

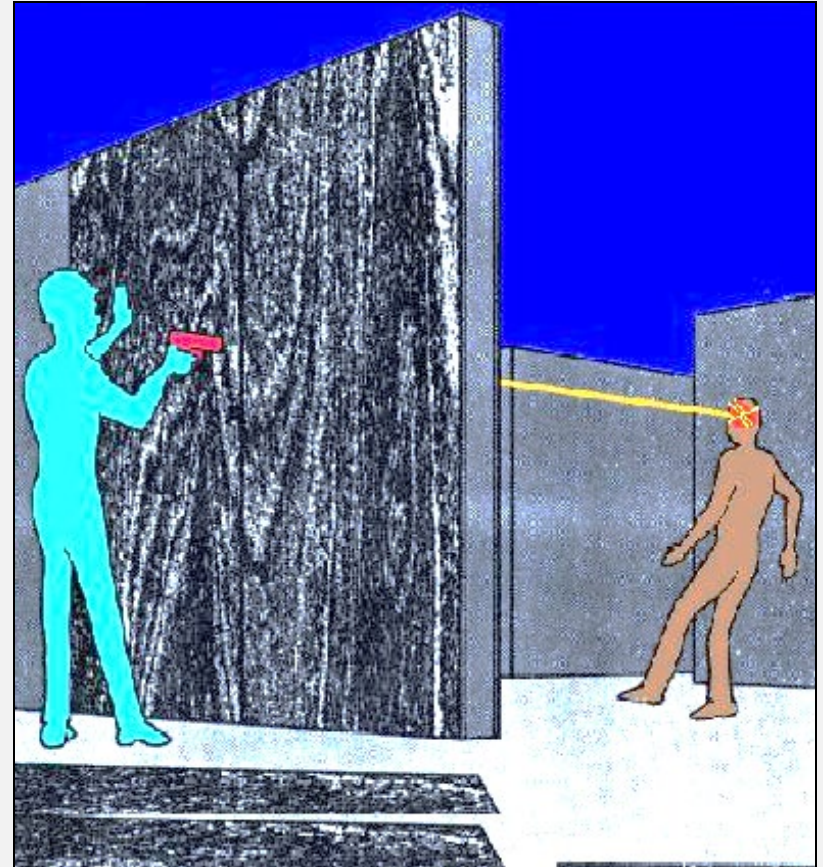
Tools – Hand and Power

10-Hour Construction Outreach

Introduction

Fatal Facts:

Employee killed when struck in head by a nail fired from a powder-actuated tool.



Source: OSHA

Introduction

- Tools are part of our everyday lives.
- Even simple tools can be hazardous.



Source: OSHA

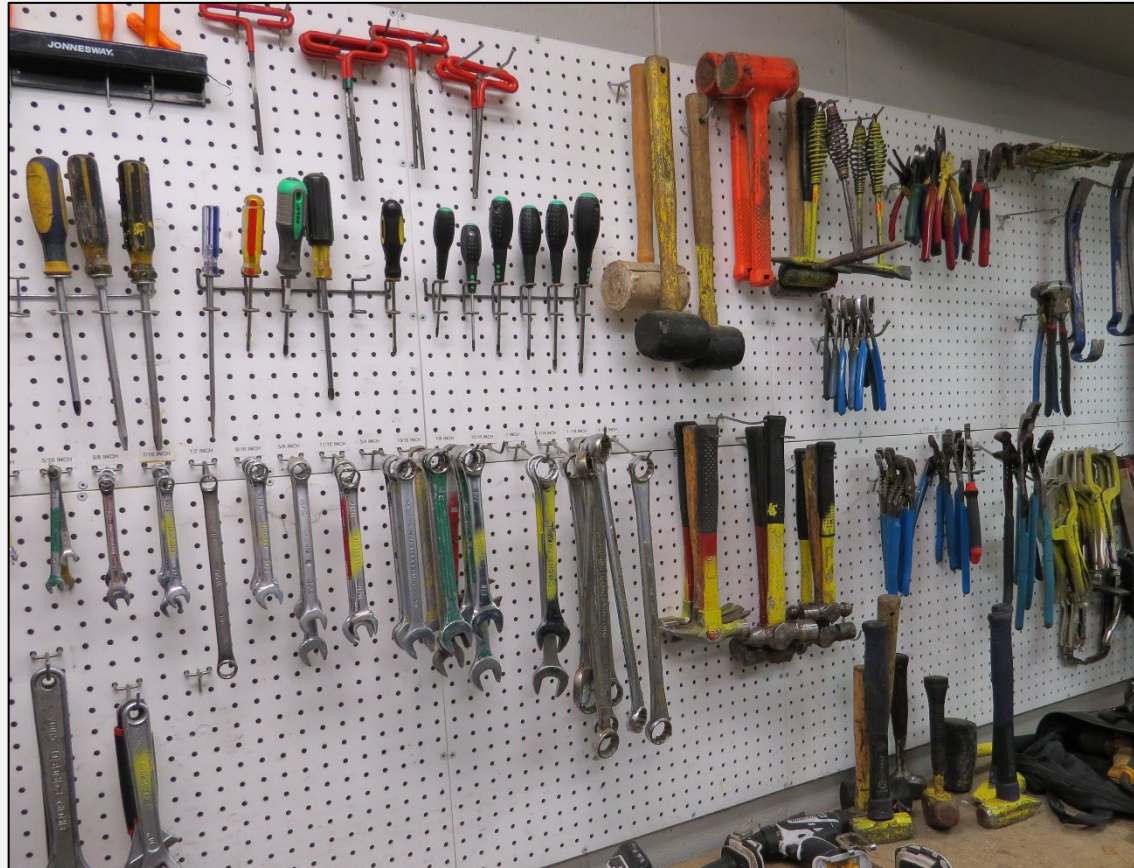
Introduction

Objectives:

1. Identify various types of tools.
2. Describe types of hazards.
3. Describe guarding requirements.
4. Describe safe operation methods.
5. Recognize employer requirements.

Types of Tools

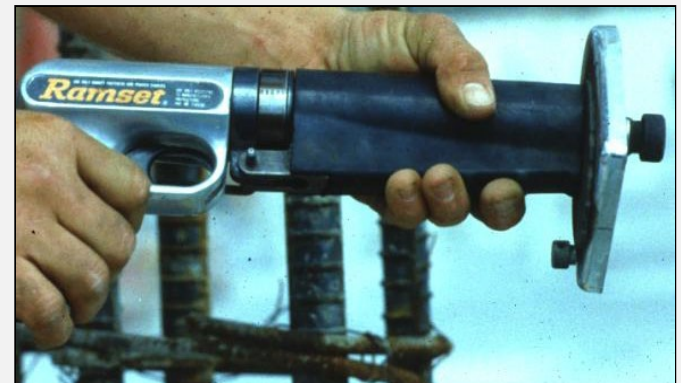
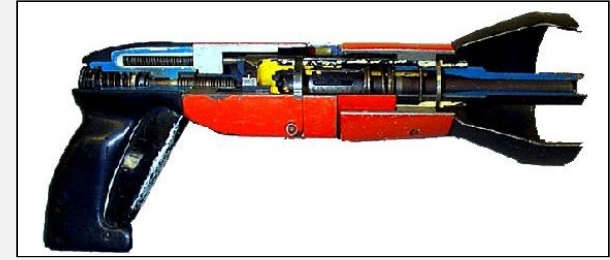
- Manually operated hand tools



Source: TEEX

Types of Tools

- Power-operated tools
 - Electrical
 - Pneumatic
 - Liquid fuel
 - Hydraulic
 - Powder-actuated



Source of photos: OSHA

Hand and Power Tool Hazards

- Types of hazards
 - Struck-by
 - Electrical
 - Caught-in



Source: OSHA



Source: Susan Harwood Grant Number
SH-17792-08-60-F-48 by Compacion Foundation

Hand and Power Tool Hazards

- Harmful materials
- Trips and slips
- Sharp edges/protruding objects



Source: OSHA, courtesy of New Jersey Department of Health



Source: OSHA

Hand and Power Tool Hazards

- Exposure to hazards due to using
 - Wrong tool
 - Tool wrong way



Source: TEEX

Hand and Power Tool Hazards

- Damaged or broken tools
- Dull tools



Source: OSHA



Source: TEEX Harwood

Hand and Power Tool Hazards

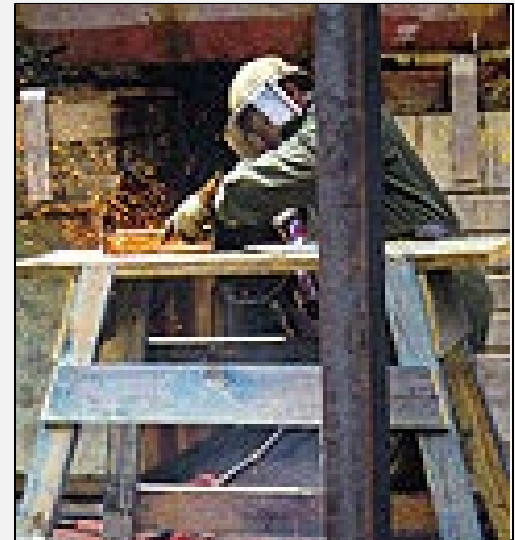
- Spark-producing tools near flammable sources
- Tools not properly guarded
- Tools not properly grounded
- Inadequate PPE



Source: OSHA



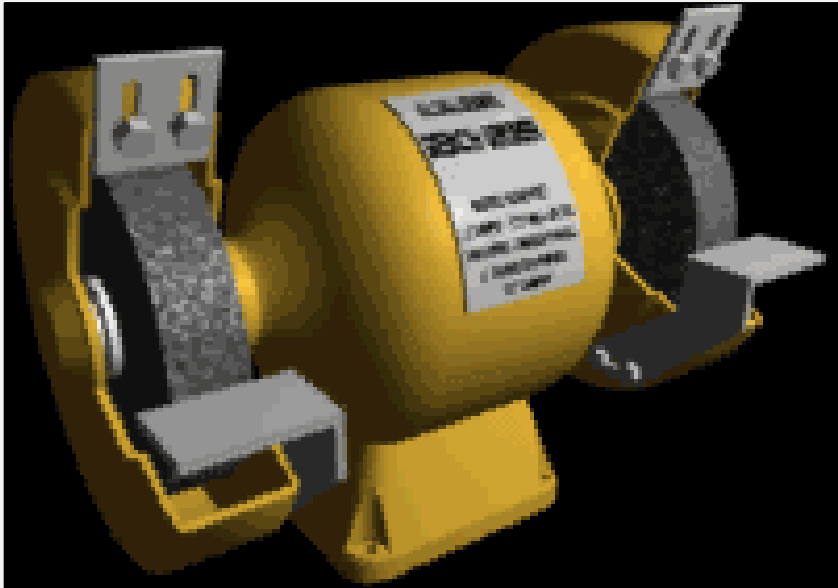
Source: TEEX Harwood



Source: OSHA

Guarding

- Use guarding techniques for hazards
 - Motions: rotating, in-running nip points, reciprocating, transversing
 - Actions: cutting, punching, shearing, bending



Source of photos: OSHA

Guarding

- Guard
 - Exposed moving parts
 - Point of operation, in-running nip points, and rotating parts
 - Flying chips and sparks
 - Abrasive wheels and cutting blades
 - Never remove guards when tool is in use



Source of photos: OSHA

Guarding

- Properly guarded blower



Source: OSHA

Precautions for Safe Use

- General hand and power tool safety practices
 - Keep tools clean and well-maintained.
 - Use the right tool and use it the right way.
 - Follow manufacturer's instructions.
 - Wear proper PPE



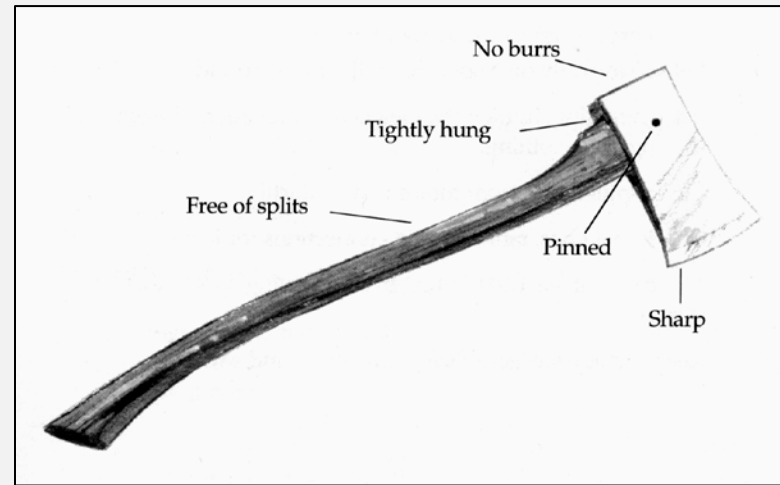
Source: OSHA

Precautions for Safe Use

- Practice good housekeeping.
- Keep work areas well lit.
- Inspect tools; remove from service if needed.
- Keep all cutting tools sharp



Source: OSHA



Precautions for Safe Use

- Precautions for power tools
 - Disconnect from power source.
 - Keep people at safe distance.
 - Secure work.



Source: OSHA

Precautions for Safe Use

- Avoid accidental start-ups.
- Fit with guards and safety switches.
- Maintain good footing and balance.
- Wear proper clothing for task.
- Safeguard exposed moving parts



Source: OSHA

Precautions for Safe Use

- Electrical tools:
 - Remove from service and tag damaged tools
 - Protect against shock
 - Never remove third prong



Source: NIOSH



Source: OSHA

Precautions for Safe Use

- Protect cords
- Store properly
- Use GFCI or AEGC



Source: OSHA



Source: NIOSH

Precautions for Safe Use

- Abrasive wheels and tools
 - Equip with guards.
 - Before mounting, inspect and test.
 - Follow manufacturer recommendations for operating speeds.

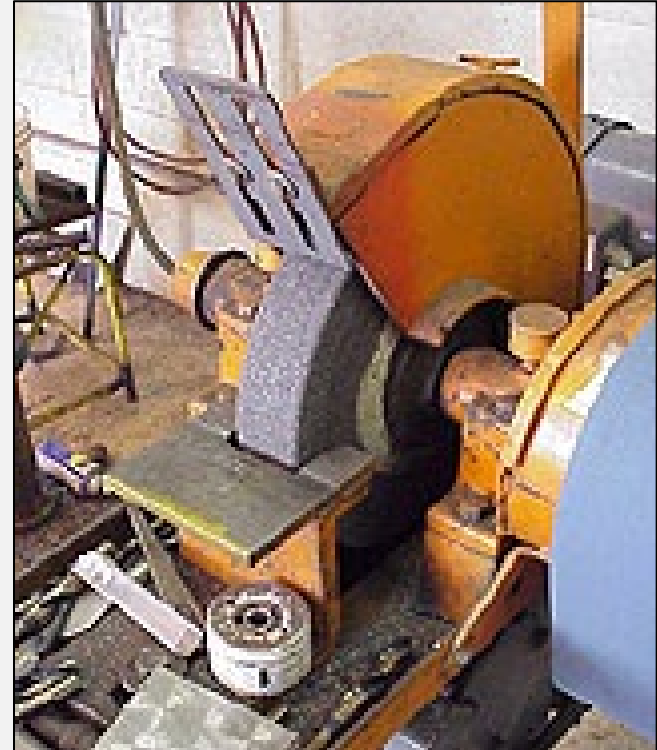


Source of photos: OSHA



Precautions for Safe Use

- Accelerate wheel to operating speed before beginning task.
- Do not stand in front of grinding wheel as it comes up to speed.
- Properly adjust (1/8" opening) and use work rest.



Source: OSHA

Precautions for Safe Use

- Pneumatic tools
 - Use same precautions with air hose as with electric cords
 - Securely fasten air hose to tool and safeguard with a positive locking device



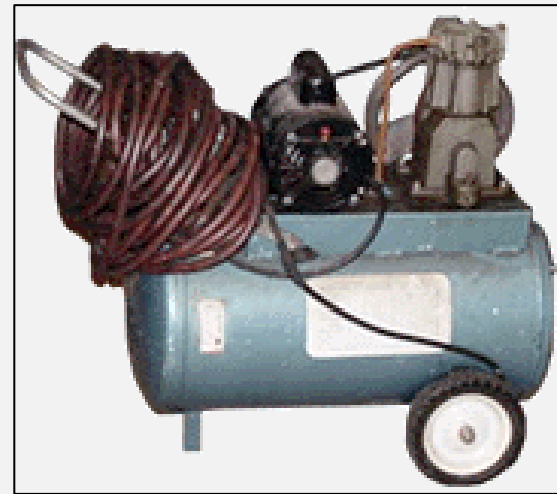
Source: OSHA

Precautions for Safe Use

- Equip tool with device to keep fasteners from accidentally being ejected.
- Use screens to protect nearby workers.
- No not use compressed air for cleaning off clothing.



Source of photos: OSHA



Precautions for Safe Use

- Fuel-powered tools
 - Handle, transport, and store gas or fuel in approved containers.
 - Shut down and allow engine to cool before refilling fuel tank.
 - Use ventilation and respiratory protection as needed.



Source: TEEX



Source: OSHA

Precautions for Safe Use

- Powder-actuated tools
 - Treat with extreme caution
 - Must be trained
 - Only employees trained in the operation of the particular tool in use shall be allowed to use
 - Wear suitable PPE



Source: TEEX

Precautions for Safe Use

- Select appropriate powder level for tool and task
- Test tool to ensure safety devices work
- Inspect tool
- Do not use defective tools



Source: TEEX

Precautions for Safe Use

- Do not load tools until just prior to use
- Never point tool at anyone
- Keep hands clear of open barrel end
- Never leave loaded tool unattended
- Do not drive fasteners into materials that are very hard, brittle, or easily penetrated
- Do not drive fastener into a spalled area
- Use manufacturer-recommended shields, guards, or attachments.
- Store unloaded in a locked box.

Employer Requirements

- Comply with OSHA standards
 - Training
 - Inspection
- Comply with manufacturer's requirements and recommendations

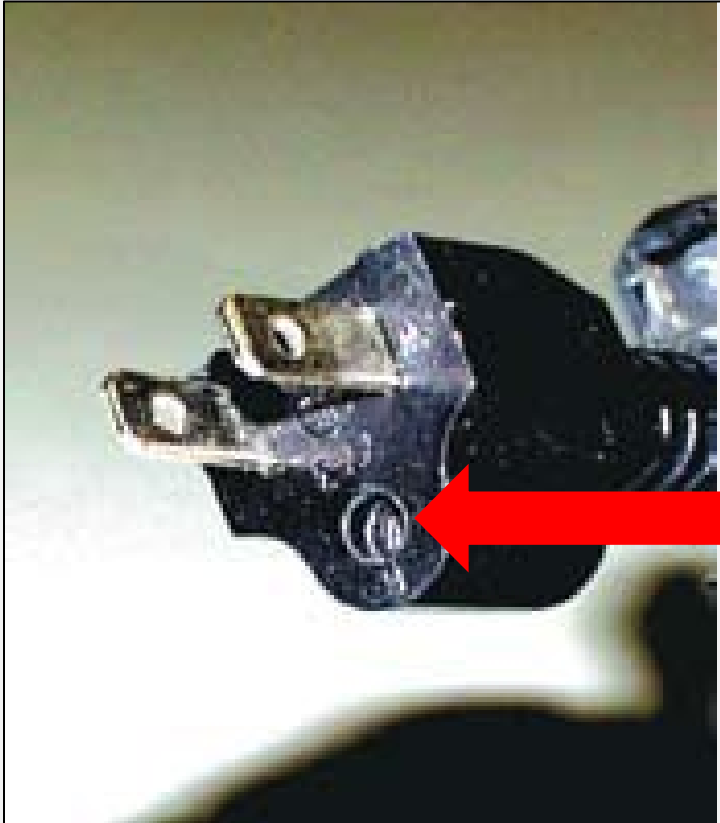
Identify Hazards



Hand-held sander with exposed wires should not be used.

Source: NIOSH

Identify Hazards



Source: NIOSH

This three-prong grounding plug has the ground prong broken off.

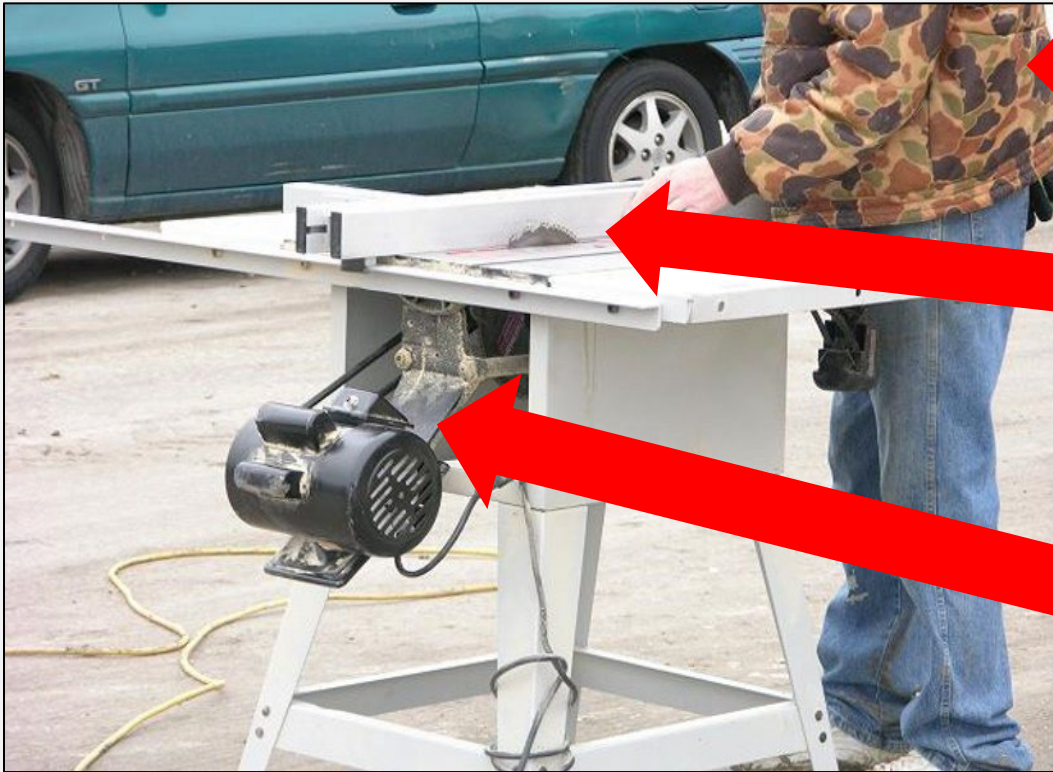
Identify Hazards



Source: TEEX Harwood

Grinder guard removed to accommodate larger wheel.

Identify Hazards



Source: TEEX Harwood

Working in street with power cords potentially exposed to traffic.

Guard removed from saw blade.

Power take-off guard is missing.

Knowledge Check

1. Which of the following is an example of an unsafe practice regarding the use of tools?
 - a. Keeping cutting tools sharp
 - b. Wearing eye and face protection while operating a grinder
 - c. Using a screwdriver to carve or cut wood
 - d. Following manufacturer's instructions when using a tool

c. Using a screwdriver to carve or cut wood

Knowledge Check

2. Which term describes a tool that is powered by compressed air?

- a. Hydraulic
- b. Powder-actuated
- c. Electrical
- d. Pneumatic

d. Pneumatic

Knowledge Check

3. Which of the following actions may expose workers to electrical shock hazards and should be avoided?
- a. Removing the grounding pin on a three-prong plug
 - b. Using double-insulated tools
 - c. Using a grounded adaptor to accommodate a two-prong receptacle
 - d. Removing damaged tools from service and tagging them "Do Not Use"

a. Removing the grounding pin on a three-prong plug

Knowledge Check

4. Which of the following statements about guarding techniques is true?
- a. Guard the point of operation, in-running nip points, and rotating parts of tools.
 - b. Remove guard from tool while it is in use, then replace when the job is completed.
 - c. Adjust guard on abrasive wheel to allow maximum exposure of the wheel surface.
 - d. Wear PPE because guards will not protect operator from flying chips and sparks or moving parts of tool.
- a. Guard the point of operation, in-running nip points, and rotating parts of tools.**

Knowledge Check

5. Employers must satisfy all of the following requirements, except:
- a. Provide PPE necessary to protect employees who are operating hand and power tools and are exposed to hazards.
 - b. Comply with OSHA training and inspection standards related to hand and power tools.
 - c. Determine which manufacturer's requirements and recommendations for a tool shall be followed or ignored.
 - d. Do not issue or permit the use of unsafe hand tools.
- c. Determine which manufacturer's requirements and recommendations for a tool shall be followed or ignored.**