



Introduction to Risk Assessments, PPE & SOPs

Unit A: Fitting and Machining
Lesson 2.1

MODULE 2 OVERVIEW

Lesson	Focus	Goal
2.1	Risk, PPE & SOPs	Understand how safety works and its importance
2.2	Workshop Tour & Safety Zones	Identify safe areas, signage, and emergency gear
2.3	Hazard ID & Risk Matrix	Assess risk and choose effective controls
2.4	Tool ID & Peer Teaching	Match tools with name and safe handling
2.5	WHS Quiz & Logbook Practice	Prove your safety knowledge and record procedures
2.6	Housekeeping & Waste Management	Learn how to clean up safely and prevent hazards

ACTIVITIES

- 2.1 Safety Quiz
- 2.2 Workshop Induction Sign-Off + Tour and Safety Worksheet
- 2.3 Hazard ID & Risk Matrix Worksheet
- 2.4 Tool ID & Safety Station Rotations
- 2.5 WHS Quiz (Assessment)
- 2.6 Housekeeping Station Rotations

RESOURCES

- Worksheets
- Risk Assessments
- SOPs
- PPEs
- Tools & Materials

LESSON OVERVIEW

What You'll Learn
Why WHS is important
What is Risk Assessment & Management
Understanding Safety Signs
PPE (Personal Protective Equipment)
SOPs (Safe vs Standard Operating Procedures)
Your safety responsibilities
Applying safety practices in Unit A
Essential workshop rules (preview)
Safety Quiz
Next Lesson: workshop Tour & Safety Sign-off
Helpful resources

ACTIVITIES

Safety Quiz

RESOURCES

- Worksheet
- SOPs
- PPEs examples

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The Act applies to all persons conducting a business or undertaking (PCBU), workers, and others at the workplace. Importantly, duties are non-transferable – everyone is accountable.

- **Everyone has the right to be safe** – safety is a legal & ethical obligation under the WHS Act.
- **Prevention is better than cure** – accidents cause harm, disruption, and extra cost
- **Engineering workplaces demand it** – safety is a core part of industry standards
- **It supports your learning** – aligns with safe operation expectations in the QCAA syllabus

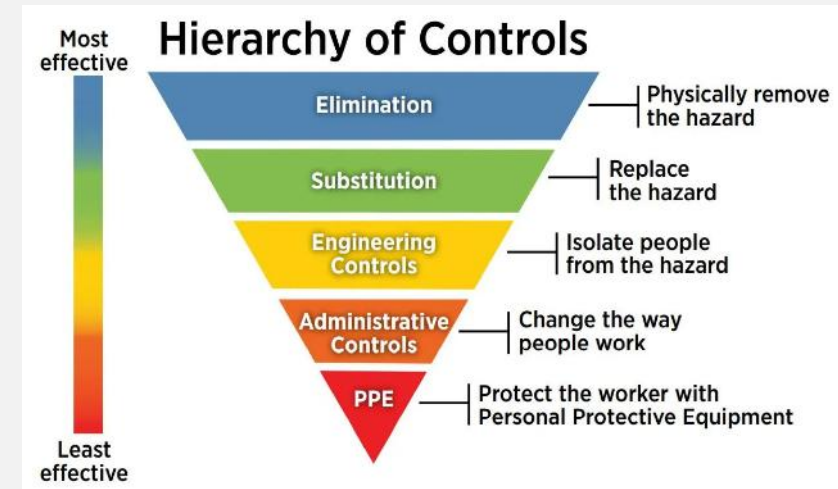
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Risk Assessment & Management

- **Risk Assessment:** A process for identifying hazards and evaluating risks.
- **Risk Management:** Broader process that includes **risk assessment** and implementing control measures to reduce risk.
- **Three key steps:**
 1. **Spot the Hazard:** What could cause harm?
 2. **Assess the Risk:** How likely and how serious?
 3. **Control the Risk:** What can be done to minimise risk?
- **Assess the risk using a Risk Matrix:**
 - **Likelihood:** How likely is the hazard to happen?
 - **Consequence:** How serious would the result be?
 - These two factors are used to rate the **risk level**.
- **Hierarchy of Controls:** Elimination → Substitution → Engineering Controls → Administrative Controls → PPE
- **Focus of Lesson 2.3** (Hazard ID & Risk Matrix)

3 x 3 Risk Matrix

LIKELIHOOD	Likely	Medium Risk	High Risk	Extreme Risk
	Possible	Low Risk	Medium Risk	High Risk
	Unlikely	Low Risk	Low Risk	Medium Risk
		Minor	Moderate	Major
		CONSEQUENCES		



Risk Assessment & Management

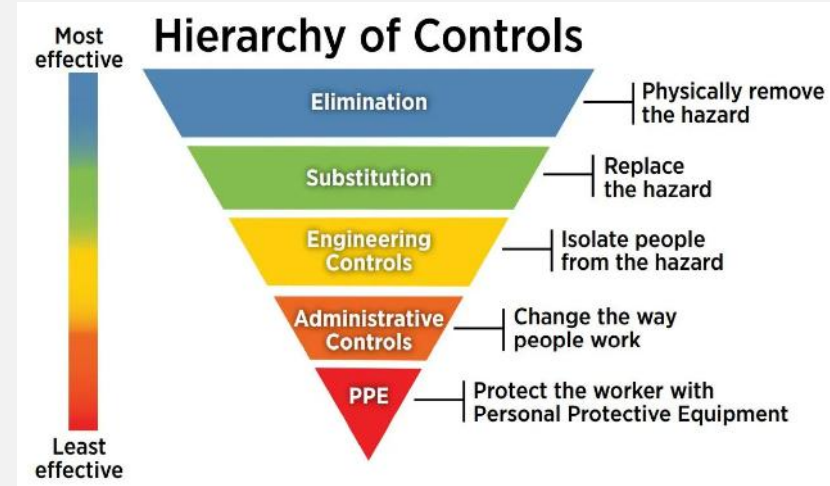
Example: Cluttered Workshop



- **Hazard example:** poor housekeeping – tools, offcuts, and cables left scattered across benches and floors can lead to slips, trips, and falls.
- **Risk =** Chance of injury due to poor housekeeping
 - **Likelihood: Likely** – clutter is common in busy workshops and often overlooked during task transitions
 - **Consequence: Moderate to Major** – injuries may range from minor cuts and bruises to serious harm if a fall occurs near operating machinery
 - **Risk Level: High – Extreme Risk**

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Risk Assessment & Management

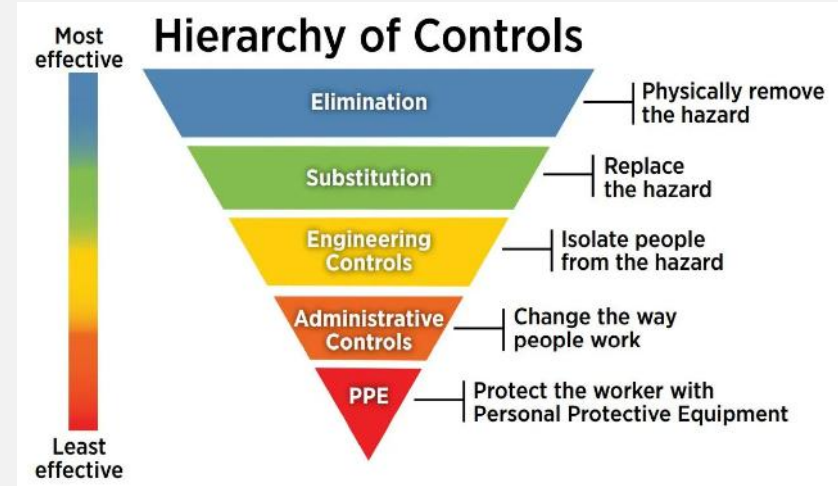
Example: Cluttered Workshop



- **Example Risk Controls:**
 - Use designated tool return zones (Engineering Control)
 - Enforce “clean-as-you-go” procedures (Administrative Control)
 - Apply SOPs that include workshop housekeeping as a critical step (Administrative Control)
- **Implementing additional controls further reduces the overall risk.**

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Understanding Workshop Safety Signs

- **Purpose:** Safety signs are used to communicate important information that helps prevent accidents, guide safe behaviour, and identify hazards in the workshop.
- Recognising safety signs is essential before operating any equipment.



Understanding Workshop Safety Signs

Types of Safety Signs (AS 1319 Standard)

Sign Type	Shape & Colour	Purpose	Example
Mandatory	Blue circle with white symbol	Tells you what you must do	Wear eye protection
Prohibition	Red circle with slash	Tells you what you must not do	No entry / No smoking
Warning	Yellow triangle with black border	Warns of potential hazards	Sharp tools / Hot surface
Danger	Red oval in black rectangle	Warns of life-threatening hazards	High voltage / Moving machinery
Emergency Info	Green rectangle with white symbol	Shows emergency exits or equipment	First aid / Emergency shower
Fire Safety	Red rectangle with white symbol	Identifies fire equipment	Fire extinguisher / Fire hose



Spot these signs during next lesson's workshop tour – they're key to safety!

Personal Protective Equipment (PPE)

- **Definition:** PPE is clothing or gear worn to protect against hazards and reduce the risk of injury.
- **Common types of PPE in workshops:**
 - Safety glasses (always) 
 - Gloves (only in approved scenarios) 
 - Steel-capped boots 
 - Face shields or masks (e.g. for grinding, cutting or fumes) 
 - Hearing protection (e.g. when using grinders or cutting metals) 
- **Note:** PPE is considered the **last line of defense**. It works best when combined with other safety controls like machine guards, proper training, and safe operating procedures.

Mini Activity: PPE-Hazard Matching

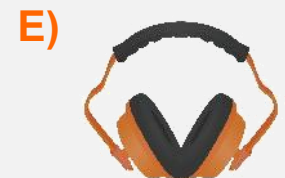
1) Protect against inhaling dust or fumes

2) Protect ears when noise levels exceeds safe limits

3) Protect eyes from flying debris

4) Protect feet from falling heavy tools and materials

5) Protect hands when handling sharp or rough materials.



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- A) 
- B) 
- C) 
- D) 
- E) 

Personal Protective Equipment (PPE)

PPE	When	Why It Is Required
 Safety glasses	Anytime you are in the workshop	Protects eyes from chips, dust, sparks and flying bits
 Steel-capped boots	Always in the workshop	Shields feet from dropped tools, heavy stock, or rolling equipment
 Gloves	When handling sharp materials or cleaning (not while using rotating tools/machinery)	Keeps hands safe from cuts, heat, chemicals and grime
 Hearing Protection	When machines are loud and noisy	Prevents long-term hearing damage from high decibel levels
 Mask	During grinding, sanding, spraying or dusty tasks	Stops you from breathing in dangerous dust or fumes



Safe vs Standard Operating Procedures (SOPs)

Understanding the difference for engineering practice

- A **Safe Operating Procedure (SOP)** is a clear set of steps that shows how to do a task safely, especially when using tools or machines. It helps prevent accidents by explaining hazards, safety gear, and emergency actions.
- A **Standard Operating Procedure (SOP)** is a written guide that explains how to use a task the same way every time to ensure quality, efficiency, and consistency – often used in workplaces.

Same acronym. Similar structure. Different focus.



Safe vs Standard Operating Procedures

Understanding the difference for engineering practice

- Both shorten to **SOP**, and look alike because they both:
 - Use **step-by-step instructions**
 - Include **safety information**
 - Help people do tasks properly
- But they are used in **different places** and **different reasons**:
 - Safe Operating Procedures** are used in **schools** to focus on **safety first**
 - Standard Operating Procedures** are used in **workplaces** to focus on **doing the job the same way every time**

*In school, we focus on staying safe. In the workplace, SOPs help ensure safety **and** get the job done right.*



Safe vs Standard Operating Procedures

Shared Components of Safe and Standard Operating Procedures

Component	Why It Is Included in Both
Title & Purpose	Clearly states what the procedure is for and why it matters
Step-by-step Instructions	Guides the user through the task in a clear, logical order
Required Equipment	Lists tools or materials needed to complete the task
Roles & Responsibilities	Explains who should do what – helps with accountability
Safety Precautions	Highlights risks and how to avoid them (especially in Safe OPs)
PPE Required	Lists personal safety gear needed to protect users during the task
Training Required	States who is allowed to perform the task and what they must know
Review & Approved Info	Shows who created or approved the procedure and when



Safe Operating Procedures (SOPs)

Example:

Drill Press SOP template ([Equipment and machinery resources](#))

[Replace with local area's SOP to make it relevant for the students]

Key steps:

- **PPE** – wear correct gear
- **Pre-Use Checks** – e.g. inspect tool or equipment for damage
- **Operating** – follow the instructions
- **Clean-up** – clean the tool or equipment after finishing

Fixed and static plant	Safe operating procedures	Drill Press		
Only use this machine if you have been given instructions on how to use it safely and have been given permission				
 EYE AND HEARING PROTECTION MUST BE WORN	 LOOSE HAIR MUST BE SECURED	 PROTECTIVE FOOTWEAR MUST BE WORN		
 WARNING Entanglement Hazard! Do not operate with loose clothing, long exposed hair or jewellery.				
 NO GLOVES WHILE OPERATING MACHINE				
Respiratory protective equipment PLACEHOLDER Insert required RPE signage or delete				
Replace this with your school's SOP to make it more relevant for the students				
Housekeeping ☐ Switch off the drill press ☐ Clean guard of all dust and spent material ☐ Leave the machine in a safe, clean and tidy state				
Potential Hazards <table border="0"> <tr> <td> ⚠ Entanglement in rotating spindle or drill ⚠ Flying swarf or chips ⚠ Debris or chips may become airborne </td> <td> ⚠ Eye injuries ⚠ Sharp edges and burrs ⚠ Hot surfaces or drill bits </td> </tr> </table>			⚠ Entanglement in rotating spindle or drill ⚠ Flying swarf or chips ⚠ Debris or chips may become airborne	⚠ Eye injuries ⚠ Sharp edges and burrs ⚠ Hot surfaces or drill bits
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Date of Review: ____/____/____ March 2025 V6 Reviewed By: _____				
Next Review: _____				
Queensland Government				

Student Responsibilities

As a learner in a practical workshop:

- **Follow all instructions** precisely at all times
- **Stay alert** – look after yourself and others
- Only use equipment after being **trained and signed off**
- **Report all incidents** or unsafe behaviour immediately
- Keep benches **clean** and tools returned
- **Be respectful** – tools, space, people

You are responsible for your own safety – and the safety of others.



WHS in Practice - Unit A

- Link to assessments: Unit A tasks involve **measuring, marking out, cutting, drilling, turning, filing, tapping, and assembling**
- Each task has potential risks – **rotating machinery, sharp tools, swarf, and noise** - so safety must be planned
- Projects will require you to:
 - **Plan** – assess hazards, check machine setup, and prepare tools and materials
 - **Use PPE correctly** - safety glasses, hearing protection, gloves, steel-capped boots, and fitted clothing
 - **Choose the right tool for the job** – lathe, drill press, hand tools, measuring instruments, and vices
 - **Reflection on what went well – and what could be safer** – improve technique, accuracy, and safety awareness

This is where learning gets real – on the tools, safely and confidently.





Before You Use Any Equipment

You must first:

1. Complete the **General Workshop Safety Induction**
2. Complete the **equipment-specific safety training and induction**
3. Pass any required **quiz, test, or safety checklist**
4. Show correct use of **PPE and safe practices**
5. Get **signed off by your teacher** as ready to use equipment safely

⊘ NEVER use any equipment on your own unless your teacher has given you permission.



Essential Workshop Rules (Preview)

Before we enter the workshop next lesson:

- Enter only when supervised
- Wear correct PPE at all times
- No distractions – no phones or horseplay
- No jewellery and loose clothing
- Long hair tied back
- Know where the emergency stop buttons/levers are located
- Report damage, faults, or spills immediately
- Use tools and machines **only** after being trained and approved
- Always clean your area before leaving

Next lesson, we'll do a full tour and talk through the complete set of rules in action.



Safety Quiz

- **Purpose:** Test your understanding of SOPs and safe behaviour in the workshop.
- **Quiz Includes:**
 - **Scenario questions** - What's the safest choice before using a machine?
 - **Step ordering** – Can you sequence the correct SOP steps?
 - **PPE & hazards** – Know how to act when safety is at risk
 - **Reflection** – Why are these steps important?
- **Duration:** 20min



IT'S QUIZ
TIME!

What Happens Next - Workshop Tour & Safety Sign-Off

In our next lesson, you'll complete your workshop induction. This includes:

- A guided tour of the workshop so you know where everything is
- Identifying emergency exits, assembly point, first aid kit, and fire extinguisher
- Finding where PPE is stored
- Noticing important signs, safety zones, and tool return areas
- Learning how we clean up, store equipment, and maintain a safe workspace
- Completing a Workshop Safety Checklist to confirm your understanding

You'll need to complete this induction before participating in any hands-on work.



What You Learned Today

- ✓ What **hazard** and **risk** mean in the workshop
- ✓ How safety signs help keep everyone informed and protected
- ✓ How to identify common types of PPE (and when to use them)
- ✓ Safe vs Standard Operating Procedures



Resources & References

- QCAA Engineering Skills Syllabus: [Engineering Skills 2024 v1.2: Applied senior syllabus](#)
- WHS Australia: www.safeworkaustralia.gov.au
- Provided:
 - Workshop SOPs
 - Risk Assessment templates

