

Unit R110 – Preparing and planning for manufacture

Safe working and personal protective equipment (PPE)

Instructions and answers for teachers

These instructions should accompany the OCR resource ‘Safe working and personal protective equipment’ activity which supports OCR Cambridge Nationals in Engineering.

OCR Engineering Level 1/2

Unit R110 – Preparing and planning for manufacture

Safe Working and Personal Protective Equipment

Task 1:

When working with tools and equipment it is important to work safely. Hazards are things that can cause injury or damage, while a risk is what might be caused by a hazard. An example of this is a bare electrical wire (the hazard) where the risk is electrocution or an electrical fire. Risks can be reduced by taking precautions, or by the use of suitable personal protective equipment (PPE).

Look at the table below and for each of the activities identify the possible hazards, the associated risks and how these risks might be reduced (including the use of PPE).

Tool or Machine	Hazards	Risks	Risk Reduction/ PPE
Filing 			
Drilling 			

The Activity:

This resource comprises of 1 task.



This activity offers an opportunity for English skills development.



This activity offers an opportunity for maths skills development.

Associated materials:

‘Safe working and personal protective equipment’ activity sheet

Suggested timings:

Task 1: 1 hour

Learning Outcome 2: Be able to use processes, tools and equipment safely to make a pre-production product

Task 1:

In this activity learners are asked to consider the hazards, risks and risk reduction (possibly through the use of PPE) when using a range of hand and machine tools typically used when making a pre-production product. The teacher might wish to substitute or add to the tools and machines shown in the context of the equipment available in the learners setting.




The teacher might begin by explaining the difference between hazard and risk as an introduction to the task, and discussing how risks might be reduced (including through the use of suitable PPE).



The activity might be extended into a full risk assessment where probability and severity are also considered against each risk.

The activity might be undertaken individually, in pairs or in groups.

The solution below identifies some typical hazards, risks and suggests risk reduction however teachers and learners may identify further correct items.

Tool or Machine	Hazards	Risks	Risk Reduction/ PPE
<p>Filing</p> 	<p>Sharp metal filings produced</p> <p>Work piece movement</p>	<p>Metal filings in eye, clothing or feet</p> <p>Injury to hand</p>	<p>Wear PPE – goggles, boiler suit, safety shoes</p> <p>Use vice to hold work piece securely</p>

Tool or Machine	Hazards	Risks	Risk Reduction/ PPE
<p>Sawing</p> 	<p>Sharp edge – saw teeth</p> <p>Work piece movement</p>	<p>Injury to hand or body</p> <p>Injury to hand or body</p>	<p>Wear suitable clothing (no short sleeves)</p> <p>Use vice to hold work piece securely</p>
<p>Vernier Caliper (measuring)</p> 	<p>Tight closing measuring jaws</p>	<p>Pinching to fingers or body</p>	<p>Wear suitable workshop clothing</p> <p>Keeps hands/fingers away from closing jaws</p>
<p>Drilling</p> 	<p>Rotating drill chuck</p> <p>Use of electricity</p>	<p>Trapping of hair or fingers</p> <p>Electric shock</p>	<p>Tie back long hair.</p> <p>Use guarding as appropriate</p> <p>Ensure drill has been safety checked.</p> <p>Visually check electric wiring</p>

Tool or Machine	Hazards	Risks	Risk Reduction/ PPE
<p>Turning</p> 	<p>Rotating work piece</p> <p>Metal swarf produced</p> <p>Use of electricity</p>	<p>Trapping of hair, clothing or fingers</p> <p>Metal swarf in eye, clothing or feet</p> <p>Electric shock</p>	<p>Tie back long hair.</p> <p>Secure loose clothing.</p> <p>Use guarding as appropriate</p> <p>Wear PPE – goggles, boiler suit, safety shoes</p> <p>Ensure lathe has been safety checked.</p> <p>Visually check electric wiring</p>
<p>Milling</p> 	<p>Rotating tool</p> <p>Metal swarf produced</p> <p>Use of electricity</p>	<p>Trapping of hair, clothing or fingers</p> <p>Metal swarf in eye, clothing or feet</p> <p>Electric shock</p>	<p>Tie back long hair.</p> <p>Secure loose clothing.</p> <p>Use guarding as appropriate</p> <p>Wear PPE – goggles, boiler suit, safety shoes</p> <p>Ensure milling machine has been safety checked.</p> <p>Visually check electric wiring</p>

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