

# MESA & ACE Program Safety Guidelines

# General Safety

- **Think Before You Cut** – The most powerful tool in your shop is your brain, use it. Thinking your cuts and movements through before acting can help save both fingers and scrap wood.
- **Keep a Clean Shop** – A cluttered shop is an accident waiting to happen. Keeping your shop clean will help protect you, and your tools, from tripping hazards.
- **Avoid Distractions** – Pay attention to your actions. Looking up to watch the shop TV or visitor can result in your hand contacting the blade. Always wait until you have completed your cut before you take your eyes off the blade.

# General Safety continue

- **Don't Rush** – Keep in mind that this is just a hobby and take a break when you feel rushed or frustrated with a project. Mistakes happen when we rush to complete a job.
- **Don't Force It** – If your saw is resisting the cut, stop and see what's wrong. A misaligned rip fence or improperly seated throat plate can sometimes cause a board to get stuck in mid cut. Forcing the board in these situations may cause kickback or contact with the blade. Take a moment to evaluate the situation and determine the problem.
- **Protect Yourself** – Wearing the proper shop protection is an important part of safe tool operation. Goggles, Ear Protection, and Lung Protection should be used when operating tools. Use push sticks when working close to the blade and make sure the tool's safety features are in place.

# General Safety Continue 2

- **Let the Tool Stop** – Giving the power tool time to wind down after a cut is an often-overlooked safety mistake. Even without power, the spinning blade can still do a lot of damage.
- **Fumes and Dust** – Solvent fumes and airborne dust can present health and explosion hazards. Care should be taken to ensure a supply of fresh air.
- **Wear Appropriate Clothing** – Loose clothing or hair can get caught in power tools and cause severe injury.
- **Use Common Sense!!!** Any emergency you should contact your teacher ASAP.

# Heavy Machinery Safety Guidelines

# Drill Press

- Approved eye protection must be worn.
- Long hair, loose clothing, and jewelry must be appropriately confined.
- Examine the setup and guards before turning on the machine.
- Never leave the key in the chuck.
- Properly secure and support the material to be drilled.
- Use the proper speed for the cutting tool and material.
- Keep the drill sharp! Stop if it smokes or binds!
- Select the correct type of cutting tool bit for the machine and job.
- Keep your fingers away from the drill and path of cut.
- Avoid overloading the machine by feeding too fast. Clear the drill often.
- Stop the machine before cleaning, adjusting or leaving it unattended.



# Miter Saw

- Wear safety glasses or a face shield. If work is dusty, use a respirator or dust mask.
- Wear appropriate hearing protection.
- Keep one hand on the trigger switch and handle and use the other hand to hold the stock against the fence.
- Keep hands out of the path of the blade.
- Keep guards in place and in working order.
- Use a crosscut or combination blade.
- Ensure that the blade and arbor collars are secure and clean. Recessed sides of collars should be against blade.
- Keep blade tight, clean, sharp and properly set so that it cuts freely and easily.
- Allow motor to reach full speed before cutting.
- Keep the work area clean. Cluttered areas and benches invite accidents.
- Keep the work area well lit.
- Unplug tools before servicing and when not in use.
- Check for damage. Repair or replace damaged parts.
- Keep motor air slots clean and free of chips.
- Use only the accessories designed for the specific saw and job.



# Belt & Disc Sander

- ALWAYS wear eye protection (safety glasses or a face shield).
- REMOVE tie, rings, watch and other jewelry and roll up sleeves.
- MAINTAIN minimum clearance between table and sanding belt or disc.
- MAKE SURE belt is tracking correctly and properly installed on the belt finishing machine.
- MAKE SURE the belt or disc is not torn or loose.
- Always keep your hands away from the abrasive surfaces.
- Never use gloves or hold the work with a rag when sanding.
- When using the disc sander, always use the **downward side** of the disc.
- Shut off the power when finished and don't leave the machine until it has come to a complete stop.
- Use a dust mask with this machine or hook the vacuum up to it.



# Table Saw

- Only operators trained in the safe operation of a table saw are allowed to use the saw.
- Operator must wear safety glasses.
- If the material chips severely, a face shield should be used **in addition to** safety glasses.
- Blade should be checked for tightness.
- Check the hood guard and anti-kickback devices for proper operation.
- Verify location of off switch and/or emergency power disconnect.
- If used, check to ensure the fence is set properly and tight.
- Ensure that the table is clear of materials, tools, and debris.
- All table saws must have a hood guard, splitter, and anti-kickback device installed. One or more of these devices may be removed **ONLY** if absolutely necessary to perform a specific cut (e.g. dado or rabbet) and only with the approval of a shop supervisor. These safety devices must be re-installed immediately after completing the cut (s).



# Table Saw Cont....

- The fence and miter gauge should never be used together. Use the fence for ripping and the miter gauge for cross-cutting.
- Push sticks, feather boards, hold-downs, etc. must be used whenever an operation is performed that would require the operator's hands to pass within 6 inches of the saw blade.
- When boards over 3 feet in any dimension are cut, a helper should be used to assist in supporting the work.
- Blade height should be set so that the top of the teeth extend no more than 1/4 inch above the wood.
- The operator should stand to the side of the wood while it is being fed through the saw.
- After completing work, the saw blade should be lowered below the table.
- A two foot perimeter around the saw should be kept clear of debris and sawdust.
- When changing the blade or servicing the saw, the power disconnect must be locked in the "off" position. For saws with a cord and plug, the saw must be unplugged. The saw must be tested after disconnecting power and before beginning service.
- Wobble blades are not permitted on table saws.

# Lathe

- Always wear eye protection - preferably industrial quality safety glasses with side-shields.
- Wear short sleeve shirts, if possible, or shirts with tightly fitting cuffs if long sleeve. Loose sleeves can catch on rotating work and quickly pull your hand or arm into harm's way.
- Wear shoes - preferably leather work shoes.
- Remove wrist watches, necklaces, chains and other jewelry.
- Tie back long hair so it can't get caught in the rotating work. Think about what happens to your face if your hair gets entangled.
- Always double check to make sure your work is securely clamped in the chuck or between centers before starting the lathe. Start the lathe at low speed and increase the speed gradually.
- Get in the habit of removing the chuck key immediately after use. Some users recommend never removing your hand from the chuck key when it is in the chuck.
- Keep your fingers clear of the rotating work and cutting tools. Avoid reaching over the spinning chuck.
- Never use a file with a bare tang - the tang could be forced back into your wrist or palm.



# Hand Tools Safety Guidelines

# Utility Knives Safety

## **Facts:**

- *Knives can be a useful tool in our work place*
- *When the right knife is chosen, it can be very effective*
- *In the hands of a trained worker a knife can be used safely*

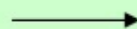
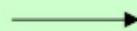
## **However:**

- *Knives are often used as 'all purpose' tools and result in injuries*
- *Workers will use a general purpose 'utility knife' when a*  
*specialized tool is available*
- *Improper use of knives has been the cause of several injuries*

- Some Fundamentals:
  - If a cutting device is needed as a work tool, it must be:
    1. Appropriate for the job
    2. Kept in good condition (i.e. blade sharp, handle intact)
    3. Stored properly with other work tools
    4. Not used for purposes it was not intended for

## Causes of knife injuries

- **Body part in the line of fire** (usually the hand holding the object being cut)
- **Handling the knife before or after the cut has been made** (picking up an unguarded knife, passing the knife to another worker)
- **Unstable object being cut** (the object shifts or moves allowing the blade to slip)
- **Dull blade** (excessive force required to compensate for the dull cutting edge)
- **Inadequate protective equipment** (lack of a cut resistant glove for the holding hand)
- **Wrong tool** (a knife was not the tool for the task)



## Preventative Measures

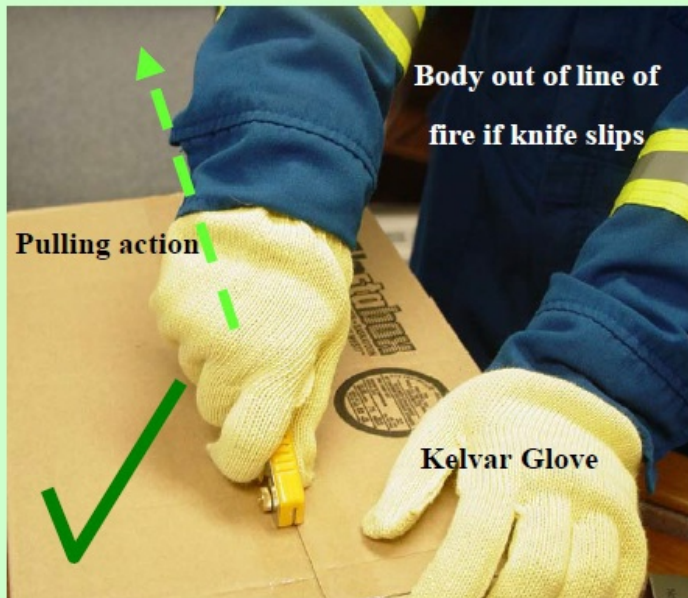
- **Do not cut toward yourself** (assess where the blade will go if it comes off or goes through the material being cut)
- **Open blade knives must be stored in sheaths** (utility knives must be stored with the blade retracted)
- **Place the object being cut on a stable surface** (secure the object with a protected hand or holding device i.e. edge)
- **Keep blades sharp** (replace or sharpen blades when they become dull)
- **Use a Kevlar glove on the holding hand** (ideally, use a mechanical device to hold the object)
- **Choose the right cutting tool** (a knife utility knife should not be the first choice)

Remember – as MORE FORCE is needed to cut, the greater the injury if one occurs!

- MORE FORCE can lead to a severe laceration.
- MORE FORCE user to lose control.
- Forcing the knife can lead to hand and arm fatigue, a weaker grip, which can lead to an injury.

## Line of Fire

- *Visualize the path the blade will take before beginning the cut*
- *Ensure that no body parts (or sensitive equipment) will be in that path if the knife slips or comes off the surface.*



## Choose the Right Tool:

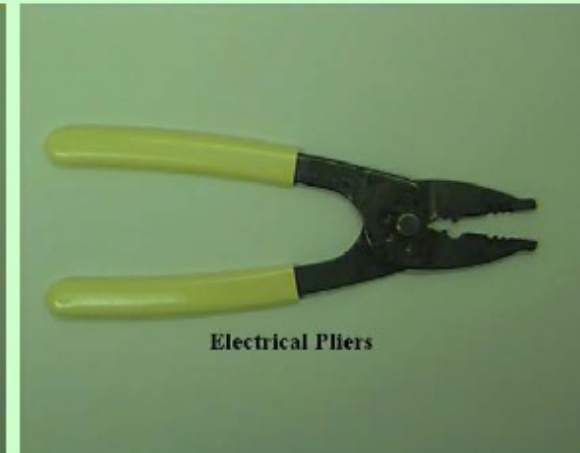
- *A utility knife should not be the first choice*
- *Use a tool that is designed specifically for the task and the material*



9" All Purpose Utility Cutters



PVC Cutters / Ratchet Type



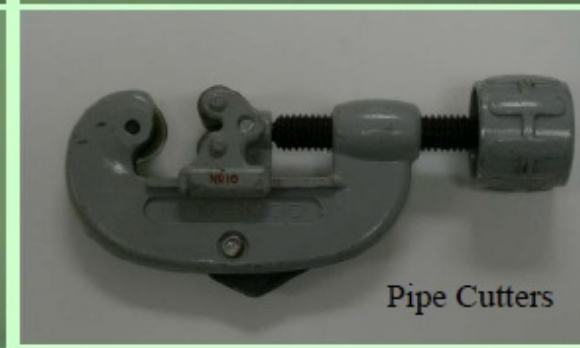
Electrical Pliers



Side Cutters



Multi - Snip



Pipe Cutters

Wire Cutter  
and Stripper



Sheet Metal  
Cutters



**Box Cutter**

**Knife**



**Chisel**

**Punch**

**Awl**

**Scraper**

**Screwdriver**

## ***Prevent Cuts with Knives***

- **Direct the cut away from your body**
- **Store knives with the blades protected or retracted**
- **Secure the object being cut on a stable surface**
- **Keep blades sharp**
- **Protect the holding hand with a Kevlar glove or guide**
- **Choose the right cutting tool**

# Hand-saw safety

# Hand-Saw Safety #1

- Prior to use, always inspect hand saws for defects such as splintered or cracked handles, missing saw-blade teeth, loose saw-blade connections, and bent saw blades or frame handles.
- If a hand saw fails your pre-use inspection, notify your teacher. Do not use the hand saw until it has been repaired.
- A preferred safety practice is to wear eye protection when using a hand saw.
- Do not test saw teeth on hands or fingers to determine whether a hand saw is sharp

# Hand-Saw Safety #2

- Use the proper type of hand saw for the material to be cut or type of cut to be made. For example, use a rip hand-saw for cutting along the grain of the wood and a cross-cut handsaw for cutting across the grain of the wood
- Select the correct type of hacksaw blade for the type of material to be cut.
- When preparing to cut wood, inspect the wood stock for nails or other imbedded objects that could damage the hand saw.
- Begin cutting by starting carefully and slowly to prevent the saw blade from jumping or binding.

# Hand-Saw Safety #3

- When using a pruning hand-saw, do not cut limbs or branches above your head and use your free hand to hold the limb or branch while sawing.
- Place stock in vise or hold stock firmly when sawing. Use a helper or bench to support long stock.
- Use the length of the blade during each saw stroke.
- Always carry a hand saw by its handle with the saw end pointed down.

# Hand-Saw Safety #4

- Keep all hand-saw blades sharp and clean. Also, keep hacksaw blades lightly oiled.
- When finished with the hand saw, return it to its assigned storage place.
- If you suffer an injury while using a hand saw, tell your teacher or supervisor. Seek medical attention if the injury is serious.