MAJOR PROGRAM POINTS

"HAND AND POWER TOOL SAFETY"

Part of the "GENERAL SAFETY SERIES"

Quality Safety and Health Products, for Today...and Tomorrow

Outline of Major Points Covered in the "Hand and Power Tool Safety" Course

The following outline summarizes the major points of information presented in the course on "Hand and Power Tool Safety". The outline can be used to survey the course before taking it on a computer, as well as to review the course when a computer is not available.

- **Cutting, hitting, fastening, crimping, holding, lifting, chopping, bending, slicing, punching, heating, grinding, polishing and gouging.**
  - During a day's work, there can be hundreds of different tasks to be done… and you will often need several tools to complete each of them.

- **Tools are so much a part of our lives that it's easy to forget how dangerous they can be.**
  - Every year, hand and power tool accidents result in thousands of serious injuries and hundreds of deaths.

- **To avoid these types of accidents you need to know how to handle your tools safely.**
  - But this can be a difficult task, since every tool has its own unique set of hazards.

- **There are a lot of different kinds of hand tools, and new types of portable power tools become available every year. Power tools can run on:**
  - Electricity.
  - Gasoline.
  - Air pressure.
  - Hydraulic fluid.
  - Gunpowder.

- **Depending on what type of tool you are working with, it could have the potential to cause:**
  - Abrasions.
  - Lacerations.
  - Amputations.
  - Puncture wounds.
  - Contusions.
  - Eye injuries.
  - Burns.
  - Electric shock.
  - Muscle sprains.
  - Broken bones.

- **Using tools can also lead to health problems, such as:**
  - Hearing loss and tinnitus (a constant ringing in the ears).
  - Back and neck injuries.
  - Repetitive stress disorders of the hands, wrists and arms.
  - Respiratory problems, including emphysema, chronic bronchitis and lung cancer.

- **Power tools can be particularly dangerous, since they often expose you to multiple hazards at once. For example, when using a circular saw you could:**
  - Be cut by the blade.
  - Be struck in the eye by flying wood chips or shocked by the electric current.
  - Breathe in sawdust that may cause respiratory problems.
  - Be exposed to noise that can contribute to hearing loss.

- **Non-motorized hand tools don't present the same degree of danger as their powered counterparts.**
  - However, since hand tools are "driven" by your muscles, there is an increased risk of repetitive stress injuries.

- **Whether you use hand or power tools, there are some general safety practices that you should always follow.**
  - Keep your tools in good condition
  - Use the correct tools for the job
  - Know how to properly operate tools before using them.
  - Always wear personal protective equipment, especially eye protection.

- **Above all else, don't use tools unless your mind is clear and you can stay focused.**
  - Being sick or distracted can impair your judgment, especially if you are taking medications.
  - You should never use tools if you are under the influence of alcohol or illegal drugs, either.

- **No matter how safe you try to be, if your tools are in bad shape you are likely to have an accident.**
  - So make sure that you keep them in their carrying cases or storage cabinets to help prevent damage.

- **If there is an owner's manual, store it with the tool or in a nearby file for easy reference.**
  - Always follow the manufacturer's instructions for cleaning and maintenance.

- **Inspect your tools every time you use them. Things to look for include:**
  - Cracked or bent pieces.
  - Loose or missing parts.
  - Rust or corrosion.

- **The handles on hand tools take a lot of abuse.**
  - Make sure that they aren't loose, cracked or splintered.
  - You don't want a tool to "lose its head" and hit someone.

- **Tools that you strike must be in good condition too.**
  - For instance, a cold chisel with a "mushroomed" head could cause eye injuries from pieces of metal flying off each time it's struck.
  - To prevent this, keep the heads on these chisels ground down.

- **Most tool accidents involve cutting tools.**
  - Make sure that you sharpen and replace blades often, so they cut with minimal effort.
  - If you try to cut something with a dull tool, you are likely to slip and cut yourself instead!

- **Use sheathes or snap-on blade protectors when storing cutting tools.**
  - Tools with retractable blades, such as utility knives and planes, should have their blades withdrawn when not in use.

- **Sometimes you may have to improvise to protect your tools and keep them sharp.**
  - You can use corks or Styrofoam® to cover the points on awls and wood chisels.
  - Foam pipe insulation makes an excellent cover for handsaws.
  - Plastic pouches are great for storing small tools (this also protects the people who are picking them up).

- **Circular saws must have "self-adjusting" guards that protect you from the blade.**
  - These guards should immediately snap back into place after you've made a cut.

- **To keep the guards functioning properly, you should clean sawdust, wood shavings and dirt off of the hinge.**
  - You can also apply an occasional drop of oil… but don't over do it.
  - Too much oil can attract debris and cause the very problem that you are trying to prevent.

- **Before plugging in an electric tool you should:**
  - Check its housing to make sure that there are no cracks.
  - Verify that switches are not loose or damaged.
  - Carefully inspect the power cord, as well as any extension cords that you will be using, to make sure that they are not cracked, frayed or missing the grounding pin on their plugs.

- **If your job requires you to use pneumatic or hydraulic tools you should inspect the hoses for cracks and splits, to ensure that they don't leak or rupture when in use.**
  - A ruptured pneumatic hose can whip around violently.
  - A high-pressure hydraulic leak can spray oil out with tremendous force.

- **Gasoline tools must also be inspected before using them.**
  - Check the gas tank and fuel lines for cracks.
  - Take the tool out of service if you find any leaks.

- **A broken tool of any kind is dangerous.**
  - Tag damaged tools as "out of order" and install "lockout" devices on them to make sure that they can't be used.

- **Don't try and fix tools yourself.**
  - Always take them to manufacturer-approved repair facilities for servicing.

- **Before using any tool, you need to check your work area for potential hazards. For instance:**
  - It's dangerous to operate electric tools in areas where fuel or other flammable materials are stored, since the sparks from electric motors can ignite these substances.
  - Ordinary hand tools can also create sparks as they strike objects, so you need to use "spark-proof" hand tools when working around extremely flammable materials.

- **If the area that you are working in is dimly lit, you should set up portable lights to make it easy to see what you are doing.**

- **Make sure that coworkers are at a safe distance from flying debris and other hazards.**
  - Cordon off your work area with caution tape if necessary.

- **You can be seriously injured if you trip and fall with a tool in your hand, so keep the floor in your work area neat and clean as well.**

- **Tool injuries often occur when workers become distracted.**
  - So never bother a coworker who is using a tool.
  - If someone is trying to get your attention while you are working, stop what you are doing before finding out what they want.

- **When working up high you have to be careful not to drop tools.**
  - Using a wrist lanyard with your tools can keep them from falling if you lose your grip.
  - Never leave tools on top of a ladder or on scaffolding where they can be knocked off.

- **You need to protect yourself whenever you are using tools.**
  - A hard hat can cushion blows to the head.
  - Many jobs require work boots with steel toes.
  - And always wear eye protection!

- **Ordinary safety glasses are fine for jobs where there is minimal risk of flying debris.**
  - But safety goggles offer a better defense, and should be worn when using hammers, wire snips or power saws.

- **Some tools, such as grinders and masonry saws, can throw off both fine debris and heavy chunks of material at high speeds.**
  - To protect yourself from these hazards you should wear full-face safety shields and goggles.

- **Many tools produce earsplitting sounds, so hearing protection may be required, as well.**

- **You'll need some level of respiratory protection when sanding, cutting and grinding.**
  - Dust masks do a good job of protecting your lungs from sawdust.
  - Cartridge-filter respirators provide a better seal, and should be worn when the work is particularly dusty.
  - There are many different types of cartridges that you can use with these respirators, so be sure to choose the right one for the job that you're doing.

- **Wearing gloves when working with hand tools can protect you from cuts, abrasions and blisters.**
  - But don't use them if they keep you from grasping a tool firmly.

- **Gloves can also help to cushion you from vibration when using jack hammers and other "impact" tools, but they should not be worn when using most power tools.**
  - A glove can get snagged on a blade or bit and draw your hand into the cutting edge.

- **Long hair, loose clothing, watches and jewelry can also get caught in a tool's moving parts. So before beginning to work you should always:**
  - Pull your hair back.
  - Roll up your sleeves.
  - Remove loose items.

- **It's important that your tools fit both you and the job that you are doing.**
  - Many of today's tools have fiberglass handles, or soft rubber grips that absorb impact and reduce fatigue.
  - There are also "ergonomically" designed tools with curved handles that keep your wrist straight and help to prevent "tendonitis" or "carpal tunnel syndrome" from developing.

- **Hand tools are fine for small jobs, but when there is a lot of work to be done you should use power tools to cut down on the wear and tear on your body.**
  - Power tools can prevent repetitive stress injuries by doing the hard work for you.
  - However, the force behind these tools can create problems as well.

- **Some power tools produce vibrations that can damage the blood vessels in your hand, causing it to go numb.**
  - Since this condition, known as "vibration white finger disease," effects blood circulation, the tips of your fingers may turn white.
  - If using tools is causing pain in your hand, wrist or arm, see your doctor.

- **Upgrading your tool collection may help you prevent repetitive stress disorders.**
  - Most new power tools are designed to reduce the amount of vibration that they produce.
  - Many have "pistol grips" that make them easier to hold for long periods of time.
  - Some even have extra-large triggers to reduce finger fatigue.

- **Always buy good quality, "professional" tools.**
  - "Bargain basement" hand tools wear out quickly and are much more likely to break.
  - "Consumer-grade" power tools simply don't "cut it" on job sites.

- **One of the most dangerous things that you can do is to use a tool in a way that was not intended.**
  - Most hand tools are made for a specific purpose.
  - Don't try and "cut corners" by using a screwdriver as a chisel, a wrench as a hammer, or a knife as a screwdriver (you're likely to severely damage the tool, the material that you are working on and your hand).

- **Never modify a tool either.**
  - "Tricks," such as getting more leverage out of a wrench by slipping a piece of pipe over the handle, can result in a serious injury.

- **The size of the tool is also important.**
  - Hitting a large nail with a small hammer could result in a "glancing" blow.
  - It is also easy to miss the mark if you use a large hammer to drive home a small finishing nail.
  - Either way you are likely to receive a painful hand or finger injury.

- **Many power tools are extremely versatile, but what may be safe operation for one tool could cause another to injure you.**
  - Look at the owner's manuals for your tools, and always follow the manufacturer's instructions.

- **You probably use electric tools every day, but did you know that one out of every five construction deaths is do to electrocution?**
  - Many of these fatal accidents are caused by tools that are not properly grounded.

- **Grounding is necessary with most electric tools because they have metal housings or other parts that can conduct electricity to your hand.**
  - Never bypass the "ground" by using an adapter that allows you to plug a tool with a three-prong plug into a two-prong, ungrounded outlet.

- "Double insulated" tools are an exception.
  - They don't have to be grounded, because their electrified parts are thoroughly sealed in non-conductive plastic housings.
  - Double insulated tools will always be marked with a label that identifies them.
  - So if a tool has a two-prong plug but it's not marked "Double Insulated", don't use it.

- **Whenever you are working with electric tools you should plug into a Ground Fault Circuit Interrupter (GFCI).**
  - These devices prevent shocks by immediately cutting off the power when they sense that there is something wrong with the flow of electricity.

- **You shouldn't use electric tools in the rain or in damp work areas. They can electrocute you!**
  - If you must work in an area that has a damp floor, you can help to protect yourself by wearing rubber-soled shoes or by standing on a rubber mat.

- **The easiest way to get shocked is to cut or damage your tool's power cord.**
  - To prevent this, always be mindful of where the power cord is, and cut away from it.

- **Power cords can be fragile!**
  - Don't use them as a "spare handle".
  - Disconnect tools by firmly holding the plug (never tug on the cord).
  - Avoid overstretching or pulling on them (you could easily expose the wires and create a "shocking" situation).

- **One of the most dangerous things that can happen while using power tools is to have them "kick back" at you.**
  - "Kick-backs" occur when a tool's blade or bit binds up in the material that is being cut, and the force of the motor drives the tool towards you.
  - This can result in a serious laceration, even an amputation.

- **You shouldn't have to exert much pressure on a power tool to make it work.**
  - If it feels like a tool is "fighting" you, the cutting edge may be getting dull.
  - Use carbide-tipped blades and bits whenever possible (they hold their edge longer).

- **If the blade is sharp, the problem may be with the material.**
  - For instance, wood can be difficult to cut if it has big knots or it is wet, so choose your stock carefully.

- **Other things that you should do to prevent kickbacks include:**
  - Using the correct blade or bit for the job that you are doing.
  - Making sure that material doesn't shift by clamping it down or having someone help you to hold it in place.
  - Allowing tools to come up to full speed before trying to make a cut.
  - Changing directions gradually, so that you don't "jam" the blade or bit into the material.

- **Always unplug your tools before changing blades or bits.**
  - Allow some time for them to cool (using a tool creates a lot of friction, which can cause blades and bits to become extremely hot).

- Be careful that you don't cut your hands.
  - Wear gloves whenever possible.

- **When discarding blades, wrap them in cardboard or several layers of newspaper, so that people handling the trash won't cut themselves either.**

- **Once you have finished with a tool, clean it and put it away, to ensure that it's ready the next time that you need it.**

***** <u>SUMMARY</u> *****

- **By taking the time to keep your tools properly maintained and using them correctly you can get your work done faster and more safely.**

- **Know the hazards that each tool presents, and how to combat them.**

- **Keep your tools clean and in peak condition.**

- **Use the correct tool for the job.**

- **Don't use cutting tools that have dull bits or blades.**

- **Use tools that "fit" you ergonomically.**

- **Inspect your work area for hazards, and use tools that are the safest for the situation.**

- **And always wear the appropriate personal protective equipment for the work that you are doing.**

- **Every tool can be dangerous in its own way… but complacency may be the biggest hazard of all. So don't "cut corners," Keep your tools well maintained and use them safely!**