

Enclosed:

General Information
General Safety Practices
Incident Report Form
Specific Hazard Assessment

General Information

Workspace Location

Civil and Mechanical Engineering Laboratories (Rusty Hut)
2275 East Mall
Vancouver, B.C., Canada
V6T 1Z4

Kaiser 1180
Fred Kaiser Building
2332 Main Mall
Vancouver, B.C., Canada
V6T 1Z4

· **Safety Officer and Contact**

Serena Ramley
safety@ubcsailbot.org
604-505-2235

· **Emergency Contacts**

Kristoffer Vik Hansen
captain@ubcsailbot.org
778-995-6401

Karry Ocean
co-captain@ubcsailbot.org
778-888-7190

· **Sponsoring Faculty Member and Contact**

Jon Mikkelsen
mikk@mech.ubc.ca
604-822-2709

General Safety Practices

In the Engineering Design Team Conference, Jon Mikkelsen mentioned the importance of building a culture that “safety is smart”. To address this, we have started implementing “Building Logs” where

everyone on the Mechanical Team, including the first years, will take turns writing up an explanation of what we did during a work session, encompassing “What we did, how, why, and a sample of safety measures taken.” We have already done this for the past four worksessions since the Engineering Design Team Conference.

One of our first year students wrote on September 24, 2014:

- Dave gave a safety and training lesson on the proper usage of the circular saw.
- Members who weren't trained or didn't feel comfortable didn't utilise power tools.
- Tool training by Dave for new members.
- Kept adequate space between each group of people doing something.
- Used glasses with side shields in preference to glasses without them.
- Ear plugs were worn around the circular saw.

We strive to have excellent housekeeping. Within work sessions, team leads are responsible to ensure that the workspace is clean and tidy throughout the duration of a work session. We also emphasize that there should be plenty of space between each team member.

Personal protective equipment (PPE) must be worn at all times when working and additional PPE must be worn according to the task. Work areas are to be kept clean and organized. Any tools or equipment are to be stored safely and securely in the proper location when not being used. If a piece of equipment is directly locked, there must be a note attached explaining why, who locked it and their contact information.

MSDS is available in the work room's binder for any chemicals used. We went an extra mile, which took several hours, to put all of the relevant MSDS information including PPE, Precautions and First Aid Measures, onto a single spreadsheet and put it on the door to the chemicals cabinet so that team members can always see the safety measures for chemicals before obtaining them. We put a second copy of the spreadsheet in our work space for convenient reference while using the chemicals.

Incident report forms are also in the team MSDS binder which is on the same shelf with all the PPE. Any incident/accident/near-miss, even minor ones such as a paper cut, must be reported within one business day to the safety officer and MECH office.

Inactive members will be removed from the list of people allowed to use the workspace, so that the workspace will not be used for unintended purpose.

The incident report form is included in the following two pages.

Due Diligence

Hazards identified prior to starting work? Yes No

Relevant safe work instructions written? Yes No

Pre-job safety talk? Yes No

Pre-job equipment inspection? Yes No

Describe specific preparations for this work:

Actions Taken Following Incident

Check that you have included this information (as appropriate):

- Damaged equipment tagged out	- Informed team lead, others	- MSDS protocol followed
- Area secured	- Spill containment	- First aid/medical attention

Report prepared by:

Print Name

Signature

DD/MM/YY

Upon completion, submit to UBC Mechanical Engineering Department, CEME 2054.

Safety Training Standards

All members are required to complete the Department of Mechanical Engineering Lab Safety and Orientation Checklist and pass the Introduction to Laboratory Safety Course ("General Training") before being allowed to come to worksessions. We keep track of general safety training completion of all team members in our team organizational chart spreadsheet on Google Drive. Team members sign up for worksessions on our Google Drive, and cannot sign up for worksessions until they have completed the general safety training. The team safety officer is the only one allowed to train other team members in the general safety training.

The health and safety officer is fully trained and certified in Standard and Emergency First Aid and CPR-C.

Additionally, task-specific training takes place at the start of every work session, or when someone arrives mid-session with prior notice that they will arrive at this designated time. Task-specific training is conducted by one of the Mechanical Co-Leads or the Graduate student in Naval Architecture and Marine Engineering. We keep track of who has completed task-specific training by a printed spreadsheet with everyone's names on the door to the team cabinet containing the task-specific tools, which can only be signed by one of the Mechanical Co-Leads or the Graduate student.

New members are reminded and encouraged to openly and repeatedly ask when they are unsure of how to do something.

Supervision Rules

One of the Mechanical Co-Leads or the Graduate student in Naval Architecture and Marine Engineering, Robert Gage, will be present to oversee any work being done. A minimum of two team members must be present at all times when work is being carried out, one of which being a Mechanical Co-Lead or the Graduate student.

We put a limit on the number of people attending each work session (as appropriate for the given task), both to make it reasonable to manage for the person(s) supervising and to allow for appropriate physical space. Work is scheduled before being carried out.

The Mechanical Co-Leads, the Graduate student, and the Safety Officer are the only mechanical team members who know the key code to access the team tools, so it is not possible for individuals to use the team space without them. The only others who know the key code are the Co-Captains, the Electrical Lead, and the Software Lead.

GENERAL SAFETY POINTS

- If in doubt, DON'T DO IT, ask for help.
- If you think pieces of equipment or tools are not safe, do not use them. Contact the Safety Officer.
- If a piece of equipment or tool needs repair, inform the Safety Officer and leave a note on the tool.
- Do not use dull or poorly sharpened drills. Inform the Safety Officer and it will be serviced.
- Remove rings and watches when using power tools.
- Remove sharp edges with a file as soon as possible.
- Always securely clamp your work piece when drilling, whether using a press or not.
- Tie back long hair and loose clothing when using power tools.
- Always wear safety glasses when you are in the work area, even if someone else is using the

tools.

- Know where the first aid kits are located.
- Know where to get first aid treatment. If someone needs assistance, campus phone 2-4444 or 911
- Report ALL accidents. You will not get in trouble.
- Report even minor incidents. WorkSafe BC implores that individuals should not self-assess, diagnose, and treat themselves.
- Report near-misses. This allows procedures to be improved before a potential incident may occur.
- Sweep up cuttings and do not blow them off with an air hose.
- Keep your workspace clean including benches and floors.
- No open toed shoes allowed in labs.
- No food allowed in labs.

Some basic tips when using hand tools

What should I know about using hand tools?

- Select the right tool for the job. Substitutes increase the chance of having an accident.
- Use tools designed to allow wrist to stay straight. Avoid using hand tools with your wrist bent.
- Ensure that team members are properly trained in the safe use of hand tools.
- Use good quality tools.
- Keep tools in good condition at all times.
- Inspect tools for defects before use. Replace or repair defective tools.
- Keep cutting tools sharp and cover sharp edges with suitable covering to protect the tool and to prevent injuries from unintended contact.
- Replace cracked, splintered, or broken handles on files, hammers, screwdrivers, or sledges.
- Ensure that the handles of tools like hammers fit tightly into the head of the tool.
- Replace worn jaws on wrenches, pipe tools and pliers.
- Redress burred or mushroomed heads of striking tools.
- Pull on a wrench or pliers. Never push unless you hold the tool with your palm open.
- Point sharp tools (e.g., saws, chisels, knives) laying on benches away from aisles and handles should not extend over the edge of the bench top.
- Maintain tools carefully. Keep them clean and dry, and store them properly after each use.
- Carry tools in a sturdy toolbox to and from the worksite.
- Wear safety glasses or goggles and well-fitting gloves appropriate for the hazards to which you may be exposed when doing various tasks.
- Keep the work environment clean and tidy to avoid clutter, which may cause accidents.
- Use a heavy belt or apron and hang tools at your sides, not behind your back.

What should I avoid when using hand tools?

- Do not use tools for jobs they are not intended to do. For example, do not use a slot screwdriver as a chisel, pry bar, wedge or punch, nor wrenches as hammers.
- Do not apply excessive force or pressure on tools
- Do not cut towards yourself when using cutting tools.
- Do not hold the stock in the palm of your hand when using a cutting tool or a screwdriver.
- Do not wear bulky gloves to operate hand tools.
- Do not throw tools. Hand them, handle first, directly to other workers.

- Do not carry tools in a way that interferes with using both hands on a ladder. If working on a ladder or scaffold, tools should be raised and lowered using a bucket and hand line.
- Do not carry a sharp tool in your pocket.

Some basic tips when using powered hand tools

When and how should you inspect powered hand tools?

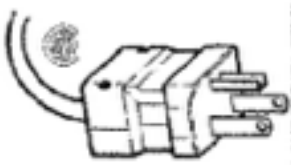
- Inspect tools for any damage prior to each use.
- Check the handle and body casing of the tool for cracks or other damage.
- If the tool has auxiliary or double handles, check to see that they installed securely.
- Inspect cords for defects: check the power cord for cracking, fraying, and other signs of wear or faults in the cord insulation.
- Check for damaged switches and ones with faulty trigger locks.
- Inspect the plug for cracks and for missing, loose or faulty prongs.

What should you do if you find a tool defective?

- If a tool is defective, remove it from service, and tag it clearly "Out of service for repair".
- Replace damaged equipment immediately - do not use defective tools "temporarily".
- Have tools repaired by a qualified person - do not attempt field repairs.

What should you do before using powered hand tools?

- Ensure that you have been properly trained to use the tool safely. Read the operator's manual before using the tool and operate the tool according to the manufacturer's instructions. Use only tested and approved tools.
- Ensure that the power tool has the correct guard, shield or other attachment that the manufacturer recommends.
- Prevent shocks. Ensure that the tools are properly grounded using a three-prong plug, are double-insulated (and are labelled as such), or are powered by a low-voltage isolation transformer: this will protect users from an electrical shock.
- Check electric tools to ensure that a tool with a 3-prong plug has an approved 3-wire cord and is grounded. The three-prong plug should be plugged in a properly grounded 3-pole outlet. If an adapter must be used to accommodate a two-hole receptacle, the adapter wire must be attached to a known, functioning ground. NEVER remove the third, grounding prong from a plug.



- Replace open front plugs with dead front plugs. Dead front plugs are sealed and present less danger of shock or short circuit.



- Have a qualified electrician install a polarized outlet if the polarized, two-prong plug of a double-insulated tool does not fit in a two-hole receptacle. Double insulated tools use plugs having one prong that is visibly wider than the other.

- Test all tools for effective grounding with a continuity tester or a ground fault circuit interrupter (GFCI) before use.
- Use only the kind of battery that the tool manufacturer specifies for the battery-powered tool that you are using.
- Recharge a battery-powered tool only with a charger that is specifically intended for the battery in that tool.
- Remove the battery from the tool or ensure that the tool is switched off or locked off before changing accessories, making adjustments, or storing the tool.
- Store a battery pack safely so that no metal parts, nails, screws, wrenches and so on can come in contact with the battery terminals; this could result in shorting the battery and possibly cause sparks, fires or burns.

What should you do while using powered hand tools?

- Wear or use personal protective equipment (PPE) or clothing that is appropriate for the work you are doing; this may include items such as safety glasses or goggles, hearing protection, dust mask, gloves, safety boots or shoes, or rubber boots.
- Switch off the tools before connecting them to a power supply.
- If a power cord feels more than comfortably warm or if a tool is sparking, have it checked by an electrician or other qualified person.
- Disconnect the power supply before making adjustments or changing accessories.
- Remove any wrenches and adjusting tools before turning on a tool.
- Inspect the cord for fraying or damage before each use. Tag defective tools clearly with an "Out of service" tag and replace immediately with a tool in good running order.
- During use, keep power cords clear of tools and the path that the tool will take.
- Use clamps, a vice or other devices to hold and support the piece being worked on, when practical to do so. This will allow you to use both hands for better control of the tool and will help prevent injuries if a tool jams or binds in a work piece.
- Use only approved extension cords that have the proper wire size (gauge) for the length of cord and power requirements of the electric tool that you are using. This will prevent the cord from overheating.
- For outdoor work, use outdoor extension cords marked "W-A" or "W".
- Suspend power cords over aisles or work areas to eliminate stumbling or tripping hazards.
- Eliminate octopus connections: if more than one receptacle plug is needed, use a power bar or power distribution strip that has an integral power cord and a built-in overcurrent protection.
- Pull the plug, not the cord when unplugging a tool. Pulling the cord causes wear and may adversely affect the wiring to the plug and cause electrical shock to the operator.
- Follow good housekeeping procedures - keep the work area free of clutter and debris that could be tripping or slipping hazards.
- Keep power cords away from heat, water, oil, sharp edges and moving parts. They can damage the insulation and cause a shock.
- Ensure that cutting tools, drill bits, etc. are kept sharp, clean and well maintained.
- Store tools in a dry, secure location when they are not being used.

What should you avoid when using powered tools?

- Do not wear gloves, loose clothing or jewelry while using revolving power tools. Tie back long hair or wear appropriate hair protection to prevent hair from getting caught in moving parts of equipment.
- Do not use a tool unless you have been trained to use it safely and know its limitations and hazards.
- Avoid accidental starting by ensuring the tool is turned off before you plug it in. Also do not walk around with a plugged-in tool with your finger touching the switch.

- Do not bypass the ON/OFF switch and operate the tools by connecting and disconnecting the power cord.
- Do not disconnect the power supply of the tool by pulling or jerking the cord from the outlet.
- Do not leave a running tool unattended. Do not leave it until it has been turned off, has stopped running completely, and has been unplugged.
- Do not use electric tools in wet conditions or damp locations unless tool is connected to a ground fault circuit interrupter (GFCI).
- Do not expose electric power tools to rain or wet conditions; wet tools increase the likelihood of electric shock.
- Avoid body contact with grounded surfaces like refrigerators, pipes and radiators when using electric powered tools; this will reduce the likelihood of shock if the operator's body is grounded.
- Do not plug several power cords into one outlet by using single-to-multiple outlet adapters or converters ("cube taps").
- Do not use light duty power cords.
- Stop using an electric power tool if you feel a tingle in your fingers. This is a warning that the tool is faulty and needs repair.
- Do not connect or splice extension cords together to make a longer connection: the resulting extension cord may not be able to provide sufficient current or power safely.
- Do not carry electrical tools by the power cord.
- Do not tie power cords in knots. Knots can cause short circuits and shocks. Loop the cords or use a twist lock plug.



- Never break off the third prong on a plug: replace broken 3-prong plugs and make sure the third prong is properly grounded.
- Never use extension cords as permanent wiring: use extension cords only as a temporary power supply to an area that does not have a power outlet.
- Do not walk on or allow vehicles or other moving equipment to pass over unprotected power cords. Cords should be put in conduits or protected by placing planks on each side of them.
- Do not bush away sawdust, shavings or turnings while the tool is running. Never use compressed air for cleaning surfaces or removing sawdust, metal turnings, etc.
- Do not operate tools in an area containing explosive vapours or gases.
- Do not clean tools with flammable or toxic solvents.
- Do not surprise or touch anyone who is operating a tool. Startling a tool operator could end up causing an accident or injury.

Some basic tips when using woodworking machines

What should you do before using woodworking machines?

Woodworking tools can be dangerous if not used properly.

- Only use woodworking machines that you have been trained to use properly and safely.
- Read the owner's manual carefully.
- Make sure you understand instructions before attempting to use any tool or machine. Ask questions if you have any doubts about doing the work safely.

What safety procedures should you follow when using woodworking machines?

- Always wear safety glasses or goggles
- Wear dust masks when required.
- Wear hearing protection that is suitable for the level and frequency of the noise you are exposed to in the woodworking area. If you have trouble hearing someone speak from three feet away, the noise level from the machine is too high. Damage to hearing may occur.
- Use gloves to protect hands from splinters when handling wood but do not wear them near rotating blades and other machinery parts where the gloves can catch.
- Wear protective footwear when required.
- Make sure the guard is in position, is in good working condition, and guards the machine adequately before operating any equipment or machine. Check and adjust all other safety devices.
- Make sure the equipment is properly grounded before use.
- Check that keys and adjusting wrenches are removed from the machine before turning on the power.
- Inspect stock for nails or other materials before cutting, planing, routing or carrying out similar activities.
- Make sure that all machines have start and stop buttons within easy and convenient reach of an operator. Start buttons should be protected so that accidental contact will not start the machine. A collar around the button 3 to 6 mm (1/8 to 1/4 inch) above the button is recommended.
- Ensure that all cutting tools and blades are clean, sharp, and in good working order so that they will cut freely, not forced.
- Turn the power off and unplug the power cord (or lock out the power source) before inspecting, changing, cleaning, adjusting or repairing a blade or a machine. Also turn the power off when discussing the work.
- Use a "push stick" to push material into the cutting area. Jigs are also useful in keeping hands safe during cutting procedures. Keep hands out of the line of the cutting blade.
- Clamp down and secure all work pieces when drilling or milling.
- Use good lighting so that the work piece, cutting blades, and machine controls can be seen clearly. Position or shade lighting sources so they do not shine in the operator's eyes or cause any glare and reflections.
- Ensure that the floor space around the equipment is sufficient to enable you to machine the size of work piece being processed safely without bumping into other workers or equipment.
- Use extension tables or roller supports for large workpieces. Supports should be placed on both sides (infeed and outfeed).
- Woodworking machines should be fitted with efficient and well-maintained local exhaust ventilation systems to remove sawdust or chips that are produced.
- Electric power cords should be above head level or in the floor in such a way that they are not tripping hazards.
- Keep work area free of clutter, clean, well swept, and well lit. Spills should be cleaned up immediately. Floor areas should be level and non-slip. Good housekeeping practices and workplace design will reduce the number of injuries and accidents from slips, trips, and falls.

What should you avoid when working with woodworking machines?

- Do not wear loose clothing, work gloves, neckties, rings, bracelets or other jewellery that can become entangled with moving parts.
- Avoid awkward operations and hand positions where a sudden slip could cause your hand to move into the cutting tool or blade.
- Do not remove sawdust or cuttings from the cutting head by hand while a machine is running. Use a stick or brush when the machine has stopped moving.
- Do not use compressed air to remove sawdust, turnings, etc. from machines or clothing.
- Do not leave machines running unattended (unless they are designed and intended to be

operated while unattended). Do not leave a machine until the power off is turned off and the machine comes to a complete stop.

- Do not try to free a stalled blade before turning the power off.
- Do not distract or startle an operator while he or she is using woodworking equipment.
- Horse play should be prohibited. It can lead to injuries.

Specific Hazard Assessment

Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Working within the Rusty Hut
Hazard Description:	Researchers are working on projects. The wind tunnel may be in operation. Other student teams may have hazards in their workspace. There are tripping hazards, large unstable objects, and a number of old projects hanging from the ceiling that could be hazardous.
Hazard Control:	Members must notify the supervisor when entering the Rusty Hut. Proper PPE must be worn. The Safety Checklist, Safety Orientation, and Safety Quiz must be completed before working in the Rusty Hut.

Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Laying out carbon/fiberglass and using chemicals in order to bond material.
Hazard Description:	Catalysts, resins, epoxies, cleaners and other chemicals are being used and fumes or excess have the potential of coming into contact with individuals.
Hazard Control:	Work is signed-off. Task-specific training must be completed, required PPE must be worn and surrounding group members are to be notified and use PPE if in close vicinity. Chemicals are to be handled and disposed of as per MSDS guidelines.

Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Sanding
Hazard Description:	Fiberglass/carbon/wood is being sanded and aerated particles and can come in contact with individuals
Hazard Control:	Work is signed-off. Task-specific training must be completed, required PPE must be worn and surrounding group members are to be notified and use PPE if in close vicinity. Note that the face mask must be properly fitted and sanitized.

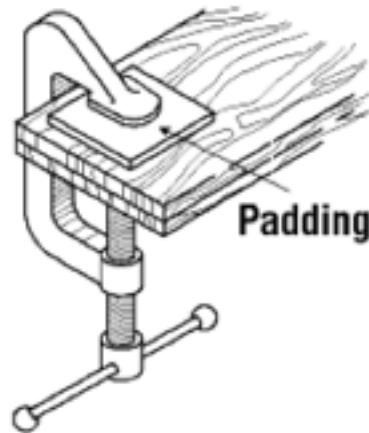
Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
-------------------------	--

Task Description:	Tripping
Hazard Description:	Trips happen when your foot collides (strikes, hits) an object causing you to lose the balance and, eventually fall. Common causes of tripping are: <ul style="list-style-type: none"> ■ obstructed view, ■ poor lighting, ■ clutter in your way, ■ wrinkled carpeting, ■ uncovered cables, ■ bottom drawers not being closed, and uneven (steps, thresholds) walking surfaces.
Hazard Control:	Good housekeeping, quality of walking surfaces (flooring), selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents.

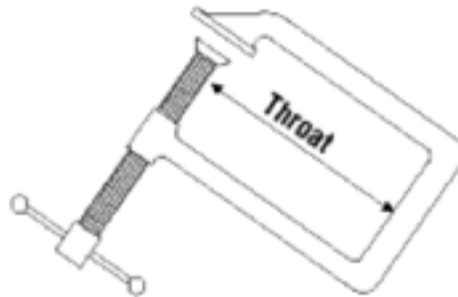
Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Clamps
Hazard Description:	Clamps provides a lot of force to a material. Incorrect use might result in accidents.

Hazard Control:

- Ensure that the swivel at the end of the screw turns freely before using.
- Dispose of clamps with bent frames; replace bent spindles, if possible.
- Ensure that the pressure plate and anvil parts of the clamp are in full contact with the workpiece before tightening.
- Use pads with C-clamps to avoid marking the work.



- Remove clamps as soon as the job is finished. Clamps serve only as temporary devices for holding work securely in place.
 - Keep all moving parts of clamps lightly oiled and keep tools clean to prevent slippage. Also make sure there is no dirt or oil on any part that will come in to contact with the work.
 - Store C-clamps by clamping them in a rack, not in a drawer.
- Integrated Engineering Page 10 of 39 Laboratory Safety Manual



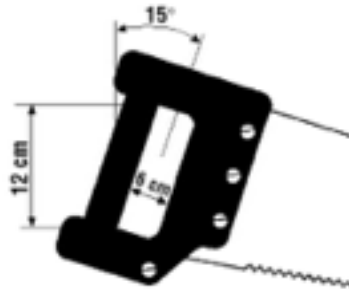
What should I avoid doing when using clamps?

- Do not use extra large clamps just for the sake of their large throats. Instead, use, deep-throat clamps.
- Do not use any clamps that have a bent frame or a bent spindle.
- Do not use wrenches, pipes, hammers, or pliers to tighten clamps. Use wrenches only on clamps especially designed for wrenches
- Do not hoist or pull with C-clamps. Use special lifting clamps.
- Do not use C-clamps to construct scaffolds or platforms for workers.

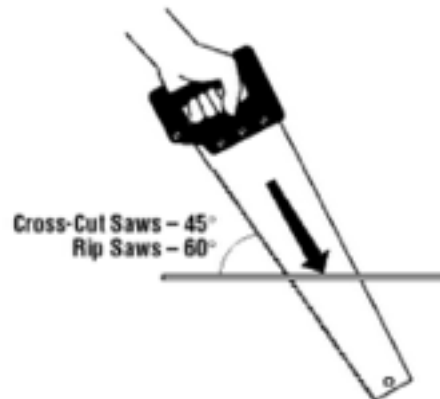
Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Hand saw
Hazard Description:	There is a possibility for hand, eye, ear, and extremity injury while working with hand saws as they or material being worked on could move suddenly or debris could come into contact with individuals.

Hazard Control:

- Wear safety glasses or goggles, or a faceshield.
- Select a saw of proper shape and size for stock being used.
- Select a saw with the number of teeth per inch (TPI) in order to get the desired finish. For example: a coarse tooth blade (e.g., 2 or 3 TPI) should be used for thicker stock. 18 to 32 TPI should be used on thinner metals or plastic (0.5 cm or 1/4 inch). General wood cutting typically requires about 4 TPI.
- Choose a saw handle that keeps wrist in a natural position in the horizontal plane.
- Choose saw with a handle opening of at least 12 cm (5 in.) long and 6 cm (2.5 in.) wide and slanted at a 15° angle.



- Check the stock being cut for nails, knots, and other objects that may damage or buckle saw.
- Start the cut by placing your hand beside the cut mark with your thumb upright and pressing against blade. Start cut carefully and slowly to prevent blade from jumping. Pull upward until blade bites. Start with partial cut, then set saw at proper angle.
- Apply pressure on downstroke only.




- Hold stock being cut firmly in place.
- Use a helper, a supporting bench or vise to support long stock if required.
- Keep teeth and blades properly set.
- Protect teeth of saw when not in use.
- Keep saw blades clean.

Hacksaw

- Select correct blade for material being cut.
- Secure blade with the teeth pointing forward. Tighten the nut until the blade is under tension.

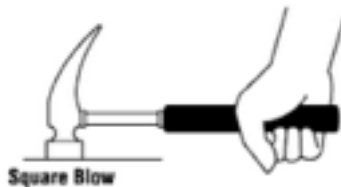
Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Cutting tools
Hazard Description:	<p>Many types and sizes of cutters are used for cutting selected metal products made from iron, steel, or softer, non-ferrous materials (e.g., copper, brass, aluminum). Cutters are designed to cut materials of different kinds of products such as wires, cables (electrical, coax, multi-strand), wire ropes, fencing, bolts, rods, pre-stressed concrete wires, and strapping.</p> <p>There is a possibility for hand, eye, ear, and extremity injury while working with cutting tools as they or material being worked on could move suddenly or debris could come into contact with individuals.</p>

<p>Hazard Control:</p>	<ul style="list-style-type: none"> ■ Wear safety glasses or goggles, or a faceshield and protective gloves when using cutters. ■ Choose the proper cutter for the job. Cutters are designed for a specific type, hardness, and size of material. ■ Cut materials straight across - keep the material being cut at right angles to the cutting edges of jaws. ■ Prevent injury from flying metal by wrapping a burlap bag, cloth or rag around the cutting jaws. Metal can fly when cut. The harder the metal, the farther it will fly. ■ Warn those in the area to take precautionary measures to avoid possible injury from flying metal pieces. ■ Keep cutting tools in good repair. ■ Adjust and lubricate cutter and moving parts daily if heavily used. ■ Sharpen jaws according to manufacturers' instructions.  <p>What should I avoid doing?</p> <ul style="list-style-type: none"> ■ Do not use a cutting tool until you are trained in its proper and safe use. ■ Do not use cushion grip handles for jobs requiring insulated handles. Cushion grips are for comfort primarily and do not protect against electric shock. ■ Do not use cutters which are cracked, broken or loose. ■ Do not exceed the recommended capacity of a tool. ■ Do not cut diagonally. ■ Do not rock cutters from side to side when cutting wire. ■ Do not pry or twist with tool when cutting. ■ Do not hammer on cutting tools or extend the handle length to achieve greater cutting power. ■ Do not expose cutters to excessive heat. ■ Do not repair cutters. Discard equipment that is cracked, broken or shows signs of damage.
------------------------	--

Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Hammers
Hazard Description:	There is a possibility for hand, eye, ear, and extremity injury while working with hammers as they or material being worked on could move suddenly or debris could come into contact with individuals.

Hazard Control:

- Select a hammer that is comfortable for you and that is the proper size and weight for the job. Misuse can cause the striking face to chip, possibly causing a serious injury.
- Choose a hammer with a striking face diameter approximately 12 mm (0.5 inch) larger than the face of the tool being struck (e.g., chisels, punches, wedges, etc.).
- Ensure that the head of the hammer is firmly attached to the handle.
- Replace loose, cracked or splintered handles.
- Discard any hammer with mushroomed or chipped face or with cracks in the claw or eye section





- Wear safety glasses or goggles, or a faceshield.
- Strike a hammer blow squarely with the striking face parallel to the surface being struck. Always avoid glancing blows and over and under strikes. (Hammers with bevelled faces are less likely to chip or spall.)
- Look behind and above you before swinging the hammer.
- Watch the object you are hitting.
- Hold the hammer with your wrist straight and your hand firmly wrapped around the handle

What should I avoid doing?

- Do not use a hammer with a loose or damaged handle.
- Do not use handles that are rough, cracked, broken, splintered, sharp-edged or loosely attached to head.
- Do not use any hammer head with dents, cracks, chips, mushrooming, or excessive wear.
- Do not use a hammer for any purpose for which it was not designed or intended.
- Do not use one hammer to strike another hammer, other hard metal objects, stones or concrete.
- Do not redress, grind, weld or reheat-treat a hammer head.
- Do not strike with the side or cheek of the hammer.

Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Pliers and Wire Cutters
Hazard Description:	There is a possibility for hand, eye, ear, and extremity injury while working with pliers and wire cutters as they or material being worked on could move suddenly or debris could come into contact with individuals.

<p>Hazard Control:</p>	<ul style="list-style-type: none"> ■ Wear safety glasses or goggles, or a faceshield where there is a hazard from flying particles, pieces of wire, etc. ■ Cut at right angles. Never rock the cutting tool from side to side or bend wire back and forth against the cutting edges.   <ul style="list-style-type: none"> ■ Choose pliers or wire cutters that have a grip span of 6 cm - 9 cm (2 1/2 - 3 1/2 in.) to prevent your palm or fingers from being pinched when the tools are closed. ■ Use adjustable pliers that allow you to grip the workpiece firmly while maintaining a comfortable handgrip (i.e., hand grasp is not too wide). ■ Use tools only if they are in good condition. ■ Make sure that the cutting edges are sharp. Dull and worn down cutting edges require many times more force needed for cutting. ■ Make sure that the toothed jaws are clean and sharp. Greasy or worn down jaws can result in compromised safety. Such tools also require increased force to hold the workpiece which, in turn, increases the risk of muscular fatigue and repetitive strain injuries. ■ Oil pliers and wire cutters regularly. A drop of oil on the hinge will make the tools easier to use. ■ Pull on the pliers; do not push away from you when applying pressure. If the tools slips unexpectedly, you may lose your balance or hit your hand against equipment or something else hard that could result in an injury. <p>What should I avoid doing?</p> <ul style="list-style-type: none"> ■ Do not cut hardened wire unless the pliers or wire cutters are specifically manufactured for this purpose. ■ Do not expose pliers or wire cutters to excessive heat. ■ Do not bend stiff wire with light pliers. Needle nose pliers can be damaged by using the tips to bend large wire. Use a sturdier tool. ■ Do not use pliers as a hammer. ■ Do not hammer on pliers or wire cutters to cut wires or bolts. ■ Do not extend the length of handles to gain greater leverage. Use a larger pair of pliers for gripping or a bolt cutter for cutting. ■ Do not use cushion grip handles for jobs requiring tools with electrically insulated handles. Cushion grips are for comfort
------------------------	--

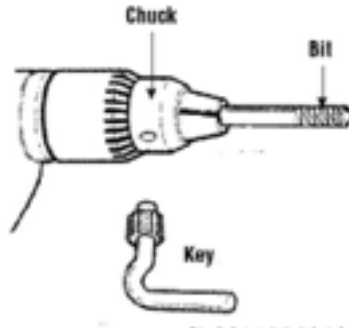
Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Screwdrivers
Hazard Description:	There is a possibility for hand, eye, ear, and extremity injury while working with screwdrivers as they or material being worked on could move suddenly or debris could come into contact with individuals.
Hazard Control:	<ul style="list-style-type: none"> ■ Do not lean or push on a screwdriver with any more force than necessary to keep contact with the screw. A screw properly piloted and fitted will draw itself into the right position when turned. Keep the shank directly over the screw being driven. ■ Do not hold the stock in one hand while using the screwdriver with the other. If the screwdriver slips out of the slot, you may cut your hand. ■ Do not hammer screws which cannot be turned. ■ Do not grind the tip to fit all sizes of screw heads. ■ Do not try to use screwdrivers on screw heads for which they are not designed (e.g., straight blade screwdrivers on Phillips, clutch head, Torx or multi-fluted spline screw heads). ■ Do not use defective screwdrivers (i.e., ones with rounded or damaged edges or tips; split or broken handle; or bent shaft). ■ Do not use a screwdriver for prying, punching, chiseling, scoring, scraping or stirring paint. ■ Do not use pliers on the handle of a screwdriver for extra turning power. A wrench should only be used on the square screwdriver shank designed for that purpose. ■ Do not expose a screwdriver blade to excessive heat. Heat can affect the temper of the metal and weaken the tool. ■ Do not use a screwdriver to check if an electrical circuit is live. Use a suitable meter or other circuit testing device. ■ Do not carry screwdrivers in your pockets.

Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Powered hand drill
Hazard Description:	There is a possibility for hand, eye, ear, and extremity injury while working with powered hand drills as they or material being worked on could move suddenly or debris could come into contact with individuals.

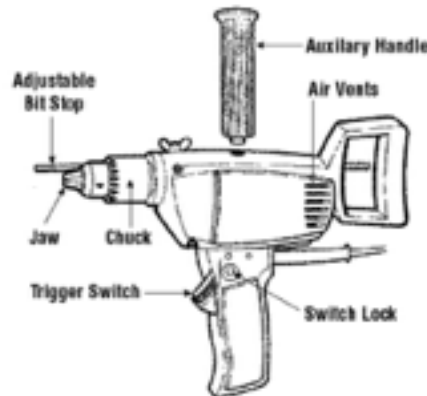
Hazard Control:

How do you select the proper bit or attachment?

- Follow manufacturers' instructions when selecting and using a bit or attachment, especially with unfamiliar drills or work.
- Select the bit or attachment suitable for the size of the drill and the work being done.
- Ensure that the bit or attachments are properly seated and tightened in the chuck.
- Use only bits and attachments that turn true.
- Use the auxiliary (second) handle for larger work or continuous operation.

**What should you do when working with powered hand drills?**

- Wear safety glasses or a face shield.
- Keep drill air vents clear to maintain adequate ventilation.
- Keep drill bits sharp always.
- Keep all cords clear of the cutting area during use. Inspect for frays or damage before each use.
- Disconnect power supply before changing or adjusting bit or attachments.
- Tighten the chuck securely. Remove chuck key before starting drill.
- Secure workpiece being drilled to prevent movement.



- Slow the rate of feed just before breaking through the surface.
- Drill a small "pilot" hole before drilling large holes.

What should you do when working with small pieces?

- Clamp stock so work will not twist or spin.
- Do not drill with one hand while holding the material with the other.

What should you avoid when working with powered hand drills?

- Do not use a bent drill bit.
- Do not exceed the manufacturer's recommended maximum drilling

Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Dremel tool
Hazard Description:	There is a possibility for hand, eye, ear, and extremity injury while working with Dremel tools as they or material being worked on could move suddenly or debris could come into contact with individuals.
Hazard Control:	<p>1. Wear the proper safety gear when you use a Dremel tool. Put on work gloves or rubber gloves to keep your hands safe from loose debris or other potentially harmful substances that you could touch when using the Dremel. Keep safety glasses on when cutting with a Dremel, since shards of wood, metal, plastic or glass could do serious damage to unprotected eyes.</p> <p>2. Familiarise with the Dremel operating controls on your model.</p> <p>3. Insert a bit into the hole at the end of the Dremel, back it out slightly and tighten the screw cap until the bit is tight on the end of the Dremel.</p> <p>4. Practice using your Dremel bit of choice on a scrap piece of wood, metal or whatever material you are working with. Start on the lowest setting and increase the speed once you are confident.</p> <p>5. Clean the Dremel after each use. Consult the owner's manual before disassembling the tool for major cleanings.</p> <p>Warnings Make sure your work area is clear, and that you are outdoors or in a room with good ventilation. Drilling, sanding, cutting and grinding will leave debris on you, your floor and in the air of your workspace.</p>

Job Location: Rusty Hut	Analyst: Serena Ramley Date: 09/28/2014
Task Description:	Band saws
Hazard Description:	There is a possibility for hand, eye, ear, and extremity injury while working with band saws as they or material being worked on could move suddenly or debris could come into contact with individuals.

Hazard Control:

What should you do before using a band saw?

A band saw can be dangerous if not used properly.

- Read the owner's manual carefully.
- Make sure you understand the instructions before attempting to use any tool or machine.
- Learn the applications and limitations before use.
- Securely anchor the band saw to the floor (or a workbench of appropriate height) to reduce vibration.

What safety procedures should you follow when using a band saw?

- Wear safety glasses or a face shield.
- Wear hearing protection that is suitable for the level and frequency of the noise you are exposed to in the woodworking area.
- Wear protective footwear when required.
- Make sure all guards are in place and properly adjusted. Ensure all band wheels are enclosed.
- Adjust blade guard height to about 3 mm or 1/8 inch above the top of the material being cut.
- Ensure the blade is tracking correctly and runs freely in and against the upper and lower guide rollers.
- Ensure the blade is under proper tension. A band saw equipped with automatic tension control is desirable.
- Use band saw blades that are sharp, properly set and otherwise suitable for the job (e.g., the right tooth pitch; tooth form; blade width).
- Hold stock firmly and flat on the table to prevent the stock from turning and drawing your fingers against the blade. Keep hands braced against the table.
- Use a push stick when you remove cut pieces from between the fence and saw blade or when your hands are close to the blade. Keep your hands on either side of the blade - not in line with the cutting line and the blade.
- Make release (relief) cuts before tight curves when doing intricate scroll-type work.
- Keep the floor around a band saw clean and free of obstructions or clutter.
- Keep the machine properly oiled and serviced.
- Provide adequate lighting at the machine table. A light fixture with a flexible connection can provide essential lighting.

