Portable power tools: General metal: Industrial Technology

In Industrial Technology 7–10 (Metal) you will encounter and use a number of elementary tools. These tools must be used in a safe and responsible manner.

This material addresses aspects of the following syllabus outcomes:

4.1.1 A student identifies and applies fundamental OH&S principles when working with materials tools and machines.

5.1.1 A student identifies, assesses and manages the risks and OH&S issues associated with the use of a range of materials, hand tools, machine tools and processes.

5.1.2 A student applies OH&S practices to hand tools, machine tools, equipment and processes.

Portable power tools

There are many portable power tools that may be encountered in school metal workshops and these tools are very useful if they are used in the correct manner. These tools are also quite dangerous if they are not used in a safe and responsible way.

Some of the portable power tools include:

- jig saws
- angle grinders
- nibblers
- hand drills
- soldering irons.

These portable power tools all have an electric motor or transformer and there is usually a necessity for an electrical power lead and a plug. The exception is for rechargeable power tools that are powered by a battery and do not require a power lead and a plug when in use.

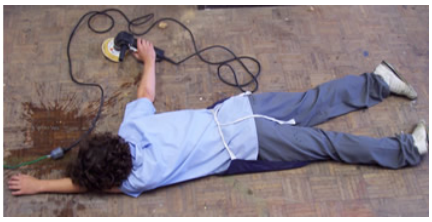
General guidelines for the safe use of portable power tools

There are some safety issues that must be considered when operating any portable power tools. These include the following:

- Check the electrical lead carefully for any cuts or exposed wires. Report any faulty equipment to your teacher.
- Do not remove any guards.
- Always cut away from your body and be aware of the risks to others nearby.

- Always wear appropriate personal protective equipment when operating these tools.
- Do not make any adjustments to cutting bits or guards whilst the power tool is plugged in.
- Make sure your job is securely held and will not move in the process of using your portable power tool.
- Be aware of the location of your power lead, it should not be a trip hazard for other people.
- Keep power leads clear of anything that could cut or damage the lead. For example, cutting bits or blades.
- Always keep leads away from direct heat or hot materials.
- Be aware of the area affected by waste material. This is particularly important when grinding.
- Never use your power tool in areas where water and electricity can come into contact. This can be a deadly mix!

This situation is unsafe, note the trip hazard, unclamped material, power lead wrapped around moving part and the clutter.



Activity 1

Read the guidelines above and then answer the following questions related to the safe use of portable power tools.

1. Why should you unplug an angle grinder before changing the cutting/grinding disk?

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2. You have been asked by your teacher, Mrs Mettallica, to grind off the sharp edges on your metal project before painting. Mrs Mettallica has asked you to implement all of the safety checks and then call her over to your work area for a final check before grinding. List the checks that you need to make before you gain permission to grind.

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Activity 2: Risk assessment

Complete the following table by identifying the risks involved in the following situations.

Practical task: Drilling into sheet metal with a portable drill.	
Identified risk:	**Control measures**:
Practical task: Cutting sheet metal with a nibbler.	
Identified risk:	**Control measures**:
Practical task: Removing burrs with an angle grinder.	
Identified risk:	**Control measures**:
Practical task: Cutting a curve in 3 mm flat mild steel with a jigsaw.	
Identified risk:	**Control measure**:
Practical task: Soldering two pieces of tin plate together.	
Identified risk:	**Control measure**: