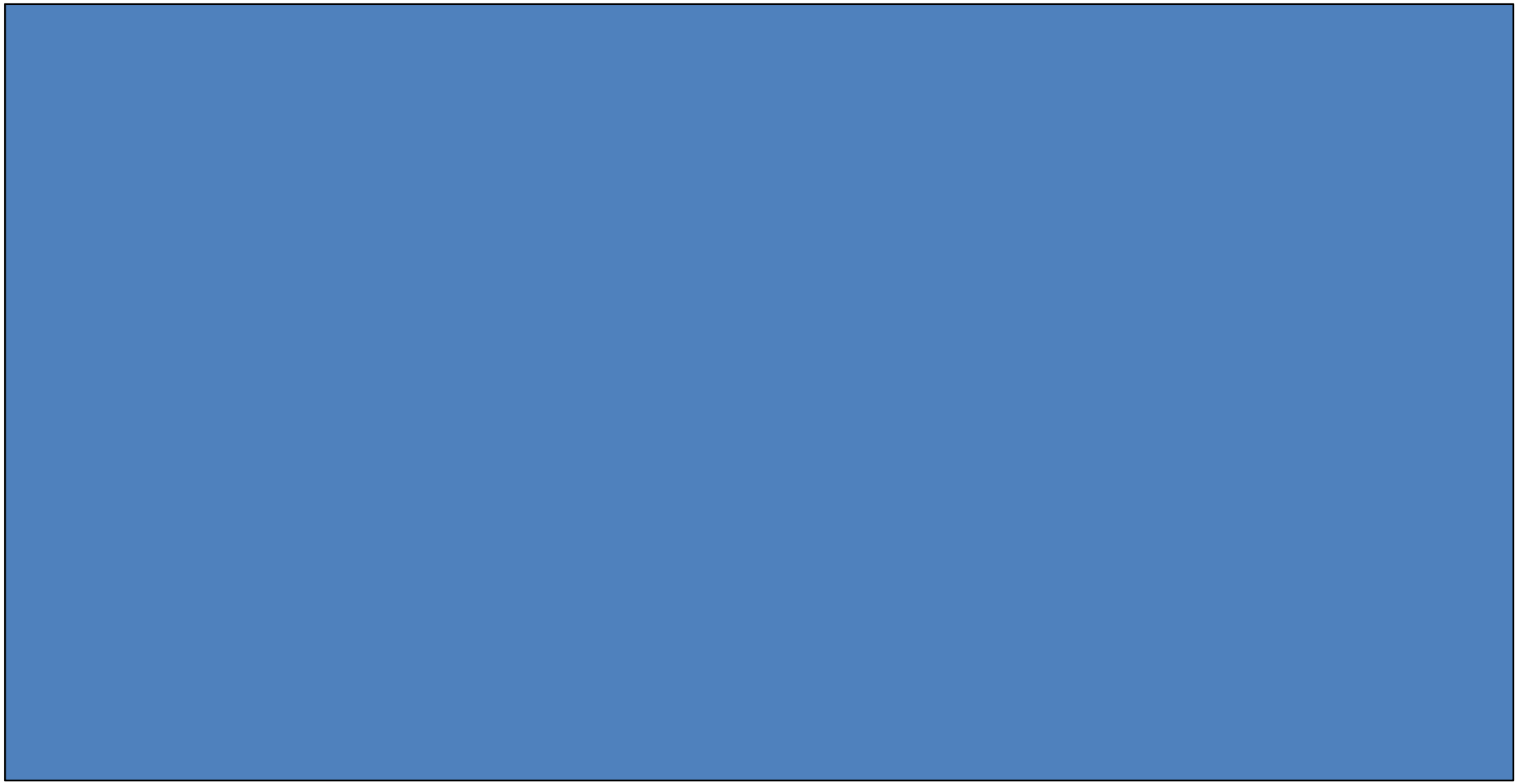
SAFETY OF HAND AND PORTABLE POWER TOOLS

Safety and Health Officer Certificate Programme

Session/LessonPlans



OBJECTIVES

- State the definition of hand and portable power tools
- Identify the statutory requirements related to the use of hand and portable power tools
- List 10 hazards associated with the use of hand and portable power tools
- List 11 safety measures that should be taken in the use of hand and portable power tools use
- State 3 selection criteria for hand and portable power tools

SCOPE

- Definition
- Statutory requirements
- Types of equipment/tools
- Hazards and accidents related to use of equipment/tools
- Selection of tools (the criteria)
- Safety measures during use of tools
- Conclusion

DEFINITION

Hand tools

Tools that require the use of human energy to manually start, work or coordinate it with work materials

DEFINITION

Power tools

Tools that require the use of other forces of energy to start, work or coordinate it with work materials

STATUTORY REQUIREMENTS

- Factories and Machinery (Building Operations and Works of Engineering Construction) (Safety) Regulations 1986;
  - Part XVI- Hand and Power Tools

- Occupational Safety and Health Act 1994 (OSHA 1994);

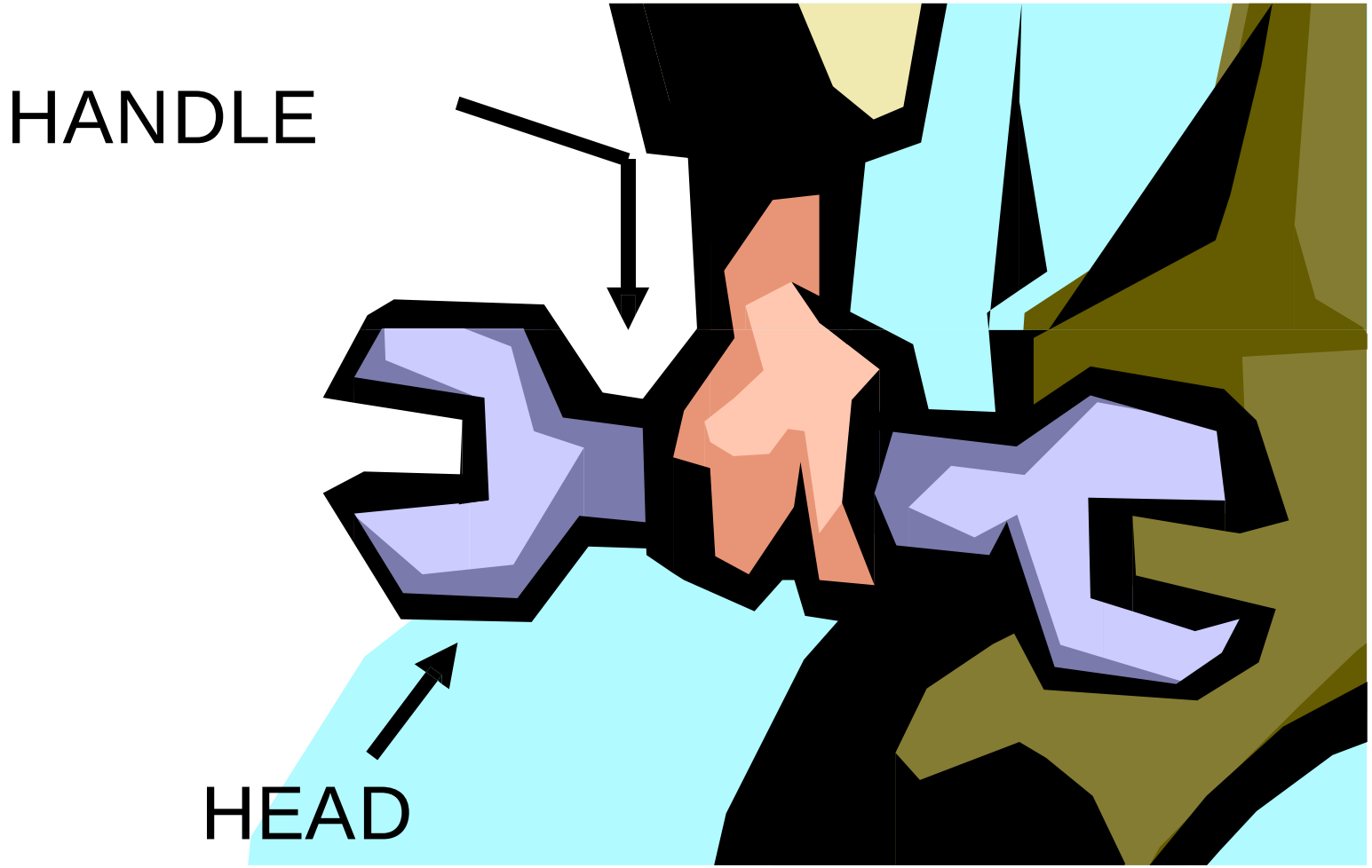
  - General responsibilities of Employers and Self-mployed
    - "provide and maintain a safe plant and systems of work…"
    - "make arrangements for the safe use, operations, handling, storage and transport of plant and substances…"

HAND TOOLS

Consists of 2 parts:

- Head
- Handle (shaft / body)

EXAMPLE

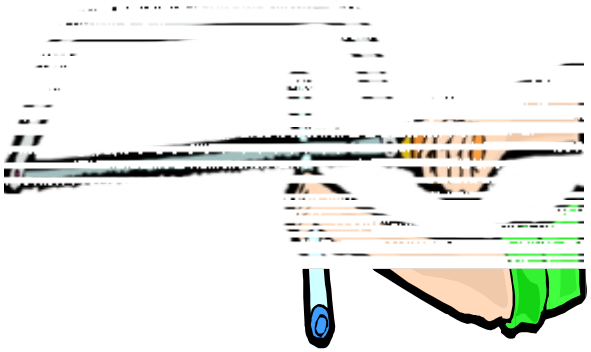


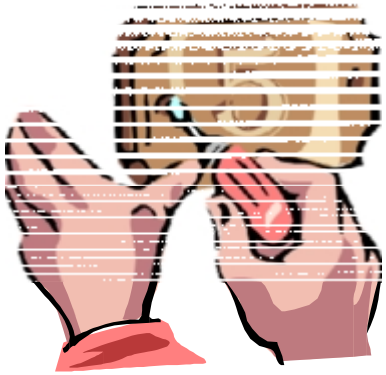
HAND TOOLS

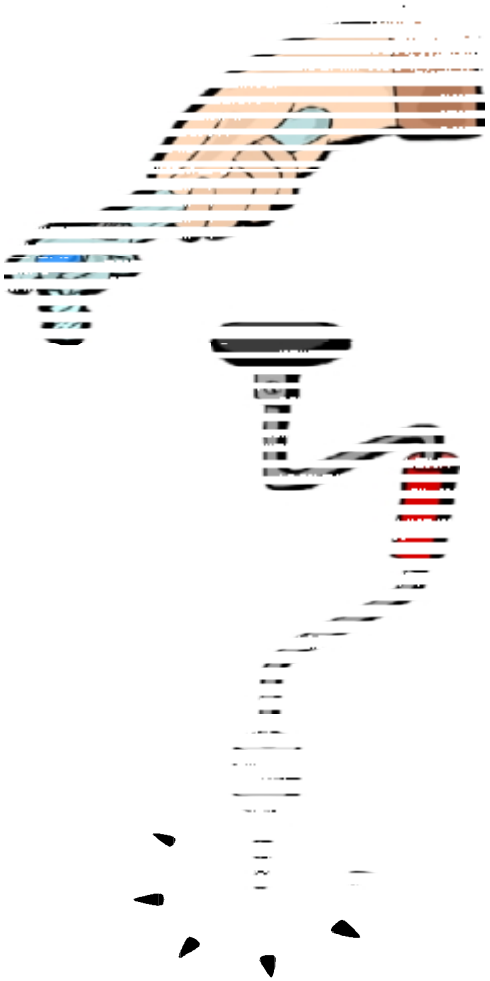
Some examples of hand tools are:

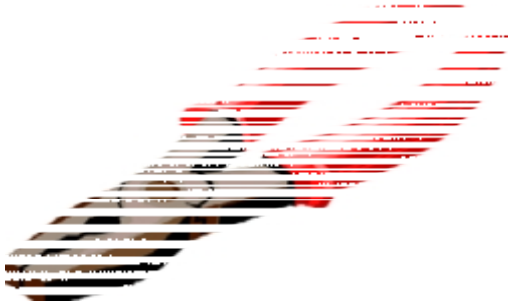
- Knife
- Hammer
- Spanner
- Wrench
- Sledge hammer
- Screwdriver
- Saw
- Pliers

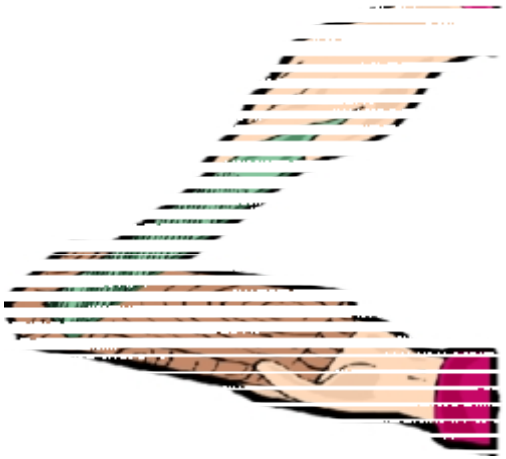
HAND TOOLS











PORTABLE POWER TOOLS

Power tools are categorised based on source of power:

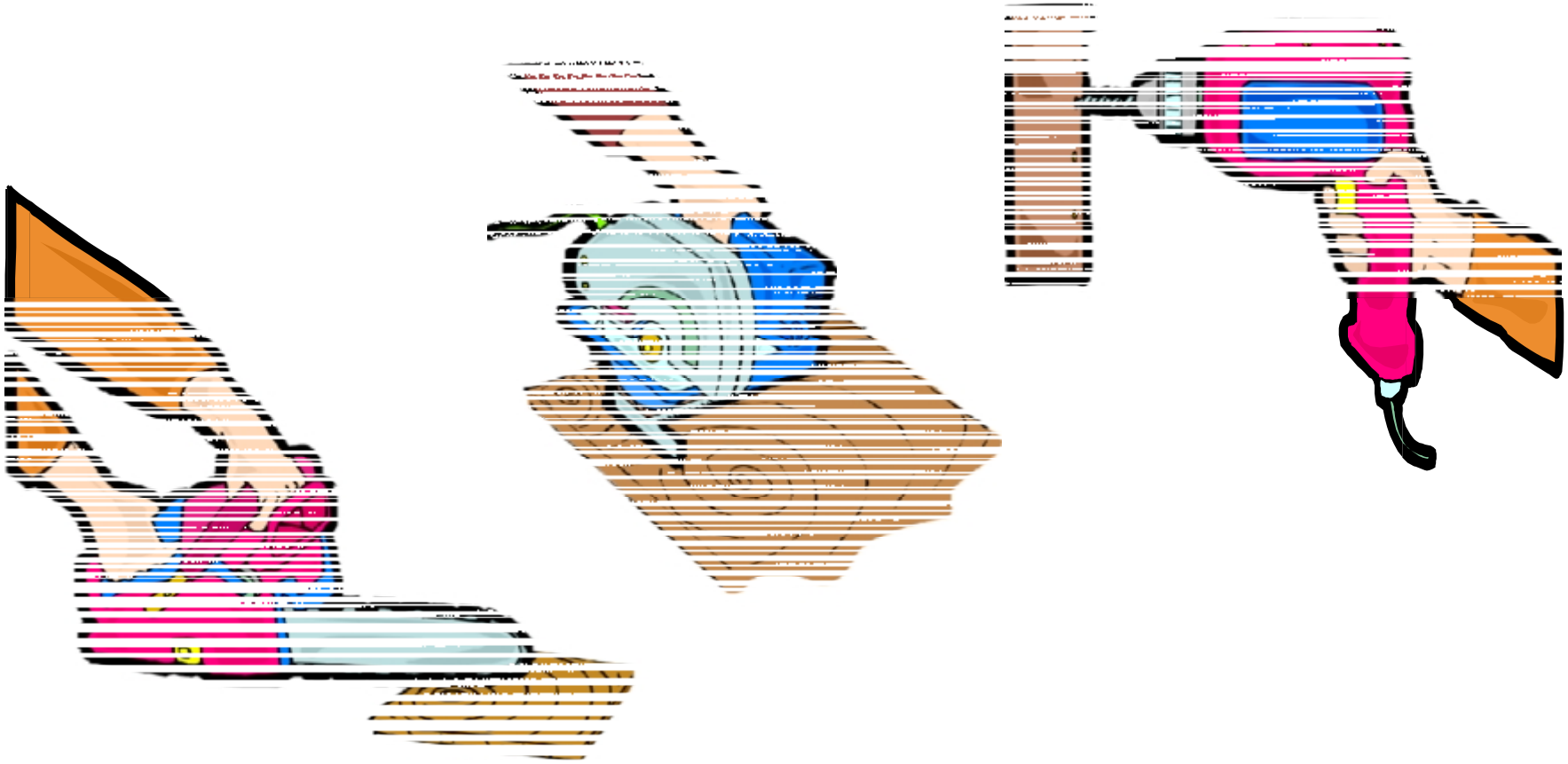
- Electric
- Pneumatic
- Hydraulic
- Fuel
- Steam

PORTABLE POWER TOOLS

Some examples are:

- Circular saw
- Chain saw
- Pneumatically driven nailers
- Spray gun
- Sander
- Grinder
- Pneumatic stapler

PORTABLE POWER TOOLS



HAZARDS IN THE USE OF POWER TOOLS

- Electric (mobile power tools)
- Cuts/incisions (mobile power tools)
- Entanglement/drawing in (mobile power tools)
- Flying objects/equipment (parts, equipment heads)
- Lodged between equipments

HAZARDS IN THE USE OF POWER TOOLS (CONT.)

- Vibration
- Hit by equipments
- Noise exposure
- Dust/vapour exposure from work activities

PORTABLE POWER TOOLS HAZARDS

(CASES REPORTED TO SOCSO - 1995)
caught in between objects

	Reported Cases	Permanent Disability	Death
Caught in object	9695	810	8
Caught in between a stationary and a moving object	3093	511	8
Caught between moving objects	1490	350	13

HAND TOOLS HAZARDS

(CASES REPORTED TO SOCSO - 1995)

struck by objects

	Reported Cases	Permanent Disability	Death
Striking against stationary objects	13,831	893	11
Striking against moving objects	12,311	1364	170
Struck by flying objects	12,661	875	49
TOTAL	38,803	3,132	230

HAND TOOLS HAZARDS

(CASES REPORTED TO SOCSO - 1995)
exposure / contact with object / material

	Reported Cases	Permanent Disability	Death
Exposure to/ contact with extreme temperature	4,303	163	6
Exposure to/ contact with electric current	400	21	7
Exposure to/ contact with harmful substances or radiation	2,050	55	7

ACCIDENTS CAUSING FACTORS

- Use of wrong method
- Improper storage of equipments/tools
- Improper maintenance of equipments/tools
- Use of faulty equipments/tools
- Tools are not suited to job task

SAFETY MEASURES

- Select equipment that is suitable to the work at hand
- Provide safety training to users
- Formulate Safe Operating Procedures for use of equipment/tool
- Inspect tool before use

SAFETY MEASURES (CONT.)

- Follow manufacturer recommended procedures in handling tool
- Structure a regular maintenance schedule for tools/equipments as per requirements

SAFETY MEASURES (CONT.)

- Allocate designated area for storage of equipment
- Provide suitable and sufficient equipments/tools
- Select and use appropriate personal protective equipment
- Install guards for power tools

SELECTION CRITERIA

General design and fabrication of tools should take into consideration the following factors:

- Quality of material used
- Ergonomic factors
- Use of suitable material
- Safety features

(example: guards for portable power tools)

Personal Protective Equipment for Hand Tools

- Type of PPE needed when using hand tools depends on the tool being used.
- At a minimum, eye protection in the form of safety glasses or goggles must be worn at all times for eye protection.
- The simple act of snipping copper wire with side-cutting pliers, striking a nail with a hammer or sawing wood can propel small pieces of debris into the air.
- It is also important to protect your hands from cuts, abrasion and repeated impact.
- Cut-resistant gloves made of Kevlar, Spectra or stainless cotton or leather gloves can help prevent wood splinters or skin abrasions from handling lumber.
- On jobs that require long periods of ham steel can help protect against the effects of a misplaced blade. Wearing standard mering, impact-resistant gloves with gel or rubber palms can reduce vibration.

List 6 safety measures when using hand tools

CONCLUSION

1) Hand tools can be divided into two: those using manual human energy, and those using other energy sources such as electricity, pneumatic force and others

2) Statutory requirements regarding the safe use of hand tools are outlined in FMA 1967 and OSHA 1994

3) Various safety measures can be implemented to prevent accidents and injuries while using hand and portable power tools

REFERECE

- http://www.grainger.com/content/qt-188-tool-safety
- https://www.ehs.harvard.edu/programs/hand-portable-power-tools