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# Mechanical Workshop

## Module 1: Basic Workshop Safety

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**IAT Curriculum Unit**

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# Module 1: Basic workshop safety

## Module Objectives

After the completion of this module, student should be able to:

1. Dress safely for the workshop.
2. Behave safely in the workshop.
3. Recognize the importance of keeping the workshop clean and tidy.
4. Demonstrate an awareness of the workshop safety rules written in the safety contract.

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## 1.1. Introduction to workshop safety

A workshop is where you learn to use tools and machines to make things; It can be a dangerous place, so you must learn the safety rules for the workshop.

The safety rules tell you how to dress appropriately and how to behave whilst working with tools that may cause harm.

You must never play in the workshop, run around or throw equipment to one another.

## 1.2. Personal safety:

**The basic dress rules that you should always follow are:**

### 1. Proper clothing.

You must not wear loose clothes that can be caught in moving machinery. You must wear tight fitting overalls as shown in Fig.1.1.

### 2. Proper eye protection.

You must always wear goggles to protect your eyes while you are working in the workshop. A safety goggles is shown in Fig.1.2



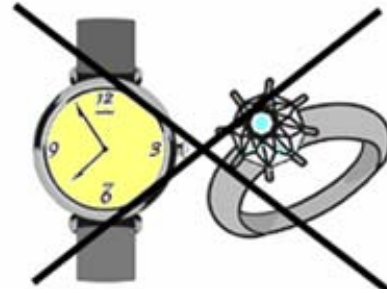
**Fig. 1.1:** Correct dress in the workshop.



**Fig. 1.2:** Safety goggles

### 3. Remove tie and jewelry.

Ties, watches, rings and other jewelers increase the chance of getting caught by moving machinery. You must remove them before entering the workshop. See Fig. 1.3.



**Fig. 1.3:** No watches and jewelers inside the workplace.

### 4. Cut or secure long hair.

Long hair is also dangerous as it may be caught by the machine and pulls you into it.

### 5. Proper shoes.

You must not wear sandals or soft shoe inside the workshop as they will not protect your feet from falling objects. A safety shoes (steel-toe shoes) will protect your feet if you accidentally drop something. A safety shoe is shown in Fig.1.4.



**Fig. 1.4:**Shows a safety shoe

The way you dress in the workshop is very important for your safety, always be sure to wear properly and encourage your friends to do the same.

**Activity 1:**

Find out FIVE mistakes in the safety dress shown in Fig.1.5?

1. -----
2. -----
3. -----
4. -----
5. -----



**Fig 1.5:** shows an unsafe dress

**Activity 2:**

Spot FIVE differences between the right and wrong dress shown in Fig. 1.6?

1. -----
2. -----
3. -----
4. -----
5. -----



**Right and Safe dress**

**Wrong and dangerous dress**

**Fig 1.6:** Correct and incorrect dress in the workshop

### 1.3. Use of tools

You will learn to use many tools and machines in the workshop. Always ask for your teacher's advice before using a machine for the first time. You must listen to the teacher when he tells you how to use them safely. Fig.1.7 shows some tools that are used in the workshop.



**Hacksaw**



**Hand File**



**Vernier caliper**



**Hammer**



**Drilling machine**



**Bench grinder**

**Fig 1.7:** Shows some tools that are used in the workshop

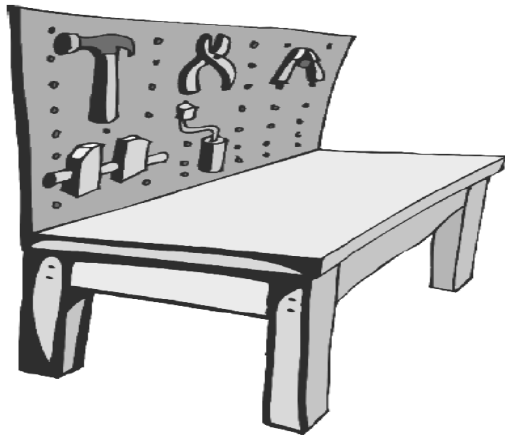
### 1.4. Workshop cleanliness

It is very important to keep the workshop clean and tidy. This will help save time and prevent accidents. When you have finished using tools, they must be put away and kept in the proper place as shown in Fig.1.8. **Do not leave tools lying around the benches or workshop; accidents may occur.**

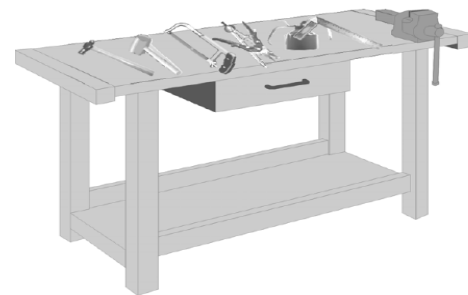


**Fig.1.8:** Shows how tools are kept in their proper place

A tidy workbench is shown in Fig1.9, while Fig.1.10 shows an untidy workbench where all the tools laying on the bench



**Fig. 1.9:** Shows a tidy workbench



**Fig. 1.10:** Shows an untidy workbench





### 1.5 Fire precautions

Fire is a great danger in a workshop and care must be taken not to start a fire.

The main causes of fire are:

- Careless storage of flammable materials;
- Careless electrical maintenance;
- People throwing away cigarettes.

**1.5.1 Classification of fire classes according to the US system**

Class of Extinguisher	Class Symbols	Materials to Use On
<b>Class A</b>		Ordinary Combustibles: paper, wood, cloth, rubber, many plastic.
<b>Class B</b>		Flammable Liquids: oil, grease, petrol, some paints, solvents, etc.
<b>Class C</b>		Electrical: wiring, DB boards.  Electrical equipment.
<b>Class D</b>		Combustible Metals: magnesium, sodium.

**1.5.2 Fire extinguisher color coding pre 1997.**

The color of the fire extinguisher indicates what type it is:

Water (Fig 1.11a)

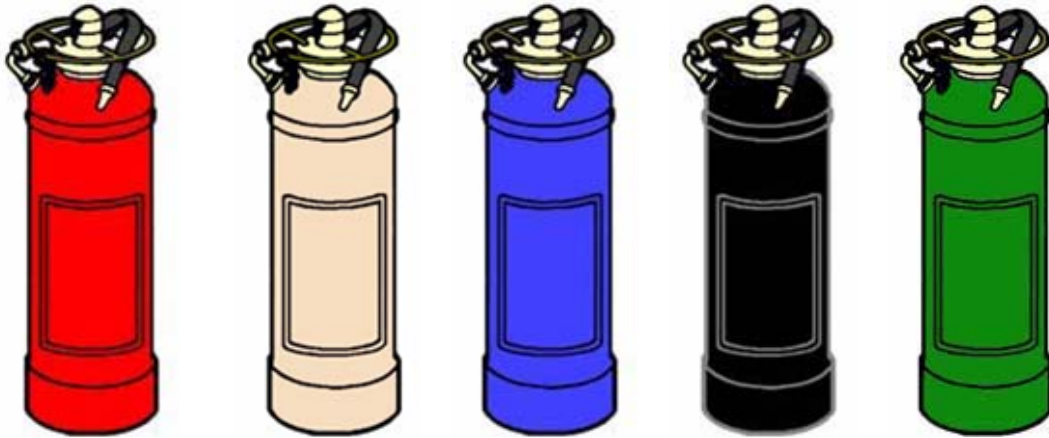
Foam (Fig 1.11b)

Powder (Fig 1.11c)

Co2 (Fig 1.11d)

Vaporizing Liquid (Fig 1.11e).





(Fig 1.11-a) (Fig 1.11b) (Fig 1.11-c) (Fig 1.11-d) (Fig 1.11-e)

### 1.5.3 New color coding of fire extinguishers used in Europe

New rules for fire extinguishers used in Europe have come into effect. The fire extinguishers used above, are being replaced with the ones below. All fire extinguishers are red in colour, with a coloured band indicating what type they are. Some examples are shown below.



Fig.1.12

### 1.6. Safety contract

1. You must read and sign the safety contract on the next page.
2. The safety contract says that you understand that safety is your responsibility.
3. The safety contract must be signed before you carry out any work in the workshop and if you don't observe and obey the safety rules, you will not be allowed in the workshop.

## SAFETY CONTRACT

### I RECOGNIZE THAT:

1. Safety is my responsibility when using a tool.
2. Safety regulations have been provided to me.
3. The possibility of accident and injury increases if I do not follow all the safety guidelines.
4. I must act responsibly to ensure my own safety AND the safety of others in the work area.

### I AGREE TO:

1. Never work in the shop without my teacher supervision.
2. Read and practice all the safety regulations that have been distributed to me in this course or have been posted in the work areas.
3. Act in a responsible manner at all times in the workshop.
4. Follow all instructions given by the teacher.
5. Immediately report any unsafe condition or activity to my teacher.
6. Wear eye protection at all times when working with tools or working anywhere near someone who is using tools.
7. Cut or Tie back long hair, remove jewelry, secure loosed clothing, and wear safety shoes in the Workshop.
8. Clean all work areas and put equipment away before leaving the workshop.

I, \_\_\_\_\_, have read and agree with all the safety instructions.

**Student signature** \_\_\_\_\_ **Section**\_\_\_\_\_

**Date**\_\_\_\_\_ **Student ID**\_\_\_\_\_

**Student's notes**

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Worksheet

1. What type of clothing and footwear should be worn in the workshop?

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2. What type of safety equipment should ALWAYS be worn when working on the workshop?

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3. If you do not know how to use tools or equipment, whom should you ask?

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4. Why is it important to keep the workshop clean and tidy?

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5. Why is it important that you should read and understand the safety contract?

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