



School of the Arts Studio Art Safety Manual

August 2007 Edition

Prepared by
Michael Syms

Edited by
Judy Major-Girardin
Graham Todd

Contents:

| | |
|------------|---|
| Section 1 | General Studio Safety |
| Section 2 | Chemical Hazards and Handling |
| Section 3 | Safety in Using Hand Tools |
| Section 4 | Safety in Using Power Tools |
| Section 5 | Safety in Using Pneumatic Tools |
| Section 6 | Safety in Using Stationary Woodworking Machinery |
| Section 7 | Safety in the Welding Shop |
| Section 8 | Safety in Ceramics |
| Section 9 | Safety in the Foundry Process |
| Section 10 | Safety in Other Sculptural Processes |
| Section 11 | Safety in Painting |
| Section 12 | Safety in Printmaking |
| Section 13 | Safety in Drawing |
| Appendices | Health and Safety Enforcement Policy Working After Hours Policy Disposal Policy Solvent Usage Policy |

What is this safety manual all about?

This safety manual informs you about the possible dangers you might encounter when working in the Togo Salmon Hall Art Studios. It tells you how to protect yourself from these dangers by explaining the Art Studios safety policies and safe operating procedures for the equipment, machinery and chemicals that you use.

This manual is a supplement to the Ontario Occupational Health and Safety Act and the McMaster University Risk Management Manual and discusses specific issues related to the Studio Art Program. All Art Studio users must obey the policies and procedures explained in this manual, as well as, all McMaster University health and safety initiatives. You must do this for your own protection and for the protection of others who use the studios. For more detailed information on safe art practices consult [The Artist's Complete Health and Safety Guide](#) (third Edition) by Monona Rossol, which is required reading for all studio art students. Copies are available through the McMaster University bookstore.

The Togo Salmon Hall Art Studios

The McMaster University, School of the Arts, Art Studios are located in the basement and on the first floor of Togo Salmon Hall. They include studios for Drawing, Painting, Printmaking, Sculpture, as well as, an exhibition/critique space, computer lab and small individual studios for upper level students.

The Togo Salmon Hall Art Studios open at 6am and close at 10pm everyday; including weekends. Students are not allowed to work in the studios outside of these hours.

The School of the Arts Main Office is TSH 414 extension 27671. Instructor offices are located on the fourth floor of Togo Salmon Hall and the Technologists office is in the Painting Studio TSH B103/D extension 24237.

Only authorized studio art students are allowed to use the facilities. You cannot bring friends or other people into the studios without prior approval from a Faculty Member or the Studio Art Technologist.

Right to Know...

The Art Studios can be a high-risk workplace for the untrained and inexperienced. Students have a right to know about any potential dangers they may encounter while using the Art Studios. This is why class demonstrations, one-on-one instruction and mandatory WHMIS training and testing are part of the curriculum. Not all machines, equipment and chemicals pose the same dangers.

Key Words

WHMIS. Workplace Hazardous Materials Information System, a Canada wide system designed to give employers and workers (including students) information on hazardous materials in the workplace.

MSDS. Material Safety Data Sheets are documents that are posted in the workplace that contain information on the safe handling and usage of chemicals and products.

Personal Protective Equipment (PPE). Items such as safety glasses, safety boots, face shields, rubber gloves

Hazard. An occupational hazard is a thing or situation with the potential to harm a worker. Occupational hazards can be divided into two categories: safety hazards that physically injure workers, and health hazards, which result in the development of disease. It is important to note that a "hazard" only represents a potential to cause harm.

Risk. Risk is the way to rate hazards posed by materials or situations and their potential to cause harm. Risk is the probability, or chance, that it actually will harm someone.

TLV. Threshold Limit Value, for chemical substances is defined as a concentration in air, typically for inhalation or skin exposure. Its units are in ppm for gases and in mg/m³ for particulates (aerosols such as dust, fumes and mist).

Three types of TLVs for chemical substances are defined:

(TLV-TWA)

Threshold Limit Value - Time Weighted Average
The average exposure on the basis of a 8h/day, 40h/week work schedule

(TLV-STEL)

Threshold Limit Value - Short Term Exposure Limit

The spot exposure for a duration shorter than 15 minutes, which cannot be repeated more than 4 times per day

(TLV-C)

Threshold Limit Value - Ceiling

The absolute exposure limit that should not be exceeded at any time

There are TLVs for physical agents as well as chemical substances. TLVs for physical agents are also defined in terms of what are considered safe levels (8 hours per day & 40 hours per work week). There are TLVs for noise exposure, vibration exposure, ionizing & non-ionizing radiation exposure and heat & cold stress.

Hazards in the Art Studios include:

- **Machines and Equipment.** Machinery and tools can crush, burn, cut skin, break bones, and cause impact injuries to the operator and others around the work area.
- **Hazardous Chemicals.** Many forms of art making use potentially harmful chemicals like solvents and acids. These chemicals can damage lungs, eyes, skin and other parts of the body.
- **Hazardous Substances.** Dusts, fumes, and other materials can poison workers, damage lungs, eyes and other parts of the body.
- **Material Handling.** Carrying and lifting large or heavy objects like lithography stones or holding machinery or tools can create back injuries, potential slip, trip and drop injuries or repetitive strain injuries, if done incorrectly.
- **Noise.** Loud noises or prolonged exposure to sounds in the sculpture studio can damage hearing.
- **Electricity.** Damaged electrical cords or power tools can cause shocks.
- **Heat.** High temperature objects and surfaces like hotplates can cause severe burns.

McMaster University Respiratory Policy:

McMaster University has a strict respiratory protection program that must be followed at all times. Students must consult with their Instructor and the Studio Art Technologist before purchasing and using a respirator and before using chemicals or materials that require the use of a respirator. Always read the MSDS for materials before purchasing, the supplier should have MSDS sheets available to you on location.

In consultation with Faculty and the Studio Art Technologist safer materials or practices may be substituted for ones requiring respirator usage.

Student respirator usage will be decided on a case by case basis. All respirator use is limited to class hours. Students after hours or when alone cannot use respirators.

Please read the Respiratory Protection Program in the McMaster University Risk Management Manual on the EOHSS website for more details. (<http://www.workingatmcmaster.ca/eohss/>)

Checklist:

- ✓ Have I received proper training for this particular process/piece of equipment?
- ✓ Have I read and understood the posted safe operating procedure for this process/piece of equipment?
- ✓ Have I read the available MSDS for the chemical that I am using?
- ✓ What are the hazards involved in this process?
- ✓ How could I or others around me be injured if something goes wrong?
- ✓ Am I wearing the proper personal protective equipment that is required to do this work?
- ✓ Is there a safer way of doing this and still get the same results I want?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?

Note: Statistics show that young workers are 24% more likely to be injured on the job than other groups. This is because they are inexperienced and often are unable to recognize hazards and unwilling to ask questions because they don't want to look "stupid".

Think about it! It is in your best interest to be informed and trained in how to protect yourself and others while working in the Togo Salmon Hall Art Studios.

Section 1: General Safety Rules

Please Note:

All safety rules **MUST** be followed.

People who ignore the rules may lose Studio access.

Rule 1: THE BIG THREE

The following must be strictly observed before entering any Studio Art Facility:

1. EATING AND DRINKING IN ALL STUDIO FACILITIES IS STRICTLY PROHIBITED.



2. SMOKING IN ALL STUDIO FACILITIES IS STRICTLY PROHIBITED.



3. CSA APPROVED GREEN PATCH STEEL TOE SHOES/BOOTS MUST BE WORN IN ALL STUDIO FACILITIES.



Rule 2: Get to Know the Studios.

- Familiarize yourself with the location of fire exits, fire extinguishers, first aid kits, panic buttons, eyewash and emergency shower locations.
- Read and familiarize yourself with the Material Safety Data Sheets (MSDS) provided for all chemicals you will use.
- Read and familiarize yourself with the posted Studio Art Disposal Policy. This policy must be followed at all times. DO NOT POUR SOLVENTS, PAINTS OR ACIDS DOWN SINKS.
- Read and familiarize yourself with the posted MACHINE SHOP SAFETY GUIDELINES.
- Make sure you know what personal protective equipment you will need to use and where it is located.
- Read and familiarize yourself with all the posted Safe Operating Procedures for the equipment and chemicals you will be using.



- When in doubt ask your Instructor or the Studio Art Technologist for assistance.

Rule 3: Wear Appropriate Clothing.

Although there are no set work clothes that must be worn in the Art Studios, for safety reasons, everyday clothes should be covered while you are working.

Clothing:



Close-fitting clothes are the safest to wear in the studio environment. Coveralls are the best to protect your clothing, but aprons and lab coats will also do the trick. Keep clothes buttoned and long sleeves rolled up to the elbows to avoid being caught in equipment. Keep exposed skin to a minimum to avoid possible chemical splashes and burns.

Jewellery and Accessories:

Wearing jewellery or other loose objects while working around moving machinery is extremely dangerous.

Dangling belts, necklaces, scarves and MP3/Walkman earphone cords can get caught in a moving piece of equipment and pull you into it.

Rings can catch on splinters or on a moving piece of machinery, causing injury to your hand.

MP3 Players/Walkmans:

Headphones cannot be used while using any type of machinery, equipment or while handling chemicals. You must be aware of your surroundings for the safety of yourself and others. It is up to individual instructors whether they allow students to listen to radios, walkmans and MP3 players during class time.

REMEMBER: NO RINGS, WATCHES, BRACELETS, NECKLACES, TIES, SCARVES, OR OTHER LOOSE ORNAMENTS ARE TO BE WORN WHILE WORKING WITH THE EQUIPMENT IN THE SCULPTURE OR PRINTMAKING STUDIOS.

Hair:

People can be seriously injured and even scalped when long hair is caught in a rotating machine. Long hair can also fall into acid baths and other chemicals if not careful. Tie up your long hair, or cover it with a hat.

Long fringes or bangs can limit vision and stop you from clearly seeing what you are doing. Make sure your hair, hats, or anything else on your head will not obscure your vision.

Rule 4: Safe Behaviour

The Togo Salmon Hall Art Studios are a serious work environment. Running about and general horseplay may seem like a bit of fun but can end up causing a serious accident or injury.



Focus on the Task at Hand.

If you are feeling under the weather or find you cannot concentrate on the task at hand, take a break. Regular breaks are highly recommended for safety and efficiency purposes. Do not continue working in the studio if you feel fatigued, hungry or dehydrated. SLEEPING IN ALL STUDIO FACILITIES IS STRICTLY PROHIBITED.

If you suffer from allergies, chronic illness, epilepsy or are taking medication, which affects your performance, inform your Instructor and the Studio Art Technologist. You should also inform your doctor of the materials and substances you are using.

People who are under the influence of alcohol or drugs will be asked to leave the studios immediately.

Don't distract others from their work, or get distracted yourself while operating machinery and equipment. Accidents can happen in the moment your attention is turned elsewhere.

Look Where You Are Going.

Watch out for obstructions or carelessly stored art work and materials that can trip you up; especially while carrying large objects that block your vision. Warn people to move out of your way when you are handling long or large materials or moving etching plates from the rosin box to the hotplate. When moving large objects, use a friend to clear a path and make sure others are not in the way.



Remember the stairways are narrow, take a moment, pause at the top and bottom to see if you can hear someone carrying something through the stairway.

Open doors slowly, someone could be coming from the other direction and kicking or opening a door suddenly could cause injury.

Carry only a few items at a time. Overloading yourself with tools and materials could cause you to drop them. You could injure yourself or others and damaged your tools or materials.

Plan Your Work Ahead of Time.

Take time to plan your work so you know what you need in the way of tools, equipment and personal protective equipment.

Make sure there is enough light, it is impossible to do a job safely if you cannot see it clearly. Turn on all the appropriate lighting in a studio to do work safely.

Ask others in the studio what they are working on to allow for communal use of stationary equipment like printmaking presses and woodworking tools.

Warn others if you are going to make noise. This gives them the opportunity to move their work or to use hearing protection.

Planning also includes leaving yourself enough time to pack up and clean up before you leave the studios for class or the day.

Clean up any ink, paint, dust or materials that you have used or generated so others can use a safe, clean space after you leave.

Do not leave tools or materials on tables, workbenches or the floor when you are finished; clean them and put them back in their proper place.

Rule 5: Use Personal Protective Equipment

ALL STUDIO ART STUDENTS ARE REQUIRED TO HAVE THEIR OWN PAIR OF CSA APPROVED IMPACT RESISTANT SAFETY GLASSES.



PPE that you will use in the studios include:



Earmuffs, earplugs, face shields, welding helmets, rubber gloves, and rubber aprons.

Signs on the walls and the posted Safe Operating Procedures will tell you what PPE must be used for specific chemicals, equipment and processes. Follow these directions for your own safety.

Rule 6: Good Housekeeping

Good housekeeping is essential for studio safety. A messy workplace is a dangerous place, with many lurking hazards.

All work must be properly stored after each work session as not to disrupt the everyday workings of the Studio environment. Remember, Studios are a communal space and scheduled classes take precedent over individual work.

Keep the floors clear of any obstructions that could trip people up. Keep floors free from grease, soap, water, fine dust, or anything else that could create a slip hazard. A fall in any one of the Studios could have serious consequences.



Return all tools and equipment to their proper storage place after each use.

Keep all artwork and materials stored when not in use. Make sure there are no protruding corners that can catch people as they walk by.

All flammable substances **MUST** be stored in properly labeled sealed containers in a flammable cabinet when not in use.

All solvent soaked rags must be disposed of in yellow or red flammable solvent rag bins. **DO NOT** throw paper towels or other paper products into these bins as it creates a potential fire hazard.

Keep all machine beds, workbenches, tables and press beds clean. Remove dust, dirt, ink, paint as you work to avoid contamination of other people and their projects.



FOR YOUR SAFETY AND SECURITY, DO NOT PROP OPEN DOORS. After class hours, all doors giving access to studios must remain locked and closed. All doors must be secure at all times. All exits must be clear of debris, and fire exit doors and corridors cannot be blocked.



You should always wash your hands with soap and water before leaving the studios. Never eat, drink or use the washroom with ink, paint, plaster or any other type of art material on your hands.

LOOK AROUND BEFORE LEAVING THE STUDIOS, MAKE SURE THAT YOU HAVE PUT ALL YOUR THINGS AWAY AND LEFT THE SPACE CLEAN AND TIDY FOR THE NEXT PERSON.

GOOD HOUSEKEEPING IS NOT BEING FUSSY IT IS BEING SAFE. IF YOU DO NOT KEEP YOUR WORK AREA CLEAN AND TIDY YOU MAY LOSE YOUR PRIVILEGE TO USE THE ART STUDIOS.

Rule 7: NEVER Work Alone!

Although this may seem obvious, special care must be taken to ensure you always have someone around you when you are working in the studios. The Togo Salmon Hall Art Studios are open to students from 6am until 10pm Monday-Sunday and to ensure your safety outside of class time the following steps must be followed:

- Students must use the Buddy System when working in the Studios after hours. The

"Buddy" can only be a registered McMaster University Studio Art Student.

- When your buddy needs to leave, you must leave.
- Students must adhere to all posted policies and regulations after hours.
- Students must have their Art Studio Pass and McMaster University Student card on them at all times for identification. Only authorized students are allowed in the studios after hours.
- Students must sign in and out in the posted white binders in the studios when working after hours.

Rule 8: Reporting and Avoiding Accidents.

Accidents do happen, but all accidents, incidents and injuries no matter how minor must be reported to the Studio Art Technologist immediately so they can be recorded and first aid given, if necessary.



Report any hazards to the Studio Art Technologist or your Instructor immediately so accidents can be prevented. These could include:

- Slippery floors
- Broken or dull tools
- Faulty or frayed electrical cords on power tools or extension cords.
- Chemical spills
- People using unsafe practices or procedures
- Obstructions or tripping hazards
- Improperly stored chemicals
- Missing or broken machine guards
- Injuries, no matter how minor
- Wax fire
- Near misses (If it happened to you the next person might not be so lucky)

Always be aware of the other people using the studios around you, what they are doing and where they are going. They may not be following safe procedures or practices. It is in everybody's best interest to interact safely in the studio environment to avoid accidents.

It is against the law for students to fool around with anything provided in the studios for the means of health and safety. This includes but is not limited to: defacing or destroying signage, abuse of fire equipment, blocking fire exits, and removing machine guards.



Checklist: General Safety Rules

- ✓ Do I have my steel toe boots on?
- ✓ Am I wearing the proper Personal Protective Equipment?
- ✓ Do I know where the panic buttons, exits, and fire extinguishers are?
- ✓ Have I read and understood the Safe Operating procedure for what I am about to do?
- ✓ Have I tied back my long hair and removed my jewellery?
- ✓ Can I focus on the task I want to accomplish?
- ✓ Have I planned out the process and my project ahead of time?
- ✓ Do I have a buddy for working after hours?
- ✓ Have I cleaned up my work area, cleaned, and put away all the tools I was using?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?



Section 2: Chemical Hazards and Handling

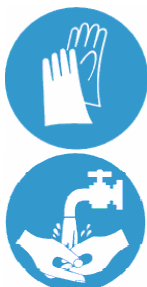
Please Note:

Many substances used in art making are known to have toxic and environmental effects. By using art materials properly, artists are protecting their health and the environment.

Chemicals can enter the body in three different ways:

1. Absorption.

Chemicals in contact with the skin can absorb directly into the body. To avoid this, practice good personal hygiene, wash your hands and any other part of your body that is exposed to chemicals regularly. Wear gloves, barrier creams, overalls and protective clothing to avoid accidental skin contact. Have a separate set of clothes for art making and remove them immediately after being in the studios.



2. Ingestion.

Chemicals and airborne particles can settle on food or beverage containers that are within the studio environment. Vapours can absorb into porous food items such as bread and be ingested into the body. Never eat, drink or smoke without first washing your hands.



2. Inhalation.

Chemicals and airborne particles can be inhaled during art making causing a wide range of health concerns. Different types of inhalation hazards are gases, vapours, mists, fumes, and dust. You should take extra care to read the MSDS about the chemicals you are using. Specific studios have built in or portable ventilation systems that **MUST** be working when you are in them. If a ventilation system does not seem to be working properly, inform the Studio Art Technologist



or your Instructor immediately and leave the area until the problem is fixed.

Chemical Toxic Effects:

Hazardous substance and chemical toxicity is dependent on the length of time in which the exposure occurs and the amount of the chemical that enters the body.

Acute Effects:

Acute effects are illnesses caused by a large dose of a toxic substance in a short period of time. Symptoms arise shortly after the exposure and can include acid burns, eye irritation, skin rash, nausea, dizziness, vomiting, loss of coordination, unconsciousness and even death.

Chronic Effects:

Chronic effects are illnesses caused by repeated small dosage exposure over a prolonged period of time. It can be years before symptoms appear and by then permanent damage has occurred. Examples are chronic lead poisoning, nerve damage, silicosis, and cancer.

Chemicals in the Art Studios:

Some of the chemicals and hazardous substances found in the art studios include:

- Acids
- Plasters and Cements
- Dusts (sawdust, charcoal, pastel, rosin)
- Pigments (acrylic and oil paints, printmaking inks)
- Welding Fumes
- Plastic Resins
- Patina Chemicals
- Solvents

Solvent Use in the Art Studios:

Solvent use presents one of the most common hazards within the art studios. They are used in all media areas as thinners, cleaners and mediums and they present risks of inhalation, absorption and fire. In most instances, safer, low-risk solvents can be substituted for ones that are more hazardous and small quantities are adequate to do the job.

In order to minimize the risk involved in solvent use, the Studio Art Program developed a policy for use of solvents in the studios. When a solvent must be used, Odourless Paint Thinners are preferred.

In choosing approved solvents, the School of the Arts looked at the following criteria:

- A high flash point
- A low evaporation rate
- A high TLV (concentration of parts per million that can be breathed for an extended period without adverse effects)
- Low toxicity (such as removal of aromatic hydrocarbons)

General Precautions:

- Read and familiarize yourself with the Material Safety Data Sheets (MSDS) provided for all chemicals you will use.
- Always wear the proper Personal Protective Equipment for the chemicals you are using.
- Substitute safer products and processes whenever possible. Consult your Instructor or the Studio Art Technologist.
- Consult Instructor or Studio Art Technologist before altering or experimenting with new processes. Heating or combining some substances can increase their potential hazards. Sanding, grinding and polishing some materials can release toxins.



- Read and familiarize yourself with the posted Safe Operating Procedures for the chemicals you will be using
- Students MUST provide the Studio Art Technologist with a current MSDS for any potential material or substances that are not on file. This must be done prior to the use of the product.
- Studio Art has a strict disposal policy that is posted in all studios. This policy must be followed at all times. DO NOT POUR SOLVENTS DOWN SINKS.
- Studio Art has a strict Solvent Usage Policy that is posted in all studios. This policy must be followed at all times.
- Students should read The Artist's Complete Health and Safety Guide by Monona Rossol for complete information on hazardous chemicals and substances used in art.
- When in doubt ask your Instructor or the Studio Art Technologist for assistance.

Checklist: Chemical Hazards

- ✓ Have I read and understood the MSDS for the chemicals I am using?
- ✓ Am I wearing the proper Personal Protective Equipment for this chemical/substance?
- ✓ Is the ventilation system working properly?
- ✓ Am I following the posted safe operating procedure for handling this chemical?
- ✓ Can I substitute a safer solvent and still get the results I need?
- ✓ Am I following the posted Solvent Usage Policy?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?


Section 3: Safety in Using Hand Tools

Please Note:

Hand tools may look harmless, but they can cause serious injuries. Always follow instructions on how to use hand tools and never use a tool that has been damaged.

Note: Statistics show that in the workplace there are almost three times as many injuries caused by hand tools as there are by power tools.

General Precautions:

- Wearing CSA Impact resistant safety glasses is mandatory whenever using hand tools. 
- Always use tools that are in good condition.
- Never carry tools in your pockets. If they are sharp they can cut you.
- Always clamp work to a workbench or use a vise to hold work securely.
- Always use the right tool for the job. It can be hazardous to use a tool for something it was not designed to do.
- Do not wear bulky gloves while using hand tools as they inhibit your ability to grip the tool properly.
- Make sure you have enough room around you to use the tool safely so you do not injure yourself or others.

Common Hand Tools in the Art Studios:


Hammers & Mallets:

Hazards:

- Hitting your own hand or fingers
- Loose head comes off
- Nail heads breaking or shattering

Precautions:

- Focus on the task at hand, hold the hammer correctly and look at the nail head.
- NEVER use a hammer that is defective or broken.


- Use the right hammer for the right job. NEVER use ball peen hammer for striking nails.
- Always wear safety glasses while using hammers. 

Screwdrivers:

Hazards:

- Cuts or stabs from screwdriver blade

Precautions:


- Always use the proper size and type of screwdriver for the screw to prevent slippage.
- NEVER use a screwdriver that is defective or broken.
- NEVER hold the screw while applying pressure to avoid stabbing your free hand.
- Keep screwdriver handles free of oil, grease and water to avoid slippage.
- It is advisable to wear safety glasses while using screwdrivers. 

Pliers and Wire Cutters:

Hazards:

- Crushing or cutting fingers
- Eye injuries from flying debris
- Twisting your wrist or damaging your hand

Precautions:

- Always keep finger out of the jaws of pliers and wire cutters.
- NEVER use pliers that are defective or broken.
- NEVER use pliers to loosen or tighten screws or nuts.
- Keep handles free of oil, grease and water to avoid slippage.
- Always wear safety glasses while using pliers and wire cutters to avoid projectiles from the wire you are cutting. 

Files & Rasps:

Hazards:

- Cuts, stabs and bruises

Precautions:

- NEVER use a file without a handle as the tang can stab you.
- NEVER use a file or rasp that is defective or broken.
- Keep your free hand out of the cutting path of the file or rasp.
- Always wear safety glasses while using files and rasps.



Handsaws:

Hazards:

- Hand saws can cause serious cuts if used incorrectly.

Precautions:

- Always inspect wood before cutting to make sure there are no nails, staples, or other objects that could buckle the saw.
- NEVER use a saw that is defective or broken.
- If using your thumb to guide the first initial cuts, use slow backward strokes and move your thumb once the cut is successfully started.
- Hold your forefinger against the saw handle for more control and accuracy.
- Use a vise or a clamp whenever possible to hold your work.
- Keep your free hand out of the cutting path of the saw.
- Always wear safety glasses when using saws.



Wrenches and Ratchet Socket Drivers:

Hazards:

- Bruises
- Twisting of the wrist
- Serious damage to hands

Precautions:

- Always use the right size wrench or socket to prevent slippage.
- NEVER use a wrench that is defective or broken.

- Use the appropriate stance while using wrenches to maintain your balance.
- Think before trying to break loose a tight nut. Make sure that the wrench and your knuckles have adequate room.

Cold Chisels and Punches:

Hazards:

- Cuts and stab wounds
- Eye injuries from flying debris
- Hitting your own hand or fingers

Precautions:

- Only use cold chisels and punches when working with metal.
- NEVER use a cold chisel or punch that is defective or broken.
- Always point the chisel or punch away from your body when striking it.
- Hold the chisel or punch firmly in place so it does not fly from hand when you strike it.
- Always wear safety glasses when using cold chisels and punches.



Utility Knives:

Hazards:

- Cuts and stab wounds

Precautions:

- Be aware of the blade path to make sure your hands and body are out of the way.
- NEVER extend the blade fully on a retractable blade knife.
- Always wear eye protection when using utility knives.
- Broken or dull blades MUST be disposed of in yellow sharps containers in the studios. DO NOT throw sharps away in regular garbage.



Measuring Tapes:

Hazards:

- Cuts from the metal tape

Precaution:

- Rewind the tape slowly, in a controlled manner and keep hands away from the metal tape

Wood Chisels and Gouges:

Hazards:

- Cuts and stab wounds
- Eye injuries from flying debris

Precautions:

- Never hold a piece of wood with one hand while trying to use a chisel or gouge in the other. You can cut yourself very badly. Use a vice, workbench or the bench hooks in printmaking to hold your work securely.
- NEVER cut towards your body when using chisels and gouges.
- NEVER strike a chisel or a gouge with a metal hammer. Use wooden or rubber mallets only.
- Hold the chisel firmly to prevent it from flying out of your hand when you strike it.
- NEVER use chisels or gouges for opening paint cans, it can dull and severely damage them.
- Always wear safety glasses and a face shield when using chisels and gouges.



Vises and Clamps:

Hazards:

- Hand and finger crushing

Precautions:

- Do not get fingers caught in jaws of vises or clamps.
- Always secure work tightly in a vise to avoid it falling out.
- The length and design of clamp handles are calculated to give correct clamping pressure for the size and type of clamp. Never strike the end of the handle, or extend it with a pipe in order to obtain more clamping force. Excess force can bend, weaken and even break clamps.
- Clamps should never be used to hold items together on a permanent basis.
- C-clamps are not to be used for hoisting or picking up work. The clamp can slip and cause injury.

Checklist: Hand Tool Safety

- ✓ Have I inspected my tools and asked for them to be replaced or sharpened by the Studio Art Technologist if needed?
- ✓ Is my work held securely?
- ✓ Am I wearing proper safety glasses?
- ✓ Could I hit my hand, or someone else if the tool slips?
- ✓ Are all sharp or pointed objects pointed away from my body before using them?
- ✓ Is my work set up so that I have proper balance and the appropriate stance?
- ✓ Have I returned all hand tools to the proper location after using them?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?



Section 4: Safety in Using Power Tools

Please Note:

**If you do not know how to use a power tool - then don't use it.
Ask your Instructor or the Studio Art Technologist to show you how.
Only use power tools that you have been properly trained to use.
Power tools can cause serious injuries if used incorrectly.**

General Precautions:

- Wearing CSA Impact resistant safety glasses is mandatory whenever using power tools.
- Use the operator's manual to find out how to adjust and use a power tool properly.
- Tie long hair back and remove loose clothing or jewelry before using machines.
- NEVER deviate from safe operating procedures. All machines and tools can inflict serious injuries if misused.
- NEVER use a power tool that is damaged. If you notice the electrical cord is frayed or split; or the plug is broken return it to the Studio Art Technologist immediately. Damaged electrical cords can electrocute you.
- NEVER operate machinery if you feel ill, fatigued or are under the influence of alcohol or drugs. You must be able to concentrate on the task at hand.
- Don't chat or talk to other people while using a power tool. Its operation needs your full concentration.
- ALWAYS make sure tool is off before plugging it in.
- NEVER carry a tool by the power cord.
- ALWAYS disconnect a power tool from the supply of electricity before changing cutters or blades.
- Check that all adjusting keys are removed before switching on power tools.



- Check your machine setting and run through the procedure in your mind before switching tools on.
- ALL wood must be free of nails, screws or foreign objects before being used with machinery. Carefully check all wood yourself before using it.
- Areas around all you when using power tools must be kept clean and clear of debris.
- Many tools cause vibration, which can be harmful. Effects of vibration are tingling or numbness in the hands and arms, usually these symptoms will subside on their own. However to avoid this take regular breaks, at least 5 minutes every half hour, when using tools that create vibrations.
- Keep handles and grips dry and grease free to avoid slippage.
- NEVER attempt to free a stalled blade or material while power tool is on and plugged in.
- Do not wear bulky gloves while using power tools as they inhibit your ability to grip the tool properly.
- Make sure you have enough room around you to use the tool safely so you do not injure yourself or others.
- Unplug and return all tools after use.



Common Power Tools in the Art Studios:

Drills: (Corded, Cordless, Hammer)

Hazards:

- Cut and stab injuries from drill bit
- Eye injuries from flying debris, including broken drill bits
- Twisting of the wrist

Precautions:

- Disconnect the power source when replacing drill bits.
- Always inspect drill bits before use; never use a dull or damaged drill bit. Make sure drill bit is held tightly in chuck before drilling.
- Use the right drill bit for the right material. Not all drill bits can be used in metal, wood or masonry.
- Always remember to remove chuck key before drilling.
- Hold the drill securely with one or both hands. Do not force the drill with too much pressure or it can break the bit.
- Always wear safety glasses while using power drills.



Rotary Tools: (Dremel, Freedom, Die Grinder)

Hazards:

- Cut and stab injuries
- Eye injuries from flying debris, including broken bits, cutting discs, grinding accessories
- Twisting of the wrist
- Damage from vibration of the tool

Precautions:

- Disconnect the power source when replacing or changing accessories.
- Always inspect accessories (wheels, stones, bits) before use; never anything that is dull or damaged.
- Hold the tool securely.
- Always wear safety glasses, a face shield, and a leather apron when using rotary tools.



Jigsaws:

Hazards:

- Serious cuts to hands, fingers, other parts of the body
- Eye injuries from flying debris, including broken saw blades
- Accidental cutting of electrical cord or work surface

Precautions:

- Disconnect the power source when replacing saw blades.
- Always inspect saw blades before use; never use a dull or damaged saw blade.
- Use the right saw blade for the right material; not all blades can be used for cutting metal and wood.
- Always securely clamp your work down so it does not move or vibrate. Make sure you know where the work top or sawhorse is to avoid accidental cutting.
- Do not start the saw until you know that the power cord will not become tangled in your work or with the saw blade while cutting.
- Keep a well-balanced position on both feet. Always stand to one side of the cutting line, so that if you slip the blade will go past you.
- Never pull the jigsaw towards you while cutting, keep your free hand out of the path of the blade at all times while cutting.
- Wear a dust mask and hearing protection if needed.
- Always wear safety glasses while using jigsaws.



Circular Saws:

Hazards:

- Serious cuts to hands, fingers, other parts of the body
- Eye injuries from flying debris
- Accidental cutting of electrical cord or work surface

Precautions:

- Disconnect the power source when replacing saw blades.
- Always inspect saw blades before use; never use a dull or damaged saw blade.
- Always securely clamp your work down so it does not move or vibrate. Make sure you

know where the work top or sawhorse is to avoid accidental cutting.

- Never hold a circular saw with your finger on the trigger while it is plugged in.
- Do not start the saw until you know that the power cord will not become tangled in your work or with the saw blade while cutting.
- Keep in mind that circular saws are designed for right-handed operators only. People uncomfortable with using a saw in their right hand should seek an alternate piece of equipment to do the job.
- Keep a well-balanced position on both feet. Always stand to one side of the cutting line, so that if you slip the blade will go past you.
- NEVER over-reach in order to finish a cut. Stop the saw, reposition yourself and finish the cut.
- Do not lift the saw out of the wood while cutting, wait for the blade to completely stop before removing it from work piece.
- Wear hearing protection if needed.
- Always wear safety glasses while using circular saws.



Reciprocating Saws:

Hazards:

- Serious cuts to hands, fingers, other parts of the body
- Eye injuries from flying debris, including broken saw blades
- Accidental cutting of electrical cord

Precautions:

- Disconnect the power source when replacing saw blades.
- Always inspect saw blades before use; never use a dull or damaged saw blade.
- Use the right saw blade for the right material. Not all blades can be used in metal and wood.
- Always securely clamp your work down or in a vise so it does not move or vibrate.
- Never hold a reciprocating saw with your finger on the trigger while it is plugged in.
- Do not start the saw until you know that the power cord will not become tangled in your work or with the saw blade while cutting.
- Keep a well-balanced position on both feet. Apply just enough pressure to the reciprocating saw to allow for the tool to cut.

- Wear hearing protection if needed.
- Always wear safety glasses while using reciprocating saws.



Routers:

Hazards:

- Serious cuts to hands, fingers, other parts of the body
- Eye injuries from flying debris
- Accidental cutting of electrical cord

Precautions:

- Disconnect the power source when adjusting, replacing, or changing bits.
- Always inspect router bits before use; never use a dull or damaged router bit.
- Allow router to get up to full speed before plunging or pushing it into the material.
- Keep both hands on the handles while using the router.
- Keep a well-balanced stance when using the router.
- Always feed the router into the work against the rotation of the blade. Routers turn in a clockwise direction. Move cutter left to right when cutting in a straight line and counterclockwise when cutting circles and curves.
- Always securely clamp your work down or in a vise so it does not move or vibrate.
- Wait for the router bit to stop spinning before lifting it from your work.
- Always wear safety glasses, face shield, and hearing protection when using a router.



Biscuit Joiner:

Hazards:

- Serious cuts to hands, fingers, other parts of the body
- Eye injuries from flying debris

Precautions:

- Always inspect cutter before use; never use a dull or damaged cutter.
- Always securely clamp your work down so it does not move or vibrate.
- Keep a well-balanced position on both feet. Apply just enough pressure to the biscuit joiner to allow for the tool to cut.
- Always wear hearing protection and safety glasses while using biscuit joiners.



Sanders:

(Belt, Palm, Finishing)

Hazards:

- Abrasions to hands and other parts of the body
- Eye injuries from dust particles
- Respiratory hazards from breathing in sawdust

Precautions:

- Always ensure paper is tight against the base of the machine so it does not fly off.
- Always securely clamp your work down so it does not move or vibrate.
- Keep a well-balanced position on both feet. Apply just enough pressure to allow the sander to do the work. Additional pressure can burn out the motor, scar the wood and cause heat build-up.
- Replace damaged or worn out sanding belts, disks and sheets immediately to avoid injury.
- Always wear a hearing protection and safety glasses while using sanders.



Electric Stapler:

Hazards:

- Eye and hand injuries from staples

Precautions:

- Some electric staplers DO NOT have safety switches and can fire when the trigger is pulled. Never hold your finger on the trigger while the stapler is plugged in.
- NEVER point the stapler at yourself or others. Staples can travel a far distance if fired into the air or at others.
- On/Off trigger lock should be in the locked position when stapler is not in use.
- Always wear safety glasses when using an electric stapler.



Grinders:

Hazards:

- Serious cuts and/or abrasions to hands, fingers, other parts of the body
- Eye injuries from flying debris

Precautions:

- Always inspect the cutting or grinding wheel before use; damaged wheels can become off-balance and shatter.
- Report any damaged wheels to the Studio Art Technologist for immediate replacement.
- Disconnect the power source when replacing grinding wheels.
- Always securely clamp your work down so it does not move or vibrate.
- Keep a well-balanced position on both feet. Apply just enough pressure to the grinder to work.
- Never remove the guards on a grinder.
- Flying sparks may ignite nearby flammable materials; remove such material and sweep floors before use.
- Never wear flammable synthetic clothing while using a grinder.
- Always wear provided leather apron or jacket to avoid sparks igniting or ruining clothing.
- Always wear hearing protection, safety glasses and a face shield while using grinders.



Metal Nibbler:

Hazards:

- Crushing or cutting fingers
- Eye injuries from flying debris
- Twisting your wrist or damaging your hand
- Burns from hot metal shards

Precautions:

- Always keep fingers out of the way of the jaws of the metal nibbler.
- The small metal off-cuts are sharp; NEVER brush them away with your bare hand.
- Always use lubricant when cutting to make it easier on the nibbler.
- Keep handles free of oil, grease and water to avoid slippage.
- Always wear safety glasses, face shield, leather gloves and leather apron while using metal nibblers.



Checklist: Power Tool Safety

- ✓ Have I received proper training from my Instructor or the Studio Art Technologist on how to use this power tool?
- ✓ Have I inspected my power tools to see if they are in good condition?
- ✓ Is my work held securely?
- ✓ Do I have the proper Personal Protective Equipment needed for using this power tool?
- ✓ Have I checked to see if the tool is OFF before plugging it in?
- ✓ Is there anyone close around me that I should ask to move or put on PPE before I start using the power tool?
- ✓ Have I cleaned the handle of the power tool to make sure it will not slip from my grip?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?



Section 5: Safety in Using Pneumatic Tools

Please Note:

Pneumatic tools can cause serious injuries if used incorrectly. They have all the same dangers as their electric counterparts, with the added hazard of using compressed air to power them. Only use power tools that you have been properly trained to use.

General Precautions:

All general precautions that apply to power tools apply to pneumatic tools. Please read the General Precautions in Section 3 Safety in Using Power Tools before using pneumatic tools.

- Wearing CSA Impact resistant safety glasses is mandatory whenever using pneumatic tools. 
- Tie long hair back and remove loose clothing or jewelry before using pneumatic tools.
- NEVER deviate from safe operating procedures. All machines and tools can inflict serious injuries if misused.
- NEVER operate machinery if you feel ill, fatigued or under the influence of alcohol or drugs. 
- ALWAYS disconnect a pneumatic tool from the air supply before changing cutters or blades.
- NEVER use a pneumatic tool that is leaking air.
- Check that all adjusting keys are removed before switching on pneumatic tools.
- Pneumatic tools DO NOT have an On/Off switch. The tool is controlled by pressing the trigger. Never rest your finger on the trigger and always disconnect the tool from the air supply when you are finished with it to avoid someone else accidentally depressing the trigger when it is picked it up.
- Disconnect and return all pneumatic tools after use.


Common Pneumatic Tools in the Art Studios:

Air Gun:

Hazards:

- Serious injuries to eyes, ears, and skin from compressed air
- Air embolism (air bubble in the blood stream)

Precautions:


- NEVER point an air gun at yourself or others. Compressed air can severely damage eyes and ear drums.
- NEVER use an air gun to blow off dust and dirt from skin and clothes. Compressed air blown into a cut can create air bubbles in your blood stream and can be fatal.
- NEVER used an air gun to blow off equipment, clean work surfaces or floors.
- Always use safety glasses when using an air gun. 

Brad Nailer:

Hazards:

- Puncture injuries from nails
- Eye and skin injuries from flying debris
- Damage to ears/eyes from compressed air

Precautions:

- NEVER remove or bypass safety mechanism on nailer.
- Always point the nailer away from yourself and others.
- Never carry nailer with the trigger depressed, bumping the safety into someone or something could accidentally fire the nailer.
- Point directional exhaust deflector on top of nailer away from operator when in use.
- Always use safety glasses when using a brad nailer. 

Drills:

Hazards:

- Cut and Stab injuries from drill bit
- Eye and skin injuries from flying debris, including broken drill bits
- Twisting of the wrist

Precautions:

- Disconnect the air supply when replacing drill bits.
- Always inspect drill bits before use; never use a dull or damaged drill bit. Make sure drill bit is tightly in chuck before drilling.
- Use the right drill bit for the right material. Not all drill bits can be used in metal and wood.
- Always remove chuck key before drilling.
- Hold the drill securely with one or both hands, do not force the drill with too much pressure; you can break the bit.
- Always wear safety glasses while using drills.



Die Grinder & Right Angle Die Grinder:

Hazards:

- Cut and Stab injuries
- Eye injuries from flying debris, including broken bits, cutting discs, grinding accessories
- Twisting of the wrist
- Damage from vibration of the tool

Precautions:

- Disconnect the air supply when replacing or changing accessories.
- Always inspect accessories (wheels, stones, bits) before use; never use anything that is dull or damaged.
- Use the right accessory for the job.
- Hold the tool securely.
- Always wear safety glasses and a face shield when using rotary tools.



Grinders:

Hazards:

- Serious cuts and/or abrasions to hands, fingers, other parts of the body
- Eye injuries from flying debris

Precautions:

- Always inspect the cutting or grinding wheel before use; damaged wheels can become off-balance and shatter.
- Disconnect the air supply when replacing grinding wheels.
- Always securely clamp your work down so it does not move or vibrate.
- Keep a well-balanced position on both feet. Apply just enough pressure to the grinder to work.
- Never remove the guards on a grinder.
- Flying sparks may ignite nearby flammable materials, remove such material and sweep floors before use.
- Never wear flammable synthetic clothing while using a grinder.
- Always wear provided leather apron or jacket to avoid sparks igniting or ruining clothing.
- Always wear hearing protection, safety glasses and a face shield while using grinders.



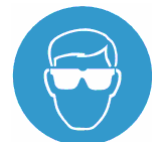
Cut Off Tool:

Hazards:

- Cut and abrasion injuries
- Eye and skin injuries from flying debris, including shattered cutting discs
- Damage from vibration of the tool

Precautions:

- Disconnect the air supply when replacing or changing cutting wheels.
- Always inspect cutting wheels; never use a damaged wheel.
- Always wear safety glasses and a face shield when using cut off tools.



Reciprocating Saws:

Hazards:

- Cuts to hands, fingers, other parts of the body
- Eye injuries from flying debris, including broken saw blades

Precautions:

- Disconnect the air supply when replacing saw blades.
- Always inspect saw blades before use; never use a dull or damaged saw blade.
- Always securely clamp your work down or in a vise so it does not move or vibrate.
- Keep a well-balanced position on both feet. Apply just enough pressure to the reciprocating saw to allow for the tool to cut.
- Wear hearing protection if needed.
- Always wear safety glasses while using reciprocating saws.



Checklist: Pneumatic Tool Safety

- ✓ Have I received proper training from my Instructor or the Studio Art Technologist on how to use this pneumatic tool?
- ✓ Have I inspected the tool and air hose to make sure they are in good condition?
- ✓ Is my work held securely?
- ✓ Do I have the proper Personal Protective Equipment needed for using this power tool?
- ✓ Is the air exhaust deflector pointed away from me and anyone else around me?
- ✓ Is there anyone close around me that I should ask to move or put on PPE before I start using the power tool?
- ✓ Have I cleaned the handle of the power tool to make sure it will not slip from my grip?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?





Section 6: Safety in Using Stationary Woodworking Machinery

Please Note:

Woodworking equipment can cause serious injuries if used incorrectly. Mistakes can be deadly. Only use equipment that you have been properly trained to use. If you do not know how to use a machine - then don't use it. Ask the Studio Art Technologist or your Instructor to show you how.

General Precautions:

- Wearing CSA Impact resistant safety glasses is mandatory whenever using stationary power equipment tools. 
- Do not use any stationary power equipment until you are trained to do so. Operating procedures refreshers for these machines are mandatory every year for students.
- Tie long hair back and remove loose clothing or jewelry before using machines.
- NEVER operate machinery if you feel ill, fatigued or are under the influence of alcohol or drugs. You must be able to concentrate on the task at hand. 
- Reread the posted Safe Operating Procedures for each piece of machinery every time that you are using them to keep them fresh in your mind.
- NEVER deviate from safe operating procedures. These machines will inflict serious injuries if misused. Remember these machines do not give second chances.
- Do not start any machine without knowing how to stop it in case of an emergency.
- Don't chat or talk to other people while using a power tool. Its operation needs your full concentration.

- Check that all adjusting keys are removed before switching on machinery.

- NEVER interrupt anyone operating a machine. If there is immediate danger approach in operator's field of vision.

- NEVER remove machine guards. If a process requires the removal of a guard the Studio Art Technologist MUST remove the guard, and be present during the operation.



- NEVER adjust guards, blade height, or machines while blades and cutters are moving and the machine is in the on position.

- Check your machine setting and run through the procedure in your mind before switching machines on.

- ALL WOOD must be free of nails, screws or foreign objects before being used with machinery. Carefully check all wood yourself before using it.


- Keep fingers clear of blades, using Push Sticks whenever necessary.



- NEVER reach over, behind a moving blade to remove waste, or off cuts.

- ALWAYS feed material against the rotation of the blade. NEVER pull work through the table saw from behind.

- NEVER attempt to free a stalled blade or material while machine is on and the blade is turning.

- Areas around all power tools must be kept clean and clear of debris.
- ALWAYS turn on dust extractor system, making sure the proper vent is open and close all vents that are not in use.
- NEVER wear gloves while using woodworking machinery, they could be caught and pull you into the blade. 
- NEVER leave a machine while it is running. Turn it off even if you think you will only be gone a second.
- All stationary power tools must be locked out when not in use.

Stationary Woodworking Machinery in the Art Studios:

Table Saw:

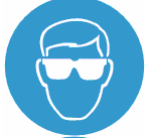

Hazards:

- Kickback: As material passes past the back of the table saw blade it has a tendency to raise off the table. If the wood moves sideways in any direction, it can be caught by the rotation of the blade and thrown back at the operator causing injury.
- Serious injuries from rotating blade including cuts to hands, arms and other parts of the body
- Eye damage from flying debris
- Inhalation of potentially harmful dust from wood and composite materials like MDF and plywood

Precautions:

- NEVER remove or use the table saw without the anti-kickback splitter in place behind the blade.
- NEVER use the mitre gauge and the rip fence at the same time. Wood can bind between the two and cause kickback.
- Always make sure the dust extraction system is on and the proper gate is open for the table saw before turning on saw.
- Make sure table saw and out feed table are clear of objects, tools and people before turning on the saw.
- Make all adjustments and measurement before turning on saw.





- Always use the blade guard while operating the table saw.
- NEVER pull work through the table saw from behind.
- Use safety devices like push sticks and shoes and feather boards where needed to hold down and push smaller pieces of material through table saw. 

- Never force a cut.
- Always wear safety glasses and a face shield when using the table saw.

Band Saw:

Hazards:

- Serious injuries from blade including cuts to hands, arms and other parts of the body
- Eye damage from flying debris, including a broken saw blade
- Inhalation of potentially harmful dust from wood and composite materials like MDF and plywood

Precautions:

- ALWAYS position band saw guard ¼" from the top of the piece of wood you are cutting.
- Wait for band saw to get up to full speed before starting cut.
- Avoid awkward operations and hand positions where a sudden slip could cause a hand to move into the blade.
- Fully support work on band saw table to eliminate twisting the blade.
- Always make sure the dust extraction system is on and the proper gate is open for the band saw before turning on saw.
- Don't force a cut.
- Use safety devices like push sticks and shoes when cutting smaller pieces of wood.
- Don't twist the blade when making curve cuts, cut curves gradually making sure the radius of is not too small for the width of the blade.
- NEVER back out of a cut while the saw is on.
- ALWAYS make sure the band saw is off and the blade has stopped moving before leaving band saw.
- Always wear safety glasses and a face shield when using the band saw. 


Mitre Saw:

Hazards:

- Serious injuries from rotating blade including cuts to hands, arms and other parts of the body
- Eye damage from flying debris
- Inhalation of potentially harmful dust from wood and composite materials like MDF and plywood

Precautions:

- Before turning on mitre saw tighten the table clamp and any other clamping systems you are using to hold your work.
- Make all adjustments and measurements before turning on saw.
- ALWAYS keep arms, hands and fingers away from blade.
- Avoid awkward operations and hand positions where a sudden slip could cause a hand to move into the blade.
- NEVER hold material between the two red lines, this is the table hazard zone.
- NEVER start the mitre saw with wood against the blade, it could be thrown causing serious injury.
- Always hold work firmly against the table and the fence and bring blade down at a moderate speed.
- NEVER perform free-hand operations on the mitre saw, never cut anything that does not sit firmly on table.
- NEVER reach under or behind the blade while machine is running.
- Always make sure the dust extraction system is on and the proper gate is open for the table saw before turning on saw.
- Always wear safety glasses and a face shield while using the mitre saw.



Scroll Saw:

Hazards:

- Serious injuries from rotating blade including cuts to hands, arms and other parts of the body
- Eye damage from flying debris
- Inhalation of potentially harmful dust from wood and composite materials like MDF and plywood

Precautions:

- Always install the blade so it cuts on the down stroke to avoid the work piece from being pulled off the table.
- Make sure you have installed the blade correctly so it is stretched tightly to avoid bending.
- Do not force a cut; scroll saw blades are very thin and can break under slight pressure.
- Make all adjustments and measurements before turning on saw.
- Be aware of your hand positioning at all times while using the scroll saw to avoid cutting yourself.
- Always wear safety glasses while using the scroll saw.



Drill Press:

Hazards:

- Serious injuries from rotating drill bit or flying material including cuts to hands, arms and other parts of the body
- Eye damage from flying debris
- Loose material, clothing or hair getting caught by rotating drill bit and machinery

Precautions:

- Tie long hair back and NEVER wear loose clothing when operating drill press.
- Set drill press height, tighten drill bit, and clamp work piece before plugging in and turning on drill press.
- Always make sure drill bit is secure in chuck and chuck is removed before starting drill press.
- Never handhold work pieces when using a drill press.
- To prevent rotation of workpiece secure it to the table with clamps. Long pieces should contact left hand side of column so they do not spin into you.
- When securing work with a vise, clamp the vise securely to the table.
- ALWAYS keep hands and fingers away from drill bit and cutting tools.
- Always stop and unplug drill press before removing scrap material or your workpiece.
- Always wear safety glasses while using the drill press.




Wood Lathe:



Note: You **MUST** get authorization from the Studio Art Technologist or your Sculpture Instructor to use this piece of equipment.

Hazards:

- Serious injuries from rotating objects including cuts to hands, arms and other parts of the body
- Eye damage due to flying debris
- Serious bodily injury from poorly secured wood becoming free and flying off lathe
- Serious injuries to fingers being trapped between tool rest and workpiece
- Rotating parts catching loose clothing, jewellery or hair can pull you into the machine
- Inhalation of potentially harmful dust from wood

Precautions:

- Tie long hair back and NEVER wear loose clothing when operating lathe.
- NEVER wear gloves when using a lathe. 
- Remove excess material from stock on table saw or band saw if possible before using lathe.
- Never turn a piece of wood that has nails, screws, checks, knots or other defects. Carefully inspect all stock before turning it on a lathe.
- Make sure work is properly and tightly secured on faceplate or between centerpoints.
- Make sure drive points are embedded firmly into your material.
- Set tool rest as close to the work piece as possible (1/4" or 5mm maximum). Adjust tool rest periodically as stock takes shape; turn the lathe off to make these adjustments.
- Always rotate stock by hand and make sure no part of it touches the tool rest. Double check all adjustments and locks and check for tightness.
- Before you turn on the lathe, stand to one side in case the stock should come loose. If there is, a vibration or balance problem turn off lathe and fix the situation.
- Start at the slowest speed for rough cutting and move up as the piece becomes finished.
- Hold tools firmly with both hands while cutting stock.



- Always turn off lathe when making changes to the tool rest or measuring work with a caliper.
- Stop and clean up debris on the floor and the lathe periodically to ensure safe footing.
- Always wear a close fitting leather apron while using lathe to guard against injury from a cutting tool that has accidentally been thrown from your hand. 
- Wear a dust mask if generating large amounts of sawdust. 
- Always wear safety glasses and a face shield while using the lathe.

Oscillating Spindle Sander:

Hazards:

- Injuries from rotating sander including cuts and abrasions to hands and arms
- Eye damage due to flying debris
- Rotating parts catching loose clothing, jewellery or hair can pull you into the machine
- Inhalation of potentially harmful dust from wood and composite materials like MDF and plywood

Precautions:

- Don't get your hands too close to moving abrasive drum.
- Don't start sanding without making sure sanding drum is properly secure and the sandpaper tight.
- Always feed workpiece into the sander from right to left. Working with the sander (left to right) can cause you to lose control of your workpiece.
- Don't sand small pieces on the spindle sander as they are too difficult to hold onto.
- Two people must never work on the spindle sander at the same time.
- Always make sure the dust extractor system is on and the proper gate open before turning on spindle sander.
- NEVER wear gloves when using the spindle sander. 
- Always wear safety glasses while using the oscillating spindle sander. 

Router Table:

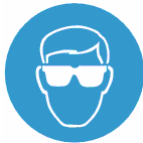
Note: You **MUST** get authorization from the Studio Art Technologist or your Sculpture Instructor to use this piece of equipment.

Hazards:

- Serious hand injuries from rotating cutters
- Router bits move at a speed of 20-25,000 revolutions per minute. At this speed, the edges of the cutter almost disappear. Keep hands well clear of the router bit while it is in operation.
- Eye damage due to flying debris
- Inhalation of potentially harmful dust from wood, MDF and plywood

Precautions:

- Always use the router table with the proper guards in place.
- Make all adjustments and measurements before turning on router table.
- Tighten all router bits securely, making sure there is at least ½ of the router bit shaft is inside the chuck.
- Stand to one side when first turning on router table to make sure bit is secure and centered.
- ALWAYS keep arms, hands and fingers away from blade.
- Avoid awkward operations and hand positions where a sudden slip could cause a hand to move into the blade.
- Always feed workpiece into the router from right to left.
- NEVER wear gloves when operating the router table.
- Always wear safety glasses and a face shield while using the router table.



Checklist: Stationary Woodworking Machinery Safety

- ✓ Have I received proper training from my Instructor or the Studio Art Technologist on how to use this piece of equipment?
- ✓ Have I inspected my piece of wood to see if is free of nails, screws or other foreign objects that could damage saw blades?
- ✓ Is machine guard in the proper location for the procedure that I am doing?
- ✓ Do I have the proper Personal Protective Equipment needed for using this piece of equipment?
- ✓ Have I checked to make sure the outfeed table and machine beds are clear of debris?
- ✓ Is there anyone close around me that I should ask to move or put on PPE before I turn on this piece of equipment?
- ✓ Do I have any piece of jewellery, long hair or clothing that is loose and needs to be removed or tied back before using this piece of equipment?
- ✓ Is the floor clean and free of sawdust or other debris to ensure I have proper footing while using this piece of equipment?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?

Section 7: Safety in the Welding Shop

Please Note:

The Welding Shop can be a hazardous area if used incorrectly or by students who have insufficient training.

Never enter the welding shop while someone is welding, you could catch an arc and do permanent damage to your eyes.

General Precautions:

- **Welding is a two-person operation. No one can weld alone; a fire watcher must be present at all times. The student welding and the fire watcher must be trained in all welding and emergency procedures.**

- **Gas welding can only be done under the direct supervision of the Studio Art Technologist or a Sculpture Instructor.**

- Wearing CSA Impact resistant safety glasses is mandatory whenever using power equipment in the welding shop.



- Wearing the proper approved and appropriate welding helmet or goggles is mandatory when doing any welding or plasma cutting.



- Wearing leather aprons and gloves are mandatory when doing any welding procedure to prevent burns.



- Never wear synthetic clothing that is flammable while welding.

- Cover ALL exposed skin to protect against serious UV damage from welding arc.

- NEVER deviate from posted safe operating procedures. All machines, tools and processes in the welding shop will inflict serious injuries if misused.

- NEVER operate machinery if you feel ill, fatigued or are under the influence of alcohol or drugs. You must be able to concentrate on the task at hand.



- NEVER use electrical welding equipment that has damaged cables. Keep cables away from welding arc and molten debris. Electrical welding equipment uses a lot of electricity and damaged cords can cause electrocution.



- NEVER use gas-welding lines that have been damaged or cut. They could be leaking flammable gas.

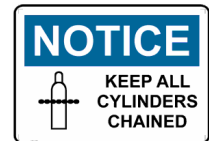
- Inform the Studio Art Technologist or an Instructor immediately if you find damaged gas lines.

- Get to know the smell of acetylene gas (pungent sweet garlic). Never weld if the smell is present, it means the acetylene gas is leaking and creating a potential fire and explosive hazard. Leave the welding shop immediately and contact the Studio Art Technologist or an Instructor.



- Students are not to remove or tamper with gauges on compressed gas cylinders.

- Students are not to move or unchain gas cylinders from the walls.



- Before starting any welding operation remove any flammable materials from the welding shop and ensure all exits are free from obstruction.

- NEVER weld if floor or other surfaces are wet.

- The Electrostatic filter must be on at all times while welding to remove potentially harmful fumes and dust.



- DO NOT WATCH ARC.

Welding and Metalworking Machinery in the Art Studios:

Horizontal Metal Band Saw:

Hazards:

- Serious injuries from blade including cuts to hands, arms and other parts of the body
- Cuts to hands from metal shavings and edges of cut metal
- Eye damage from flying debris

Precautions:

- Before starting metal band saw, inspect blade. Report all damaged blades to Studio Art Technologist for immediate replacement.
- Clean work area around saw from debris and oil to prevent accidental slipping.
- Before turning on metal band saw tightly clamp work piece in saw.
- NEVER freehand or hold material while operating saw.
- ALWAYS keep arms, hands and fingers away from blade.
- Avoid awkward operations and hand positions where a sudden slip could cause a hand to move into the blade.
- Don't start the metal band saw with the material against the blade.
- Wait for the metal band saw to get up to speed before feeding saw slowly into material.
- DO NOT force the band saw to cut, let gravity and the weight of the saw do the work.
- Use cutting fluid while operating metal band saw to reduce the chance of sparks and blade breakage.
- NEVER reach under or behind the metal band saw while machine is running.
- NEVER leave the metal band saw running unattended.
- Don't use your bare hand to wipe away metal shavings, they are sharp and can cut you.
- Wear leather gloves when handling freshly cut metal as it may have sharp burrs on the ends and may be hot.
- Always wear safety glasses while using the horizontal metal band saw.



Metal Cut Off Saw:

Hazards:

- Serious injuries from rotating blade including cuts to hands, arms and other parts of the body
- Eye damage from flying debris and broken cutting wheel
- Burns and possible fires from sparks

Precautions:

- Before starting cut off saw, inspect blade. Report all damaged blades to Studio Art Technologist for immediate replacement. NEVER use a damaged blade as it may explode and throw pieces at you and others.
- Clean work area around saw from debris and oil to prevent accidental slipping.
- Remove any flammable substances and materials from around and behind the cut off saw so the sparks generated during operation do not ignite them.
- Before turning on cut off saw, tightly clamp work piece in saw.
- NEVER freehand or hold material while operating saw.
- ALWAYS keep arms, hands and fingers away from blade.
- Avoid awkward operations and hand positions where a sudden slip could cause a hand to move into the blade.
- Don't start the cut off saw with the material against the blade.
- Wait for the cut off saw to get up to speed before feeding saw slowly into material.
- DO NOT force the cut off saw to cut, slight pressure and patience are all that is needed.
- NEVER reach under or behind the metal band saw while machine is running.
- Don't use your bare hand to wipe away metal shavings, they are sharp and can cut you.
- Wear leather gloves when handling cut metal as it may have sharp burrs on the ends
- Always wear safety glasses, face shield, hearing protection leather gloves and a leather apron or jacket while using the metal cut off saw.



Stationary Grinder:

Hazards:

- Serious injuries including cuts and abrasions to hands, arms and other parts of the body
- Eye damage from flying debris and broken grinding wheel
- Burns and possible fires from sparks

Precautions:

- Before starting grinder, inspect wheel for cracks or damage. Report all damaged wheels to Studio Art Technologist for replacement. Never use a damaged wheel as it can explode and throw pieces at you and others.
- Tie loose hair back and never operate grinding wheel while wearing loose clothing or jewelry.
- Clean work area around grinder from debris and oil to prevent accidental slipping.
- Remove any flammable materials and sweep up sawdust from around the grinder so sparks generated during operation do not ignite them.
- Distance between the grinding wheel and tool rest cannot exceed 1/8" (3mm).
- Never adjust work rest while grinding wheel is in motion. Turn off power supply at lock out box before making adjustments.
- Wait for the grinding wheel to get up to speed and wait one full minute to check for balance before applying material to wheel. Report unbalanced wheels immediately to the Studio Art Technologist, Never use an unbalanced wheel.
- Keep arms, hands and fingers away from grinding wheel.
- Avoid awkward operations and hand positions where a sudden slip could cause a hand to move into the wheel.
- Never use the side of the wheel for grinding.
- Never reach below or behind the wheel while it is running.
- Clean Floor regularly, grit and dust can become slippery.
- Never wear gloves when operating the grinding wheel, if a glove gets caught it will pull you hand into the machine.
- Always wear safety glasses and a face shield when operating the grinder.



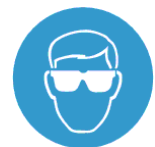
Sandblaster:

Hazards:

- Eye damage from abrasives
- Respiratory damage from inhalation abrasive particles
- Eye and skin injuries from compressed air
- Air embolism (air bubble in the blood stream)

Precautions:

- Disconnect air supply when loading and unloading sandblast cabinet.
- Inspect all hoses and gloves for damage before using sandblaster. Report any damaged or worn components to the Studio Art Technologist immediately.
- Don't open the sandblast cabinet until abrasive dust has settled to avoid releasing it into the shop.
- Never point the nozzle of the sandblast gun directly at the gloves inside the cabinet when operating; it could force air into your blood stream.
- If sandblast cabinet is leaking or expelling abrasives, stop and notify the Studio Art Technologist immediately.
- Never use the sandblaster with cabinet door open. Close and latch sandblaster door when not in use.
- Always wear safety glasses when using the sandblaster.



Pedestal Metal Shear:

Hazards:

- Serious cuts to hands
- Eye damage from flying debris

Precautions:

- Do not cut any metal thicker than 16 gauge on the metal shear.
- Keep hands clear of cutting blade at all times.
- Support sheet metal so pedestal shear does not become unstable.
- Always wear gloves to avoid cutting yourself on metal burrs left by cutting.
- Always wear safety glasses when using the pedestal metal shear.



Electric Welding Procedures

Note: You **MUST** get authorization from the Studio Art Technologist or your Sculpture Instructor to use any electric welding equipment. You **MUST** have a trained Fire Watcher with you at all times while you are welding.

Electric welders all have the same general hazards and precautions. Specific hazards for each type of welder follow this section:

Hazards:

- High-amperage electric current can cause electrocution
- Serious burns from hot metal, UV, and infrared radiation
- Eye damage from flying debris including molten metal
- Eye damage from UV radiation from arc rays
- Inhalation of potentially harmful fumes
- Fire risk from molten metal

Precautions:

- Check all cables, plugs and leads for defects and signs of wear before plugging in or turning on arc welder. Report any damage to the Studio Art Technologist immediately.
- NEVER weld in a wet area.
- Follow duty cycle rating to avoid overheating.
- Inspect your steel toe work boots to make sure they are in good condition and there are no exposed metal on them to insure you are well insulated.
- Don't wear metal jewellery or watches while welding.
- NEVER weld with matches or lighters in your pockets.
- Cover all areas of exposed skin to guard against UV and infrared radiation.
- Wear fire-resistant clothing while welding.
- Keep plastic separating curtain closed at all times during welding.
- Before starting any welding operation remove all flammable materials from the welding shop and ensure all exits are free from obstruction.
- Don't touch any part of the metal with your bare hands after welding. Heat travels quickly through metal it and areas that were not close to the actual weld will still be very hot.

- Keep your pants over your work boots to avoid trapping molten metal and sparks in your boot.
- Don't weld in awkward positions, like on your back underneath the metal you are welding, sparks and molten metal can fall on you and burn you.
- Keep your head out of the fumes.
- Electrostatic filter must be on at all times with the exhaust vent as close as possible to the area you are welding.
- Fire watcher is to watch for welding sparks and know how to use fire extinguisher if needed.
- Do not weld or cut old oil drums, propane tanks or gas cylinders.
- Always wear safety glasses, welding helmet with correct shade filter, leather gloves and a leather apron or jacket while using any electric welder.
- Fire watcher must also wear safety glasses, proper welding helmet with correct shade filter, leather gloves and a leather apron or jacket while in the welding shop.



Arc Welder:

Specific Hazards:

- Flying debris from chipping slag
- The arc welder, once turned on, is live and touching any piece of metal that is in contact with the grounding clamp will produce an arc that can cause potential damage to the eyes

Precautions:

- Always wear safety glasses under your welding helmet so that chipping slag from weld does not create the risk of getting metal chips in your eye.
- Always be aware of where you are placing the electrode holder and welding rod. Any metal that is touching the ground clamp, including the welding table, is live.
- Always set up the welding procedure, connecting the ground clamp to the metal bench or work piece and placing the electrode in a manner so it cannot strike an accidental arc upon start up.
- If electrode becomes stuck to the workpiece or the metal table, turn off the arc welder without looking at the electrode.

MIG Welder (Metal Inert Gas):

Specific Hazards:

- MIG welding uses compressed gas (argon) to shield the weld
- Puncture injury caused by automatic feeding of welding wire



Precautions:

- Check hose from argon cylinder to Mig welder for defects and wear. Report any damage immediately.
- Protect argon cylinder from sparks, flying debris and excessive heat at all times.
- Never hang a welding torch from a gas cylinder.
- Don't point the welding torch at anyone, or any part of your body and pull the trigger. Wire feeds mechanically and automatically.
- Shut off argon cylinder when not in use.



TIG Welder (Tungsten Inert Gas):

Specific Hazards:

- TIG welding uses compressed gas (argon) to shield the weld
- Eye damage due to breaking of ceramic tip



Precautions:

- Check hose from argon cylinder to TIG welder for defects and wear. Report any damage immediately.
- Protect argon cylinder from sparks, flying debris and excessive heat at all times.
- Never hang a welding torch from a gas cylinder.
- Shut off argon cylinder when not in use.
- Be careful when setting down welding torch as not to damage ceramic nozzle. Never TIG weld with a damaged ceramic nozzle.



Plasma Cutter:

Specific Hazards:

- Plasma Cutting uses compressed air to blow molten metal away from the cut
- Hot metal and sparks from plasma cutting can start fires or explosions
- Eye and skin damage from hot metal and sparks
- Heat from plasma arc can cause serious burns and can even cut through gloves and tissue



Precautions:

- NEVER cut where flying sparks can strike flammable substances.
- Protect ALL gas cylinders in the welding shop from sparks and molten metal.
- Inspect compressed air line for damage and wear before commencing plasma cutting.
- Never cut containers that once held flammable substances such as oil drums.
- Keep hands gloves away from cutting path and torch tip at all times. Use clamps and other devices to hold the workpiece and guide the torch tip.
- Always protect yourself, fire watcher and others from sparks; cut away from yourself and others at all times.
- Point torch away from your body and towards work when pressing trigger; the pilot arc comes on immediately.
- Don't touch metal with bare hands after cutting; allow metal to cool before moving cut pieces.
- Keep your pants over your work boots and avoid clothing with turned up cuffs to avoid trapping molten metal in these areas.
- Wear fire resistant earmuffs to prevent sparks from entering ears.



Gas Welding (Oxyacetylene Welding):

Note: You **MUST** get authorization from the Studio Art Technologist or your Sculpture Instructor to use oxyacetylene welding equipment. You **MUST** have the Studio Art Technologist or your Sculpture Instructor in the welding shop with you at all times while you are oxyacetylene welding.

All gauges and hoses connected to the acetylene cylinder are colour-coded **RED** and left hand threaded while all gauges and hoses connected to the oxygen cylinder are colour-coded **GREEN** and right threaded for safety reasons.

Hazards:

- Oxyacetylene welding uses acetylene, a compressed and extremely flammable gas, and compressed oxygen to oxidize the flame
- Acetylene gas is mildly poisonous and can cause headaches and nausea
- Long periods of oxyacetylene welding can create an oxygen rich flammable atmosphere within the welding shop
- Serious burns from hot metal and infrared radiation
- Eye damage from flying debris including molten metal
- Inhalation of potentially harmful fumes
- Fire and explosion risk do to improper handling and use of welding torch and lead hoses.



Remember this rhyme and you will do fine:

A Before O or Up You Go!

Always turn on the acetylene before the oxygen when lighting torch.

Precautions:

- Check all hoses, gauges and fittings for defects and signs of wear before turning on gas cylinders. Report any damage to the Studio Art Technologist immediately.
- Don't wear metal jewellery or watches while welding, they can heat up.
- NEVER weld with matches or lighters in your pockets.
- Cover all areas of exposed skin to guard against infrared radiation.
- Wear fire-resistant clothing while welding.
- Keep your pants over your work boots to avoid trapping molten metal and sparks in your boot.
- Keep plastic separating curtain closed at all times during welding.
- Before starting any welding operation remove all flammable materials from the welding shop and ensure all exits are free from obstruction.
- Never use butane lighters to ignite an oxyacetylene torch; the heat could blow the lighter up in your hand.
- Always light the welding torch so it is pointing away from you and others.
- Remember heat travels quickly through metal so don't touch any part of the metal with your bare hands after welding.
- Don't weld in awkward positions, like on your back underneath the metal you are welding; sparks and molten metal can fall on you and burn you.
- Never point the torch at gas cylinders or gas hoses. Breaching a hose line can cause explosions and fire.
- Keep gas hoses off the floor and away from falling molten metal and sparks to avoid damaging the hose.
- Keep your head out of the fumes.
- Electrostatic filter must be on at all times with the exhaust vent as close as possible to the area you are welding.
- Fire watcher is to watch for welding sparks and know how to use fire extinguisher if needed.
- Do not weld or cut old oil drums, propane tanks or gas cylinders.
- To shut down the torch, close the oxygen torch valve first, then the acetylene. (A 'pop' may occur if you reverse the order. The pop throws carbon soot back into the torch, which may partially plug the gas passages.)

- Never use oxygen to blow off dust and dirt from skin and clothes. Compressed gas blown into a cut can create air bubbles in your blood stream and can be fatal. Pure oxygen supports combustion and a spark can ignite saturated clothing.
- Welder and Fire watcher must wear welding goggles, leather gloves and a leather apron or jacket while oxyacetylene welding.



Checklist: Welding and Metalworking Safety

- ✓ Have I received proper training from my Instructor or the Studio Art Technologist on how to use this piece of equipment?
- ✓ Have I inspected all electrical cables and gas hoses for damage or defect before turning on welding equipment?
- ✓ Do I have the proper Personal Protective Equipment needed for using this procedure?
- ✓ Have I checked to see if the equipment is off before plugging it in?
- ✓ Is there anyone close around me that I should ask to move or put on PPE before I start?
- ✓ Is the welding shop clear of all flammable materials and substances before I start?
- ✓ Is the welding shop floor clean and dry before turning on equipment?
- ✓ Do I have a firewatcher for my welding project and are they trained to use a fire extinguisher?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?

Section 8: Safety in Ceramics

Please Note:

- Clay contains silica. Silica is a designated substance on campus.**
- Keep surfaces damp at all times when using clay and clean the ceramics area with water.**
- Never dust or sweep dry clay.**

General Precautions:

Clay dust contains free silica and chronic over exposure can cause silicosis. Symptoms of silicosis include shortness of breath, dry cough, emphysema, and high susceptibility to lung infections such as tuberculosis. The disease may take years to develop. Silica dust exposure is not hazardous by skin contact or ingestion. To keep clay dust to a minimum good housekeeping and personal hygiene practices must be followed.

Housekeeping:

- Keep work area free of clay dust.
- Always clean ceramics area after use. All cleaning must be done with wet materials.
- Always mop floors numerous times to ensure they are free of clay dust. Never sweep floors in the ceramics area.
- Clean rims of glaze jars to eliminate build up and avoid contamination.
- To prevent dust, discard scrap clay in recycling bin immediately.

Personal Hygiene:

- Never ingest or inhale ceramic products.
- Always wash hands thoroughly after handling clays and glazes before you eat, drink, smoke or use the washroom to avoid contamination.
- Protect open cuts and wounds from materials.
- Wear separate work clothes or smocks while in the ceramics area. Choose clothes of material and design that don't trap dust. Wash these clothes weekly and separately from other laundry.
- Never use utensils in ceramics that will later be used for food preparation or eating.



Other Precautions:

- Read all relevant MSDS for chemicals and materials you will be using in the ceramics area.
- Read all the posted safe operating procedures and cleaning procedures and follow them.
- Always use tools that are in good condition.
- Never carry ceramics tools in your pockets, if they are sharp they can cut you.
- Make sure you have enough room around you to work so you do not injure yourself or others.
- Clay boxes and raw materials can be heavy. Be conscious of the way you are lifting and carrying heavy objects. Bend your knees when lifting.



Common Substances and Machinery Used in Ceramics:

Clay:

Clays are minerals composed of hydrated aluminum silicates, which often contain crystalline silica. Other impurities in clay may include organic matter or sulfur compounds. Materials like grog, sand, talc, vermiculite, perlite, and minerals such as barium carbonate and metal oxides, are added to modify clay properties.

Hazards:

- Silicosis, or "potter's rot," from chronic inhalation of large amounts of free silica during clay mixing. Symptoms of silicosis include shortness of breath, dry cough,

emphysema, and high susceptibility to lung infections such as tuberculosis. The disease may take years to develop. Silica dust exposure is not hazardous by skin contact or ingestion.

- Clay that dries out on the floor, bench and other surfaces can produce an inhalation hazard due to the presence of free silica.
- Sand, perlite, grog, and vermiculite contain free silica. Vermiculite can also be contaminated with asbestos.
- Kaolinosis a disease in which the lungs become mechanically clogged from the chronic inhalation of kaolin.
- Exposure to moulds growing in wet clay may lead to respiratory problems like asthma and hypersensitivity pneumonia. Moulds can also cause or exacerbate skin conditions.
- Hand contact with wet clay can result in abrasion and dryness of fingertips and hands.

Precautions:

- Read all relevant MSDS before using any clay in the ceramics studios and follow the preventative measures guidelines for each material.
- Use premixed clay to avoid exposure to large quantities of clay dust.
- Do not use asbestos or asbestos-contaminated talcs.
- Avoid contact of clay with broken skin. Use a skin moisturizer.
- Recondition clay by cutting still-wet clay into small pieces, letting them air-dry, and soak in water.
- Finish green ware while still wet or damp with a fine sponge instead of sanding when dry. Do not sand greenware containing fibrous talc.
- Always wash hands thoroughly after handling clays before you eat, drink, smoke or use the washroom to avoid contamination.



Glazes:

Glazes used to color or finish clay pieces are a mixture of silica, fluxes and colorants. Common fluxes include lead, barium, lithium, calcium and sodium. The colour in glaze comes from an assortment of metal oxides or metal compounds that produce particular colors when fired. Luster or metallic glazes can contain mercury,

arsenic, highly toxic solvents such as aromatic and chlorinated hydrocarbons, and oils. Some underglazes and overglazes use mineral spirits as the vehicle instead of water.

Hazards:

- Lead Poisoning lead compounds are highly toxic by inhalation or ingestion. Symptoms of lead poisoning include: damage to the peripheral nervous system, brain, kidney, or gastrointestinal system, as well as, anemia, chromosomal damage, birth defects and miscarriages.
- Lead-glazed foodware can leach lead if not fired properly, or if the glaze composition is not correctly adjusted. Acidic drinks and foods such as tomato juice, citric juices, sodas, tea, or coffee can increase this hazard.
- Barium and lithium are also highly toxic by inhalation, but less so than lead.
- Certain colorant compounds of particular metals are known probable human carcinogens, including arsenic, beryllium, cadmium, chromium (VI), nickel and uranium.
- Antimony, barium, cobalt, lead, lithium, manganese, and vanadium colorant compounds are highly toxic by inhalation.
- Antimony, arsenic, chromium, vanadium, and nickel compounds are moderately toxic by skin contact.
- Silicosis, free silica may occur in many of the clays, plant ash, flint, quartz feldspars, talcs, etc. used in glazes.
- Soda ash, potassium carbonate, alkaline feldspars, and fluorspar used in glazes are skin irritants.
- Spray application of glazes is very hazardous because of the potential inhalation of glaze mists.
- Dipping, pouring, and brushing certain glazes may cause skin irritation. Glazes containing solvents are both flammable and hazardous.

Precautions:

- Read MSDS for glazes that you are using.
- Never deface safety or warning labels on glaze containers. Never use a glaze that is missing or has a defaced manufacturer's safety label.
- Only use premixed liquid glazes.
- Only use lead-free glazes. If the glaze does not state "lead-free" or "leadless" or carry the

AP or CP symbol on the label, assume it contains lead and do not use it.

- A glaze label marked “lead-safe” means that the finished ware, if fired properly, will not release lead into food or drink. The actual glaze is still hazardous to handle and fire and may contain lead so do not use it.
- If possible, don’t use colorants that are known human carcinogens and avoid probable human carcinogens. There is no known safe level of exposure to carcinogens.
- Never use Raku glazes for food ware items.
- Avoid skin contact while working with glazes. Wear gloves while handling wet or dry glazes. Barrier creams may cause glazes to creep during firing.
- Always wash hands thoroughly after handling and applying glazes before you eat, drink, smoke or use the washroom to avoid contamination.



Clay Mixer:

Note: You **MUST** get authorization from the Studio Art Technologist or your Sculpture Instructor to use this piece of equipment.

Hazards:

- Silicosis, dry clay dust contains free silica
- Possible back injury from improper loading of materials into the mixer
- Pinch hazard from moving parts inside mixer

Precautions:

- Always wear appropriate respirator when handling dry clay to protect against inhalation of free silica.
- Wipe down any clay dust from around the clay mixer with a damp sponge immediately to avoid free silica in the air.
- Always bend your legs when lifting heavy bags of clay or raw materials.
- Never override the safety shut-off on the clay mixer. Never reach inside the mixer while it is still spinning.
- Wipe out clay mixer with a damp sponge immediately after removing clay to keep dry clay dust to a minimum.



Pug Mill:

Note: You **MUST** get authorization from the Studio Art Technologist or your Sculpture Instructor to use this piece of equipment.

Hazards:

- Crushing or cutting of fingers and hands

Precautions:

- Always keep finger out of the feeding opening. Pug Mill will cut fingers completely off if they come into contact with the auger inside.

Slab Roller:

Hazards:

- Silicosis, dry clay dust contains free silica
- Crushing or pinching of fingers

Precautions:

- Always keep hands clear of roller while using.
- Don’t force clay through slab roller, if it is too tight loosen the roller and continue feeding clay through it.
- Always clean the slab roller and canvas immediately after use.

Extruder:

Hazards:

- Silicosis, dry clay dust contains free silica
- Pinch and crush hazards to hands
- Head injury from falling handle.

Precautions:

- Always keep hands clear of plunger while using extruder.
- Don’t force excessive amounts of clay through extruder, if it is too tight loosen the roller and continue feeding clay through it.
- Always clean the slab roller and canvas immediately after use.

Throwing Wheels:

Hazards:

- Injury to hands from moving parts
- Potential shock hazard
- Carpel tunnel syndrome, can develop from throwing on a potter's wheel for long periods of time because of the awkward position and stress on the wrists
- Back problems from bending over the potters wheel for long periods of time.

Precautions:

- Never wear loose clothing, jewellery, rings or watches while using a throwing wheel, they could be caught in moving parts and damage your hands or pull you into the machine.
- Don't move or hold the wheel while the power is on.
- Never reach under a throwing wheel while power is on and the machine is plugged in.
- Never touch switches or unplug throwing wheels with wet hands.
- Never clean a throwing wheel while it is on and plugged in.
- Never use excessive amounts of water or hose down a throwing wheel to clean it. Water could enter the electrical motor and cause electrocution. Always be mindful of water around electricity.
- Take frequent breaks to prevent back and wrist fatigue and problems.
- Keep wrists in unflexed position as much as possible to prevent carpal tunnel syndrome.



Electric Kiln:

Note: You MUST get authorization from the Studio Art Technologist or your Sculpture Instructor to use this piece of equipment.

Hazards:

- Serious burns to skin
- Potential shock hazard
- Inhalation of potentially harmful fumes
- Fire

Precautions:

- Always turn the power to the kiln at the lock out box off before loading or unloading. Touching the inside elements can cause an electrical shock.



- Always inspect kiln furniture and shelving before loading kiln. Never use damaged or cracked kiln furniture as they can collapse during firing and damage the inside of the kiln.
- When loading kiln all pieces must be at least 1" away from elements.
- The downdraft exhaust must be switched on at all times when firing kiln.
- Overhead foundry exhaust must be on at all times when firing kiln to exhaust kiln fumes to the outside.
- Never place anything combustible on the lid of the kiln while firing. Move all flammable materials from around the kiln before firing.
- Never open kiln while firing. Inside temperatures can be over 1200 degrees Celsius and can cause immediate serious burns just from the heat. The electric current is sufficient to kill a person if the element is touched.
- If looking through peepholes during firing process always wear tinted oxyacetylene welding goggles to protect eyes from heat and infrared radiation damage.
- Wear gloves when looking through peepholes during firing to protect from burns.

Raku Firing:

Note: You MUST get authorization from the Studio Art Technologist or your Sculpture Instructor to use this piece of equipment and you must remain present at all times during the firing process.

Raku involves first firing ware at a low temperature in a regular gas kiln, and then removing the still hot pieces and placing in them in sawdust, leaves or other organic materials for a reduction phase.

Hazards:

- Inhalation of toxic substances, the reduction step produces large amounts of smoke and carbon monoxide. Treated wood or other materials can yield an exposure to highly toxic preservatives or pesticides, such as arsenic and chromium compounds.
- Fire and explosion hazard, propane is heavier than air and it can collect at ground level and not disperse
- Burns from intense heat and infrared radiation

Precautions:

- Raku can only be done outdoors because of smoke. Be careful to not locate raku near air intakes or open windows and doors of buildings.
- Do not use materials that have been treated with preservatives or pesticides for the reduction phase.
- Inspect all gas connections and hoses before turning on propane.
- You must have a fire extinguisher present at all times during Raku firing and know how to use it correctly.
- When transferring pottery for the reduction phase you must wear the silver heat resistant clothing in the foundry including gloves, jacket, boot and shin coverings, hard hat with green tinted face shield and safety glasses.

Checklist: Ceramics Safety

- ✓ Have I received proper training from my Instructor or the Studio Art Technologist on how to use this piece of equipment?
- ✓ Do I have the proper Personal Protective Equipment needed for this process?
- ✓ Have I read the MSDS for the chemicals and/or materials I am using?
- ✓ Have I removed my jewellery and tied my long hair back before using the throwing wheels?
- ✓ Have I cleaned up the ceramics studio using wet methods now that I am finished?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?

Section 9: Safety in the Foundry Process

Please Note:

The foundry process can be extremely dangerous. Certain aspects are conducted only by a Faculty member and the Studio Art Technologist.

General Precautions:

- Only authorized trained individuals conduct the bronze pouring process.
- Anyone involved in the bronze pouring process **MUST** wear the appropriate protective clothing including hard hats with face shield, heat resistant jacket, gloves and shin protectors.
- Read all MSDS for materials and chemicals you use.
- Always use tools that are in good condition.
- Never carry tools in your pockets, if they are sharp they can cut you.
- NEVER deviate from posted safe operating procedures. All machines, tools and processes will inflict serious injuries if misused.
- NEVER work in the studios if you feel ill, fatigued or are under the influence of alcohol or drugs. You must be able to concentrate on the task at hand.
- Never enter the foundry when bronze furnace is firing; the heat and infrared radiation can burn you.
- During bronze pouring process, all stationary power equipment is locked out to ensure student safety.
- Keep back from bronze pouring operation. Obey and keep behind student safety marshals wearing the silver heat resistant clothing.
- All students watching the bronze pour must wear safety shoes and safety glasses and keep back behind the designated safety line.



Common Substances and Machinery Used in the Foundry Process:

Wax:

Hazards:

- Overheating wax can result in the release of flammable wax vapors.
- Wax dripped on heating elements can start fires.
- Decomposition of the wax from overheating releases acrolein fumes and other decomposition products, which can cause upper respiratory tract irritation and congestion.
- Chlorinated synthetic waxes are highly toxic by skin contact and skin absorption and may be contaminated with polychlorinated biphenyls (PCBs), which are highly toxic, causing chloracne (a severe form of acne), liver problems, and possibly cancer of the pancreas and melanoma (a fatal form of skin cancer).
- Explosions have occurred from heating wax that contained water.

Precautions:

- Do not overheat waxes. Wax melts at a low temperature use the lowest possible temperature to accomplish task.
- Always use a double boiler and a temperature-controlled hot plate, or a crock pot to melt wax instead of an exposed element.
- Never use an open flame to melt waxes.
- Do not use chlorinated synthetic waxes

Silica Sand:

Please consult Studio Art Technologist or your Instructor before using this material.

Hazards:

- Silicosis may result from chronic inhalation of respirable crystalline silica
- Upper respiratory and eye irritation can be caused by high concentrations of dust

Precautions:

- Wearing an air-purifying respirator with high efficiency particulate air filters (HEPA) is mandatory when handling silica sand.



Ludo (refractory material):

Please consult Studio Art Technologist or your Instructor before using this material.

Hazards:

- Contains silica sand (see above)

Precautions:

- Wearing an air-purifying respirator with high efficiency particulate air filters (HEPA) is mandatory when handling ludo.
- Breaking up of ludo must be done in designated area under the supervision of a Faculty Member or the Studio Art Technologist.



Natural Gas Kiln:

Note: Only the Studio Art Technologist and Faculty can use this equipment.

Hazards:

- Natural gas leaks
- Fire and explosion hazard
- Burns from hot surfaces



Precautions:

- Do not store combustible or flammable substances in the foundry area.
- If you smell natural gas, report it immediately to an Instructor, Studio Art Technologist or campus security and evacuate the studios.
- If claxon alarm goes off while natural gas kiln is running report it immediately to an Instructor, Studio Art Technologist or campus security.

Bronze Melting Furnace:

Note: Only the Studio Art Technologist and Faculty can use this equipment.

Hazards:

- Natural gas leaks
- Fire and explosion hazard

- Burns from molten metal, hot surfaces and infrared radiation

Precautions:

- Do not store combustible or flammable substances in the foundry area.
- If you smell natural gas, report it immediately to an Instructor, Studio Art Technologist or campus security and evacuate the studios
- Do not enter foundry without permission while bronze furnace is operational.
- Never interrupt Instructors or Studio Art Technologist while they are placing bronze inside crucible for melting.
- Full body protection with heat resistant jackets, gloves, leg protectors, and hard hat with full face shield is required for pouring bronze.
- Foundry and sand pit area MUST be clean and free of debris and slip hazards to ensure safe bronze pouring.



Mobile Lift:

Hazards:

- Serious injuries from crushing of feet and other parts of the body from falling objects

Precautions:

- CSA Approved Safety Shoes are mandatory while operating Mobile Lifts.
- Before using the lift clean all debris from around the area where you will be using the lift. Even small objects can jam the wheels causing you to lose the load.
- Do not stand or ride on lift.
- Always lock wheels with lever on side when raising and lowering lift.
- Pump slowly and steady to desired height.
- Move lift slowly while carrying load. Sudden stops or turns can cause you to lose the load.
- Don't carry load higher than needed to get it off the ground. Top-heavy loads can tip causing serious injury and damage.
- Always stay behind lift while moving loads. Never allow anyone to stand in front or near load while it is moving.



Overhead Winch:

Hazards:

- Bodily injuries from falling objects

Precautions:

- CSA Approved Safety Shoes are mandatory while operating Overhead Winch.
- Maximum load capacity for overhead winch system is 500lbs. Do not exceed it.
- Move objects slowly and in a controlled manner to avoid accidental dropping.
- Don't carry load higher than needed to get it off the ground, heavy loads cause more serious injuries when dropped from a height.
- Always stay behind winch while moving loads. Never allow anyone to stand in front or near load while it is moving.



Propane Cylinders:

Hazards:

- Burns from hot materials
- Fire hazard
- Cylinders can explode if heated



Precautions:

- Always wear leather gloves to pick up sculpture when using a propane cylinder to heat it.
- Only use a flint striker to light propane cylinders. Never light a propane cylinder with butane lighters they can explode in your hand.
- Never heat bronze sculptures on flammable surfaces or materials.
- Never store propane cylinders near sources of heat or spark
- Propane cylinders can only be used outdoors in the sculpture court.

Patina Chemicals:

Please consult Studio Art Technologist or your Instructor before using this material.

Hazards:

- Most patinas employ highly toxic chemicals
- Applying patinas with heat can create toxic byproducts like vapours, gases and fumes
- Mixing some chemicals together can produce highly toxic emissions that will not work properly

Precautions:

- Patinas must be applied outside in the sculpture court wearing a NIOSH approved respirator for the chemicals you are using.
- Always wear chemical splash goggles and rubber gloves and apron while applying patina chemicals
- Do not mix chemicals for patinas without the supervision of your Instructor or the Studio Art Technologist.



Checklist: Foundry Process Safety

- ✓ Have I received proper training from my Instructor or the Studio Art Technologist on how to use this equipment?
- ✓ Am I wearing all the necessary safety equipment to be involved with or watch the bronze pouring process?

Section 10: Safety in Other Sculptural Processes

Please Note:

Always read the Material Safety Data Sheets for the materials that you are using in sculpture.

Consult your Instructor or the Studio Art Technologist for instruction and never use a material that you are unfamiliar with.

Combining some chemicals and materials can make them more toxic.

General Precautions:

- Read and follow all MSDS for materials and chemicals you use.
- Students must provide the Studio Art Technologist with a current MSDS for any potential material or substances they wish to use before bringing it into the Studio environment.
- Always wear the appropriate Personal Protective Equipment required by the MSDS
- Don't wear contact lenses in the sculpture studios they can hold harmful dust or chemical splashes against your eyes.
- NEVER work in the studios if you feel ill, fatigued or are under the influence of alcohol or drugs. You must be able to concentrate on the task at hand.



Other Substances and Chemicals used in Sculpture:

Plaster:

Hazards:

- Plaster dust (calcium sulfate) is slightly irritating to the eyes and respiratory system. Heavy inhalation of the dust can result in more severe respiratory problems.
- Potassium sulfate and potassium alum are slightly toxic by ingestion; potassium alum is slightly toxic by skin contact, and can cause mild irritation or allergies in some people

- Borax is moderately toxic by ingestion, by inhalation, and by absorption through burns or other skin injuries. It is also slightly toxic by skin contact, causing alkali burns
- Concentrated acetic acid is highly corrosive by ingestion, inhalation, and skin contact
- Burnt lime (calcium oxide) is moderately corrosive by skin contact (especially if the skin is wet), and highly toxic by inhalation or ingestion
- Careless use and storage of sharp tools can cause accidents.
- Chipping set plaster can result in eye injuries from flying chips
- Casting of hands, legs, and other body parts can be hazardous due to the heat released during the setting process

Precautions:

- Wear gloves and goggles when mixing acetic acid and burnt lime.
- Always carve or cut in a direction away from you, and keep hands behind the tool. If the tool falls, don't try to catch it.
- Do not use plaster for body part casts. Instead, use a plaster-impregnated bandage (such as Johnson and Johnson's Pariscraft), along with vaseline or similar mold release as protection.
- Wear safety glasses when chipping plaster.



Cement Fondue

Hazards:

- Exposure to dust, cement dust is abrasive to eyes and skin and is a nose and throat irritant. Large amounts of inhaled cement dust can cause chemical burns in the mouth, throat and lungs

- Silicosis, some cements contain crystalline silica, which is harmful to inhale and increases risk of tuberculosis, and renal disease
- Burns, some cements contain calcium oxide which is corrosive and can cause 3rd degree burns or mild to severe dermatitis

Precautions:

- Keep area free of dust (use wet cleaning procedures as with ceramics).
- Wear goggles, gloves and impermeable clothing to prevent contact with material.
- When using large quantities that exceed TLV (check specific MSDS), use in an area with a local exhaust, or use a NIOSH approved respirator.



Latex:

Hazards:

- Over exposure to latex (acute and chronic) can cause damage to the nose, throat, and upper respiratory system; skin and eye irritation; exposure can increase pulse and blood pressure; ingestion can cause digestive system irritation, pain and vomiting; direct eye contact could cause blindness
- Contains ammonia which is a lung irritant
- Releases ammonia when heated
- Drying latex will release toxic oxides of carbon and nitrogen if it combusts
- Routes of entry: inhalation, skin, ingestion, eye contact
- People who have pre-existing eye or respiratory problems can be at more risk when using latex
- Sensitivity and allergies to latex can develop over time and repeated exposure



Precautions:

- Use in a ventilated area and always turn on overhead ventilation in sculpture studio when applying latex.
- Students sensitized to latex or ammonia should wear a NIOSH approved respirator.

- Store latex containers away from heat sources to prevent it from heating up.
- Never use a heat gun or hair drier to speed up the drying process of latex.
- Always wear goggles and gloves when applying latex to avoid skin and eye contact.



Mold Release/Conditioner

Hazards:

- A skin/eye/gastrointestinal irritant
- Pre-existing skin/eye/respiratory problems may be aggravated by Mold Release
- Could be more of an inhalation hazard if it is spray on

Precautions:

- Wear gloves and goggles to avoid skin/eye contact.
- Make sure to wash hands when leaving the studio to avoid accidental ingestion.
- Be careful when spraying on (do not breathe in product) if spraying a large mold, do so in a ventilated room or wear a respirator.



Liquid Rubber (Urethane)

Note: Students **MUST** provide an MSDS specific to the product they want to use prior to getting authorization from the Studio Art Technologist or Sculpture Instructor to use it.

Hazards:

- Hazardous by inhalation and skin absorption
- Lung irritant, can cause asthma-like spasms and chronic lung impairment with chronic inhalation
- Inhaling rubber can be corrosive to the mouth, throat and lungs
- Contains chemicals (Toluene Diisocyanate and Bis (2-ethylhexyl) phthalate) that are listed as suspected carcinogens
- Students with asthma, bronchitis, emphysema, skin allergies, or eczema, should take extra precautions when using liquid rubber

Precautions:

- Always use overhead sculpture ventilation fans and use a NOISH approved respirator when TLV is surpassed (check MSDS sheet for specific product guidelines).
- Practice good hygiene and wash hands when leaving the studio to prevent accidental ingestion.
- Always wear chemical goggles, gloves and impermeable clothing to prevent bodily contact.



Checklist: Sculpture Safety

- ✓ Have I received proper training from my Instructor or the Studio Art Technologist on how to use this material or chemical safely?
- ✓ Have I supplied my Instructor and the Studio Art Technologist an MSDS for the material I want to use?
- ✓ Do I have the proper Personal Protective Equipment needed for using this material or chemical?
- ✓ Have I checked to see if the tool is off before plugging it in?
- ✓ Is there anyone close around me that I should ask to move or put on PPE before I start using this material or chemical?
- ✓ Is there a safer substitute for the material or chemical I could use instead and get the same effect or result?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?

Section 11: Safety in Painting

Please Note:

Information is the first step in health and safety. Support suppliers who use the Colour Index System to identify pigments.

“Take intellectual risks, not physical risks” –Monona Rossol

General Precautions:

- Read and follow all MSDS for materials and chemicals you use.
- Substitute safer alternatives when possible.
- Follow all clean-up and disposal policies.
- Students MUST provide the Studio Art Technologist with a current MSDS for any potential material or substances that are not on file. This must be done prior to the use of the product.
- Always wear the appropriate Personal Protective Equipment required by the MSDS.
- Don't wear contact lenses while painting; they can hold harmful chemical splashes against your eyes.
- Never eat, drink or smoke while painting.

Oil Painting:

In oil painting, students work from tube oil paints and use solvents for thinning the paints, in mediums and in cleanup. Pigments are suspended in the oil and many pigments are toxic, including those based on lead, cadmium, mercury, chromates, manganese and cobalt. The main risk is from accidental ingestion of the pigments from hand to mouth contact. Simple precautions, good personal hygiene and common sense can eliminate the risk.

Solvent use in oil painting is a serious hazard. During a four-hour class period, a student might have a half a cup (125 ml) of solvent in an uncovered container and approximately one quarter to half of this will evaporate from the container or be used.

All solvents can cause dermatitis and defatting of the skin from prolonged or repeated exposure and can cause skin allergies.

Acute inhalation of high concentrations of turpentine or mineral spirits can cause respiratory irritation and narcosis (dizziness, nausea, fatigue, loss of coordination, coma, etc.). Chronic inhalation of turpentine can cause kidney damage and respiratory allergies. Chronic inhalation of large amounts of mineral spirits could cause brain damage. Although odourless mineral spirits have had the aromatic hydrocarbons removed, and are less hazardous, to inhale, ingestion of either turpentine or mineral spirits can be fatal.


Hazards:

- Accidental ingestion and skin contact of hazardous pigments
- Inhalation and skin contact with solvents such as turpentine, and odourless mineral spirits.

Precautions:

- See page 46 for pigment hazards.
- Read and follow posted Solvent Usage and Solvent recycling Safe Operating Procedures.
- Read and follow posted Oil Paint Cleaning Procedures to limit the amount of solvent you are using.
- Avoid skin contact with pigments and solvents.
- If you are sensitive to solvents and pigments, wear solvent resistant gloves, barrier cream or substitute non-solvent painting process.
- It is advisable to wear an apron, smock or coveralls while painting to avoid contaminating clothes with pigment and solvents.



- Practice good personal hygiene and always wash your hands before leaving the painting studio to avoid contamination. 
- Practice solvent recycling to limit need for storage and disposal of large amounts of solvents.
- Properly label and store all hazardous materials.
- Avoid using the most toxic pigments: lead white or flake white, the arsenic variety of cobalt violet, true vermilion (mercuric sulfide) and chrome yellow (lead chromate).
- For thinning solvents, use an odorless paint thinner rather than the more toxic turpentine.
- Cover all open containers of solvent with aluminum foil wrapped around the brushes and top of container when taking breaks to limit the evaporation of the solvent into the studio.
- Place waste solvent in approved red solvent waste cans and close all containers used for solvent recycling when not being used.
- Use baby oil for cleaning brushes, hands and palettes.

Water Based Paints:



Water-based paints include watercolor, acrylic, gouache, tempera and water based oil paints.

Hazards:

- See page 47 for pigment hazards.
- Acrylic paints contain a small amount of ammonia and it can be an eye, nose and throat irritant in some people.
- Acrylics and some gouaches contain a small amount of formaldehyde as a preservative and people already sensitized to formaldehyde can experience allergic reactions from the formaldehyde.
- All water-based paints contain a preservative to prevent mould and bacterial growth. Although present in small amounts, certain preservatives may cause allergic reactions in some people.

Precautions:

- Avoid contact with skin.
- Avoid using dry powdered pigments.



- It is advisable to wear an apron, smock or coveralls to avoid contaminating clothes with pigment and solvents. 
- Practice good personal hygiene and always wash your hands before leaving the painting studio to avoid contamination. 

Encaustic Painting:

Hazards:

- See page for 46 pigment hazards.
- Heating wax releases toxic acrolins
- Wax burns at 468 degrees Fahrenheit and can ignite both liquid and vapour causing a high risk of fire
- Fusing wax with flame can cause fire risk
- Wax and solvent combined pose a dangerous fire hazard

Precautions:

- Wax must be used in well vented areas only.
- Wax temperature must be maintained less than 220 degrees Fahrenheit.
- Keep wax working area clear of all combustible materials.
- Never use water to extinguish a wax fire. Only use fire extinguishers found in TSH B102 that are rated for class A, B and C fires.
- Use heating equipment that has an enclosed element (electric wok, electric fry pan, slow cooker, etc). Never heat wax with an open flame or an exposed electrical heating element.
- Use only a heat lamp with a porcelain socket or an iron for fusing.
- Never combine wax and solvents. The melting point of wax is above the flash point of solvents.
- It is advisable to wear an apron, smock or coveralls to avoid contaminating clothes with pigments. 
- Practice good personal hygiene and always wash your hands before leaving the painting studio to avoid contamination. 

Spray Painting and Spray Fixatives:

Note: Students **MUST** consult Studio Art Technologist or your Instructor before using spray materials, safer substitutions will be recommended.

The Studio Art program discourages using aerosol spray cans because of the hazards involved. Aerosol spray products often contain the most toxic solvents and particles are suspended in the air for long periods of time.

Hazards:

- See page 46 for pigment hazards.
- If the spray paint contains solvents, you can inhale liquid droplets of the solvents.
- The pigments in spray paint are easily inhaled, creating a more dangerous situation than if applying paint by brush.
- Aerosol spray cans contain propellants (usually isobutanes and propane) which are present as extremely flammable vapours. Aerosol spray products such as, spray varnishes, fixatives, etc. also contain solvents, propellants and particulates.
- Spray adhesives are particularly hazardous as the particulates are large and can be irritants to eyes and skin.
- Over exposure to these products can cause respiratory tract damage and central nervous system depression.

Precautions:

- Read MSDS and safety warnings on the product you are using.
- See section below for precautions with pigments. Always substitute safer practices when possible such as brush applications rather than spraying.
- All spray aerosol applications must occur outside in the sculpture court away from the exit doors using a NIOSH approved respirator.
- Wear coveralls or an apron to protect clothes from overspray and from becoming saturated with propellant if spraying for extended periods of time.
- Never smoke, eat or drink when applying aerosol spray products.

Known or Probable Carcinogens/Highly Toxic Pigments:

antimony white (antimony trioxide)
barium yellow (barium chromate)
burnt umber or raw umber (iron oxides, manganese silicates or dioxide)
cadmium red or orange (cadmium sulfide, cadmium selenide)
cadmium yellow (cadmium sulfide)
cadmium barium colors (cadmium colors and barium sulfate)
cadmium barium yellow (cadmium sulfide, cadmium selenide, barium sulfate, zinc sulfide)
chrome green (prussian blue, lead chromate)
chrome orange (basic lead carbonate)
chrome yellow (lead chromate)
cobalt violet (cobalt arsenate or cobalt phosphate)
cobalt yellow (potassium cobaltinitrate)
lead or flake white (basic lead carbonate)
lithol red (sodium, barium and calcium salts of soluble azo pigment)
manganese violet (manganese ammonium pyrophosphate)
molybdate orange (lead chromate, lead molybdate, lead sulfate)
naples yellow (lead antimonate)
strontium yellow (strontium chromate)
vermilion (mercuric sulfide)
zinc sulfide
zinc yellow (zinc chromate)

Moderately Toxic Pigments:

alizarin crimson (flakes of 1,2-dihydroxyanthraquinone or insoluble anthraquinone pigment)
carbon black (carbon)
cerulean blue (cobalt stannate)
cobalt blue (cobalt stannate)
cobalt green (calcined cobalt, zinc and aluminum oxides)
chromium oxide green (chromic oxide)
manganese blue (barium manganate, barium sulfate)
prussian blue (ferric ferrocyanide)
toluidine red (insoluble azo pigment)
toluidine yellow (insoluble azo pigment)
viridian (hydrated chromic oxide)
zinc white (zinc oxide)

Pigments:

Pigments are used in all types of paint; oil paints, acrylics, watercolors, gouache, encaustic, poster paints, casein paints and tempera and in commercial paints such as oil enamel, epoxy and automobile paints.

Paints are pigments mixed with a vehicle or binder. Both inorganic and organic pigments are used as colorants. Dry pigments are especially hazardous because they are easily inhaled and ingested. They are used in encaustic, paper-marbleizing and in the fabrication of paint products, and will be discussed more thoroughly in the section below.

The term "hue on paint labels refers to a colour mixture that approximates a traditional colour. Cadmium Hue therefore may not contain any cadmium. Read labels carefully when purchasing paints.

Hazards:

- Poisoning can occur if toxic pigments are inhaled or ingested. The main hazard in standard painting techniques is accidental ingestion of pigments due to inadvertent hand to mouth contact. If methods such as spraying, heating, or sanding are employed then there is an opportunity for inhalation of toxic pigments.
- Exposure to toxic pigments, the classic example of a toxic inorganic pigment in painting is white lead, or flake white (basic lead carbonate). Lead pigments can cause anemia, gastrointestinal problems, peripheral nerve damage (and brain damage in children), kidney damage and reproductive system damage. Other inorganic pigments may be hazardous; including pigments based on cobalt, cadmium, and manganese.
- Some of the inorganic pigments, in particular cadmium pigments, chrome yellow and zinc yellow may cause lung cancer. In addition lampblack and carbon black may contain impurities that can cause skin cancer.
- Chromate pigments (chrome yellow and zinc yellow) may cause skin ulceration and allergic skin reactions (such as rashes).
- The long-term hazards of the modern synthetic organic pigments have not been well studied.

Precautions:

- Obtain MSDSs on your paints to find out what pigments you are using. This is especially important because the name that appears on the tube of color may or may not truly represent the pigments present. Manufacturers may keep the name of a color while reformulating the ingredients.
- Support suppliers who label using the Colour Index System.
- Use the least toxic pigments possible. Do not use lead or carcinogenic pigments.
- Avoid mixing dry pigments whenever possible.
- If dry pigments are mixed, do it inside a mixing box.
- Wet mop and wipe or HEPA vacuum and wet wipe all surfaces when using dry pigments.
- DO NOT use dishes, containers or utensils from the kitchen to mix and store paints and pigments.
- Never heat, sand or burn pigments.
- Practice good personal hygiene and always wash your hands after handling pigments and paints.



Easels:

Hazards:

- Pinching of fingers
- Danger from falling objects/paintings

Precautions:

- Always be aware of hand placement when stacking easels to ensure fingers do not get pinched between two easels.
- Always ensure sliders are tight before placing paintings or drawing boards on them.
- Never stand on an easel, they can become unstable and you could fall off or injury others around you.

Checklist: Painting Safety




- ✓ Have I read the MSDS for the pigments and solvents I will using?
- ✓ Am I following safe practices for disposal, storage and clean up of my materials and painting supplies?
- ✓ Am I practicing solvent recycling?
- ✓ Have I consulted with my Instructor on any new processes I am using?
- ✓ Have I considered safer substitutes for the chemicals I am using?
- ✓ Am I practicing good personal hygiene to limit skin contact of pigment and solvents?
- ✓ Do I have clean up materials on hand before I begin painting?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?

Section 12: Safety in Printmaking

Please Note:

Explore less hazardous processes whenever possible and use non-acid and non-solvent practices to reduce risks.

General Precautions:


- Read and follow all MSDS for the chemicals and materials you are using when printmaking.
- Re-read all safe operating procedures before using any equipment or chemicals in the printmaking studios.
- Always wear the appropriate Personal Protective Equipment when handling solvents and acids.
- If you are sensitive to solvents and pigments, wear solvent resistant gloves or barrier creams. 
- It is advisable to wear an apron, smock or coveralls to avoid contaminating clothes with pigment and solvents. 
- Practice good personal hygiene and always wash your hands before leaving the studio to avoid contamination. 
- Do not use or adjust any equipment that you have not received instruction and training for.
- Substitute alternatives that avoid acids such as dremel engraving, drypoint, mezzotint, carborundum printing, zerox lithography, collographs relief process etc.
- Students must follow posted cleaning procedures for the printmaking studios and keep solvent usage for cleaning to a minimum. Clean with baby oil followed by soap and water.
- Use a printmaking buddy for carrying/moving/grinding lithography stones, opening the acid room doors while you are carrying a plate from the rosin box to the hotplate, and printing.

- Never use the nitric acid bath if fume hood ventilation is not working properly. Report all faulty ventilation to the Studio Art Technologist immediately.


Common Substances and Equipment Used in All Printmaking Processes:

Solvents: (Odourless Mineral Spirits, Varsol)

Hazards:

- All solvents can cause dermatitis and defatting of the skin from prolonged or repeated exposure.
- Inhalation of high concentrations of turpentine or mineral spirits can cause respiratory irritation and narcosis (dizziness, nausea, fatigue, loss of coordination, coma, etc.). 
- Chronic inhalation of large amounts of mineral spirits could cause brain damage.
- Some solvents may cause photosensitization of the skin
- Ingestion of solvents can be fatal.
- Solvents are flammable

Precautions:

- Read and follow posted Solvent Usage and Printmaking Cleaning Procedures to keep solvent usage to a minimum.
- Avoid skin contact with solvents by wearing solvent resistant gloves or barrier creams. 
- Never use solvents to clean inks from hands.
- Never use solvents near sources of heat or spark. All solvents must be stored in flammable cabinets when not in use.

Inks:

Hazards:

- Pigments used in printmaking inks are essentially the same as those used in painting and therefore have the same risks.
- Some inks contain solvents

Precautions:

- See page 46 for pigment hazards
- Avoid skin contact by wearing gloves or barrier creams
- Practice good personal hygiene and wash hands regularly when using printing inks.
- Use baby oil to clean hands, tools and surfaces.



Presses:

Note: *There are three types of presses used in the printmaking studios: Intaglio, Lithography and Letter Press. Each press operates differently and students must be trained on each style of press before using them. Presses used incorrectly can cause injury to the operator and serious damage to the machine.*

Hazards:

- All presses have pinch points where fingers can become caught and injured
- Letter presses have series of moving parts that can catch clothing, hands and other body parts
- Presses have heavy metal components that can seriously injure users if they become loose
- Press handles can spring back when under pressure causing injury



Precautions:

- Never use a press that you have not been trained to use by your Instructor or the Studio Art Technologist.
- Keep hands and fingers away from moving parts of presses.
- Never wear loose clothing or jewellery when operating presses.
- Do not release handles of press under pressure. Help hands, head and other body

parts away from handles while under pressure.

- Use press designated for the process you are using.
- All wood blocks, collographs and plates must be ½ inch or less in height.
- Never remove parts or modify the presses without instruction from the Studio Art technologist or Instructor.
- Never force presses if the pressure is too tight. You can break lithography stones, damage press beds and etching press rollers.

Common Substances and Equipment Used in Intaglio Printmaking:

Liquid Hard and Soft Grounds:

Hazards:

- Contains the solvent Naphtha
- Contains the chemical Gilsonite which may photosensitize the skin
- Highly flammable



Precautions:

- Never use liquid grounds near sources of heat or spark.
- Liquid grounds must be stored in flammable cabinets when not in use.
- Avoid skin contact with solvents by wearing suitable latex or rubber gloves.
- Chemical splash goggles must be worn when using liquid grounds.



Asphaltum:

Hazards:

- Contains mineral spirits and xylene which are central nervous system depressants, skin irritants and defatting agents.
- Xylene is absorbed through the skin
- Contains chemical gilsonite which can cause photosensitization of the skin
- Flammable



Precautions:

- Use asphaltum sparingly, keep lid tightly closed at all times.
- Avoid skin contact by wearing suitable rubber or latex gloves and splash goggles.
- Avoid using near sources of heat or spark.
- Immediately return asphaltum to flammable cabinet when not in use.



Ball Grounds:

Hazards:

- Contains the chemical Gilsonite which may photosensitize the skin
- Ball grounds may cause dermatitis

Precautions:

- Avoid skin and eye contact; wear suitable gloves if you have sensitive skin.

Ferric Chloride:

Hazards:

- Vapours and liquid is irritating and corrosive to respiratory tract, mouth, throat and digestive system.
- Contact with eyes may cause eye damage
- Chronic exposure with eye will cause corneal ulceration.
- Hydrogen gas is produced when ferric chloride is exposed to metals such as aluminum, zinc, tin and lead.



Precautions:

- Ferric chloride is used for copper plates only.
- Students are NOT allowed to mix or handle concentrated acids.
- Use only acid that is supplied in red vertical dip tank.
- You must wear splash goggles, rubber gloves and a rubber apron at all times when handling acids.



Aquatint (Rosin) Box:

Note: The aquatint box can only be used with instructor permission and during regular class time.

Hazards:

- Rosin dust can cause severe allergies
- Rosin dust within the aquatint box can explode if in contact with sparks, flames or a static charge.

Precautions:

- Allow the rosin to settle after turning handle.
- Mop up any dust that collects on the floor immediately after using aquatint box. Always use wet methods of cleaning to keep rosin dust to a minimum.

Hotplate:

Hazards:

- Severe burn to hands and other parts of the body
- Can ignite flammable vapours or substances



Precautions:

- Use the lowest temperature possible for the job.
- Never lift an etching plate directly off the hotplate with your hands. Use gloves or put a piece of paper under it.
- Never apply liquid grounds or use solvents near the hotplate.
- Use metal hotplate indicator to inform others when hotplate is on.

Etching Tools:

(Etching needle, burnishers, scrapers, sandpaper)

Hazards:

- Punctures, cuts and abrasions to hands and other parts of the body

Precautions:

- Focus on the task at hand, hold the tool correctly and always work away from your body.
- Never carry tools in your pockets they are sharp and can cut and puncture your skin.
- Always sand metal wet. Metal particulate can be hazardous when airborne.

- Always use tools that are in good condition. Inspect tools before each use.
- Always wear safety glasses when working with tools on etching plates



Metal Shear:

Hazards:

- Serious injury to hands from moving blade
- Serious injury to feet from jumping on cutting plate

Precautions:

- Keep hands away from blade edge.
- Keep feet away from the underneath of the cutting lever.

Common Substances and Equipment Used in the Relief Printing Process:

Wood Chisels and Gouges:

Hazards:

- Cutting or puncturing hands and other parts of the body
- Damage to eyes from flying debris

Precautions:

- Always push chisels and gouges away from yourself while cutting.
- Clamp work down or use bench hooks to hold woodblocks and linoleum blocks securely when cutting.
- Always wear safety glasses when using wood chisels and gouges.



Rotary Tools (Dremel):

Hazards:

- Cut and stab injuries
- Eye injuries from flying debris, including broken bits, cutting discs, grinding accessories
- Twisting of the wrist
- Damage from vibration of the tool

Precautions:

- Disconnect the power source when replacing or changing accessories.

- Always inspect accessories (wheels, stones, bits) before use; never anything that is dull or damaged.
- Hold the tool securely.
- Always wear safety glasses, a face shield, and a leather apron when using rotary tools.



Common Substances and Equipment Used in the Lithography Process:

Lithography Stones:

Hazards:

- Crushing fingers
- Injury to feet from dropping stones
- Injury to back from carrying stones

Precautions:

- Never carry a stone that is too heavy for you. Get a buddy and move the stone together.
- Always place the stone on the edge of the table or press bed at an angle before lowering it down to be able to move finger and hands out of the way.
- Use the mobile lift and follow the safe operating procedures to move large stones.
- Be sure your path is clear when moving stones so you don't have to carry it around obstacles or people.

Nitric Acid:

Hazards:

- Nitric acid students use in lithography is concentrated.
- It is highly corrosive and will cause severe burns to skins and eyes
- Nitric acid vapour is corrosive to the skin, mucous membranes of the eyes, nose, and respiratory tract.



Precautions:

- Nitric acid must be mixed in fume hood only. Never raise the door above the safe operating height.
- Never stick your head into fume hood.
- You must wear splash goggles, rubber gloves and a rubber apron when handling acids



Asphaltum:

Hazards:

- Contains mineral spirits and xylene which are central nervous system depressants, skin irritants and defatting agents.
- Xylene is absorbed through the skin
- Contains chemical gilsonite which can cause photosensitization of the skin
- Flammable



Precautions:

- Use asphaltum sparingly, keep lid tightly closed at all times.
- Avoid skin contact by wearing suitable rubber or latex gloves and splash goggles.
- Avoid using near sources of heat or spark.
- Immediately return asphaltum to flammable cabinet when not in use.



Mobile Lift:

Hazards:

- Serious injuries from crushing of feet and other parts of the body from falling objects

Precautions:

- CSA Approved Safety Shoes are mandatory while operating Mobile Lifts.
- Clean all debris from around the area before using the lift. Even small objects can jam the wheels causing you to lose the load.
- Do not stand or ride on lift.
- Always lock wheels with lever on side when raising and lowering lift.
- Pump slowly and steady to desired height.
- Move lift slowly while carrying load. Sudden stops or turns can cause you to lose the load.
- Do not carry load higher than needed to get it off the ground. Top-heavy loads can tip causing serious injury and damage.
- Always stay behind lift while moving loads. Never allow anyone to stand in front or near load while it is moving.



Common Substances Used in Cyanotyping (Blueprinting):

Note: The exposure process for cyanotyping creates cyanide gas. Never expose indoors using indirect window light or exposure units. Only expose outdoors in an area that you can supervise from a safe distance (sculpture courtyard). Exposure, coating and washout require instructor supervision.

Ferric Ammonium Citrate:

Hazards:

- Inhalation of dust may cause irritation to the upper respiratory tract.
- Accidental ingestion has a low toxicity in small quantities but larger dosages may cause nausea, vomiting, and diarrhea.
- Mild irritant to skin and eyes due to acidic nature of ferric salts

Precautions:

- Avoid processes that generate excessive dust.
- Only the Instructor can mix dry chemicals.
- All washout water must be collected for hazardous waste disposal.
- Wear gloves and safety goggles to prevent skin and eye contact.



Potassium Ferricyanide:

Hazards:

- May cause irritation to the respiratory tract.
- Large doses may cause gastrointestinal upset with nausea, vomiting, diarrhea, and possible cramping.
- May cause eye and skin irritation with redness and pain.

Precautions:

- Avoid processes that generate excessive dust.
- Only the Instructor can mix dry chemicals.
- All washout water must be collected for hazardous waste disposal.
- Wear gloves and safety goggles to prevent skin and eye contact.



Checklist: Printmaking Safety

- ✓ Have I received proper training from my Instructor or the Studio Art Technologist on how to use this chemical properly?
- ✓ Do I have the proper Personal Protective Equipment needed for using this chemical?
- ✓ Have I washed my hands before leaving the studio to take a break or eat?
- ✓ Is there anyone close around me that I should ask to move or put on PPE before I start using this chemical?
- ✓ Have I cleaned up the area I was using; making sure to clean glass slab of all ink and any tools I was using before leaving?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?

Section 13: Safety in Drawing

Please Note:

The area of drawing encompasses a wide variety of processes and materials. Always use the least hazardous materials that you can.

General Precautions:

- Read the posted MSDS for all materials and chemicals that you use.
- Always practice good personal hygiene, wash hands after handling drawing materials.

Note: The safe use and handling of spray fixatives is currently under review. Please consult Studio Art Technologist or your Instructor before using this material and for safer substitutions.

Dry Drawing Media:

Art students use a broad range of dry drawing media including charcoal, chalk pastels, oil pastels, graphite sticks and pencils.

Hazards:

- Pencils are made with graphite, rather than lead and as such not considered a hazard.
- Colored pencils (pencil crayons) have pigments added to the graphite, but the amounts are small so that there is no significant risk of exposure
- Compressed charcoal sticks use various resins in a binder to create the color.
- Charcoal and coloured chalks can create nuisance dusts; however, inhalation of large amounts of dust can create chronic lung problems through a mechanical irritation and clogging effect.
- Colored chalks create nuisance dusts.
- Individuals who have asthma can sometimes have the condition exacerbated by dusty chalks and charcoal, but this is a nonspecific dust reaction, not a toxic reaction.
- Pastels can contain toxic pigments such as chrome yellow (lead chromate) which can cause lung cancer, and cadmium pigments (which can cause kidney and lung damage and are suspected human carcinogens).
- Oil pastels can contain toxic pigments, but this is only a hazard by accidental ingestion.

- Both permanent and workable spray fixatives contain toxic solvents and plastic particulates that can be inhaled while spraying

Precautions:

- Use the least dusty types of pastels, chalks, etc. Asthmatics in particular might want to switch to oil pastels or similar non-dusty media.
- Don't blow off excess pastel or charcoal dust with your mouth it can lead to accidental inhalation. Instead, tap off the built up dust so it falls to a plastic lined trash can.
- Wet-mop and wet-wipe all surfaces clean of dusts do not sweep up dusts as they can get back into the air.

Liquid Drawing Media:

Art students use a broad range of liquid drawing media including water-based and solvent-based pen and ink and felt tip markers.

Hazards:

- Drawing inks are usually water-based, but there are that are some solvent-based
- Permanent felt tip markers used in design or graphic arts contain solvents. Xylene, which is a toxic aromatic hydrocarbon, is the most common ingredient; newer brands often contain the less toxic propyl alcohol (although it is an eye, nose and throat irritant).
- Water-based markers do not have an inhalation hazard although there is concern about the dyes used in these and in permanent markers

Precautions:

- Use water-based markers and drawing inks if possible.
- Alcohol-based markers are less toxic than solvent-based markers.

- Solvent-based drawing inks and permanent markers should be used with good dilution ventilation.
- Never paint on the body with markers or drawing inks.

Easels:

Hazards:

- Pinching of fingers
- Danger from falling objects/paintings

Precautions:

- Always be aware of hand placement when stacking easels to ensure fingers do not get pinched between two easels.
- Always ensure sliders are tight before placing paintings or drawing boards on them.
- Never stand on an easel, they can become unstable, you could fall off injuring yourself or others around you.

Drawing Boards:

Hazards:

- Splinter and cuts from wood
- Pinching of fingers
- Danger from falling objects

Precautions:

- Never let a drawing board slide in your hands as you move it.
- Always ensure easel sliders are tight before placing drawing boards on them.

Checklist: Drawing Safety

- ✓ Have I read and understood the MSDS for the materials I am using?
- ✓ Do I know the proper clean up procedures for dry and liquid drawing media?
- ✓ Have I washed my hands before leaving the studio after handling drawing media?
- ✓ Are there any questions that I should ask my Instructor or the Studio Art Technologist?

STUDIO ART HEALTH AND SAFETY ENFORCEMENT POLICY

MCMASTER UNIVERSITY, SCHOOL OF THE ARTS

The School of the Arts has a responsibility to maintain a healthy work environment for all. Therefore, violations of Studio Art or McMaster University Health and Safety Policies and Procedures cannot be tolerated. We are all human and are vulnerable to error and our first priority is to establish safe practice rather than focus on punitive measures. However, we believe that clear consequences are a component of ensuring safety in the studios.

Although individual circumstances can sometimes be taken into consideration when deciding on consequences, the following categories are intended to communicate our policy on dealing with infringements.

Minor Offences

Minor offences are those offences, which affect only the person who is in non-compliance. Examples may be failure to wear proper footwear or eating in the studios. Students will be asked to leave the facility until they comply and the incident will be documented. Repeat offenders (three times) will be treated as an Intermediary Offence.

Intermediary Offence

Intermediary offences are those that violate internal procedures and affect the health and safety of others or the smooth operation of the studio environment. Examples of this may be failure to clean-up or store work properly, non-collegial attitudes that disregard or disrespect the rights of others, improper use of equipment or handling of materials (that are not in violation of fire codes, WHIMS regulations or University policies). Students will be asked to leave the facility and the incident will be documented. These offences will require a written record of the offence signed by the student, and the student will be required to perform a duty that makes a positive contribution to the studio facility. Repeat offenders (two times) will be treated as a major offence.

Major Offence

Major Offences are those that violate WHIMS regulations, Fire Codes, or University Policies. Examples of this are abuse of equipment or materials that poses a major risk to self or others (such as fire), using equipment without training, blocking fire exits, creating hazardous work without proper approval, or using materials that have not been cleared with instructor and for which no Material Safety Data Sheet is available, improper disposal of hazardous waste. Students will be asked to leave the facility and the incident will be documented. These offences will immediately result in loss of after-hours privileges and report to the Director. Students must then meet with a studio faculty member and the Studio Art Technologist to discuss the incident and consider the best recourse, which may include:

- Rewriting the School of the Arts Safety Test
- Review of the Studio Art Safety Manual
- Temporary loss of after-hours privileges in area which violation occurred
- Temporary loss of after-hours privileges in all studios
- Permanent loss of after hours privilege in all studios

The School of the Arts is under no obligation to reinstate after-hours privileges if it feels that the student cannot work safely and follow McMaster University or School of the Arts policies unsupervised.

STUDIO ART STUDENT WORKING AFTER HOURS POLICY MCMASTER UNIVERSITY, SCHOOL OF THE ARTS

AFTER HOURS ACCESS IS A PRIVILEGE GRANTED TO STUDIO ART STUDENTS. ABUSE IT AND YOU WILL LOSE IT.

The Togo Salmon Hall Art Studios are open from 6am until 10pm daily. Students are not permitted to work in the studios outside of these hours. Upon the close of the studios, McMaster Security Personnel will conduct a complete walkthrough to ensure all students have left the area.

Students **MUST** use the “Buddy System” when working in the Studios after hours. **Students cannot work alone.** The “Buddy” must be a current Studio Art Student that is working in the same studio as you. Once your “buddy” leaves, you must leave. Plan your projects and work accordingly.

Students cannot use chemicals or equipment they have not been properly trained to use from an Instructor or the Studio Art Technologist after hours.

Students **MUST** adhere to all posted policies, regulations and Safe Operating procedures when working after hours.

Students **MUST** familiarize themselves with the location of Panic Buttons, telephones and emergency eye wash and shower equipment.

Students **MUST** have their Art Studio Pass and McMaster University Student card on them at all times for identification. Only authorized students are allowed in the studios after hours.

Students **MUST** sign in and out in the posted white binders when working after hours.

Students should **NEVER** walk the campus alone after hours. Use SWHAT or call a friend or relative to pick you up.

In case of emergency, dial 88 from any campus phone to contact security or press a panic button. If it is safe to do so wait in the room in which the panic button was pressed to be available to answer questions from the McMaster Security Officers.

SOLVENT USAGE POLICY

MCMASTER UNIVERSITY, SCHOOL OF THE ARTS

Introduction:

Solvent use presents one of the most common hazards in the art studios. They are used in all media areas as thinners, cleaners and mediums and they present risks of inhalation, absorption and fire. In most instances, safer, low-risk solvents can be substituted for more hazardous ones and small quantities are adequate to do the job.

In order to minimize the risk involved in solvent use, Art Faculty, the Studio Technologist and the University's Health and Safety officers have developed a policy for use of solvents in the art studios.

In choosing approved solvents the School of the Arts looked at the following criteria.

- A high flash point
- A low evaporation rate
- A high TLV (concentration of parts per million that can be breathed for an extended period without adverse effects)
- Low toxicity (such as removal of aromatic hydrocarbons)

1. After hours use of solvents is restricted to Odourless Paint Thinners in amounts 3/4 cup (175 ml) or less.
2. Any other solvent use is restricted to supervised hours when the Technologist or Instructor are available. Students must seek approval from the Technologist or Instructor, and provide a Material Safety Data Sheet on the product that they are seeking approval for.
3. Solvent recycling must be practiced according to the solvent recycling policy.
4. Alternative products such as baby oil must be used for clean up of hands, palettes, ink slabs and brushes and Mr. Clean should be used for degreasing where necessary.
5. All solvents must be stored in properly labeled containers in the yellow flammable storage cabinets.
6. All solvents and rags must be disposed of in flammable waste containers.
7. Never work with a solvent next to a source of heat or spark. Students should be at least 2 meters away from TSH 101 Hotplate while using solvents for printmaking.
8. When in doubt STOP and ask Faculty or Studio Art Technologist for assistance.

DISPOSAL POLICY

MCMASTER UNIVERSITY, SCHOOL OF THE ARTS

1. WASTE SOLVENTS (Odourless Mineral Spirits) are to be disposed of in the red waste solvent container in TSH-B103. DO NOT POUR SOLVENTS DOWN SINKS
2. SOLVENT SOAKED RAGS are to be placed in yellow or red oily waste receptacles.
3. SOLVENT BASED PAINTS of one pint or less are to be placed in the flammable storage cabinet, apart from incompatible chemicals, to evaporate; and then disposed of in general trash.
4. WATER BASED PAINTS of one pint or less are to be placed on top of flammable storage cabinets to evaporate; and then disposed in general trash.
5. GLUES AND CONTACT CEMENTS can be left to evaporate in Fume Hood in TSH-102 and then placed in trash. Consult with Studio Art Technologist or Printmaking Instructor before using fume hood for this reason. NEVER PUT OTHER CHEMICALS OR CONTAINERS IN FUME HOOD WHILE ACIDS ARE PRESENT.
6. NON-CONTAMINATED CLAY (free of plaster, wood, metal, etc.) can be recycled into the large gray clay bin in TSH-B102.
7. CONTAMINATED CLAY can be disposed of as general garbage in quantities small enough for easy disposal.
8. PLASTER should be placed in plastic bags in easy to lift quantities before being disposed of. NO PLASTER IS TO BE DUMPED DOWN SINKS.
9. METALS should be placed in TSH-B102, in a manner that does not impede the use of the studio or create safety hazards, for recycling.
10. WOOD should be free of nails, screws or other foreign objects and be placed in TSH-B102, in a manner that does not impede the use of the studio or create safety hazards, for reuse.
11. GENERAL GARBAGE should be disposed of in appropriate trash containers located in the studios. Clean your area after each work session
12. HAZARDOUS WASTE should be reported to Instructor and/or Studio Art Technologist for proper disposal procedures. See MSDS binders in each studio for definition and handling of hazardous wastes.
13. BROKEN GLASS cannot be thrown out into regular garbage, this is a serious safety hazard. Collect all broken glass into a cardboard box and report it to the Studio Art Technologist for proper disposal.
14. SHARPS (RAZOR BLADES, UTILITY KNIFE BLADES) must be disposed of in supplied yellow sharps containers located in the studios and disposed of as hazardous waste.
15. WHEN IN DOUBT ASK STUDIO ART TECHNOLOGIST OR FACULTY.