



## Hand and Power Tool Safety

## **Welcome to the Hand and Power Tool Safety training!**

There is a short Final Quiz in addition to this module, which will be scored. It is necessary to pass with a score of 80% or better to receive credit for this module. This module takes 15 minutes to complete.

The Occupational Safety and Health Administration states that most injuries on construction sites involve excavation cave-ins, **power tool accidents**, falls, electrical hazards, and exposure to potentially dangerous materials.

Working with power tools, you can:

- get an electric shock
- lose a finger
- lose an eye
- go deaf

It's especially dangerous to use a tool that's defective, that's been modified, or that's not designed for the job. And of course, you can also get injured if you use any tool carelessly.

## Hand Tool regulations say:

- ▶ Each employer shall be responsible for **the safe condition of tools and equipment used by employees.**
  - including tools and equipment **furnished by employees**
- ▶ Employers shall not issue or permit the use of unsafe hand tools.
- ▶ Wrenches, including adjustable, pipe, end, and socket wrenches shall not be used when jaws are sprung to the point that slippage occurs.
- ▶ Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed heads.
- ▶ The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.
- ▶ Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

- ▶ Employees who use hand and power tools and who are exposed to the hazards of falling, flying, abrasive and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases must be provided with the particular personal equipment necessary to protect them from the hazard.
- ▶ Employees and employers have a responsibility to work together to establish safe working procedures. If a hazardous situation is encountered, it should be brought to the attention of the proper individual immediately.

- **Employer**

- Assess workplace for hazards
- Provide PPE
- Determine when to use
- Provide PPE training for employees and instruction in proper use

- **Employee**

- Use PPE in accordance with training received and other instructions
- Inspect daily and maintain in a clean and reliable condition

## Hand and power tool uses:

- Hand digging, shoveling, raking and grading
- Maintaining equipment
- Building and constructing landscape related structures
- Tree felling, trimming and pruning
- Grass trimming and leaf blowing



## Potential causes of personal injury:

- Broken and defective tools
- Carrying tools in your pockets, instead of toolboxes /bags
- Missing guards, exposed belts and blades
- Bad electrical cords
- Misuse of tools
- Mushroomed heads
- Cracked and split handles
- Not using required PPE
- Pushing a wrench instead of pulling it



### Workers using hand and power tools may be exposed to these hazards:

- Bruises, sprains and strains
- Struck by projectiles
- Lacerations and amputations
- Entanglement
- Eye and face injuries due to flying objects
- Shocks and electrocutions
- Leading to injury or death



Employees and employers have a responsibility to work together to establish safe working procedures. If a hazardous situation is encountered, it should be brought to the attention of the proper individual immediately.



## The most common injuries from working with hand and power tools are:

- Electric shock
- Flash burns
- Falling
- Hand and Eye injuries
- Hearing loss
- Crushing, cuts or losing a body part
- Ergonomic injuries



**Avoid having this happen!**

## Basic Safety Rules:

- Maintain regularly
- Use the right tool for the job
- Inspect before use
- Hand tools to others using the handle first
- Operate according to the manufacturer's instructions
- Use the proper personal protective equipment
- Use the guards



**Hand-held power tools must be equipped with one of the following:**

## Constant pressure switch

Shuts off power upon release

Examples: circular saw, chain saw, grinder, hand-held power drill

## On-Off Switch

Examples: routers, planers, laminate trimmers, shears, jig saws, nibblers, scroll saws



## Do not:

- use wrenches when jaws are sprung
- use impact tools (chisels and wedges) when heads have mushroomed
- use tools with loose, cracked or splintered handles
- use a screwdriver as a chisel
- use tools with taped handles – they may be hiding cracks
- use tools that you do not know how to operate
- use tools with frayed cords or without a grounding plug
- carry portable tools by the cord
- electric cords to hoist or lower tools
- yank cord or hose to disconnect it



## Do:

- Leave attached all equipment guards.
- Be sure the power tool is off and stopped rotating before putting it down.
- Disconnect tool from power source to change drill bits, blades, etc.



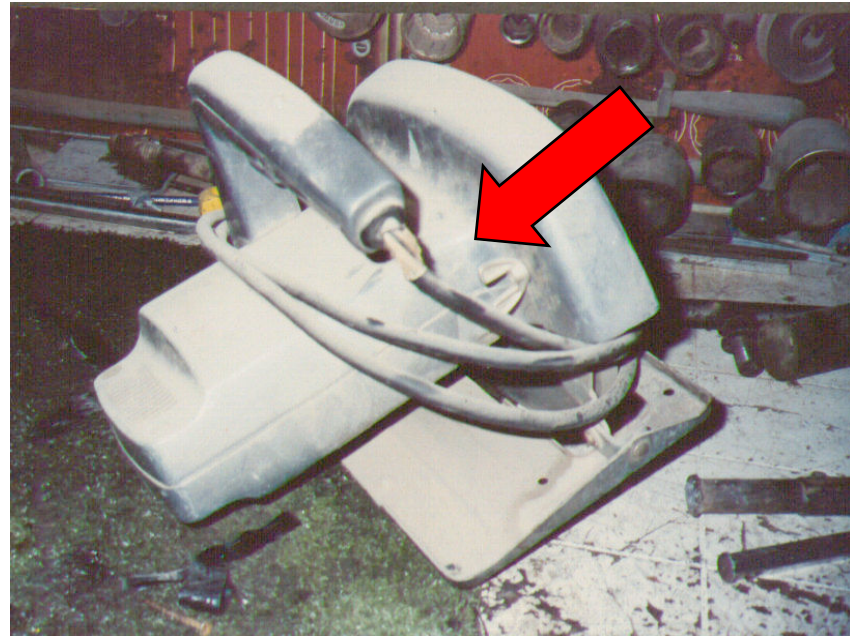
**Unsafe Condition**



**Use a hood for guarding**

## Do..Inspect cords for defects:

- check the power cord for cracking, fraying, and other signs of wear or faults in the cord insulation.

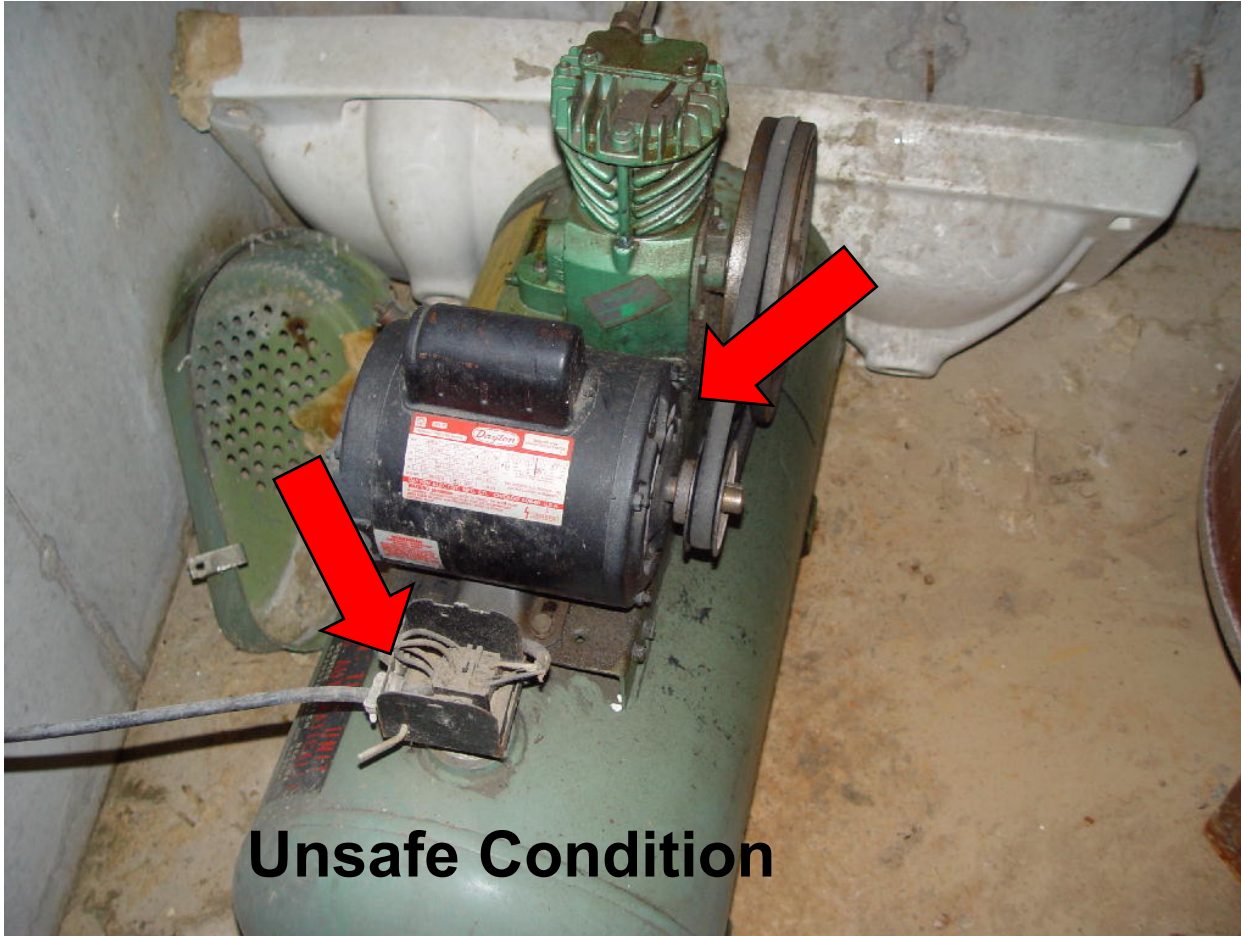


The point of operation is where the work is actually performed on the materials – it must be guarded

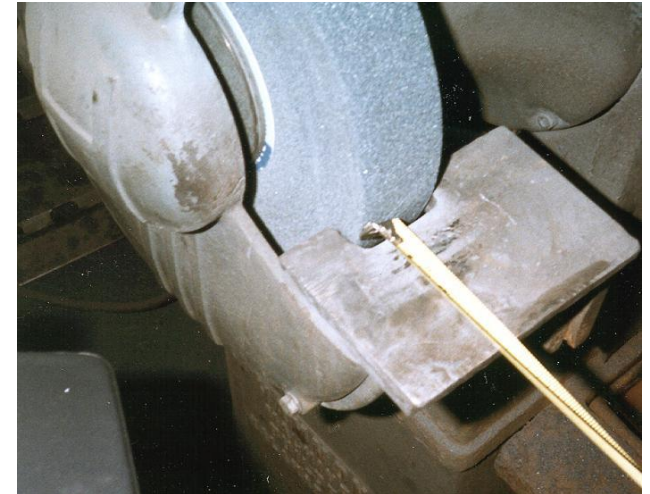
- Guard exposed moving parts of power tools
- Guard belts, gears, shafts, pulleys, sprockets, spindles, flywheels, chains, or other moving parts
- Never remove a guard when a tool is in use







**Unsafe Condition**



### Before mounting:

- inspect closely for damage
- perform sound- or ring-test to ensure free from cracks and defects

### To test:

- tap wheel gently with a light, non-metallic instrument
- if wheel sounds cracked or dead, do not use it because it could fly apart
- Keep work rests not more than 1/8th inch from wheel surface
- This prevents jamming the work between the wheel and the rest, which may cause the wheel to break
- Don't adjust wheel while it's rotating

### Knives, Box Cutters, Scissors, Razor Blades, etc...

**A Sharp Blade Is Safer** – When dull, a blade can slip from the object being cut and cause a serious injury.



**Cut or Wipe Away from Sharp Edge** – Always cut away from your hand.

**Put It Back** – Never leave a cutting tool lying around. Places a cutting tool should be:

- 1) in use,
- 2) stored safely in a drawer, tool box, in a knife rack, or,
- 3) in the dishwasher (blade down, handle up)

**Let It Go!** – Never attempt to catch a dropped knife or other cutting tool – let it fall.

**Never Touch The Sharp Edge** – Always use a piece of paper to test the sharpness of a knife – NEVER use your fingers!

**Never use a knife as a substitute for other tools** – such as a screwdriver or bottle opener.

- ▶ Pneumatic power tools shall be secured to the hose in a positive manner to prevent accidental disconnection.
- ▶ Safety clips or retainers shall be securely installed on pneumatic impact tools and on hose connectors.
- ▶ The manufacturer's safe operating pressure recommendations for all fittings shall not be exceeded.
- ▶ Powered by compressed air
- ▶ Includes nailers, staplers, chippers, drills & sanders
- ▶ Main hazard - getting hit by a tool attachment or by a fastener the worker is using with the tool
- ▶ Take the same precautions with an air hose that you take with electric cords



← Unacceptable



← Acceptable



- Approved safety cans are made from metal or very low conductivity plastic. Safety cans have spring-mounted spout caps.
- These automatically open when the vapor pressure builds up inside, to allow vapors to escape and prevent rupture or explosion.
- These prevent flashbacks from reaching the liquid in the cans.

- Small engine power tools require special precautions.
- Always wear personal protection clothing such as safety goggles with shields, earmuffs or earplugs, leather or cotton gloves, long pants, and rubber-soled work boots.
- Do not wear tennis shoes, sandals or open toed shoes.
- Remove any loose debris (trash, tree limbs, rocks, etc.) before you start.
- Always check the oil level before starting the engine.
- Never start the engine in an enclosed space.
- Make sure the area where you will be working is clear of all people.
- Never operate a machine while under the influence of alcohol or drugs.
- Never remove any safety guards or shields.



- Keep your hands, face, and feet away from any moving parts.
- If the trimmer should become entangled, stop the engine immediately.
- Do not overreach. Always be properly balanced.
- Wear a full face shield, hearing protection, long pants, and heavy work boots.



- If your working area is dusty, wear a dust mask.
- Make sure the area is clear of other people where you will be working.
- Always wear proper clothing and eye/face and ear protection while operating blowers.





## HINTS

1. Operating temperature can reach 900 degrees F.
2. Parts can move up to 68 miles an hour
3. At full speed, > 600 teeth pass at a given point per second
4. One in 5 injuries are from “kickback”.

**Answer: Chain Saw**



- Often landscaping includes the trimming, and felling of trees as part of the job.
- Special tools are needed to accomplish these tasks.
- Due to the dangerous nature of this work special precautions are necessary.
- Chain saws are a vital part of tree trimming and tree felling.

- Chain saws are a great tool for landscapers and arborists.
- Their powerful motors cut through heavy trunks, branches, and brush quickly and easily.
- However, that power also brings danger.
- Safe practices are critical in using chain saws.



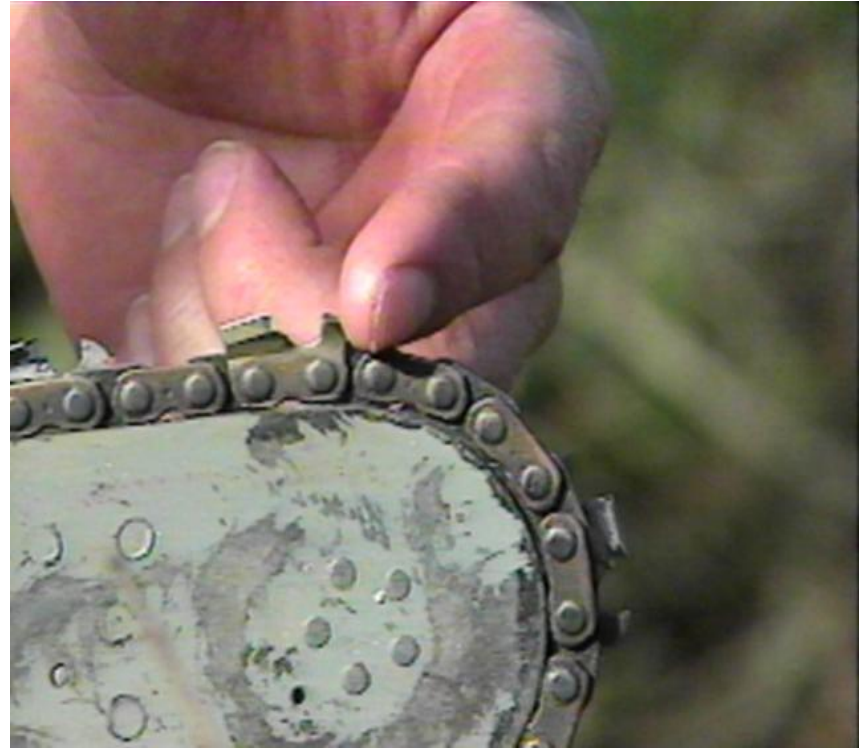
- Check controls, chain tension, bolts, and handles.
- Adjust according to manufacturer's instructions.
- Fuel at least 10 ft. from ignition sources.
- Start at least 10 ft. away from fuel.
- Start with chain brake on and on the ground or firmly supported.



- Keep hands on handles.
- Maintain secure footing.
- Clear area of things that get in the way.
- Do not cut overhead.
- Shut off or throttle released prior to moving.
- Shut off or chain brake engaged if terrain is hazardous or going more than 50 ft.
- Wear required PPE



- The top front of the bar is the area prone to kick-back.
- Always keep this in mind.
- No other part of the saw will work so hard to get you!



- A hard hat protects the head from falling limbs or branches.
- A mesh full-face shield prevents injury from flying wood chips and twigs.
- Protect ears from the high level of noise by using earplugs.
- Chainsaw safety boots and chaps, protect the feet and legs in the event of accidental contact.
- Keep the operator's manual with the chain saw.
- If the manual is missing, contact the manufacturer for a replacement.
- Periodically review the manual for safe operating procedures.
- Keep saw in good repair.
- Consult the operator's manual and check for needed maintenance before each use.
- The operator's manual can be the best source of information for this procedure.

- Most workers are killed by being struck in the head.
- Without a Hardhat, even the smallest piece of wood can be deadly.
- Designed to absorb energy.
- Must be ANSI approved.
- Must be worn!





- If the worker uses a chain saw, boots must be cut resistant that will protect against chain saw contact.
- Cut resistant boots are UL approved.



- Each worker who operates a chain saw must wear protection.
- Made of cut resistant material.
- Extend from upper thigh down to boot top.
- Must be UL approved.



Hazards are usually the result of improper tool use or not following one or more of these protection techniques:

- Inspecting the tool before use
- Read Tool Owners Manual prior to use
- Using PPE (Personal Protective Equipment)
- Using guards
- Properly storing and maintaining the tool
- Keep the workplace neat and free of clutter
- Using safe handling techniques

Congratulations!

You have completed the Hand Power Tool module.

Click [here](#) and take the quiz.