GENERAL SHOP SAFETY

Statistics show that in the workplace, or more specifically, the woodworking shop, there are almost 3 times as many injury accidents involving hand tools as there are with power tools. Although the statistics are from industrial sources, we can assume that a similar statistic exists in the world of small workshops as well.

HAND TOOLS

1. Wear eye protection when using hand tools. Do not wear bulky gloves, except in extreme situations.

2. Before using any tool, visually inspect it and check that the cutter is securely mounted into its holder, that the handle is solid, and that the body is not chipped, cracked. or obviously lacking parts. If you are in any doubt about a tool's function or use, ask a knowledgeable professional for advice.
Tool maintenance is important. Dull or broken tools should be taken out of service and repaired, sharpened, or replaced. Do not use chisels or screwdrivers that have cracked handles.

3. When using any tool, respect it for what it is. Every tool is designed to perform a specific task well, and is almost useless in any other capacity.

If you are having trouble getting a tool to do what you want it to do, you are probably using the tool incorrectly or using the wrong tool for the job, and should seek advice before proceeding.

Use the right tool, don't substitute tools, and don't be afraid to seek advice about tool usage and safety.

4. Keep cutting tools sharp. The sharper the tool, the more effortlessly and precisely it performs its function. A dull tool takes heavy hammer blows to plow through the material, with an increased risk to safety. If you do cut yourself with a sharp tool, the injury will heal faster and cleaner than an injury made with a dull tool. If you do not know how to sharpen your hand tools, learn how. There is reading material available, and workshop seminars as well.

5. Be careful when laying your tools on the bench. Sharp blades are dangerous if left protruding over the edge of counters, or hidden beneath mounds of chips or debris. Sharp blades also become dull very quickly if dropped on concrete floors or left lying against other metal tools or tables.

6. When finished using a tool, set it aside on your work area where it is visible. When your work session is over, clean your tools, and place them back In their proper positions in the tool cabinets or racks.

7. When buying tools, do not sacrifice quality for price. Usually, the better quality tool will have more safety features, will be less likely to fall apart in your hands, and, with proper care, will save you money over the life of the tool.

POWER TOOLS

1. Wear appropriate protection, such as goggles, hearing protectors, and face shields, when operating any power hand tool.

2. Never attempt to use a machine with which you are unfamiliar. No-one should use a machine unassisted until he/she understands the manufacturer's recommendations about the tool and its proper use. A full working knowledge of how to use the machine and the safety precautions applicable to the machine must be demonstrated. If you are in doubt about any procedure, ask for advice.

3. Do not wear loose clothing while using power tools, and roll up baggy sleeves.

4. Tie long hair well out of the way so that it will not get tangled in moving bits or impair visibility.

5. Do not wear gloves unless the situation specifically demands that you do so. Gloves are dangerous when working with any rotary power tool.

6. Make sure that the floor surface you are standing on is dry and clear of anything that might impede your movement or put you off balance.

7. Wear sensible shoes- the workshop is not the environment for high heels, sandals, or other unsuitable footwear. Wear "sensible" shoes, preferably steel-toed, when working in the shop.

8. Do not distract a person who is performing an operation with a power tool. Approach them from the front if they are in danger and are unaware of it.

9. Before plugging in any power tool:

* briefly inspect it to make sure that the cutter is properly mounted in its holder.

• ensure that all adjustment locks are tight.

• check that the machine body is intact.

• see that the handles are secure onto the body.

* be certain that the cord is secure where it enters the body, and is not cracked, worn, or frayed, and that the plug is intact.

• be sure that the machine is switched off.

10. Before switching on the machine, make sure that your work is properly secured in a vise or clamped to a tabletop.

11. Before turning a machine on:
*check all adjustments and safety devices.
*be certain that no locking keys or adjustment wrenches have been left on the machine. An adjustment wrench left in a drill press, lathe chuck, or planer head will become a bullet if the machine is turned on. The same is true for wrenches left on machine tables, or near rotating shafts or spindles.

12. Take some time to plan your moves, and mentally rehearse the sequence you will follow in order to carry out the operation you are about to begin.

Remember that blades rotating at high speed become invisible and do not appear to be as dangerous as they are. Keep your hands securely on the handles of the machine, and keep the rotating cutters away from your body and clothing.

13. While the machine is running, keep your senses alert for unusual sounds and vibrations that may signal machine malfunction. It could mean that there is a maladjustment in the machine, or that the bits or cutters are loose, bent, cracked, or broken. If you hear something unusual, stop the machine immediately until the problem can be checked out.

14. The smell of smoke or the presence of burn marks on your material is an indication of an overheated cutter. This could be caused by dull or clogged cutting edges, too deep a cut, or too fast or slow a cutting speed. Do not feed material faster than the machine will comfortably accept it, and make deep cuts in several shallow passes.

If you have a problem, stop the operation immediately until it can be rectified.

15. Always use a machine that is suitably sized for the job. Overloading the motor capacity of a machine results in heat buildup, and shortens the life of the machine.

16. Keep your senses about you and realize that any job done well takes preparation and time. Taking chances, unnecessary haste, and ill-considered shortcuts are strongly discouraged.

17. Do not leave power tools resting on their cutters, and never leave power tools laying on the floor. Almost all power tools have a designed-in "rest" position. This position varies for each tool, but generally, in this position. The tool is balanced so that its cutter is exposed and off the surface. Learn what this position is and when you finish

an operation, switch off the power and place the tool in this position on the workbench top.

18. Always unplug a power tool before changing bits or cutters, and after using it. Do not unplug any electrical device by pulling on the cord. Pull firmly on the plug.

19. When feeding material into a blade or cutter, keep your hands out of the line of cut. Whenever possible, use push sticks to keep your hands clear of the cutters.

20. Never brush debris from the table by hand. When clearing dust or debris from the machine table, use a counter brush. Shut the machine off in order to clear debris or cuttings from the cutter area.

21. Never attempt to free the mechanism while the motor is under power. If a piece of material gets jammed in the moving cutter head, or the cutter becomes stalled in the material, shut the power off.

22. Awkward postures and hand positions lead to accidents. If you can't make a cut without making awkward movements, construct a jig that allows you to work the piece safely. Avoid situations which might allow your hand to slip into the cutter.

23. Dirty, gritty, or painted material should not be worked on these machines as they will dull the cutters immediately. Material to be worked must be checked for staples, nails, screws. etc.

24. Inspect blades and cutters often to ensure that they are clean and sharp. Clean blades cut smoothly and easily, with less damaging heat build-up. Built-up resins can be removed, in most cases, with oven cleaner. Have dull blades sharpened immediately by a professional.

25. Make deep cuts in several shallow passes. Refrain from feeding the material faster than the machine will comfortably accept it.

26. In order to maximize the life of the electric motors, and to minimize the chance of kickback, machines must be allowed to reach operating speed before material is fed into them.

27. Keep all material in contact with the machine table when presenting it to the cutters. If the piece is awkward and won't lay flat on the table, construct a jig that allows you to work the piece safely.

28. Never leave a machine while it is running, and when provided. If equipped, use the brake to stop the machine's motion before leaving it.

29. When finished with a power tool:

• blow the dust from it with an air gun if you have one.

• set the depth adjustment so the cutter is not exposed.

* wrap its cord around the body, and return it to its place in storage.

FIRE EXTINGUISHERS

To use a fire extinguisher, first hold it upright by the handle, and pull the ring pin to unlock ft. Standing back 10 feet from the fire, aim the nozzle at the base of the flames, and squeeze the handle. Sweep the extinguisher from side to side to provide a heat shield as you move In on the source of the flames. Do not stop

TYPES OF FIRES

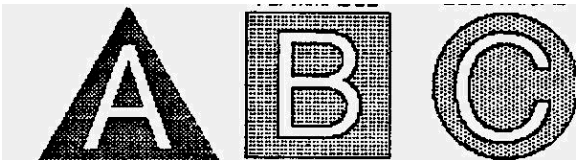
Know your fire extinguishers and the different types of fires that they are meant to be used on. Fires can be categorized into four types:

Type A: Ordinary combustibles: wood, paper. cloth, rubber and many plastics.

Type B: Flammable liquids such as gasoline, oil based paints, oils, grease, tar, fat. lacquer and flammable gas.

Type C: Electrical Equipment; motors and machinery, appliances, switches, wiring. fuse boxes, and circuit breakers.

Type D: Combustible Metals: magnesium. sodium, potassium, powdered aluminum. uranium, and their alloys. This type of fire does not normally affect the woodworking shop. The symbol for this type of fire is a yellow star.



COMPRESSED AIR

Air guns are meant to be used to blow dust or particles from hard to reach places. It is also often used to blow dust from work and surfaces, although a small brush reserved for the purpose is probably more effective.

Although some people use air guns to blow dust from clothing and hair when work is completed, this practice is not condoned by those who think safety first.

An air gun can do irreparable harm to ears and eyes, and can be lethal if pressurized air enters the bloodstream through an open wound. If you must use the air gun to blow dust from your clothes, keep the air blast away from your head and exposed skin.

1. Always wear eye protection when using the air gun. A dust mask and hearing protection is also advisable.

2. The air gun is not a toy and should never be used as such. Never aim an air gun at anyone, and remember, when in use, keep the blast directed away from other people.

SAFETY HAZARDS

The following points describe the types of physical hazards present in the workshop environment. Personal protective equipment needs are governed by these types of hazards. They do not, however, mention the most important safety hazard in any work environment: attitude.

Overconfidence, a feeling of invincibility, and an attitude of nonchalance have probably caused more injuries in the workshop than have all of the following physical hazards combined. You must realize that workshop safety demands that you be humble, attentive, and in the present tense at all times.

Hazard Type I:
Flying Objects & Impacts

a. To avoid injury from flying objects and impacts, use eyeglasses or Cover Goggles. Lenses should be made of Hardex or Polycarbonate material (minimum .060 Inch thickness) to Insure against shattering. For full protection, eyeglasses should have side shields. For positive eye and face protection, wear eyeglasses and cover goggles in conjunction with a face shield.

b. Hearing protection should be worn.

c. Wear a good quality dust mask.

d. Coveralls should also be worn. When grinding or welding. a leather apron is also advisable in order to protect your chest from flying particles.

e. Depending on the operation, gloves may be appropriate.

f. Safety footwear may also he a consideration.

Hazard Type II: Flying Particles/Dust & Fumes

a. To protect the eyes from dust, cover goggles, suitable for dust situations, can be worn together with a face shield. When working with high-speed tools, all lenses must be of polycarbonate material, of at least .060 inch in thickness.

b. Hearing protection should be worn.

c. Wear a good quality dust mask. If the dust or fumes are of a chemical nature, a toxic particle mask must be worn. Be certain that the filter type matches the hazard you are encountering.

d. Coveralls should also be worn to provide an extra layer of protection. When sandblasting. a leather apron is also recommended to protect your chest from flying particles.

e. Depending on the operation, gloves may be appropriate.

Hazard Type Ill: Chemical Splash

a. When working with chemicals or when painting with enamels or lacquers, wear cover goggles together with a face shield. There is no need for polycarbonate lenses, but make sure your goggles are rated for splashes and fumes.

b. Wear a good quality toxic particle mask. Be sure the filter cartridges are compatible with the chemical you are using.

c. Wear coveralls to provide an extra layer of protection.

d. Depending on the operation, gloves may also be appropriate. Make sure that they are compatible with the chemical you are using.

e. Safety footwear may also be a consideration. It may be necessary to use protective covering for your feet.

Hazard Type IV: Heat/Glare/Radiation

When working with welding equipment, welding helmets must be worn. For oxy-acetylene welding, use lightweight tinted face shields. These offer almost no protection against the glare and radiation produced during other welding processes, however. When using Arc, MIG, or TIG welders, dark glass, protective welding helmets must be worn. Do not use welding equipment without proper training. Consult professional sources for advice.

NOISE

When working in noisy environments, or when using noisy tools, proper hearing protection must be worn. The noise made by machinery and cutters can result in a lasting Impairment of hearing. Hearing protectors are designed to reduce the amount of sound energy that reaches the ears. Hearing protection should always be worn when working with or around hammers. power tools, or compressed air.

Sound intensity, or loudness, is measured in decibels (abbreviated dB). These represent a logarithmic scale of ratios. Sound intensity doubles with an added 6 dB. An added 20 dB will mean a 10-fold increase in intensity.

Occupational Health and Safety set limits on the job exposure to noise. They recommend that a maximum 85 dB level be maintained over an 8-hour work day. If the level increases to 90 dB. a 4-hour maximum exposure is allowed. At 95 dB, this exposure is limited to 2 hours, and so on. With each increase of 5 dB, the allowable exposure time is halved.

Research has been done to measure the sound intensity produced by different machines, and the reduction of noise levels experienced as a result of wearing hearing protection devices.

Typical noise level produced by different machines (actual levels vary from machine to machine, and from workshop to

Bandsaw	98dB
Dust collector	95dB
Jointer	90dB
Miter saw	105dB
Orbital sander	100dB
Panel saw	100dB
Planer	105dB
Pneumatic nailer	110dB
Router	105dB

Ear Plugs- are small and have the advantages of being easily carried and stored. They are convenient to use, may be used in conjunction with earmuff-type protectors. and are comfortable in hot, humid, or confined work spaces. But because they are made to fit inside the ear canal. ear plugs are sometimes uncomfortable because of air pressure buildup. and also require strict hygienic practices. They may be difficult to insert and remove comfortably, and are easily lost or misplaced.

Ear-muff type hearing protectors should be readily available in the workshop, and kept on hangers at each noisy tool location. It is important that you use them when working

with loud machinery, when performing noisy operations, or when working in close proximity to others that are.

Hazardous Materials Labeling Pictograms

Flammable

Easily combustible material. Includes most oil & lacquer-based paints, solvents, and filler materials. Do not use around sparks, flames, or fire.

Storage: keep in a closed, marked container in a secure, well-ventilated, dry area.

Disposal: most can be recycled until exhausted, and handled by a toxic waste facility.

Corrosive

Will burn skin. Dissolves Metals. Includes acids, rust removers, alkaline liquids and powdered cleaners, paint thinners and strippers.

Storage: keep in a closed, marked container in a secure, well-ventilated, dry area.

Disposal: most must be handled by a toxic waste facility.

Poisonous

Immediately seriously toxic. Includes some finishing materials, pesticides, products with high concentrations of heavy metals, such as lead, mercury, and cadmium.

Storage: keep in a closed, secured, marked container, out of the reach of children.

Disposal: must be handled by a toxic waste facility.

Other Toxic

Toxic over long exposure. Includes adhesives containing formaldehyde, certain plastic and paint products.

Storage: keep in a closed, marked container in a secure, well-ventilated, dry area.

Explosive **Will react violently.** Unstable substances which react violently with water, shock, or changes in heat and pressure. Includes bleaches, oxidizers, spray can products, fuels.

Storage: keep in a closed, marked container in a secure, well-ventilated, dry area.

Disposal: must be handled by a toxic waste facility.

Compressed Gas

container may explode. Includes all compressed gas containers. Spray cans, welding gasses, propane bottles, compressor tanks.

Storage: High-pressure containers must be transported and stored upright. Containers in use must be secured upright.

Disposal: Compressed gas containers must be handled by trained personnel (supplier or shipper).

Radioactive Materials
Harmful Radiation

Biohazardous/ Infectious
Hazardous to living tissue

DO NOT OPEN - DO NOT HANDLE

Extremely Dangerous Material
If you have materials that posess these labels, call FIRE or POLICE. These are usually restricted materials,