

# Hand & Power Tools Outline

- 1. Course Objectives**
  - a. Definition of Terms
  - b. Learn about Hand Tool Safety
  - c. Learn about Power Tool Safety
  - d. Learn about Extension Cords
  - e. Learn about Bench Grinder Safety
- 2. Hazard Prevention of Hand and Power Tools**
  - a. Keep all tools in good condition with regular maintenance
  - b. Use the right tool for the job
  - c. Examine each tool for damage before use and do not use damaged tools
  - d. Operate tools according to the manufactures' instructions
  - e. Provide and use the right PPE
- 3. Definitions**
  - a. Hand Tools
    - i. Tools that are powered manually
  - b. Power Tools
    - i. Tools that are powered with electricity, pneumatic, fuel, hydraulic, or powder-actuated.
- 4. Hand Operated Tools Standards**
  - a. Employers shall not issue or permit the use of unsafe hand tools.
  - b. Wrenches, including adjustable, pipe, end, and socket wrenches shall not be used when jaws are sprung to the point that slippage occurs.
  - c. Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed heads.
  - d. The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.
    - i. Tools – Hand and Power (1926.301)
- 5. Hand Tool Safety**
  - a. Never use a tool that has a cracked or splintered handle
  - b. Keep tools clean to allow for easy inspection
  - c. Do not wrap handles with any tape
  - d. Tools with mushroomed heads must be redressed with a grinder
  - e. Hand tools can produce sparks, because of this be aware of any flammables around the area where you are using the tool
  - f. Use tools as they were intended to be used
- 6. Tips For Using a Knife Safely**
  - a. Always wear safety gloves to protect your hand.
  - b. Keep knife blades sharp – a dull blade can easily slip from the object being cut.
  - c. Always cut away from your hand
  - d. Never attempt to catch a dropped knife
  - e. Retract blade when not in use

## **7. Power Tool Types**

- a. Electric
- b. Pneumatic
- c. Liquid Fuel
- d. Hydraulic
- e. Powder-Actuated

## **8. Power Tool Switches**

- a. Constant Pressure Switch – Shuts off power when switch is release (e.g. hand-held drill, circular saw, chainsaw)
- b. On-Off Switch (e.g. router, planers)

## **9. General Power Tool Precautions**

### **10. Electrical Tool Hazards**

- a. Electrical burns and shocks.
- b. Amputation
- c. Projectiles
- d. Caught in

### **11. Electrical Tool Precautions**

- a. Operate electrical tools according to manufacturers guidelines
- b. Use appropriate PPE
- c. Store electric tools in a dry place when not in use
- d. Avoid using electrical tools in damp or wet locations
- e. Ensure that a ground-fault circuit interrupter or an equipment-grounding conductor protects all tools.
- f. Disconnect tools from power source when servicing
- g. Keep all people not involved with the task at a safe distance
- h. Do not carry tool by switch button while it is plugged in
- i. Keep tools maintained and in good working order
- j. Do not wear loose clothing when operating power tools
- k. Remove all damaged tools from service and tag “Do Not Use”

### **12. Electrical Tool Power Cord Precautions**

- a. Ensure cords do not present a tripping hazard
- b. Never carry a tool by the cord
- c. Never yank the power cord to disconnect from receptacle
- d. Keep cord away from heat, harmful chemicals, and sharp edges

### **13. Pneumatic Tool Precautions**

- a. Tools must be fastened to hose securely with a short wire or positive locking device
- b. Attachments must be secured with a safety clip or retainer
- c. Eye protection is required for employees working with Pneumatic Tools
- d. Hearing protection may be required based on decibels of tools

### **14. Liquid Fueled Tools Precautions**

- a. Use liquid fueled tools in a well ventilated environment
- b. Before refueling, the user must shut off the engine and allow it to cool
- c. Do not smoke while fueling liquid fueled tools
- d. Wear eye, face, hand, and hearing protection

- e. Keep a fire extinguisher in close proximity of the tool

#### **15. Powder-Actuated Tool Precautions**

- a. Can only be operated by trained employees
- b. Must wear eye, ear, hand, and face protection
- c. Do not operate in a flammable or explosive environment
- d. Do not store a loaded tool
- e. Do not fire fasteners into material that would allow the fastener to pass through to the other side

#### **16. Extension Cord Precautions**

- a. Choose the right extension cord for the tool you use
- b. Inspect extension cords daily before use
- c. Damaged extension cords shall be removed from service immediately
- d. Do not place extension cords in high traffic areas
- e. Protect cords from any damage (i.e. sharp corners, heat, doorways, etc.)

#### **17. Bench Grinder Precautions**

- a. Before using a grinder visually inspect the grinding wheel and perform the ring test.
  - i. *Show ring test video*
- b. Make sure the grinder RPM rating is not higher than the RPM rating on the grinding wheel.
- c. Use eye and face protection
- d. Do not wear loose fitting gloves
- e. Start the bench grinder while standing off to the side (most grinding wheel failures occur during startup)

#### **18. Bench Grinder Setup**

- a. Work Rest
  - i. Work rest must not be more than an 1/8" from grinder wheel
  - ii. This prevents jamming the object that you are grinding between the wheel and the work rest.
- b. Adjustable Tongue Guard
  - i. Tongue guard must be no more than 1/4" from grinding wheel
  - ii. The tongue is meant to deflect any debris away from the operator

#### **19. What We Learned**

- a. Definition of Terms
- b. Learned about Hand Tool Safety
- c. Learned about Power Tool Safety
- d. Learned about Extension Cords
- e. Learned about Bench Grinder Safety