Electrotechnology
Work Health and Safety

Learner Workbook
Version 1

Training and Education Support
Industry Skills Unit
Meadowbank

Product Code: 5747
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## Risk Assessment Terminology

<table>
<thead>
<tr>
<th>Letter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D</strong></td>
<td>Direct</td>
<td>This means the personal supervision of a learner, at all times, on a direct and constant basis, within visual contact and/or earshot. Constant basis refers to the continuous supervision of tasks being performed for the first time and until skill is demonstrated for the complexity of the task and work environment.</td>
</tr>
<tr>
<td><strong>G</strong></td>
<td>General</td>
<td>This means the learner does not require constant attendance of the supervisor but requires personal contact with an experienced worker on a recurrent basis when working. Periodic supervision means being under instruction and direction for tasks being performed with checks and tests being made prior to the commissioning of apparatus/equipment.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Broad</td>
<td>This means the learner does not require constant supervision but requires personal contact with an experienced worker on at least a regular/occasional basis when working. Occasional supervision means instruction and direction with checks being carried out on completion of multi-tasks.</td>
</tr>
</tbody>
</table>

### Risk Classes:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Risk Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>High Risk</td>
<td>Potential death or permanent disablement.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Medium Risk</td>
<td>Potential serious injury/illness and temporary disablement.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Low risk</td>
<td>Potential minor injury, no lost time.</td>
</tr>
</tbody>
</table>
Introduction

This learner workbook contains learning exercises and review questions. It is intended to help students learn and is not a textbook. Your class teacher will advise you regarding which resources you are required to use to support this learner workbook.

References

- http://www.thelaw.tas.gov.au
- Guide to the model work health and safety act accessed 27/11/12
Section 1: Basic Legal Requirements of WHS

Purpose:
In this section you will learn about relevant legislation and government guidelines relating to the implementation and monitoring of Work Health and Safety (WHS).

Objectives
At the end of this section you should be able to:
• outline the principles of Work Health and Safety (WHS)
• list the aims and objectives of the relevant state or territory legislation relating to WHS
• detail the responsibilities of the employer and the employee with regard to their rights and obligations
• describe the functions of safety committees and representatives.
Workplace Health and Safety

Work Health and Safety (WHS) is the current terminology used to replace the traditionally used term “Occupational Health and Safety” (OHS). Ultimately Work Health and Safety is about eliminating or reducing the risk of injury, illness or death in the workplace.


The primary responsibility of Safe Work Australia is to improve work health and safety for workers and workers compensation arrangements across Australia.

Safe work Australia is an Australian Government statutory agency established in 2009 and represents a partnership between unions, industry and governments all working together to reduce injury, disease and deaths in the workplace.

The commonwealth states and territories have the responsibility for regulating and enforcing work health and safety laws in their control. Safe Work Australia is not the regulator of work health and safety however their role is to create national policy.

Safe Work Australia has developed a model act in conjunction with industry. The commonwealth, states and territories have committed to implement the new work health and safety laws from the 1st of January 2012. Safe work Australia’s role will be to monitor and assess the national work health and safety framework.

The employer is now referred to as the person conducting a business or undertaking (PCBU). The PCBU should be aware that the new model work health and safety act has some key differences from previous occupational health and safety laws. Some of the differences are:

- The employer has the primary duty of care in the workplace.
- Introduction of a proactive approach to safety activities.
- Duty of care can apply to multiple people at the same time.
- A requirement for all people to consult with others.
- An employer will be known as a person conducting a business or undertaking.
- More than one person can be the responsible officer.
- Visitors and workers have a similar duty of care towards their own and others’ safety.
The Commonwealth and each State and Territory in Australia has a Work Health and Safety Act. Underpinning the Act are regulations which are legally binding detailed lists of instructions or requirements.

A Code of Practice is a set of guidelines which includes obligations under the Work Health and Safety Act. For example, in NSW, Work Cover publish a Code of Practice for Low Voltage Electrical Work. A code of practice may be thought of as an industry best practice guide as it provides details on how to identify hazards and manage risks while meeting the requirements of the WHS Act.

Standards Australia is an independent body that develops national uniform standards. The Wiring Rules (AS/NZS 3000) for example sets out the minimum requirements for the design, construction and verification of electrical installations with the intention to protect persons, livestock and property from electric shock, fire and physical injury from an electrical installation that is used with reasonable care and with due regard to the intended purpose of the electrical installation.

Each state and territory has authorities to administer Work Health and Safety Acts.
**Student Activity**
Investigate the authority in your state or territory responsible for administering the Work Health and Safety Act and detail the powers given to Work Health and Safety Inspectors.

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

**Penalties**

Non-compliance with the Work health and Safety Act or Regulations can incur a significant financial penalty. Inspectors can issue Provisional Improvement Notices and fines to the Person Conducting a Business or Undertaking.

There are 3 categories of offence related to WHS. The maximum penalties vary depending on the category of offence and whether the offence is an individual or a body corporate.

Category 1 – a duty holder, without reasonable excuse, engages in conduct that recklessly exposes a person to a risk of death or serious injury or illness.

Category 2 – A duty holder fails to comply with a health and safety duty that exposes a person to risk of death or serious injury or illness.

Category 3 – a duty holder fails to comply with a health and safety duty.

<table>
<thead>
<tr>
<th></th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual as worker</td>
<td>$300,000, five years jail or both.</td>
<td>$150,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>or other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual as PCBU</td>
<td>$600,000, five years jail or both.</td>
<td>$300,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>or officer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporation</td>
<td>$3,000,000</td>
<td>$1,500,000</td>
<td>$500,000</td>
</tr>
</tbody>
</table>

In addition to imposing penalties courts may impose alternative remedies.

Source: Guide to the model work health and safety act accessed 27/11/12
WHS Consultation

WorkCover NSW has released a publication to provide guidance to persons conducting a business or undertaking. The document assists them with meeting their duty of care obligations. The document may be accessed on the following link.


Student Activity

Using the publications above, answer the following questions:

1. When does a person conducting a business or undertaking need to consult with workers?

2. When and how should the opportunity to express your views and contribute to Work Health and Safety be made to the worker?
   A) Outside of normal business hours so that customers of the business are not affected and the employer does not have to pay you for lost production time
   B) Every morning via a toolbox talk and before work commences
   C) At a suitable time during work hours allowing time for opinions regarding Work Health and Safety to be discussed and providing different ways to provide feedback such as emails, text messaging, suggestion boxes, etc.
   D) After an accident has occurred so the workers can ensure it doesn’t happen again.

3. Is it acceptable for an employer to make changes that may affect your Work Health and Safety without consulting with you first? (e.g. a change from day shift to afternoon shift, restructuring the business or purchasing new substances or equipment).
A worker who carries out work for a business or undertaking may ask for the election of one or more health and safety representatives. If the request is made, the person conducting the business or undertaking must make allowance for the request.

The work group is responsible for determining by negotiation an agreement between the person conducting the business or undertaking and the workers who will form the work group or their representatives. Negotiations between the business and the work group must commence within 14 days of the request. Penalties in excess of $2000 for individuals and $10000 for body corporates may be applied should negotiations not commence.

**Student Activity**

Complete the consultation process for the following situation:

<table>
<thead>
<tr>
<th>Consultation in a Workplace Without Health and Safety Representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case Study</strong></td>
</tr>
<tr>
<td><strong>When to Consult</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Who to Consult</strong></td>
</tr>
<tr>
<td><strong>How to Consult</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Review Questions
These questions will help you revise what you have learnt in Section 1.

1. What are the eight main aims of the WHS Act?

___________________________________________________________
___________________________________________________________
___________________________________________________________
___________________________________________________________
___________________________________________________________
___________________________________________________________
___________________________________________________________
___________________________________________________________

2. When must a person conducting a business or undertaking make allowance for a work health and safety representative?
   A) When the workplace has 5 or more employees
   B) When a request is made by workers for the allowance of one or more representatives
   C) There is no requirement to make allowances for work health and safety representatives
   D) If the workplace is deemed to be a hazardous worksite.

3. What is the primary responsibility of Safe Work Australia?

______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

4. If one or more work health and safety representatives have been appointed, do they have the responsibility of ensuring the health and safety of workers?

______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
5. Who has the prime responsibility for work health and safety in the workplace?

______________________________________________________________

______________________________________________________________

______________________________________________________________

6. Can employees be retrenched for making a complaint?

______________________________________________________________

______________________________________________________________

______________________________________________________________

7. If an employer wants to purchase a new type of insulation tester, they should:
   A) buy the insulation testers because they look newer than the existing insulation testers being used
   B) shop around to see if they can buy a cheaper insulation tester
   C) confirm they have the correct category and voltage rating for their intended use
   D) consult with workers and or the nominated Work Health and Safety representatives prior to the purchase.

8. Have all states and territories conformed to the national model Work Health and Safety laws?

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________
9. Code of practice documents are the:
   A) minimum requirements to legally meet the suggested industry best practice guidelines and comply with the WHS Act
   B) maximum control measures that can be used to control risks and hazards in the workplace
   C) suggested guidelines that the worker can choose to follow if they wish
   D) Industry best practice rules.

10. Self-employed people are:
    A) exempt from the WHS act
    B) expected to employ people so a WHS representative can be nominated
    C) expected to ensure the health and safety of visitors to their workplace
    D) allowed to apply for exemption from complying with the WHS Act.
Section 2: The Work Environment

Purpose:
In this section you will learn about features of the work environment that relate to Work Health and Safety.

Objectives
At the end of this section you should be able to:

- list typical hazards associated with electrotechnology work environments
- identify the principles of risk assessment and control measures associated with these hazards
- identify hazards in relation to poor housekeeping
- state the hierarchy of WHS hazard control measures
- select the correct personal protective equipment (PPE) for given hazardous situations
- complete documentation for risk assessment
- identify common workplace safety signs
- outline the principles for effectively dealing with a workplace emergency that poses a threat to health and safety
- state suitable procedures for an emergency workplace evacuation
- select appropriate fire extinguishers for given types of fire
- describe the basic process of fire fighting
- create a Standard Work Procedures document.
The Work Environment

The textbook that has been recommended by your teacher includes a comprehensive description of risk assessment and hazard identification. It is recommended that you read the relevant text prior to completing this section.

The worksite for an electrical worker provides for a diverse range of workplaces including air conditioned offices, industrial factories, small and large scale construction sites, underground mining installations and others.

The electrical worker often works in a range of working environments therefore it is essential that the worker is familiar with assessing and identifying hazards and risks.

Electrical workers must become very good at identifying hazards, assessing risks and recording the risks and chosen control methods.

Risk assessment is a four step process:

1. Identify hazards.
2. Assess the risks.
3. Remove or control the risks.
4. Monitor and review the process.

**Student Activity**

Visit [www.youngworkers.com.au](http://www.youngworkers.com.au) select the “visit safety zone” link and play the “hazard a guess” game, completing the “slips, trips and falls” category.
**Student Activity**

Use the following risk assessment matrix to complete the inspection list for a workplace you have visited in the last seven days. The checklist has been designed to help you begin to identify the hazards that may affect your work health and safety.

**Risk Assessment Matrix**

<table>
<thead>
<tr>
<th>Possibility of this happening</th>
<th>Trivial Effect</th>
<th>Slight Effect</th>
<th>Reasonable Effect</th>
<th>Major Effect</th>
<th>Devastating Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will happen</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Will most likely happen</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>May happen</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Should not happen</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Highly unlikely to happen</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

**Risk Classes:**

<table>
<thead>
<tr>
<th>A</th>
<th>High Risk</th>
<th>Potential death or permanent disablement.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Medium Risk</td>
<td>Potential serious injury/illness and temporary disablement.</td>
</tr>
<tr>
<td>C</td>
<td>Low risk</td>
<td>Potential minor injury, no lost time.</td>
</tr>
</tbody>
</table>
Think about the workplace which you have chosen and consider the risk that may have been present. Decide on the likelihood that this site may have an effect on your health and safety.

<table>
<thead>
<tr>
<th><strong>Electrical Worker Checklist</strong></th>
<th><strong>Yes or No</strong></th>
<th><strong>Risk Class</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you previously been to this site?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were there any major risks associated with this worksite?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was the worksite clean and tidy with no obstacles?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had it rained or was the ground slippery/ wet?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are products kept with ease of access in mind?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was it dangerous to carry equipment around the worksite?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you have a form of communication in case of an accident?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you have mobile phone reception?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were there other people onsite?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you need to use power tools or extension leads?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you inspect the existing electrical installation work before commencing work?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you need to work at heights?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could you identify the most suitable type of access equipment required?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you need a permit/training to use the identified equipment?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was there sufficient light to complete the task?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If artificial light was used did you have a standby lighting source?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was there excessive glare?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were there facilities to dispose of excess material?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you know where the amenities were?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were hazardous materials required or stored on site?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was asbestos present?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was the temperature in the extremes (hot/cold)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Student Activity**

Ladder and EWP identification – in consultation with your colleagues complete the missing information for each ladder type shown below.

<table>
<thead>
<tr>
<th>Type: 2.1 m domestic step ladder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction: Aluminium</td>
</tr>
<tr>
<td>Load Rating: 100 kg</td>
</tr>
<tr>
<td>Suitable for electrical work: ...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type: ...........................................</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction: Fibreglass</td>
</tr>
<tr>
<td>Load rating: 125 kg</td>
</tr>
<tr>
<td>Suitable for electrical work: ...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type: ...........................................</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction: ................................</td>
</tr>
<tr>
<td>Load rating: 125 kg</td>
</tr>
<tr>
<td>Suitable for electrical work: Yes, both short and long term.</td>
</tr>
</tbody>
</table>
Fall arrest systems are only effective if workers wear them and use them in the manner intended. They are PPE designed only to be used as a last resort after all possibilities of removing the hazard have been exhausted. Some of the common components of a fall arrest system are:

- Lifelines
- Shock absorbing lanyard
- Karabiners
- Harness
- Snap hooks.

**Student Activity**

Identify the common components associated with an individual fall arrest system by drawing a line between the description and the actual component.
**Student Activity**

Complete the confined space checklist for this workplace.

**Single entry point**  
**Workplace in the ceiling**

<table>
<thead>
<tr>
<th>Part A</th>
<th>Yes or No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the space enclosed or partially enclosed?</td>
<td></td>
</tr>
<tr>
<td>Is the space a place not designed to be occupied?</td>
<td></td>
</tr>
<tr>
<td>Is the space designed or intended to be at normal atmospheric pressure?</td>
<td></td>
</tr>
</tbody>
</table>

**Part B**

| Is there a risk of unsafe oxygen levels?                              |           |
| Is there a risk of engulfment in the event of a fire?                 |           |
| Are flammable or harmful contaminants likely to be present?          |           |

**Is this a confined space?**  
Yes / No