procedures?
- Is this reduction in risk likely to be ongoing?
- Have there been any organisational or process changes that may impact on the effectiveness of the risk controls?
- Is it possible to make further improvements to increase the reliability and effectiveness of the risk controls?
- Are there any lessons to be learnt that can be applied to other OHS risks or risk control processes?

In section 1.2 you identified and accessed sources of information within the workplace to identify hazards. You will need to revisit the workplace sources of information to obtain updated data to evaluate the effectiveness of controls in reducing risk and to identify whether any new hazards have been introduced as a result of the change.

This information, together with that for OHS performance measures and on the compliance with procedures, will enable the criteria for acceptability of risk to be applied (as in section 3.4). Remember, the controls are acceptable where:

- the law is satisfied;
- the cost of putting safeguards in place is measured against the consequences of failing to do so, not whether the employer considers they can afford the safeguards;
- controls take account of currently available knowledge and meet or exceed industry standards; and
- the people exposed to or affected by the risk feel comfortable about it.
Competency check for Element 4

Key issues for each performance criterion in Element 4 are as follows.

4.1 Develop a range of control options in consultation with stakeholders, taking account of the outcomes of the risk assessment and the hierarchy of control:

- Control options consider and, where practicable, focus on those at the higher levels of the hierarchy of control and meet legislative requirements.
- Stakeholders, key personnel and, where appropriate, OHS specialists are involved in developing risk control options.

4.2 Identify potential factors impacting on the effectiveness of controls:

- Strategies are used to systematically evaluate potential control options.

4.3 Seek advice from OHS specialists and key personnel if required:

- Circumstances where OHS specialists are required are identified.
- Processes are recommended to ensure identification of appropriate specialist advisers.

4.4 Identify and seek appropriate authority and relevant resources to initiate and maintain controls:

- Level of responsibility and accountability is considered in identifying appropriate authority.
- Resources identified include financial, personnel, equipment and specialist resources.
- Appropriate documentation is completed to obtain commitment of resources.

4.5 Identify and document actions required to achieve change:

- A range of risk control options is reviewed to determine the risk control ‘package’ including short and long term actions.
- Risk control action plan is prepared.
4.6 Analyse extent of change and reduction in risk, as a result of controls:

- Workplace information is accessed to identify whether the risk control action plan has been implemented and whether change has occurred.
- Appropriate OHS performance measures are used to evaluate the level of risk reduction.

The OHS risk management diagram can be completed as below.
Case Study 4 – Plastering

Develop and evaluate options to control risk

The following are the risk control measures recommended for this case study.

<table>
<thead>
<tr>
<th>Step in task</th>
<th>Hazard</th>
<th>Recommended risk controls</th>
<th>Potential factors that may limit effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Filling the ‘hawk’</td>
<td>Manual handling/MSD</td>
<td>Short term</td>
<td>Reinforcement to change practice.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Raise height of bucket containing jointing compound (ie, place bucket on upturned bucket).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refer integrated solution below.</td>
<td></td>
</tr>
<tr>
<td>2 Carrying the trestle</td>
<td>Manual handling/MSD</td>
<td>Short term</td>
<td>Worker acceptance, need to put down ‘hawk’ while carrying trestle.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Two-handed task.</td>
<td></td>
</tr>
<tr>
<td>3 Climbing on trestle</td>
<td>3A Falls</td>
<td>Short term</td>
<td>Depending of stability may increase risk of falls. May not be accepted by work group.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refer integrated solution below.</td>
<td></td>
</tr>
<tr>
<td>4 Hand-trowelling the ceiling</td>
<td>4A Manual handling</td>
<td>Short term</td>
<td>Minimal risk reduction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Technique &amp; task training.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term</td>
<td>Currently being ergonomically evaluated for effectiveness in risk reduction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Trowel box on long handle.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4B Falls</td>
<td>Short term</td>
<td>Low reliability as relies on worker feeling the ridge.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Attach a ridge/beading 20cm short of the end of the trestle so that proximity to edge can be felt with foot.</td>
<td></td>
</tr>
<tr>
<td>5 Climbing down from trestle</td>
<td>Falls</td>
<td>Short term</td>
<td>Worker compliance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rule of no jumping down from trestle.</td>
<td></td>
</tr>
<tr>
<td>4C Foreign bodies in eyes</td>
<td>Safety glasses</td>
<td>Perceotion that glasses may interfere with good view of joint for quality work.</td>
<td></td>
</tr>
<tr>
<td>Long term solution for overall task:</td>
<td></td>
<td>• Small mobile, elevating platform:</td>
<td>Cost.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• with side rails and good access;</td>
<td>• Overhead work still required although reach is reduced.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• that can be raised so that person is in easy reach of ceiling or walls;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• can be moved while worker is on platform;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• has location for bucket of jointing compound so that there is no bending;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• moves sideways or front/rear directions;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• moves through residential doors; and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• demountable or easy to move from site to site.</td>
<td></td>
</tr>
</tbody>
</table>
## 6 Document risk control action plan

### OHS RISK CONTROL ACTION PLAN

**Topic:** Plastering - Stopping  
**Date:** 20 April 2005

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>ACTIONS</th>
<th>COST/RESOURCES</th>
<th>PERSON RESPONSIBLE</th>
<th>TARGET DATE</th>
<th>COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Attach a beading to all trestles</td>
<td>Purchase beading and arrange for it to be fixed.</td>
<td>Minimal</td>
<td>John Smith (Supervisor)</td>
<td>26-04-05</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Provide safety glasses</td>
<td>Obtain samples of arrange of styles of safety glasses.</td>
<td></td>
<td>John Smith</td>
<td>26-04-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arrange for personal issue of preferred style of glasses for all plasterers.</td>
<td>~$100</td>
<td>John Smith</td>
<td>2-05-05</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Briefing/training for plasterers</td>
<td>Arrange training for plasterers on risk factors for falls and MSD &amp; short term controls.</td>
<td>Payment for trainer</td>
<td>Peter Kelly (Manager)</td>
<td>2-05-05</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Monitor compliance &amp; effectiveness</td>
<td>Conduct workplace observation as part of inspection &amp; supervision.</td>
<td></td>
<td>Peter Kelly &amp; John Smith</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Take action as appropriate.</td>
<td></td>
<td>Peter Kelly &amp; John Smith</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Determine whether trowel box should be used</td>
<td>Follow up current status &amp; outcomes of research project.</td>
<td></td>
<td>Peter Kelly</td>
<td>10-05-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop action plan based on findings of research.</td>
<td></td>
<td>Peter Kelly, John Smith &amp; Jim Jones (OHS rep)</td>
<td>20-05-05</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Investigate mobile elevating platform</td>
<td>Investigate mobile platforms available in the market.</td>
<td></td>
<td>Peter Kelly</td>
<td>2-05-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Talk with the Wall and Plasterboard Association.</td>
<td></td>
<td>Peter Kelly</td>
<td>10-05-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact WorkSafe for information on mobile elevating platforms and implications of making modifications.</td>
<td></td>
<td>John Smith</td>
<td>10-05-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If required, liaise with manufacturers/suppliers.</td>
<td></td>
<td>Peter Kelly</td>
<td>20-5-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop further action plan based on findings.</td>
<td></td>
<td>Peter Kelly, John Smith &amp; Jim Jones (OHS rep)</td>
<td>25-05-05</td>
<td></td>
</tr>
</tbody>
</table>
7 Monitor and evaluate risk controls

In order to monitor and evaluate the effectiveness of the controls for the plastering case study the following were defined:

- sources of information on any new hazards and the effectiveness; and
- lead, or positive, performance measures to give timely feedback on the effectiveness of the change.

<table>
<thead>
<tr>
<th>Step in task</th>
<th>Hazard</th>
<th>Recommended risk controls</th>
<th>Sources of information on change</th>
<th>Lead performance measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Filling the 'hawk'</td>
<td>Manual handling/MSD</td>
<td>Short term</td>
<td>Workplace observation.</td>
<td>% of times bucket raised so that no stooping required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Raise height of bucket containing jointing compound (ie, place bucket on upturned bucket).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term</td>
<td>Workplace observation Worker feedback.</td>
<td>Risk control action plan completed within date.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Mobile, elevating platform.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Carrying the trestle</td>
<td>Manual handling/MSD</td>
<td>Short term</td>
<td>Workplace observation.</td>
<td>% of times trestle moved when two hands used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Two handed task.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Mobile, elevating platform.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Climbing on trestle</td>
<td>3A Falls</td>
<td>Short term</td>
<td>Workplace observation.</td>
<td>% of times additional step used for stepping up to trestle.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Place a step to reduce the height of step up.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3B MSD</td>
<td>Short term</td>
<td>Workplace observation Worker feedback.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Mobile, elevating platform.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Hand-trowelling the ceiling</td>
<td>4A Manual handling</td>
<td>Short term</td>
<td>Workplace observation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Technique &amp; task training.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term</td>
<td>Industry ergonomic reports Worker reports Injury reports.</td>
<td>Risk control action plan completed within date.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Trowel box on long handle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4B Falls</td>
<td>4B Falls</td>
<td>Short term</td>
<td>Ridge attached to all trestles by target date.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Attach a ridge/beading 20cm short of the end of the trestle so that proximity to edge can be felt with foot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Mobile, elevating platform.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Climbing down from trestle</td>
<td>Falls</td>
<td>Short term</td>
<td>Workplace observation Worker feedback.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Rule of no jumping down from trestle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term</td>
<td>Workplace observation Worker reports Injury reports.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Place step to improve step down.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4C Foreign bodies in eyes

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Recommended risk controls</th>
<th>Sources of information on change</th>
<th>Lead performance measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety glasses</td>
<td>Short term</td>
<td>Workplace observation Worker feedback.</td>
<td></td>
</tr>
<tr>
<td>- Mobile, elevating platform.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

4 Hand-trowelling the ceiling

<table>
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<tr>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Activity 4

Keep a copy of this Activity for your Assessment Portfolio.

Develop and evaluate options to control risk

1 Identify the people that should be involved in developing risk controls for your tasks and determine the most practical and effective way for these people to be involved.

2 Clarify whether the people involved in the risk control have the required skills or whether additional OHS or technical input is required.

3 Having determined the group for risk control, work together to brainstorm a range of possible risk control options.

4 Evaluate the risk control options developed to ensure that they address regulatory requirements and take account of relevant standards. Note any limitations such as sole reliance on PPE. Add any further control options that should be considered.

5 Identify factors that may limit effectiveness of the controls identified. The learning guide gives some suggestions as to how this might be done. You should apply a process that suits your workplace, but you need to demonstrate that you have consulted appropriate people as part of the process.

6 Using this information, develop the recommended risk control ‘package’ for your hazards and task(s).

7 Prepare a report for the relevant manager outlining the risk control process that has been used and the recommended package of controls.
Activity 5

Keep a copy of this Activity for your Assessment Portfolio.

Prepare an OHS risk control action plan

1. Search out some examples of risk control action plans from codes of practice and other sources.

2. Prepare a risk control action plan to implement your ‘package’ of risk controls. Ensure that your action plan identifies the following:

   - short and long term actions required to achieve change;
   - persons responsible for implementation of actions; and
   - required resources including financial, personnel and equipment requirements.
Activity 6

Keep a copy of this Activity for your Assessment Portfolio.

Evaluate extent of change and reduction in risk

Assuming that the risk control action plan has been progressed, return to the hazards and task(s):

1. Identify the sources of information that will provide information on the level of change, any new hazards introduced, the level of compliance with new procedures and any other information on the effectiveness of the risk controls.

2. Recommend three ‘lead’ or ‘positive’ performance measures that could be implemented to drive the required change and facilitate evaluation of the level of implementation.

3. Undertake activities to access and analyse the required information to identify areas for further improvement in the management of risk associated with this hazard. Ensure that stakeholders and key personnel are involved in identifying the areas for improvement.

4. Prepare an update report for the relevant manager that includes an action plan to implement the identified improvements.
Element 5: MAINTAIN HAZARD IDENTIFICATION AND RISK CONTROL PROCESS

You have now carried out the core activities in OHS risk management. You have:

- identified hazards;
- assessed the hazards to identify risk factors and prioritise tasks for risk control; and
- developed a risk control 'package'.

This Element is about maintaining these processes to ensure durability and reliability of the risk management process.

In order to successfully complete this Element of the competency unit you will have to show that you have satisfied the following performance criteria:

5.1 Establish and maintain a risk register relevant to the workplace.

5.2 Document and communicate risk management procedures to stakeholders and key personnel, as appropriate.

5.3 Document and communicate outcomes of risk management processes to stakeholders and key personnel, as appropriate.

5.4 Involve stakeholders and operational staff in risk management processes.

5.5 Identify situations where OHS specialists may be required.
5.1 ESTABLISH AND MAINTAIN A RISK REGISTER RELEVANT TO THE WORKPLACE

The risk register is a key document in OHS risk management as it enables an organisation to record and track the status of hazards and risks.

Documenting a risk register was discussed in detail in the learning guide for BSBOHS403 *Identify hazards and assess OHS risks*.

A risk register is a document detailing:

- a list of hazards, their location and people exposed;
- a range of possible scenarios or circumstances under which these hazards may cause injury or damage;
- nature of injury or damage that may be caused;
- the results of the risk assessment;
- and may also include:
  - possible control measures and dates for implementation.

A risk register may be formatted to contain:

- unique record number for the hazard;
- date identified/assessed;
- location of hazard;
- who or what is exposed;
- ‘owner’ of the hazard (manager or responsible person for the area);
- description of hazard and the risk factors;
- current controls;
- conditions under which there may be loss of control of the hazard and the consequences of each situation;
- outcomes of risk assessment (risk ranking or risk score, decision regarding need for action); and
- further controls required.

Section 10 of the *Risk Management Guidelines* (Standards Australia, 2004c) gives some sample formats for a risk register. You may also choose to cross reference the risk register to the Job Safety Analysis.
Some organisations publish their risk register on an organisational intranet, others actually provide them on public web sites. Hard copy risk registers may be appropriate depending on the size of the organisation.

- Try an Internet search using the key word ‘risk register’.
- What other strategies are you aware of that organisations use to communicate information on hazards and risk assessments?

5.2 DOCUMENT AND COMMUNICATE RISK MANAGEMENT PROCEDURES TO STAKEHOLDERS AND KEY PERSONNEL, AS APPROPRIATE

The need to include stakeholders, key personnel and OHS specialists in the OHS risk management process has been highlighted in previous sections of this learning guide. A common understanding of the principles, the criteria and the process for OHS risk management is essential for such people to be involved in OHS risk management.

Thus, the process must be documented and communicated to those who have a role or a stake in the process.

Document risk management procedures

Documented procedures are essential for a common understanding of ‘how we do things around here’. However, documented procedures that make up management systems such as OHS risk management are often “….repetitive, circular and contain unnecessary cross referencing with the language being ‘impenetrable’. “ (Hopkins, 2000).

The appropriate format and approach for documentation will depend on the size and nature of the organisation and the language, literacy and information technology skills of the people who require the information.
Procedures may include, or be presented, as:

- text;
- flow charts or decision trees;
- concept maps;
- matrices or tables; and
- mnemonics (memory aids).

**Communicate risk management procedures**

For people to participate effectively in the OHS risk management process, they must be aware of the procedures and also have the knowledge and skills to contribute to the process.

Therefore, the communication processes may need to include training in the concepts of hazards and risk and the OHS management process. This training should be appropriate to the position or role in the organisation and the level of risk.

**5.3 DOCUMENT AND COMMUNICATE OUTCOMES OF RISK MANAGEMENT PROCESSES TO STAKEHOLDERS AND KEY PERSONNEL, AS APPROPRIATE**

In this section you will:

- check that you have addressed the documentation requirements for hazard identification and risk assessment activities;
- identify the people who should be provided with information on the outcomes; and
- the most appropriate format for that information.

The need to document the risk assessment was discussed in section 4.5. Maintaining a risk register was discussed in section 5.1. So the documentation of the hazard identification and risk assessment should have already been addressed.
Remember that employees and their representatives have a legal right to information on health and safety in the workplace and to be consulted during decision-making about matters that may impact on their health and safety. There is also an obligation to provide employees with any information they require in order to do their job safely.

Stakeholders may also include people outside the organisation, so external communication processes may need to be considered.

Therefore, there is a need to communicate to stakeholders and key personnel, in a readily understandable and accessible format, the outcomes of the hazard identification, risk assessment and risk control processes.

The way this is done will depend on the nature of the organisation, the employees, and communication processes and technology used by the organisation. The test is: **Do those who need the information, or who may be affected by the information, have ready access and can they understand it?**

### 5.4 INVOLVE STAKEHOLDERS AND OPERATIONAL STAFF IN RISK MANAGEMENT PROCESSES

The involvement of stakeholders, key personnel and operational staff has been highlighted in this learning guide at each stage of the risk management process. Refer to sections 1.3 and 2.6 (hazard identification), section 3.5 (risk assessment) and section 4.1 (risk control).

The checklist of who should be consulted, which was introduced in section 1.3, should also be referred to here.
5.5 IDENTIFY SITUATIONS WHERE OHS SPECIALISTS MAY BE REQUIRED

The types of OHS specialists were discussed in detail in section 1.1 and the reasons for consulting an OHS specialist, as well as the pitfalls, were reviewed in section 4.3.

Remember, when deciding whether to consult an OHS specialist you should consider:

- the complexity of the hazard;
- the level of risk (seriousness of potential consequences); and
- the knowledge of the risk management team (remember knowledge of the task does not equate to knowledge of the risk).

Competency check for Element 5

Key issues for each performance criterion in Element 5 are as follows.

5.1 Establish and maintain a risk register relevant to the workplace:

- OHS risk register includes information required to record and track hazards and risks in the organisation and the status of the risks.

5.2 Document and communicate risk management procedures to stakeholders and key personnel, as appropriate:

- OHS risk management procedures are documented in a clear, concise manner that takes account of organisational factors and needs of those who will be involved in the risk management process.
- Risk management procedures are communicated in a way that enables all participants to understand the process and effectively contribute to the outcomes.
5.3 Document and communicate outcomes of risk management processes to stakeholders and key personnel, as appropriate:

- The outcomes of OHS risk management activities are documented so that they are understandable and accessible to stakeholders, key personnel and operational staff.
- Outcomes of OHS risk management activities are communicated to stakeholders, key personnel and operational staff.

5.4 Involve stakeholders and operational staff in risk management processes:

- Individuals and groups who can make a practical contribution to the risk management process, or have a legal right to be involved, are consulted and involved.

5.5 Identify situations where OHS specialists may be required:

- Own limitations are recognised.
- Specialty areas and skills in OHS are identified.
- Reasons or circumstances where OHS specialist input is required are identified.
Case Study 5 – Plastering

Document outcomes using a risk register

A risk register has been developed for the plastering case study as an example. This is just one format and approach. The risk register may also be cross-referenced to the JSA.
## OHS Risk Register

<table>
<thead>
<tr>
<th>Record No</th>
<th>Date of entry</th>
<th>Location</th>
<th>Hazard owner/manager</th>
<th>Hazard</th>
<th>Possible injuries/damage</th>
<th>Potential scenario/conditions where injury/damage could occur</th>
<th>Risk score</th>
<th>Further action required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Manual handling/MSD</td>
<td>Shoulder; arm; wrist injury</td>
<td>• Body stress from carrying trestle with one hand.</td>
<td>Substantial risk</td>
<td>Correction required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Manual handling/MSD</td>
<td>Shoulder; neck, wrist; back injury</td>
<td>• Body stress working above head height.</td>
<td>Must do</td>
<td>Must do</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Manual handling/MSD</td>
<td>Ankle; knee injury</td>
<td>• Stress to lower limbs climbing on/off trestles.</td>
<td>Substantial risk</td>
<td>Correction required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Falls</td>
<td>Ankle; knee; hip; back injury</td>
<td>• Tripping, falling &amp; climbing on/off trestles.</td>
<td>Must do</td>
<td>Must do</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Falls</td>
<td>Ankle; knee; hip; back; head injury</td>
<td>• Stepping, falling off trestle while looking up.</td>
<td>High risk</td>
<td>Immediate correction required</td>
</tr>
</tbody>
</table>
Activity 7

Keep a copy of this Activity for your Assessment Portfolio.

Maintain a risk register

1. Access and review a range of format for risk registers. (Did you follow the suggestion to do an Internet search using the key word ‘risk register’?)

2. Review the format for a risk register in your workplace and make recommendations for improvement as required.

3. Update the risk register by entering the results of the three hazards that have been the subject of your risk management activities for the previous activities.
Activity 8

Keep a copy of this Activity for your Assessment Portfolio.

Document and review OHS risk management procedures

Access and review current documentation within your organisation that addresses how OHS risk management is to be carried out. In your review consider:

- compliance with legislation and current standards;
- language and format compared with the needs of the users (language, literacy etc) and the structure and processes within the organisation; and
- accessibility of the documentation and how the procedures are communicated to the users.

Prepare a report for the OHS committee outlining:

- the process taken for your review including the people consulted;
- your findings; and
- your recommendations for improvement.
Activity 9

Keep a copy of this Activity for your Assessment Portfolio.

Document and communicate outcomes of OHS risk management activities

Select an example of OHS risk management that has occurred in your workplace. Evaluate the documentation and communication of the outcomes of the risk management activity and prepare a report for the OHS committee giving your findings and recommendations for improvement in the process.

Ensure that your evaluation considers the following:

- Did the processes comply with the workplace procedures?
- Did stakeholders and others who had an interest understand the documentation?
- Were the communication processes effective in informing the stakeholders and others of the process and the outcomes?

Ensure that your report addresses the process and criteria for your review and evaluation.
Activity 10

Keep a copy of this Activity for your Assessment Portfolio.

Protocol for involvement of OHS specialist advisers

The OHS legislation for most Australian states requires the employer to 'employ or engage persons suitably qualified in relation to occupational health and safety to provide advice…' 

Develop a protocol for your organisation that addresses this requirement. Consider:

- the nature of hazards in your workplace;
- the organisational size, structure, location(s);
- whether internal or external resources are/should be available;
- the range and scope of such advice;
- when such advice should be sought (consider type of hazard; severity of risk etc);
- source(s) of advice and selection of the appropriate person;
- how to access such advice including approval process, etc; and
- any other factors that you consider relevant.
Element 6: MONITOR AND REVIEW RISK MANAGEMENT PROCESSES

Risk management is often represented as a three-step process of:

- hazard identification;
- risk assessment; and
- risk control.

It was noted in the Introduction that while these three steps form the core, there are two linking elements: communicate and consult, and monitor and review.

Monitoring of the effectiveness of the risk management process is not only a practical requirement but a legal obligation as the common law duty of care and OHS legislation requires that the employer “provide and maintain a safe working environment”.

In order to successfully complete this Element you will have to show that you have satisfied the following performance criteria:

6.1 Determine frequency, method and scope of review in consultation with workplace stakeholders and key personnel.

6.2 Ensure stakeholders and key personnel have input to the review.

6.3 Identify areas for improvement in the risk management processes and make recommendations.

6.4 Prepare action plans, including allocated responsibilities and timeframes for implementation.
6.5 Regularly review effectiveness of risk management processes.

### 6.1 DETERMINE FREQUENCY, METHOD AND SCOPE OF REVIEW IN CONSULTATION WITH WORKPLACE STAKEHOLDERS AND KEY PERSONNEL

Factors to be considered in the review may include:

- actual risk reduction achieved;
- adequacy of procedures;
- compliance with procedures;
- level of integration with operational business activity;
- support of senior management;
- communication with stakeholders; and
- ownership and acceptance of outcomes by stakeholders.

The review may involve:

- internal or external audits of the process;
- evaluation against pre-determined performance criteria; and
- qualitative feedback from stakeholders, key personnel and OHS and risk management advisers.

### Audits

Where an audit is used as a tool in the review it is vital that the role of the audit is clear and agreed to by all who may use or rely on its outcomes.

AS/NZS 4804 states that audits are necessary to:

“… determine whether the system (including the organisation’s policy, objectives and targets, management program, operational controls and audit program), has been properly implemented and maintained and whether the organisation has met the performance objectives set within its OHS policy.”
This definition does NOT state that it makes an assessment of the effectiveness of the OHS management (or OHS risk management) approach in controlling or minimising the risk of injury or ill-health. This difference is usually not appreciated by those who conduct the audit or rely on the outcomes of the audit. The assumption is often that a good report on the audit equals good management of OHS risk.

OHS audits are differentiated from quality-style audits by the need for:

- the auditor to possess adequate, if not advanced, knowledge of safety management and/or technology and OHS legislation;
- the auditor to formally interview a reasonable sample of people and examine workplace OHS conditions, in addition to examining documentation;
- a multidisciplinary team to cover key items; and
- all significant evidence to be considered.

(Gallagher, Underhill, & Rimmer, 2001; Waring, 1996)

**Scope**

The scope of the review should be defined at the outset. It may be that the review applies to a defined area of the organisation or an element of the OHS risk management system. On at least some occasions, the review should be broad enough in scope to address the OHS risk management implications of all activities of the organisation.

The scope should be sufficient to enable system deficiencies and root causes of deficiencies to be identified.

**Criteria**

What criteria will be used to determine the effectiveness of the OHS risk management process and to identify when improvement is required?

One of the lessons from Longford is that inadequate or inappropriate criteria and process for measurement and evaluation of the OHS (risk) management program results in complacency, with disastrous results.
Performance measures

Performance indicators are necessary to provide information on what is happening. Performance measures may be outcome-based (rate of injury) or input-based (number of workplace inspections). Outcome-based measures are also called negative or lag indicators while input measures, or process drivers, are also called positive or lead indicators.

Good performance indicators must be:

- controllable;
- measurable;
- provide reliable results when measurements are repeated over time and by different persons;
- understandable and clear to all who need to use the information; and
- accepted as true indicators of good performance.

Performance measures for the OHS risk management program need to take account of the fact that the least serious occurrences are more frequent while high consequence occurrences usually happen rarely.

The discussion about using Lost Time Injuries and Diseases (LTI/D) as an indicator of OHS/risk management performance has been queried by a number of writers, particularly Hopkins (Safe Work Australia formerly ASCC/NOHSC, 1994), (Hopkins, 1999) (Hopkins, 2000). Hopkins attributes a focus on LTI/Ds as a significant factor that diverted attention from the cumulative warning of failures at both Moura and Longford.

There has been much discussion of positive performance measures (Safe Work Australia formerly ASCC/NOHSC, 1994, 1999). However, Hopkins (Hopkins, 2000) notes that there is nothing inherently wrong with indicators of failure so long as their frequency is sufficient to indicate rates and trends.
The challenge is to identify performance measures for the OHS risk management program that are:

- applicable to the organisation and the level of risk; and
- meet the criteria of good performance measures listed above.

The performance measures for the risk management program should be defined as part of documenting the principles, criteria and process for OHS risk management (refer section 5.3.)

### 6.2 ENSURE STAKEHOLDERS AND KEY PERSONNEL HAVE INPUT TO THE REVIEW

Reviewing the effectiveness of OHS risk management processes is a management responsibility but there should be input from all areas and all levels of the organisation.

The checklist of personnel to be involved in the risk management process in section 1.2 is a useful tool here.

### 6.3 IDENTIFY AREAS FOR IMPROVEMENT IN THE RISK MANAGEMENT PROCESSES AND MAKE RECOMMENDATIONS

The processes outlined above will result in areas for improvement being identified. The next step is to document and plan for action to implement the improvements.
6.4 PREPARE ACTION PLANS, INCLUDING ALLOCATED RESPONSIBILITIES AND TIMEFRAMES FOR IMPLEMENTATION

Planning for improvement needs to be systematic. Just as you developed a risk management action for a specific risk in section 4.6, you need a documented action plan to implement improvements identified for the risk management process.

The action plan will list the required actions, the persons responsible and target time frames. To ensure implementation of the improvements, achievement against the action plan should be monitored.

6.5 REGULARLY REVIEW EFFECTIVENESS OF RISK MANAGEMENT PROCESSES

Good risk management requires evaluation of the effectiveness of the process to determine the current status or performance and identification of any areas for improvement.

The concept of continual improvement is part of any systematic approach to management. It requires ongoing evaluation of policies, objectives, targets and the achievement of management plans, together with identification of any system deficiencies and the root causes* of non-conformance.

Monitoring should be continuous and dynamic. There should be ongoing routine surveillance of outcomes compared with expected performance. This routine monitoring should be supported by periodic, focused review.
Competency check for Element 6

Key issues for each performance criterion in Element 6 are as follows.

6.1 Determine frequency, method and scope of review in consultation with workplace stakeholders and key personnel:

- Methodology of review provides valid and reliable information on the effectiveness of the OHS risk management processes.
- Performance indicators include lead and lag measures and provide valid and reliable information on the effectiveness of the OHS risk management processes.

6.2 Ensure stakeholders and key personnel have input to the review:

- Input is actively sought from stakeholders, key personnel and specialist advisers.
- Input is given due consideration in the review.

6.3 Identify areas for improvement in the risk management processes and make recommendations:

- Specific recommendations are made to address areas for improvement.

6.4 Prepare action plans, including allocated responsibilities and timeframes for implementation:

- Action plans clearly define required actions, level of responsibility and target date.

6.5 Regularly review effectiveness of risk management processes:

- Monitoring includes routine surveillance supported by periodic, focused review.
Case Study 6

Monitor and review risk management practices

Locate and review a case study that includes the monitoring and review of risk management practices.
Activity 11

Keep a copy of this Activity for your Assessment Portfolio.

Review OHS risk management processes

You organisation is planning a major review of the OHS risk management program and wants to undertake an audit as part of the review. They have asked you to prepare a document detailing how the audit should be undertaken.

You have been briefed to ensure that the audit gives a true assessment of the status and effectiveness of the risk management process. It is not to be a compliance audit against a management systems standard nor is it a quality audit.

You have some flexibility in how this document is developed but it is to address:

- scope of audit;
- performance measures or indicators (but not the development of the detailed audit tool);
- who should conduct the audit;
- who should be involved or consulted as part of the audit; and
- strategies for collecting information.

Develop this document and prepare a covering memo to your manager. The memo should introduce the document and also address any limitations or other comments on the use of the document and progressing the audit.
REFERENCES


On-line unit test questions

As a final Activity, check your understanding of applying principles of OHS risk management by answering the on-line test questions for the unit, which you can access at the SafetyLine Institute:

www.worksafe.wa.gov.au/institute

The test questions have been taken from the Readings and Resources for this unit as well as from this learning guide.

Keep a copy of your student record in your Assessment Portfolio as evidence you have correctly answered the on-line test questions. Please note that you may be further questioned about the test questions during your Assessment Interview.
Integrated project

Keep a copy of this Project for your Assessment Portfolio.

By completing the Activities, you have undertaken the actions necessary to demonstrate OHS risk management as it applies to a range of hazards.

While each Activity has to be individually identifiable for assessment purposes, you should also present them in a way that provides an integrated report for your workplace and demonstrates that you can apply the principles of OHS risk management.

This will also give you the opportunity to check that you have provided evidence that you have:

- the required knowledge and understanding; and
- the required skills and abilities, which are outlined in the Introduction to this unit.

You should ensure that you integrate evidence of the required knowledge and skills into your report.

Summative presentation

In addition to the written report, you are required to present an oral report on the OHS risk management processes that you have applied and the outcomes to a workgroup (or a simulated workgroup). You may select the format and approach that you consider is most appropriate to the workgroup, but you should take account of the Project Review Checklist that will be used to assess you.
ASSESSMENT

Assessment portfolio from learning guide

For BSBOHS504B – Apply principles of OHS risk management.

Note to participant

Any documentation provided as evidence must be prepared by you to a satisfactory standard and be in accordance with workplace procedures.

When collecting material for your assessment portfolio, please ensure that the confidentiality of colleagues, workers and other persons is protected, and block out any sensitive information. If you have any doubts regarding confidentiality issues, contact the organisation concerned.

Participant's name: _______________________________
Date: _______________________________

✓ the box when you complete an activity from the Learning Guide. Add the material from the activity to your assessment portfolio.

☐ Activity 1 Access information to identify hazards
☐ Activity 2 Analyse work environment to identify hazards
☐ Activity 3 Assess risk associated with a hazard
☐ Activity 4 Develop and evaluate options to control risk
☐ Activity 5 Prepare an OHS risk control action plan
☐ Activity 6 Evaluate extent of change and reduction in risk
☐ Activity 7 Maintain a risk register
Assessment portfolio from learning guide (cont.)

☐ Activity 8 Document and review OHS risk management procedures
☐ Activity 9 Document and communicate outcomes of OHS risk activities
☐ Activity 10 Protocol for involvement of OHS specialist advisers
☐ Activity 11 Review OHS risk management processes
☐ On-line test questions
☐ Integrated project and presentation

Note:
Attach a copy of this document to your assessment portfolio, so that your assessor can see you have completed all the activities.

Assessor’s signature: __________________________
Date: __________________________
Project review check-list

For BSBOHS504B – Apply principles of OHS risk management.

Participant's name: ____________________________
Date: _______________________________

✓ the box if the learner has completed the following:

☐ Presented a written report detailing the application of OHS risk management process for at least three hazard types.

☐ Gave a summary oral presentation to a workgroup (or a simulated workgroup), that summarised the OHS risk management process you applied and explained how the following knowledge underpins this process:

☐ Difference between hazards and risk, and risk as a measure of uncertainty.

☐ Types of hazard identification tools and their limitations.

☐ Requirements for risk assessment and risk control under hazard-specific OHS legislation and codes of practice.

☐ Risk assessment and risk ranking tools and processes and their limitations.

☐ The hierarchy of control and considerations for choosing different control measures.

☐ Standard industry controls for a range of hazards.

☐ How the composition and characteristics of the workforce may impact on the risk and risk controls.

☐ Requirements for consultation in OHS risk management.

☐ When to involve OHS specialists in the OHS risk management process.

Assessor’s Signature: ________________________________

Date: ________________________________
Third party (manager/mentor) report

For BSBOHS504B – Apply principles of OHS risk management.

Note to participant

Where possible you should have an OHS practitioner as a mentor to assist in developing your practical skills in applying your knowledge. Your manager is also an important source of feedback on your competence, although from a different perspective.

The assessor will arrange to meet with you and your mentor, coach or manager to discuss completion of the third party report. The third party report will support integrated assessment of this unit.

The mentor, coach or manager is required to provide the Assessor with any relevant information. This report will be forwarded by the Assessor to the candidate for inclusion in their assessment portfolio.

The following is provided as the basis for a checklist for you and your mentor, coach or manager. Where you have both mentor and manager, separate forms should be completed.

The checklist has been designed to reflect the performance criteria and to collect information about your demonstration of competence in the workplace. The assessor may use additional questions to address any need for supplementary evidence to support your competence.

Checklist

<table>
<thead>
<tr>
<th>Did the Candidate satisfactorily:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Access external sources of information and data to assist in identifying hazards</td>
<td>1.1 Access external sources of information and data to assist in identifying hazards?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2 Review workplace sources of information and data to access and assist in identification of hazards?</td>
<td></td>
</tr>
<tr>
<td>Did the Candidate satisfactorily:</td>
<td>Yes</td>
<td>No</td>
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<td>---------------------------------</td>
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</tr>
<tr>
<td>1.3 Seek input from stakeholders, key personnel and OHS specialists?</td>
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<tr>
<td>1.4 Conduct formal and informal research to ensure currency with workplace issues?</td>
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</tbody>
</table>

Comments:

<table>
<thead>
<tr>
<th>2. Analyse the work environment to identify hazards</th>
<th>2.1 Define, document and communicate occasions when hazard identification is required?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.2 Source tools to assist in the analysis of identified hazards?</td>
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<tr>
<td></td>
<td>2.3 Examine task demands and the task environment for impact on the person, to identify situations with a potential for injury or ill health?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4 Examine workforce structure, organisation of work and work relationships to identify situations with a potential for injury or ill health?</td>
<td></td>
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<tr>
<td></td>
<td>2.5 Examine the work environment for agents with a potential for injury or ill health?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.6 Seek input from stakeholders to clarify and confirm issues?</td>
<td></td>
</tr>
</tbody>
</table>

Comments:
<table>
<thead>
<tr>
<th>Did the Candidate satisfactorily:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3. Assess risk associated with a hazard</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Identify factors contributing to risk?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Identify current risk controls for each hazard?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3 Evaluate adequacy of current controls (if any) taking account of relevant standards and knowledge?</td>
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<td></td>
</tr>
<tr>
<td>3.4 Identify discrepancies between current controls and required quality of control?</td>
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</tr>
<tr>
<td>3.5 Prioritise hazards requiring further control?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6 Document the method and outcomes of risk assessment</td>
<td></td>
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</tr>
</tbody>
</table>

**Comments:**

<p>| <strong>4. Control risk associated with a hazard</strong> | | |
| 4.1 Develop a range of control options in consultation with stakeholders, taking account of the outcomes of the risk assessment and the hierarchy of control? | | |
| 4.2 Identify potential factors impacting on the effectiveness of controls? | | |
| 4.3 Seek advice from OHS specialists and key personnel, if required? | | |
| 4.4 Identify and seek appropriate authority and relevant resources to initiate and maintain controls? | | |
| 4.5 Identify and document actions required to achieve change? | | |</p>
<table>
<thead>
<tr>
<th>Did the Candidate satisfactorily:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6 Analyse the extent of change and reduction in risk as a result of controls?</td>
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</tbody>
</table>

Comments:

**5. Maintain hazard identification and risk control processes**

| 5.1 Establish and maintain a risk register relevant to the workplace? |     |    |
| 5.2 Document and communicate risk management procedures to stakeholders and key personnel, as appropriate? |     |    |
| 5.3 Document and communicate the outcomes of risk management processes to stakeholders and key personnel, as appropriate? |     |    |
| 5.4 Involve stakeholders and operational staff in the risk management processes? |     |    |
| 5.5 Identify situations where OHS specialists may be required? |     |    |

Comments:

**6. Monitor and review risk management processes**

| 6.1 Determine frequency, method and scope of review in consultation with workplace stakeholders and key personnel? |     |    |
| 6.2 Ensure stakeholders and key personnel have input to the review? |     |    |
| 6.3 Identify areas for improvement in the risk management process, and make recommendations? |     |    |
Did the Candidate satisfactorily: | Yes | No |
---|---|---|
6.4 Prepare action plans, including allocated responsibilities and time frames, for implementation? |  | |
6.5 Review regularly the effectiveness of the risk management process? |  | |

Comments:

Comments: further comments by assessor (if required)

Keep a record of the following:

Name of person completing checklist: 

Background/experience in topic (if any) 

Date: 

Relationship to person being assessed (tick)

☐ Mentor/coach for _______ Months

☐ Manager for _______ Months

Other _______ Months (explain) 

Team Manager/Mentor’s Signature: 

Assessor’s Signature: 

Date: 

Keep a record of the following:
## Skills checklist

For BSBOHS504B – Apply principles of OHS risk management.

<table>
<thead>
<tr>
<th>Candidate’s name</th>
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<tbody>
<tr>
<td>Assessor’s name</td>
<td></td>
</tr>
<tr>
<td>Work activity</td>
<td>OHS risk management</td>
</tr>
<tr>
<td>Unit of competency</td>
<td>BSBOHS504B – Apply principles of risk management</td>
</tr>
<tr>
<td>Location</td>
<td></td>
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</tbody>
</table>

**Instructions:**
The candidate undertakes OHS risk management (may be simulated).

During OHS risk management did the candidate demonstrate or provide evidence of the following abilities:

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage own tasks within a time frame?</td>
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<tr>
<td>Undertake basic research, including application of basic computer and information technology skills, to access internal and external sources of information and data on OHS?</td>
<td></td>
</tr>
<tr>
<td>Analyse relevant OHS information and data, and make observations of workplace tasks and interactions between people, their activities, equipment, environment and systems in order to carry out OHS risk management activities?</td>
<td></td>
</tr>
<tr>
<td>Interpret information and data, including the use of simple arithmetic calculations and graphical techniques, to identify areas for improvement?</td>
<td></td>
</tr>
<tr>
<td>Employ consultation and negotiation skills, particularly in relation to developing action plans and implementing and monitoring designated actions?</td>
<td></td>
</tr>
<tr>
<td>Contribute to the assessment of resources needed for effective OHS risk management and, where appropriate, access the resources?</td>
<td></td>
</tr>
</tbody>
</table>
During the investigation of incidents did the candidate demonstrate or provide evidence of the following abilities:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Prepare reports for a range of target groups including a safety and health committee, safety and health representatives, managers and supervisors, using language and literacy skills appropriate to the task?</td>
<td></td>
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</tr>
<tr>
<td>- Communicate effectively with personnel at all levels of the organisation, and with OHS and other specialists?</td>
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<td></td>
</tr>
<tr>
<td>- Relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities?</td>
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<tr>
<td>- Provide advice to others in the workplace and explain specialist advice that has been obtained?</td>
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</tbody>
</table>

The candidate's overall performance met the standard:  

Yes | No

Comments/observations:

Assessor's signature

Candidate's signature

Date of assessment
Interview questions

For BSBOHS504B – Apply principles of OHS risk management.

Note to participant

The questions listed below cover the performance criteria for this unit and support your required knowledge and skills. The assessor can add to or modify these questions to suit the particular context.

<table>
<thead>
<tr>
<th>Candidate’s name</th>
<th>Assessor’s name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work activity</td>
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</tr>
<tr>
<td>Unit of competency</td>
<td>BSBOHS504B - Apply principles of risk management</td>
</tr>
<tr>
<td>Location</td>
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</tbody>
</table>

Instructions:

The candidate is required to provide verbal answers (using examples where possible) to the following questions that will be asked by the assessor. It is suggested that the interview should be a ‘conversation’. The interviewer should be prepared to insert their own questions to explore weaknesses or other issues that arise during the ‘conversation’.

Did the candidate satisfactorily answer the following questions:

<table>
<thead>
<tr>
<th>Number</th>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In your workplace, have you been involved in hazard identification?</td>
<td></td>
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<tr>
<td></td>
<td>Did you find any information outside the workplace that assisted in identifying the hazards? What were the sources of this information?</td>
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<tr>
<td></td>
<td>What sources of data from inside the workplace were used in identifying hazards?</td>
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<tr>
<td></td>
<td>Who did you talk to as part of the hazard identification?</td>
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<td></td>
<td>Did you have any problems getting access to the information? How did you overcome these problems?</td>
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<tr>
<td></td>
<td>Have there been changes, either external to the workplace or within the workplace, which might impact on the hazards or the hazard identification process?</td>
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<tr>
<td></td>
<td>How did you identify these changes?</td>
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<tr>
<td>2</td>
<td>What are some examples of when hazard identification should be conducted?</td>
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</tr>
<tr>
<td>Did the candidate satisfactorily answer the following questions:</td>
<td>Yes</td>
<td>No</td>
<td></td>
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<tr>
<td>---------------------------------------------------------------</td>
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<td></td>
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<tr>
<td>3 What tools and techniques did you use for the risk assessment?</td>
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<tr>
<td>• Did you have difficulty accessing suitable hazard identification tools? How did you choose which tool/s to use?</td>
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</tr>
<tr>
<td>4 In your workplace, have you been involved in the process of risk assessment?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Who was involved in the risk assessment?</td>
<td></td>
<td></td>
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<tr>
<td>• Who else could have been involved?</td>
<td></td>
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<tr>
<td>• What tools did you use to for the risk assessment?</td>
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<tr>
<td>• Did these tools adequately address aspects of the task demands, task environment, workforce structure, organisation of work and work relationships?</td>
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<tr>
<td>• Did you need to modify the tools? How were they modified? Who was involved in the modification?</td>
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<tr>
<td>• How did you prioritise the risks you found?</td>
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<tr>
<td>• How were the findings used?</td>
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<tr>
<td>5 Where and how were the outcomes of the risk assessment recorded?</td>
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<tr>
<td>6 Have you been involved in the process of controlling hazards in the workplace?</td>
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<tr>
<td>• Who did you talk to about potential control methods for the hazard?</td>
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<tr>
<td>• What legislation did you look at when developing control options?</td>
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<tr>
<td>• How did you prioritise the suggested control options or decide on the final control 'package'?</td>
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<tr>
<td>• Where on the hierarchy of controls did these controls sit?</td>
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<tr>
<td>• Were you involved in identifying the required resources and budget?</td>
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<tr>
<td>• Who in the workplace approved the controls to be implemented? Did you encounter any resistance is gaining approval? How was the resistance overcome?</td>
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<td>• Were you satisfied with the change process in implementing the controls? Would you do anything differently next time or make different recommendations?</td>
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<td>7 How did you ensure that the controls were working?</td>
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<tr>
<td>• What data in the workplace did you look at to help you decide if the controls were working?</td>
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<tr>
<td>Did the candidate satisfactorily answer the following questions:</td>
<td>Yes</td>
<td>No</td>
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<td>8 What did you learn during the process?</td>
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<tr>
<td>• Did you encounter any problems in applying the OHS risk management process? How did you overcome these problems?</td>
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<tr>
<td>• Were OHS specialists involved in the OHS risk management process? How was it decided either to involve, or not involve, OHS specialists?</td>
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<tr>
<td>• What were the key points that you learned?</td>
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<td>• What would you differently next time?</td>
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The candidate's required knowledge was satisfactory:

Notes/Comments:

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