



# Art Safety Guide

Important Information for Students,  
Faculty, and Staff in the  
College of Communication & Fine Arts

## **Preface**

Central Michigan University's Office of Laboratory and Field Safety and the College of Communication and Fine Arts, Department of Art and Design has developed this Art Safety Guide to familiarize faculty, staff and students with important safety information as it relates to the visual arts. The contents of this guide have been kept concise and as specific to the CMU Art Department as possible.

Many of the campus health and safety program areas, such as Fire Safety, Hazard Communication, Personal Protective Equipment, Injury/Illness Reporting, Laboratory Safety, Shop Safety, etc. have been touch upon only briefly since more detailed information is available on the Risk Management, Environmental Health and Safety website and the Office of Laboratory and Field Safety website.

Questions, comments, or requests for additional information may be directed to the Art Department or the Office of Laboratory and Field Safety.

- Department of Art and Design  
132 Wightman Hall  
Phone: 989-774-3025  
Website: <https://www.cmich.edu/colleges/CCFA/CCFADepartmentofArtandDesign/Pages/default.aspx>
- Office of Laboratory and Field Safety  
104 Foust Hall  
Phone: 989-774-4474  
Website: [https://www.cmich.edu/office\\_provost/ORGS/Lab\\_Safety/Pages/default.aspx](https://www.cmich.edu/office_provost/ORGS/Lab_Safety/Pages/default.aspx)
- Risk Management, Environmental Health and Safety  
103 Smith Hall  
Phone 989-774-7398  
Website:  
<https://www.cmich.edu/fas/fsr/rm/Pages/default.aspx>

# Central Michigan University Art Safety Guide

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## **Introduction**

Many of the methods and techniques used in creating works of art brings us into contact with hazardous materials and processes, as well as tools and equipment that require the use of proper, safe procedures. Being aware of potential hazards and using methods to work safely reduces the likelihood that you will experience an accident in the studio or an unnecessary exposure to a hazardous substance.

The information presented in this Art Safety Guide is not meant to discourage or scare you. Don't be alarmed – be aware. By being informed of the hazards present in art studios, receiving training on techniques and required personal protective equipment, and having an orientation to equipment and tools used in the various studios allows you to have a thorough understanding of the steps taken to create your artwork safely. A small amount of time spent pre-planning your work is a valuable exercise to prevent accidents and ensure your time is spent on actual creation of art. Improper use of equipment, poor work practices, inappropriate handling, storage, and disposal of hazardous materials can have dire consequences on your health and safety and can lead to regulatory fines. Always ask questions and be sure you understand what you are doing before beginning your project. Faculty and staff are here to help you.

## **Responsibilities**

Central Michigan University's Office of Laboratory and Field Safety and Risk Management, Environmental Health and Safety serve the University community by providing technical support, information and training, consultation and periodic audits of environmental health and safety practices and regulatory compliance.

The Art Department has a safety representative on the campus-wide Laboratory Safety Committee. This person serves as a liaison between the Office of Laboratory and Field Safety and the Art Department. The safety representative is a point of contact for Art Department faculty, staff, and students for safety concerns.

Art Department faculty are responsible for ensuring that students receive and understand appropriate safety training on potential hazards and that students observe and implement the safe work practices and hazard control measures outlined in this Art Safety Guide. Faculty members are responsible for communicating with their safety representative on environmental health and safety issues and concerns.

Artists (both student and faculty) are responsible for obtaining safety training and observing the general and studio-specific safety precautions outlined in this Art Safety Guide. Student artists are responsible for reporting any art-related injuries, hazardous materials spills, unsafe conditions or work practices to their course instructor and/or graduate assistant.

Willful disregard for safety by student artists may result in expulsion from the studio and other disciplinary action. Overall environmental health and safety compliance by the Art Department will be handled through the Office of Laboratory and Field Safety and Risk Management, Environmental Health and Safety.

## Emergency Response Procedures

**For any emergency, including fire, explosions, accidents and medical emergencies, contact CMU Police by calling 911.** CMU Police will determine whether additional assistance is needed and will alert others as necessary.

### Fire

If you discover a fire, know and follow the acronym **A.C.E.:**

**A:** Stands for **alarm** (activate the nearest fire alarm pull station and call 911)

**C:** Stands for **confined** (close the doors to contain the fire, if possible)

**E:** Stands for **evacuate** the building

A fire contained in a small vessel (like a wastebasket) can usually be suffocated by covering the vessel with a lid of some sort. **If you have been trained in the proper use of a fire extinguisher**, you may put out small, incipient stage fires (no bigger than a waste paper basket). Be sure to fight the fire from a position where you can escape and only if you are confident you will be successful. A helpful acronym for fire extinguisher use is **P.A.S.S.:**

**P:** Pull the **pin** in the handle of the fire extinguisher

**A:** **Aim** the fire extinguisher at the base of the fire

**S:** **Squeeze** the handle on the fire extinguisher

**S:** Use a side-to-side **sweeping** motion while discharging the contents of the fire extinguisher

**If your clothing catches fire, drop to the floor and roll to smother the fire.**

**If you hear the fire alarm:**

- Begin evacuation of the building using the nearest stairwell or ground floor exit door.
- Stay with other building occupants. When CMU Police arrive, notify them of the exact location and details of the fire.
- Do not re-enter the building until an "All Clear" is issued by CMU Police or Fire Department officials.

## **Hazardous Material Spill**

Any spill of a hazardous material (acids, solvents, etc.) outside of a chemical fume hood is considered dangerous, and steps to remediate must be taken immediately. Spill containment techniques include diking or enclosing the spill, covering the spill with absorbent material, ventilating the area, closing the door to the spill area, etc. Studios with hazardous materials in use should have a chemical spill kit readily available, which contains appropriate personal protective equipment and items used to contain and/or clean up spills. Because of the quantities used in most procedures on campus, spills will usually be small. However, the vapor released from a small spill can be dangerous either if inhaled or if it is flammable.

In the event of a hazardous chemical spill, do the following:

- Eliminate all sources of ignition and evacuate the immediate area.
- Close all doors leading into the spill area.
- If applicable, assist contaminated persons to a safety shower or eyewash station.
- Notify CMU Police by calling 911. Include the following details if known:
  1. Location of the spill
  2. Chemical or product name
  3. Approximate quantity spilled
  4. Other pertinent information
- Report the spill immediately to your supervisor and to the Office of Laboratory and Field Safety. Report whether the spill has entered the air, ground, sanitary or storm sewers, or any surface water.

## **Chemical Exposure**

The following procedures should be followed in the event of chemical exposure. In all cases, the incident should be reported to faculty, regardless of severity.

If your eyes get splashed with a chemical:

- Immediately flush them in the nearest eyewash fountain for 15 minutes.
- Keep your eyes open while washing them.
- Seek medical attention.

If your skin comes in contact with a chemical:

- Flush the area with water for 15 minutes and remove contaminated clothes.
- If large areas are exposed, go to the emergency chemical shower and begin flushing with water at once while removing clothes in the shower. Continue flushing with water for 15 minutes.
- Seek medical attention.

If you inhale a chemical, immediately move to fresh air. Seek medical attention.

If you ingest a chemical, you may or may not induce vomiting depending on the chemical. Refer to the Safety Data Sheet (SDS) for recommended first aid. Never induce vomiting when corrosives are ingested. Seek medical attention.

## **Injury/Illness**

### **Employee Injuries**

If a CMU employee/student employee suffers a work related injury, they should promptly contact the Workers' Compensation office at (989) 774-7177 to report the injury. For further information regarding Workers' Compensation, please visit **Human Resources - Worker's Compensation**.

### **Guidelines for Handling Injuries on Campus**

The University has standard procedures for assisting individuals who need medical treatment as a result of an injury while on campus. Faculty and staff members handling these situations should use the following information.

### **Immediate Attention Emergencies**

For all emergency situations, phone 911 immediately for assistance. Indicate the nature of the problem, your identification and your specific campus location. Once the injured party is attended to and transported, report the incident immediately, following the appropriate procedures indicated below.

### **Handling and Reporting All Employee (including student employee) Injuries**

1. If non-emergency medical treatment is required, have the injured person go to the McLaren Central Occupational Medicine Program (COMP), 1523 S. Mission St., from 8:00 a.m. to 4:00 p.m. Monday-Friday, or to Ready Care/McLaren Emergency Room, 1221 South Drive, if COMP is closed. Call CMU Police at 774-3081 if transportation assistance is needed. Faculty or staff member should NOT attempt to transport the injured person. *\*If the injured employee/student employee chooses to see their own physician, they will be responsible for any expenses incurred.*
2. Call the Workers' Compensation Office at 774-7177 to report the incident. A 24-hour voice mail system is available to report incidents when the office is closed. There is no form for you to complete.
3. Give a detailed account of the incident including name of injured person, date, time, location, injury, description of what happened, the names of any witnesses and the phone number of the injured person's supervisor.
4. Workers' Compensation staff will send a completed incident report form to the supervisor or department designate for review and signature. Return the signed form to the Workers' Compensation Office, South Grounds Building.

### **Handling and Reporting All Student Injuries**

1. Encourage the injured person to seek medical treatment if appropriate. Students may contact University Health Services Primary Care Suite at 774-6591 or go to Foust 200 for assistance between 8:30 a.m. and 4:30 p.m.
2. If the injured person is unable to transport him or herself for treatment, phone CMU Police at 774-3081 for assistance. Faculty and staff members should NOT attempt to transport the injured person.
3. Faculty or staff members providing assistance should inform the injured student that he/she is responsible for all medical expenses. They should submit related medical bills

to their own insurance company for coverage. DO NOT promise that their bills will be paid by the University.

4. The faculty or staff member providing assistance must complete an **Accidental Personal Injury Report** form. Send the completed original form to the Director of Risk Management, Smith Hall 103 and retain a department copy for your records. Accidental Personal Injury Report forms are available from the Risk Management web page.

### **Handling and Reporting All Visitor (including students from other Universities) or Vendor Injuries**

1. If appropriate, encourage the injured person to seek medical treatment with any off-campus medical provider.
2. If the injured person is unable to transport him or herself for treatment, phone CMU Police at 774-3081 for assistance. Faculty and staff members should NOT attempt to transport the injured person.
3. Individuals will be responsible for their own medical expenses. They should submit related medical bills to their own insurance company for coverage. DO NOT promise that their bills will be paid by the University.
4. Faculty or staff member providing assistance must complete an **Accidental Personal Injury Report** form. Send the completed original form to the Director of Risk Management, Smith Hall 103 and retain a department copy for your records. Accidental Personal Injury Reports forms are available from the Risk Management web page.

### **General Reminders**

- **NEVER CLEAN UP BLOOD OR FLUIDS CONTAINING BLOOD YOURSELF!** Call the Facilities Management Service Center at 774-6547 for cleanup assistance.
- In all chemical exposure situations, the treating medical facility will be expecting a copy of the Safety Data Sheet (SDS). The department must send them the SDS immediately or as soon as reasonably possible following a chemical exposure--preferably by fax or with the injured person.
- In non-emergency situations, if the injured person is unable to transport self, call CMU Police at 774-3081 for assistance.
- In all situations, it is the injured person's right to deny transportation and/or treatment. The injured person may seek treatment with the medical provider of their choice.
- If you are in doubt about how to handle the situation, call CMU Police at 774-3081 for assistance.
- Anyone who is exposed or thinks they may have been exposed to blood should contact University Health Services at 774-6599 for instructions.

If you have questions or comments about these procedures, please contact:

Risk Management at: (989) 774-3741

Central Health Improvement Program at: (989) 774-3198

Workers Compensation at: (989) 774-7177

## **General Information**

**Potential Hazards** - Some materials and processes in art use or generate hazardous chemicals, harmful physical agents (infrared light, high temperature, high noise, etc.) or involve mechanical equipment that can cause serious injury. General information about potential hazards in art is provided below. Other important health and safety information is provided in the studio safety section of this guide. Be sure to review both the general information as well as applicable studio safety information.

### **Chemical Hazards**

#### ***How can art materials affect your health?***

As you move on to your career in art, you will be using the materials and processes particular to your field each and every day, so it's extremely important to develop safe habits from the beginning to avoid potential health problems now and in the future. All artists need to understand the inherent hazards (flammability, toxicity, reactivity) in various art materials and the appropriate precautions to protect against illness or injury.

Your exposure to hazardous chemicals can occur by various routes of entry including inhalation, skin contact (dermal absorption), or accidental ingestion. (Injection is another potential route of exposure but it is most significant among healthcare workers.) Materials that become airborne either by evaporation (like solvents) or when disturbed (powdered clay) are potential respiratory (inhalation) hazards. Welding operations can produce both metal fumes and toxic gases. Some compounds (like toluene) can also be absorbed through the skin so chemical protective clothing may be needed. Accidental ingestion of chemicals can occur when food, beverages or cosmetics are handled in contaminated areas or with dirty hands. This is why consumption of food, beverages, etc. is not allowed in areas where hazardous materials are present and why hand washing is so important.

Exposure to hazardous materials may cause immediate adverse health effects, delayed health effects, or possibly no observed effects. This will depend on the particular material, the duration and frequency of exposure, whether or not appropriate personal protective equipment was used, good hygiene practices and individual susceptibility.

#### ***You want to use the safest materials available. So how can you find out about the chemical hazards of materials you will be using?***

The two best sources of information on chemical hazards are the product's label and its Safety Data Sheet (SDS). Manufacturer's labels include the name of the material, hazard warnings and information about special handling procedures, personal protective equipment and first aid instructions. If chemicals are transferred from the original manufacturer's container into a secondary container, the secondary container must be labeled with the material's complete name (no abbreviations) and the appropriate hazard warning--words like Flammable, Corrosive, etc. Never transfer chemicals into old food and beverage containers. Similarly, containers that have been used for chemicals should not be reused for food storage.

SDSs provide more detailed information on a specific product. For example, various solvents are commonly used in studio art classes. In selecting which product to use, consideration must be given to its toxicity, volatility, flashpoint, and waste disposal options. This information can be obtained from the SDS. Toxicity can be determined by looking at the exposure limit; the lower the exposure limit, the more toxic the substance.

A product's potential to cause a fire is related to flashpoint (or ability to form an ignitable mixture) and its volatility or tendency to evaporate. The lower the flashpoint, particularly when it is at or below room temperature, the more hazardous the material. Volatility is measured by vapor pressure; the higher the vapor pressure, the more volatile the material. Acetone is extremely volatile and will evaporate almost immediately whereas mineral spirits are much less volatile.

Michigan Occupational Safety and Health Administration (MIOSHA) regulations require CMU to maintain an inventory of hazardous materials and SDSs on each product. SDSs on materials used at CMU are maintained on the Risk Management, Environmental Health and Safety website; using [MSDSonline](#). If you cannot locate a SDS, contact your instructor, the Office of Laboratory and Field Safety or Risk Management, Environmental Health and Safety for assistance.

### **Physical Hazards**

Exposure to physical hazards of acoustic, electromagnetic, and thermal nature can cause adverse health effects. Physical hazards in the Art Department may include high noise (woodworking and metal working operations), optical radiation (infrared/ultraviolet light in welding), and thermal burns/heat (welding/foundry work.)

### **Mechanical Equipment**

Use of powered equipment (band saws, grinders, belt sanders, clay mixer, etc.) can present a variety of hazards: wiring/electrical hazards, moving parts (gears, pulleys, belts), and high noise. Never use a defective tool or piece of equipment. Make all adjustments to equipment while power is off and while blades, bits, etc. are NOT moving. Do not use equipment if you are not authorized to do so, have not been trained, or are uncertain about what to do. Ask for help. Follow posted instructions for equipment use. Never operate mechanical equipment or power tools while under the influence of drugs, alcohol, medication or other conditions which may affect your mental alertness.

### **Fire/Shock**

Fires and electrical shock may be caused by overloaded circuits, extension cords, or damaged wiring. Report any obvious electrical problems (smoke, sparks, tripped circuits, damaged power cord, etc.) to your instructor. Do not use damaged equipment -- tag it with a warning label and remove damaged equipment from service. Do not use electrical equipment in wet or damp locations. Make sure electrical outlets in wet areas are equipped with ground fault circuit interrupters (GFCIs).

## **Hand Tools (non-powered)**

Examples of non-powered hand tools that artists may use include utility knives, chisels, snips, punches, hammers, etc. Hand tool injuries are often related to improper use or maintenance of the tool. Some ways to avoid hand tool injuries include:

- Inspect tools before use to make sure they are in good condition. Worn or defective tools should be repaired or discarded. Report any defective equipment to your instructor.
- Use the right tool for the job, i.e., don't use a wrench as a hammer. Also use the correct size tool for the job.
- When using a knife, cut away from the body and keep hands and body clear of the knife stroke.
- Dispose of razor blades and utility knife blades in a puncture-resistant sharps container.
- Store tools safely. Sharp edges or blades should be protected or enclosed to prevent accidental contact.
- Keep tool cutting edges sharp so the tool will move smoothly without binding.
- Maintain a good grip and stand in a balanced position to avoid sudden slips. Avoid awkward postures-bending, twisting, reaching, etc...
- Consider using ergonomically designed tools (especially those that will be used frequently) that fit the hand well.

## **Ergonomic Hazards**

Back injuries may occur from lifting heavy or awkward objects such as sculptures or lithography stones. Use mechanical aids such as hoists whenever possible to move heavy objects. If an object weighs more than 40-50 pounds, get someone to help you lift it. Use proper lifting techniques: keep your back straight, hold the load close to the body, flex your knees and lift with your legs. Never lift and twist at the same time.

The work of many artists such as potters, painters, and weavers involves repetitive motion. Persons who spend a lot of time using computers are also at risk of repetitive motion disorders. Repetitive motion, particularly of the hands, wrists, and arms, can lead to painful inflammation of the muscles, tendons and nerves over time and cause the eventual deterioration of those tissues. Awkward positions and postures can also lead to musculoskeletal injuries. To prevent these injuries, select appropriate tools and try to use more neutral postures (for example, a straight wrist instead of a flexed wrist) while performing tasks. Take breaks and move strained body parts to increase circulation in the affected areas. Further information on ergonomics can be obtained from the Office of Laboratory and Field Safety, Risk Management, Environmental Health and Safety as well as the Internet.

## **Compressed Gas Cylinders**

Compressed gas cylinders must be properly secured to a permanent fixture in an upright position at all times by means of an appropriate stand, chain, or non-combustible restraint. (This includes empty cylinders.) Mark empty cylinders as “Empty” or “MT” and store away from other cylinders. The protective valve cap should remain in place until the regulator is attached. Some other safety precautions for gas cylinders are listed below:

- When moving cylinders, keep them in an upright position and use a cylinder cart or hand truck. Cylinders must be properly secured with a chain or strap, and have the protective valve cap in place while being moved. Do not roll or drag cylinders. Avoid dropping cylinders or allowing them to strike one another.
- Do not use oxygen fittings, valves, or regulators for other types of gases. Always use the proper valve connections.
- Cylinders containing flammable gases such as acetylene must be stored separately from oxidizers (oxygen) by either a 20-foot distance or by a non-combustible 5-foot high barrier. The only exception to this is an oxy-acetylene welding cart.

## **Hazard Control Measures**

When dealing with known health and safety hazards, a variety of control measures are used to reduce, or better yet, eliminate the hazard. Control measures include engineering controls, work practice controls, and finally, use of personal protective equipment. Usually, more than one control method is used.

**Engineering controls** include: changes in procedures or processes, substitution, isolation, and ventilation. Procedural changes include changing from a paint spraying operation to paint brushing to minimize aerosol production. Substitution means using a less hazardous material or process instead of a more hazardous one (e.g., use of water-based paints instead of solvent-based paints or use of lead-free glazes and enamels.) Isolation means separating the hazardous operation from exposed personnel—either by distance or by placing barriers.

Ventilation controls include use of either general exhaust (dilution) or a local exhaust system. Dilution ventilation involves bringing in clean air to dilute the contaminated air and exhausting the diluted air to the outside via exhaust fans. Note: An open door/window or recirculating fan does not provide adequate ventilation for toxic gases and vapors. Local exhaust ventilation involves collection and removal of contaminants near their source so it is much more efficient and effective for some operations. Examples of local exhaust systems found in the CMU Art Department include spray booths (glaze room, printmaking studio), canopy exhaust hoods over the kilns, snorkels (welding area, clay mixing room) and specially designed slot exhaust ventilation (photography darkroom and printmaking).

**Work practice or administrative controls** include training, good housekeeping and good work practices. For example: flooring in the ceramics studio should be wet mopped instead of sweeping which can disturb settled dust and cause it to become airborne. Other work practice controls include proper storage of art materials, keeping solvent containers closed when not in use, proper labeling of chemical containers, etc.

**Personal protective equipment (PPE)** includes use of eye protection (safety glasses or goggles), hand protection (gloves), face protection (face shield), foot protection, respirators, and hearing protection. See PPE and Clothing section of this Art Safety Guide for additional information. NOTE: Suitable eye protection is required in all studios where there is a risk of chemical splash, flying particles or optical radiation (infrared and UV light), or whenever hazards exist.

## **Fire Safety**

See Emergency Response Procedures section of this Art Safety Guide for additional information.

Preplan your response to a fire emergency. Review the **Emergency Procedure Manual for the North Art Studio and Wightman Hall**. Know where the nearest fire alarm pull station, fire extinguisher, exits, and outside assembly area (Lot 16) are located. Remember, elevators cannot be used in a fire emergency. Be familiar with the alarm system in your building. When you hear the alarm, evacuate the building immediately and do not return to the building until CMU Police or Fire Department officials have issued the “all clear.”

In addition to knowing what to do in event of a fire, it is important to take the following precautions to keep the building safe and to avoid causing a fire:

- Don't block access to emergency equipment such as fire extinguishers, fire alarm pull stations.
- Keep exit routes, aisles, stairwells and exit doors clear of obstructions.
- Don't store materials within 18 inches of an overhead sprinkler.
- Keep containers of flammable/combustible liquids capped when not in use.
- Use flammable/combustible materials in a well-ventilated area and keep them away from sources of heat and ignition. Note: Always remove butane lighters from pockets before working around hot processes such as foundry work and welding.
- Store flammable/combustible liquids in a flammable liquid storage cabinet.

## **Personal Protective Equipment (PPE) and Clothing**

PPE is defined as equipment worn by workers to protect against hazards in the environment and includes eye and face protection (safety glasses, goggles, shaded lenses, face shields), head protection (hardhats), foot protection (steel-toed shoes), hand protection (gloves), hearing protection (ear plugs, ear muffs), and respiratory protection. Technically, PPE does not include clothing such as long pants, long-sleeved shirts, or closed-toe shoes but such apparel can provide an additional level of protection to artists and are required depending on the hazards present in the studio. Some clothing can actually be hazardous to artists. For example, synthetic fabrics should not be worn around hot processes (i.e., welding, furnaces) because they can catch fire, melt and cause serious burn injuries. Loose clothing (sleeves, neckties, scarves, etc.) and jewelry (dangling necklaces, rings, watches, etc.) can become caught in machinery; these items should be removed before starting work with power tools. Damaged or defective personal protective equipment must be taken out of service immediately to be repaired or replaced.

All artists are encouraged to review the PPE selection and usage issues described below as well as studio and equipment specific PPE and clothing recommendations. Safety Data Sheets (SDS's) also provide information on recommended PPE for the materials being used in the studio.

PPE is usually the last line of defense after other hazard control methods have been implemented. There are several drawbacks with use of PPE: Wearing PPE can be awkward or uncomfortable (especially in hot weather) and can sometimes get in the way. People often get a false sense of security when they use PPE and rely too heavily on it. Also, PPE protects only the person wearing it but the hazard still exists and may harm unprotected personnel. Problems such as incorrect fit, use of the wrong PPE for the job, use of damaged or poorly maintained PPE, can result in less than adequate protection. In order for PPE to be effective, the user must:

- Know when PPE is necessary
- Know what kind of PPE is necessary
- Know how to use PPE properly
- Understand the limitations of the PPE (what it can and cannot do)
- Know how to wear and adjust PPE
- Know how to properly maintain PPE

A hazard assessment is an evaluation of the workplace to determine the hazards you may be exposed to, such as:

- Falling or flying objects
- Objects that could puncture the skin
- Objects that could roll over feet
- Toxic chemicals
- Heat
- Harmful dust
- Optical radiation (visible, ultraviolet, infrared light)
- High noise

The hazards identified during the assessment determine the type of PPE required to protect people. More details on PPE and the hazard assessment process are provided on the [\*\*Risk Management, Environmental Health and Safety web page.\*\*](#)

### **Hand Protection**

Gloves are used to protect against cuts, punctures, burns, chemical absorption, or temperature extremes. It is important that the correct type of glove is used since the wrong glove may not provide the necessary protection. This is a particular problem with chemical absorption where the wrong glove may allow certain chemicals to reach your skin and you may not realize it. Glove selection begins with knowledge of the chemical composition of your art materials and that is determined from reviewing the SDS. Glove manufacturers provide chemical resistance ratings for various types of gloves and chemicals. When selecting appropriate gloves for a particular application it is crucial to determine how long the glove can be worn, and whether it can be reused. Cloth gloves must not be worn when operating rotating equipment such as saws, drill presses, or powered threading machines. Your instructor or the Office of Laboratory and Field Safety can provide information or assistance with the selection of appropriate gloves.

### **Hearing Protection**

Generally speaking, if noise levels require you to raise your voice to speak with someone at a distance of about 3 feet, the noise level may be considered hazardous and use of hearing protection is recommended. Some operations associated with studio art activities (particularly mechanical equipment in the wood and metal shops) can produce high noise levels. Artists with frequent or prolonged exposures to high noise levels are strongly urged to use hearing protection in the form of ear plugs or ear muffs to prevent noise-induced hearing loss.

### **Respiratory Protection**

Air contaminants (particles, vapors, fumes, etc.) can usually be effectively controlled with ventilation and good work practices such as minimizing the use of solvents and keeping solvent containers closed. In some instances, artists may elect to use dust masks or respirators as an extra measure of protection. Use of dust masks or N-95 disposable respirators is recommended for some studio art procedures where excessive levels of airborne dust may be produced. (See studio safety information for details.) One fundamentally important issue regarding dust masks and respirators is the need for a good seal between the dust mask/respirator and the user's face. A good facial seal cannot be obtained when the respirator comes into contact with facial hair. Artists with frequent exposures to airborne contaminants (such as dust produced by woodworking equipment) are strongly urged to shave their beards before wearing a dust mask or respirator. Dust masks or respirators can be reused as long as they perform adequately and do not become contaminated. Keep your respirator in a sealed plastic bag when not in use and replace it as necessary. Respirator selection, handling, and usage issues are surprisingly complex. If you have concerns about exposure to chemicals or toxic dusts, contact the Office of Laboratory and Field Safety for more specific information.

## **Hair Entanglement**

Long hair (longer than four inches) can be drawn into machine parts such as chains, belts, rotating devices, suction devices, and blowers. Hair may even be drawn into machines guarded with mesh. It may also present an ignition risk in areas near open flames or welding. Employees with long hair must completely tie it back and secure it so that it cannot get caught in moving parts. The same applies to beards.

## **Eye and Face Protection**

All safety eyewear and face protection must meet the ANSI Z87.1 standard for minimum allowable protection. All eye and face protection supplied by Central Michigan University Departments must meet this standard, to provide impact protection. Side shields are required, under Michigan law, on all safety glasses. It is recommended that each individual be issued his or her own eye protection. MIOSHA regulations state that shared eyewear must be cleaned and disinfected between uses by different wearers. Safety glasses do not give adequate protection from chemical splashes. If the potential for liquids to be splashed or sprayed is present, wear safety goggles.

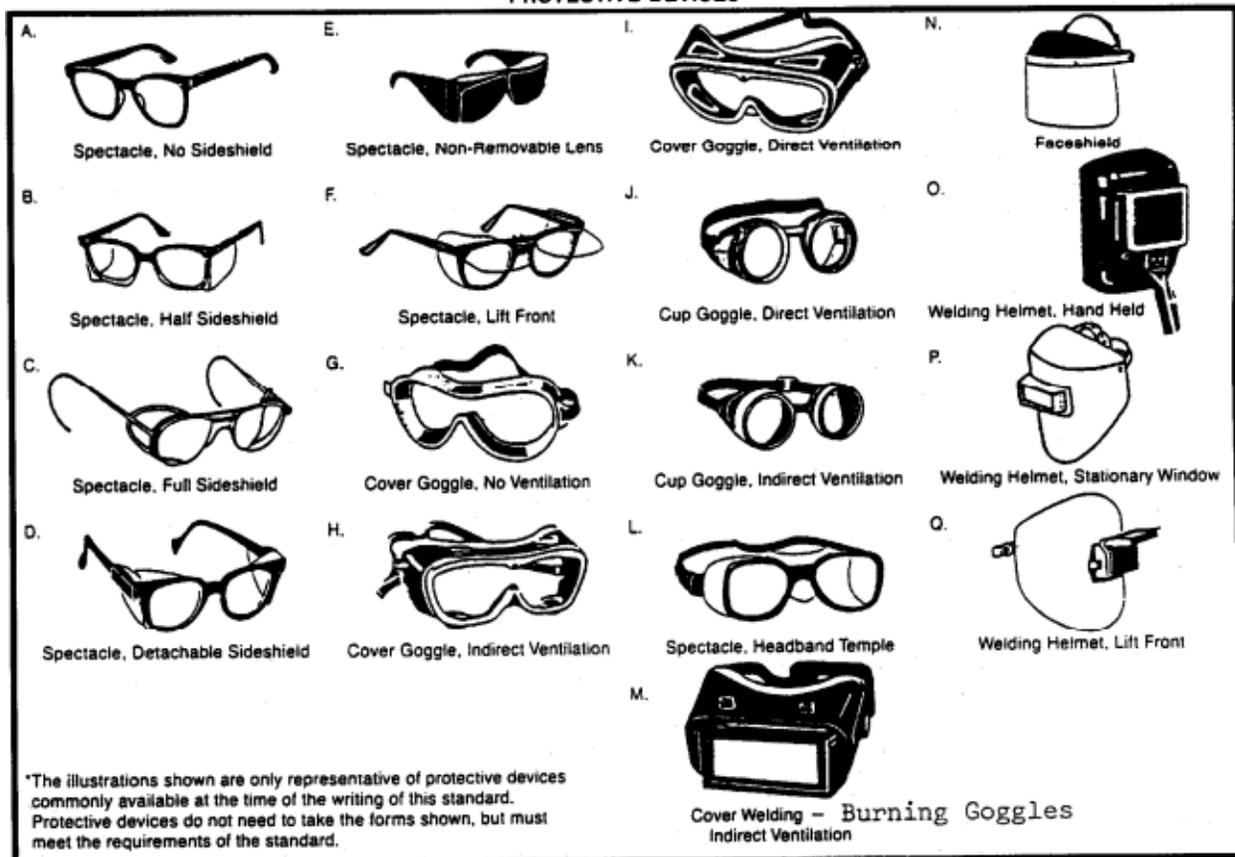
It is important to realize that face protection and eye protection are not the same thing. Use of a face shield alone does not provide adequate eye protection; **Never wear a face shield without wearing eye protection underneath.**

Contact lenses do not provide eye protection! Wearing contact lenses is discouraged when working with materials or procedures that give off gases, vapors, welding fumes, smoke or dust. If you choose to wear contacts, be aware of the hazards of wearing contacts in a studio.

Protective eyewear and face shields should be inspected regularly for scratching, pitting, etc. and replaced if necessary. Equipment should be stored away from heat, light, and further contamination.

Eyes must be protected against a variety of hazards. Specific information on eye protection is summarized on the following pages:

## Eye and Face Protection Selection



SOURCE OF HAZARD	ASSESSMENT OF HAZARD	TYPE	PROTECTION (see notes on next page)
IMPACT – chipping, grinding, machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and sanding	Flying fragments, objects, large chips, particles, sand, dirt, etc.	B, C, D, E, F, G, H, I, J, K, L, N	Spectacles with side protection, goggles, face shield. See note (1), (3), (5), (6), (10). For severe exposure, use face shield.
HEAT – furnace operations, pouring, casting, hot dripping, and welding	Hot sparks	B, C, D, E, F, G, H, I, J, K, L, N	Face shields, goggles, spectacles with side protection. For severe exposure, use face shield. See notes (1), (2), (3)
	Splash from molten metals	N	Face shields worn over goggles. See notes (1), (2), (3)
	High temperatures	N	Screen face shields, reflective face shield. See notes (1), (2), (3)
CHEMICALS – acid and chemical handling, use of cleaning products, paint use and clean-up products, pesticide and herbicide use	Splash	G, H, K	Goggles. For severe exposure, use face shield. See notes (3), (11)
	Irritating mists	G	Special-purpose goggles
DUST – woodworking, buffing, general dusty conditions.	Nuisance dust	G, H, K	Goggles, or spectacles with side protection. See note (8)

LIGHT and/or RADIATION – welding: electric arc.	Optical radiation	O, P, Q	Welding helmets or welding shields. Typical shades: 10-14. See notes (9) (12)
- welding: gas	Optical radiation	J, K, L, M, N, O, P, Q	Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4. See note (9)
-cutting, torch brazing, torch soldering	Optical radiation	B, C, D, E, F, N	Spectacles or welding face shield. Typical shades: 1.5-3. See notes (3), (9)
-glare	Poor vision	A, B	Spectacles with shaded or special purpose lenses, as suitable. See notes (9), (10)

### NOTES FOR EYE AND FACE PROTECTIONS SELECTION

1. Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protection devices do not provide unlimited protection.
2. Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.
3. Face shields should only be worn over primary eye protection (spectacles or goggles).
4. As required by the standard, filter lenses must meet the requirements for shade designation in OSHA 1910.133(a)(5). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.
5. As required by the standard, persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear.
6. Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
7. Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
8. Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.
9. Welding helmets or face shield should be used only over primary eye protection (spectacles or goggles).
10. Non-side shield spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for “impact.”
11. Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.
12. Protection from light radiation is directly related to filter lens density. See note (4). Select the darkest shade that allows task performance.

More detailed information regarding Personal Protective Equipment may be found in the written plan **CMU Personal Protective Equipment Program Guidelines**.

## **Working Alone/Unsupervised**

Persons working in a shop or studio should avoid doing so alone. Working alone in a shop or studio with potentially hazardous equipment is never a good idea. If the supervisor, faculty member, or other designated employee determines that work must be done under these conditions, the hazards should be assessed, contingencies thought out and discussed, and the work approved only if the chances of injury are minimal.

1. If possible, use the “buddy system” when working in the shop.
2. Must complete all required safety training.
3. Must observe all shop safety rules when working in the shop.
4. Must wear all required PPE when working in the shop.
5. Must observe all shop-specific rules/regulations beyond the scope of this program.
6. Must report all injuries to a shop supervisor promptly, regardless of severity.
7. Must promptly report unsafe conditions, damaged or defective equipment to shop supervisor.
8. Seek further guidance on any machine/equipment and or safety related issues that are unclear.
9. Work with the shop supervisor, faculty, or designee if there are specific needs for your work.
10. Some equipment is locked out or de-energized to prevent unauthorized usage.

Some shops and studios are locked after hours. Do not jeopardize the building security or your personal safety by propping windows and doors open. Anyone found not in compliance with safety and security practices will be subject to disciplinary action.

## **Waste Management and Disposal**

The goal of any waste disposal program is to reduce the potential harm to people and the environment that could result from the improper disposal of a hazardous chemical. Consider first the minimization of the amount of waste generated. If possible, use nonhazardous alternatives. Recycle or reclaim materials when possible. Know the disposal requirements before ordering a new material. Contact CMU's Hazardous Waste Manager for the proper disposal requirements and methods for all chemical wastes.

Several types of waste are generated in visual arts processes: solvents, oil-based paints, ceramic glaze, photographic processing chemicals, etc. Many of these wastes are considered hazardous waste by the U.S. Environmental Protection Agency (EPA) and require special handling. Hazardous wastes should be collected and disposed of via commercial disposal companies; they may not be poured down the drain or placed with regular trash. Hazardous waste disposal is arranged through the university's hazardous waste manager using an online request submission process.

The following procedures apply to hazardous waste containers in shops and studios:

- Place a "Hazardous Waste" label on hazardous waste containers before any waste is put into it. Include the words "hazardous waste" on the label along with a description of the waste.
- Keep containers closed when not in use.
- Use only containers that are in good condition.
- Keep containers under the generator's control.
- Inspect containers on a regular basis.
- Keep an inventory of the contents. Record the name and amount of each chemical added to the waste container along with the date it was added.
- **When adding new waste to a container, check to see that the new waste is compatible with the original contents.**
- Date waste containers when waste is first placed in the container.
- When the container is full, complete the hazardous waste label with percentages of each chemical and the date the container became full. The % column must equal 100%.
- A container is full when the liquid level reaches close to, but not all the way to the top of the container. This will prevent the build-up of excessive vapors while ensuring adequate room for expansion.
- Notify the Hazardous Waste Manager for waste pick-ups within 3 days of the container being full.

More information regarding hazardous waste disposal and the online request submission to have any hazardous waste picked up for disposal may be found on the **Risk Management, Environmental Health and Safety** website under Hazardous Waste Disposal.

## **General Safety Summary**

**Know your materials and their hazards.** Learn about the content of art materials and their hazards by reviewing labels and Safety Data Sheets (SDSs). Whenever possible, try to use the safest materials and processes available. For example:

- a. Choose water-based materials instead of solvent-based ones.
- b. Eliminate toxic metals like lead and cadmium (e.g., use cadmium-silver solders and lead-free glazes and enamels).
- c. Use wet techniques instead of dry techniques to minimize dust production (e.g., wet sanding or wet grinding).
- d. Apply coatings by brushing or dipping instead of spraying.
- e. Choose products that do not create dusts and mists. If possible, avoid using materials in powder form or aerosol products or use them with local exhaust ventilation.

**Know where emergency equipment is located and what to do in the event of an emergency.** Examples include:

- a. Eyewash stations and safety showers
- b. Fire alarm pull stations, fire extinguishers, designated evacuation assembly area
- c. Emergency phones
- d. Injury response procedures (notification, recordkeeping, healthcare resources)
- e. Locations of Safety Data Sheets (SDSs)

**Practice good hygiene.** It's a simple way to avoid exposure to toxic substances.

- a. Never eat, drink, smoke, chew gum/tobacco, or apply cosmetics in the studio or shop or wherever there is a potential for chemical exposure.
- b. Wash your hands and exposed skin thoroughly with soap and water after using any hazardous material or substance and before eating or smoking. Don't forget to wash under your fingernails. Keep nails trim and clean and do not bite nails.
- c. Never use toluene, turpentine, or other solvents to remove paint, inks or stains from your skin. Baby oil can be used to remove paint.
- d. Never hold brushes or tools in your teeth or mouth.

**Keep studio space clean and organized.** Continuous and diligent cleaning of the studio reduces the risk of accident and fire. Designate a separate area for work with potentially hazardous materials.

- a. Dusty surfaces should always be wet mopped or cleaned with a HEPA filtered vacuum. Sweeping stirs up the dust and creates an inhalation hazard. This is particularly important with toxic dusts such as clays and pigments.
- b. Dusty work areas should be cleaned on a regular basis (preferably daily).
- c. Clean up wet floors and small spills immediately.
- d. Store tools and equipment when not in use and keep them in good working order.
- e. Be neat. Pick up trip hazards and keep working and walking areas unobstructed.

**Use appropriate ventilation to reduce the level of airborne contaminants and prevent accumulation of flammable vapors.**

- a. Be aware that floor fans or ceiling fans can sometimes stir up settled dust or cause air contaminants to be carried into a person's breathing zone. It's better to use exhaust ventilation to remove hot or contaminated air than it is to just use a fan to blow it around.
- b. A common recommendation on product labels is **USE WITH ADEQUATE VENTILATION**. This is a non-specific phrase that provides little information but it does indicate that the product may contain odorous or potentially toxic materials and that it should be used outdoors, in a large open area, or with a local exhaust system (e.g. spray booth, snorkel, fume hood, etc.).
- c. If local exhaust or dilution ventilation systems are not working properly (e.g., if visible dust leakage or strong odors are noted), notify course instructor or facilities management.

**Handle and store equipment and supplies properly.**

- a. Don't block access to emergency equipment (fire extinguishers, fire alarm stations, etc.)
- b. Keep exit routes, aisles, and exit doors clear of obstructions.
- c. Choose appropriate containers. Avoid breakable glass containers whenever possible and don't put chemicals in empty food or beverage containers.
- d. Don't store incompatible chemicals in close proximity. Refer to SDS for information.
- e. Store materials safely so they will not fall; don't store hazardous chemicals above eye level. Sharp edges or blades should be protected or enclosed to prevent accidental contact.
- f. Make sure all containers are labeled with contents and hazard warning information.
- g. Cover containers when not in use to prevent liquids from evaporating and powders from spilling.
- h. Transfer materials carefully to avoid splashing or generating large amounts of dust.

**Wear appropriate clothing and personal protective equipment (PPE).** Refer to studio safety guides for specific information.

- a. Avoid wearing jewelry, loose long hair, or loose clothing around mechanical equipment.
- b. Wear non-synthetic (cotton) clothing when working with hot objects (welding) Polyester and other synthetic clothing is prohibited for hot work projects.
- c. Minimize exposed skin and avoid bare midriffs when working with hazardous chemicals or hot objects.
- d. Do not go barefoot in art studios. Sandals and other open shoes should not be worn in the metal or wood shops, when handling or mixing plaster, or when moving lithography stones.
- e. Store PPE properly and keep it readily accessible.

**Be a responsible artist.** The information in this safety guide is designed to protect you, your fellow artists, and the environment.

- a. Follow the instructions of your instructor and teaching assistant. They are there to help you learn and ensure that you can do your artwork safely.
- b. Do not use equipment if you are not authorized to do so, haven't been trained on it, or are uncertain about what to do. Follow posted instructions for equipment use. If you have questions, ask your instructor.
- c. Report unsafe conditions or damaged equipment to your instructor or TA immediately. If necessary, take the equipment out of service or place a warning tag/label on it.
- d. Recognize your physical, emotional, and mental limits. Eat well-balanced meals and get plenty of rest each night. Do not operate mechanical equipment or power tools while under influence of drugs, alcohol or medication. Decreased alertness is a major cause of accidents.
- e. Be considerate of the health and safety of the people around you and their activities. Communicate any known chemical or physical hazards that your project has the potential to create. Work safely and don't put others at risk. If you have any health or safety concerns, discuss the issue with your instructor or the teaching assistant. You can also contact CMU's Office of Risk Management, Environmental Health and Safety or the Office of Laboratory and Field Safety for assistance.

## **Art Safety Training**

Art faculty and staff are required to provide training to all students and users of equipment in art studios on campus prior to the initial use of the equipment or process. The safety topics covered in this guide are a good starting point and may be expanded upon to cover issues that the instructor has observed in their own experience. Personal protective equipment, unique hazards present in the studio and an orientation to the studio including location of emergency equipment/supplies and PPE should be conducted on the first day of work in the studio.

Documentation of training is required, however, the format of how this information is documented is left up to the instructor, although it needs to be readily accessible.

Additional resources and safety training is available on the Risk Management, Environmental Health and Safety website and the Office of Laboratory and Field Safety website.

## **Art Safety References**

Special thanks to the Art Faculty at CMU for their time and input in creating this guide. Additional art safety information is available on the Internet and at other universities' web sites.

References used in the creation of this art safety guide include:

*The Artist's Complete Health and Safety Guide*, Monona Rossol, 2<sup>nd</sup> ed., 1994, Allworth Press

Central Michigan University, Office of Risk Management, Environmental Health and Safety  
[www.cmich.edu/fas/fsr/rm/EHS](http://www.cmich.edu/fas/fsr/rm/EHS)

- a. CMU Shop Safety Policy
- b. CMU Personal Protective Equipment Program Guidelines
- c. CMU Emergency and Safety Procedures Guide
- d. CMU Emergency Action Plans
  - i. North Art Studio Emergency Procedure Manual
  - ii. Wightman Hall Emergency Procedure Manual
- e. CMU Risk Management – Injuries
- f. CMU Hazardous Waste Disposal

Central Michigan University, Office of Laboratory and Field Safety  
[www.cmich.edu/office\\_provost/ORGS/Lab Safety](http://www.cmich.edu/office_provost/ORGS/Lab_Safety)

- a. CMU Chemical Hygiene Plan

Tulane University, Office of Environmental Health and Safety, *Art Safety Guide*  
[www.tulane.edu](http://www.tulane.edu)

Reference Regulations:

- a. U.S. Occupational Safety and Health Administration (OSHA) 29 CFR 1910.132 – 1910.138
- b. OSHA Laboratory Standard (29 CFR 1910.1450)
- c. Michigan OSHA (MIOSHA) Part 431: Hazardous Work in Laboratories
- d. MIOSHA Part 33: General Industry
- e. MIOSHA Part 433: Health
- f. MIOSHA Part 12: Welding and Cutting
- g. MIOSHA Part 26: Metal Working Machinery
- h. MIOSHA Part 27: Woodworking Machinery
- i. MIOSHA Part 38: Hand and Portable Power Tools
- j. MIOSHA Part 44: Foundries
- k. MIOSHA Part 76: Spray Finishing Using Flammable and Combustible Materials

## **Studio Safety Hazards and Precautions**

- Ceramics
- Drawing/Painting
- Photography
- Printmaking
- Sculpture – Metalworking and Woodworking

## **Ceramics**

Ceramic hazards occur during three basic processes - preparing and molding the clay, glazing and firing. Clay materials may contain hazardous substances in varying amounts depending on the manufacturer or source. The supplier should have information readily available to the users of their products so the artist knows the specific hazards and necessary precautions to work safely with the product. There is also a concern about lead and other metals leaching into food and drink from pottery fired with certain glazes. Common glazes are a mixture of minerals, metallic compounds and water and are potentially hazardous at all stages of use. Carefully review Safety Data Sheets (SDS) for the products you use in ceramics - particularly the glazing compounds. Currently, no regularly used glazes contain hazardous materials; however, upper level students may use higher-hazard glazes.

In addition to the hazards of the clay and glazes used in ceramics, physical hazards exist from the heavy work associated with clay mixing. Overuse and strain injuries can occur while wedging, throwing or hand building with clay. Hand, back and wrist muscle injuries can also occur from sitting at the potters wheel for extended periods of time or poor posture. Be aware of electrical conditions since water is always present. Kilns used to fire the ceramics operate at very high temperatures and present a risk of burns to the artist. Infrared radiation emanates from ware when it glows with heat, which can cause skin burns and eye damage. Functioning ventilation is required for all firing processes. The slab roller is an entanglement hazard and contains pinch-points that can cause serious injury. For these reasons only one person at a time may use the slab roller.

Working safely with clay and glazes and maintaining an awareness of potential hazards can reduce accidents and injuries significantly. It is not possible to detail all the risks involved with ceramics; however, it is possible to foresee and implement controls for hazards by carefully planning each task associated with creating pottery. The activities, hazards, and precautions on the following pages are intended to provide a broad overview for commonly used procedures and hazards encountered in the ceramics studio.

ACTIVITY	HAZARDS	PRECAUTIONS
Working with clay	<ul style="list-style-type: none"> <li>• Clays contains crystalline silica which can cause the lung disease silicosis. Crystalline silica may be a human carcinogen.</li> <li>• Handling/mixing clay in powder form can cause an inhalation hazard.</li> <li>• Some clay additives (talc) may be contaminated with asbestos and other hazardous contaminants.</li> </ul>	<ul style="list-style-type: none"> <li>• Materials are measured and mixed in a designated area using snorkels positioned directly above the work area for local exhaust ventilation.</li> <li>• Dust masks and local exhaust ventilation is utilized when receiving/loading large shipments of dry materials.</li> <li>• Review the SDS for hazardous components of clay</li> <li>• Avoid creating dust (do not sweep, work wet whenever possible) and use the dry HEPA vacuum to clean floors and other horizontal surfaces.</li> </ul>
Handling glazes/frits	<ul style="list-style-type: none"> <li>• Glazes can contain free silica and highly toxic metals such as lead, cadmium, chromium, etc. which can cause cumulative toxic effects. Note: CMU Art &amp; Design is lead free.</li> <li>• Handling/mixing glazes in powder form can cause an inhalation hazard.</li> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS</li> <li>• Avoid creating dust (do not sweep, work wet whenever possible) and use the dry HEPA vacuum to clean floors and other horizontal surfaces.</li> <li>• Weigh and mix powder glazes in functioning spray booth and wear a dust mask and gloves.</li> <li>• If possible, avoid spray application of glazes which can create aerosols</li> <li>• Brushing, pouring or dipping is the preferred method of applying glaze. <b>Spraying, air brushing, or dusting of glazes must be done in the spray booth.</b></li> </ul>
Firing kiln	<ul style="list-style-type: none"> <li>• Toxic gases and fumes (carbon monoxide, formaldehyde, etc.) may be emitted during the firing process as by-products of combustion</li> <li>• Infrared radiation produced by the glowing fire can cause cataracts after long periods of exposure.</li> <li>• Heat generated by a kiln or hot objects from a kiln can cause thermal burns. Heat can also cause fires in nearby combustibles.</li> </ul>	<ul style="list-style-type: none"> <li>• Use exhaust ventilation</li> <li>• Wear shaded lenses when looking into a kiln</li> <li>• Wear leather gloves when handling hot objects</li> <li>• Do not store flammable and combustible materials near kilns</li> </ul>

**Other Important Notes:**

1. Avoid working in the studio alone.
2. All intro students are required to complete safety orientation on the first day of work in the studio.
3. Food and drink are not allowed in the studio.
4. No dangling jewelry, loose clothing, long scarves allowed when using pottery wheels. Tie back long hair, including beards to prevent entanglement.
5. Ask for assistance when moving heavy items.
6. Open studio hours or after-hours use of the ceramics studio is for enrolled students or members of The Ceramic Society only.
7. Needle tools may be sharp – use with care.
8. In case of equipment malfunction, place out of service sign on equipment and notify NAS coordinator.
9. All users of the NAS must know the location of the emergency shower and eyewash station.
10. Report all injuries or near misses to the supervisor immediately; for emergencies, call 911 to reach CMU Police.
11. Wash your hands after working in the ceramics studio.

## **Drawing/Painting**

Paints are pigments suspended in vehicles or bases. Vehicles usually contain a liquid such as an oil, a solvent or water. Cleaners and thinners for most paints are these same liquids or liquids which are compatible with them. For example, turpentine will thin and clean up oil paints. Drawing materials also are pigments suspended in vehicles. Some drawing material vehicles include wax (crayons), inert minerals (pastels, conte crayons, chalks), and liquids (solvent and water-based inks and marking pens). Pencils contain “leads” made of graphite and clay (“lead” pencils) or pigmented clay/binder mixtures (colored pencils).

Hazards associated with painting/drawing are related to the pigments, solvents, varnishes, lacquers, and binders or vehicles that pigments are mixed with. Some of these materials may cause allergic reactions in certain individuals; some materials may be carcinogenic or toxic by ingestion or inhalation and some may be absorbed through the skin. Accidental ingestion can occur due to eating, drinking, or smoking while working, and inadvertent hand to mouth contact. Preventing skin contact through good hygiene and task-appropriate personal protective equipment can prevent dermatitis or skin irritation and also prevent accidental ingestion of paint pigments. Carefully review Safety Data Sheets (SDS) for the products you use and review specific hazard control measures.

Awareness of the potential hazards associated with drawing and painting, combined with careful use of the materials, can reduce risks involved with these activities. Ensure that all containers of paint and solvents are kept closed when not in use. Solvents such as mineral spirits and turpentine are flammable and must be stored in the flammable storage cabinet. All waste is collected into appropriate flammable safety cans. While low-odor solvents (mineral spirits, turpentine) are used in the studio, they may still release harmful vapors. Utilize the local exhaust ventilation in the studio to ensure adequate air changes in the space, remembering to turn off when the last person leaves the studio.

ACTIVITY	HAZARDS	PRECAUTIONS
Painting and solvent use	<ul style="list-style-type: none"> <li>• Some solvents and vehicles used in paints can evaporate quickly creating an inhalation hazard.</li> <li>• Some solvents can be absorbed through the skin and can cause dermatitis with prolonged exposure.</li> <li>• Many solvents are flammable.</li> <li>• Some natural resins may cause skin irritation or allergic reaction.</li> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS</li> <li>• Turn local exhaust unit on when working in the studio.</li> <li>• Keep containers of paint and solvents closed except when you are using them.</li> <li>• Never point brushes with your lips or hold brush handles in your teeth.</li> <li>• Avoid skin contact with solvents. Wear nitrile gloves.</li> <li>• Wash your hands when leaving the studio and before eating, drinking, or smoking to prevent absorption or ingestion.</li> <li>• <b>NEVER</b> use solvents or bleaches to remove splashes from your skin.</li> <li>• Wear protective clothing such as a smock or coveralls, nitrile gloves and eye protection if performing messy work or when working with caustic paints or corrosive chemicals.</li> <li>• Dispose of waste solvents, paints and other materials into designated hazardous flammable waste receptacles.</li> </ul>
Drawing Media	<ul style="list-style-type: none"> <li>• Dust from charcoal sticks, pastels, and colored chalks can create inhalation hazards and irritate the respiratory tract.</li> <li>• Pastels can contain toxic pigments which can be hazardous by inhalation or accidental ingestion.</li> <li>• Some drawing inks and permanent felt tip markers can contain solvents.</li> <li>• Spray fixatives contain toxic solvents and flammable propellants.</li> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS</li> <li>• Use in well-ventilated areas.</li> <li>• Wear protective clothing such as a smock or coveralls and leave these garments in the studio to avoid bringing dusts home. Wash protective clothing frequently and separately from other clothing.</li> <li>• Wash your hands when leaving the studio and before eating, drinking, or smoking.</li> <li>• Do not blow off excess pastel or charcoal dust.</li> <li>• Wet wipe or mop dusty surfaces.</li> <li>• <b>Never spray fixative in or near the building except in designated spray booths.</b></li> </ul>

## **Photography**

Taking photos is a safe task; however, there are chemical hazards in the film developing process. Some of these chemicals may cause allergic skin reactions in certain individuals; some may be carcinogenic or toxic by ingestion, inhalation or absorption through the skin, others may cause irritation to the eyes or respiratory tract. Accidental ingestion can occur due to eating, drinking, or smoking while working, and inadvertent hand to mouth contact. A qualified faculty member must train all users in the photography studio and dark room before they begin using the area. The faculty member must authorize use of the space after-hours. Carefully review Safety Data Sheets (SDS) for the products you use and utilize specific hazard control measures to reduce the risk of exposure to these chemicals. Best practice is to ensure that all developing solutions are identified/labeled when filling the trays to avoid any confusion with other chemicals.

In addition to chemical hazards in the photography studio, the use of reduced or subdued lighting during the developing processes requires pre-planning and thoughtful consideration of the placement of chemical trays and other equipment for the work being performed. Be sure that walkways in the studio are clear of obstructions and that you are familiar with the space before reducing the lighting.

Being aware of the potential hazards associated with developing photographs and carefully planning your work with the developing materials can reduce the risks involved with these activities. Ensure that all chemical containers are kept closed when not in use and stored properly and that all chemical waste is collected into an appropriate hazardous waste container for proper disposal. Utilize the local exhaust ventilation in the studio to ensure adequate air changes in the space, remembering to turn off when the last person leaves the studio. Hand washing and cleaning up your work area when you are finished are necessary to keep yourself and others safe from unnecessary chemical exposures or other hazards.

ACTIVITY	HAZARDS	PRECAUTIONS
Photo processing	<ul style="list-style-type: none"> <li>Some processing chemicals are skin irritants or sensitizers and inhalation or dermal contact can cause adverse reactions such as allergic contact dermatitis, skin rashes, or permanent sensitization.</li> </ul>	<ul style="list-style-type: none"> <li>Review the SDS</li> <li>Avoid skin contact with chemicals by using tongs to handle prints.</li> <li>Wear appropriate clothing (lab coat or apron, long pants, closed-toe shoes) and PPE (eye protection and nitrile gloves)</li> <li>Know where the nearest eyewash station is located</li> <li>Wash hands before eating, drinking, smoking</li> </ul>
	<ul style="list-style-type: none"> <li>Some processing chemicals emit a variety of respiratory irritants (acetic acid, hydrogen sulfide, sulfur dioxide). Exposure to these irritants can cause increased susceptibility to respiratory infections.</li> </ul>	<ul style="list-style-type: none"> <li>Always mix concentrated solutions in a well-ventilated area or fume hood</li> <li>Keep working solutions covered when not in use</li> <li>Make sure local and dilution ventilation systems are working properly</li> </ul>
	<ul style="list-style-type: none"> <li>Many chemicals used in photo processing are highly toxic if ingested.</li> </ul>	<ul style="list-style-type: none"> <li><b>Wash hands when done working and before eating, drinking, or smoking</b></li> <li>Do not put processing chemicals in food or drink containers.</li> </ul>
	<ul style="list-style-type: none"> <li>Highly irritating and toxic substances can be produced and become airborne if stock or working solutions are mixed with incompatible materials.</li> </ul>	<ul style="list-style-type: none"> <li>Label all containers</li> <li>Do not mix stock solutions with incompatible materials</li> <li>Store incompatible materials separately</li> </ul>
	<ul style="list-style-type: none"> <li>Water and other liquids may be used in the vicinity of electrical equipment.</li> </ul>	<ul style="list-style-type: none"> <li>Separate electrical equipment from water sources and wet processes as much as possible</li> <li>Utilize ground fault circuit interrupters on all electrical outlets within 5 feet of water source.</li> </ul>

## **Printmaking**

Hazards associated with printmaking include chemicals found in inks, pigments, solvents, adhesives, etching compounds and other materials that may be used. Some of these materials may cause allergic reactions in certain individuals; some materials may be toxic by ingestion or inhalation while others may be absorbed through the skin. Accidental ingestion can occur due to eating and/or drinking while working in the studio and inadvertent hand to mouth contact. Food and drink is not permitted in the printmaking studio. A designated clean area in the studio is available for personal belongings. While most solvents and inks used in printmaking are non-toxic, some may contain hazardous components. Use of corrosive materials may cause eye or skin injuries necessitating proper personal protective equipment (PPE) be worn when in the studio. Flammable chemicals may also present a hazard to the artist. Careful review of all Safety Data Sheets (SDS) prior to using these materials and ensuring appropriate hazard control measures are utilized reduce the risk to the artist.

Equipment used in printmaking, such as presses, sharp tools, and lithography stones present physical hazards such as pinch points, entanglement hazards, and crush injury/muscle strain potential. These hazards may cause serious injury to the artist if procedures and proper techniques are not followed.

Awareness of the potential hazards in printmaking, combined with proper training and use of safety procedures can reduce accidents and injuries significantly. It is possible to foresee and implement controls for hazards by carefully planning each job. The activities, hazards, and precautions on the following pages are intended to provide a broad overview for commonly used procedures and hazards encountered in the printmaking studio.

ACTIVITY	HAZARDS	PRECAUTIONS
<p>Use of inks, pigments, solvents (soy solvent, mineral oil, isopropyl alcohol, vinegar, Holy Cow cleaner, acetone), spray paint, liquid hard ground</p>	<ul style="list-style-type: none"> <li>• Some solvents can evaporate quickly, creating an inhalation hazard or be absorbed through the skin, causing dermatitis with prolonged exposure.</li> <li>• Solvents may be flammable.</li> <li>• Inks may contain ingredients that will irritate skin and eyes and may produce allergic reaction by skin contact.</li> <li>• Spray paint may contain hazardous materials, produce noxious vapors, and irritate the skin, eyes and respiratory tract.</li> </ul>	<ul style="list-style-type: none"> <li>• Use solvents in areas with adequate ventilation. Be aware of color-coded solvent containers and use as intended.</li> <li>• Review SDS for all hazards associated with chemicals used.</li> <li>• Spraying solvent into a rag and then wiping minimizes aerosol hazards.</li> <li>• Used rags containing solvents are placed into red safety cans.</li> <li>• Wear eye protection and appropriate gloves when using irritating materials.</li> <li>• Use of paint spray booth is required when using spray paints and applying liquid hard ground.</li> <li>• Wash hands with hand cleaner, not solvents.</li> </ul>
<p>Chemical handling and use (includes Ferric Chloride etching solution, Tannic Acid, Nitric Acid, Saline Sulfate)</p>	<ul style="list-style-type: none"> <li>• Contact with acids can irritate skin and mucous membranes and cause chemical burns.</li> <li>• Acid spills can damage clothing, equipment, and the studio itself.</li> <li>• Generating and handling hazardous chemical waste.</li> <li>• Nitric acid is a strong oxidizer. Avoid contact with combustible material (wood, paper, oil, clothing, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>• Review SDS for all chemicals prior to using.</li> <li>• Always wear required PPE: Goggles, chemical-resistant gloves, chemical-resistant apron, closed toe shoes when handling acids.</li> <li>• Ensure local exhaust ventilation is on and functioning properly.</li> <li>• Make sure correct bath is used for metal plate being used.</li> <li>• Avoid splashing by placing plates carefully in bath.</li> <li>• Acids are stored in a locked acid storage cabinet with primary containers stored inside of secondary containment devices.</li> <li>• Nitric acid use is restricted to when instructor present.</li> <li>• Chemical spill kit is available.</li> <li>• Hazardous chemical waste is collected in an appropriate, properly labeled container.</li> <li>• Emergency shower and eyewash are immediately accessible in the event of skin or eye contact with chemicals.</li> </ul>

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
Moving lithography stones	<ul style="list-style-type: none"> <li>• Back injuries, muscle strains or crush injuries may occur from lifting heavy stones.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask for help lifting stone if too heavy to move alone. Use proper lifting techniques.</li> <li>• Have destination location prepared prior to moving stone.</li> <li>• Use a cart to move stones.</li> <li>• Use of hydraulic lift to move large stones (24" x 36") allowed only under supervision of instructor.</li> <li>• Engage brake on lift when loading and unloading stones.</li> <li>• Ensure hands are clean and dry when lifting stones.</li> </ul>
Printing Press Use (Lithography, Conrad Press and American French Tool)	<ul style="list-style-type: none"> <li>• Mechanical rollers, moving table, scraper bars, press frame, pinch points and entanglement hazard areas, pressure created by printing process.</li> <li>• Ergonomic hazards due to repetitive motions or awkward body position in relation to the press.</li> </ul>	<ul style="list-style-type: none"> <li>• Instructor must train user prior to using printing presses.</li> <li>• Only one person at a time allowed to operate press. Others present in studio are at a safe distance from press while in use.</li> <li>• Conrad Press requires two-handed wheel operation. American French Tool requires operator to have one hand on the wheel and the other on the moving bed to advance sheet into the press. Be aware of hand placement on moving bed.</li> <li>• Signage indicating pinch points on press, keep hands away.</li> <li>• No jewelry, loose clothing or ear buds allowed when using equipment.</li> <li>• Tie back long hair, including beards.</li> <li>• Start with minimum pressure setting on press and add pressure gradually.</li> <li>• Do not send three-dimensional material through the press.</li> <li>• Work standing up straight with elbows close to the body, take breaks and change body posture as needed.</li> </ul>

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
Plate Shear (cutting printing plates)	<ul style="list-style-type: none"> <li>• Sharp edges on plates.</li> <li>• Mechanical parts, moving parts, pinch points and sharp blade.</li> </ul>	<ul style="list-style-type: none"> <li>• All users must be trained before using plate shear.</li> <li>• Cut only copper (18 gauge or thinner, smaller than 18”), zinc (18 gauge or thinner), lithographic aluminum plates, relief linoleum and 4ply (or thinner) mat board.</li> <li>• Do not place hands or other parts of body near areas with potential to nip, grab, pinch or cut.</li> <li>• Do not pull the equipment toward yourself or use excessive force.</li> <li>• Return pull handle to the upright position when done.</li> <li>• Only one person at a time allowed to operate plate shear. Others present are kept at a safe distance from plate shear while in use.</li> <li>• Keep feet and legs clear of area where cut plate will fall.</li> </ul>
Use of Hand Tools (non-powered)	<ul style="list-style-type: none"> <li>• Sharp or pointed tools can cause cuts or puncture wounds.</li> <li>• Metal filings and shavings create eye hazards.</li> </ul>	<ul style="list-style-type: none"> <li>• Cut away from the body and keep hands and fingers clear of the sharp object.</li> <li>• Store tools safely, protecting sharp edges or blades when not in use.</li> <li>• Eye protection is required when using files and de-burring tools.</li> </ul>

### **Other Important Notes:**

1. Studio users must be registered students at CMU, enrolled in the printmaking course and trained by an instructor prior to working with equipment, chemicals and materials. Signed equipment safety training documents must be on file before users are allowed to use the equipment.
2. Users are responsible for understanding all the instructions and hazards that are inherent in each material, chemical, or equipment they are using.
3. Avoid working in the studio alone. Do not use equipment / tools or materials when extremely tired or under the influence of alcohol or drugs. Students must follow the guidelines in the CMU student handbook.
4. The hot plate and metal plates get **HOT** –use hot pads and trowels to handle heated materials. There is a timer on the wall – if you are using the hot plate, you are responsible for making sure it is **OFF** before leaving the room.
5. Do **NOT** participate in horseplay, practical jokes or any behavior that may startle, distract or disorient another worker in an area where hazardous materials are used or where potentially dangerous operations are taking place.
6. **BE ALERT** to any unsafe condition. If an unsafe condition exists, immediately notify the appropriate people (the instructor, Facilities Management, and/or CMU Police)
7. Persons with pre-existing physical/medical conditions should consult their physician before working with printmaking materials (eye, skin, pulmonary or respiratory problems).
8. Wash your hands after working in the printmaking studio.
9. If you notice that something is not functioning or reacting correctly, stop using the materials/equipment and notify the appropriate people (CMU Facilities Management or instructor) immediately. Please place an “OUT OF ORDER DO NOT USE” note on the object/materials to communicate the issue to others in the studio.
10. If an accident were to occur, call **911** for help and fill out a university incident report.
11. Consult the CMU Shop Safety Policy for further information. [https://www.cmich.edu/fas/fsr/rm/EHS/Written\\_Plans/Documents/CMU%20Shop%20Safety%20Program2015.pdf](https://www.cmich.edu/fas/fsr/rm/EHS/Written_Plans/Documents/CMU%20Shop%20Safety%20Program2015.pdf)

## **Sculpture – Metalworking and Woodworking**

Hazards involved with metalworking depend on the type of work performed and the methods used. Artists may weld, braze, solder or torch cut metals as well as cast or forge them. Melting metal can produce toxic gases as well as metal fumes. Metal fumes form when a metal is heated above its boiling point and its vapors condense into very fine particles (solid particulates) that can penetrate deep into the lungs.

Woodworking hazards include the wood itself, preservatives that may be present within the wood, hand and powered tools used to shape it, glues and finishing compounds. Dusts from many hardwoods are sensitizers and both hard and softwoods can cause allergic reactions of the eyes, skin and respiratory system. Carefully review the Safety Data Sheets (SDS) for the wood and other products you use.

Awareness of potential hazards combined with proper safety procedures can reduce accidents and injuries significantly. It is not possible to detail all the risks involved with metalworking and woodworking; however, it is possible to foresee and implement controls for hazards by carefully planning each job. The activities, hazards, and precautions on the following pages are intended to provide a broad overview for commonly used procedures and hazards encountered in the sculpture studio.

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
Bronze Casting (mold making, removing molds)	<ul style="list-style-type: none"> <li>• Sand has a high silica content which can become airborne during mold making/mixing of materials, creating an inhalation hazard.</li> <li>• Some products may contain crystalline silica which may be a human carcinogen. Crystalline silica can cause the lung disease silicosis.</li> </ul>	<ul style="list-style-type: none"> <li>• Materials are measured and mixed in a designated area (welding shop) using snorkels positioned directly above the work area for local exhaust ventilation.</li> <li>• Small batches (5 gallons) are created and then added to a larger container with a continuous mixer installed.</li> <li>• Dust masks, eye protection and gloves are worn during the preparation and use of silica-containing materials.</li> <li>• Once the product is liquid, continuous mixing prevents it from becoming solid. Liquid and solid materials do not pose any inhalation hazard.</li> </ul>
Foundry Work (melting and pouring metal)	<ul style="list-style-type: none"> <li>• Furnace releases a lot of heat and infrared radiation that can lead to heat stress, skin burns and eye damage.</li> <li>• Furnace can generate combustion gases (carbon monoxide).</li> <li>• Toxic metal fumes can be produced.</li> <li>• Molten metal can burn organic resins and binders in the sand mold and release toxic decomposition products.</li> <li>• Use of hoist/rigging equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Electric and natural gas supply to furnace is kept locked to prevent unauthorized use.</li> <li>• Exhaust ventilation system must be turned on prior to starting furnace.</li> <li>• NAS Coordinator must be present when foundry is used.</li> <li>• Personal protective equipment must be worn when in designated foundry area and foundry is in use.</li> <li>• Hoist and rigging training must be completed by user before working with equipment.</li> <li>• Review the SDS for products used in foundry.</li> </ul>

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
<p>Welding, Brazing, Heating, Plasma Cutting</p>	<ul style="list-style-type: none"> <li>• Compressed Gas Cylinders</li> <li>• Base Metals Used – Steel, Aluminum, Stainless Steel, Copper, and Bronze are only base metals used.</li> <li>• Air contaminants produced by process.</li> <li>• Ultraviolet and Infrared Radiation.</li> <li>• High-voltage Electrical Hazards</li> <li>• Heat, sparks and slag can cause burns and fires.</li> </ul>	<ul style="list-style-type: none"> <li>• Cylinders secured with safety chain, flameproof wall between cylinders on welding rig.</li> <li>• Review SDS for base metal prior to use. Base metal must be free of coatings and clean.</li> <li>• Work in well-ventilated area and ensure local exhaust ventilation/snorkel is turned on before process begins. Wear an appropriately fitted respirator if required for base metal being used.</li> <li>• Wear shaded eye protection, adjusting shade number based on process being performed.</li> <li>• Follow appropriate grounding procedures prior to using welding rig.</li> <li>• Conduct visual check of welding area for presence of flammable materials prior to starting work.</li> <li>• Wear natural fiber clothing, long pants, a fire-resistant welding jacket, sturdy close-toed shoes, leather welding gloves and safety glasses under the welding helmet.</li> <li>• Pull welding screens to enclose the work area, protect against UV light exposure, and contain any sparks.</li> <li>• Use plasma cutting table to contain hot slag.</li> <li>• Ensure appropriate personal protective equipment is worn for the task being performed.</li> </ul>

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
Operating Mechanical Equipment/Power Tools	<ul style="list-style-type: none"> <li>• Improper or unauthorized use of equipment can cause injuries.</li> <li>• Clothing, hair, fingers can get caught in moving equipment.</li> <li>• Eye injury hazards such as wood dust, metal shavings and flying debris.</li> <li>• Dust produced during cutting/sanding.</li> <li>• Prolonged exposure to high noise levels may damage hearing.</li> <li>• Malfunction or maintenance required on equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Users must be registered students at CMU, trained prior to working with equipment and supervised during use of equipment.</li> <li>• Power disconnect locks are installed on all equipment.</li> <li>• Emergency stop button kills power to all equipment.</li> <li>• Keep machine guards in place.</li> <li>• Be aware of nip points on equipment.</li> <li>• Use push sticks and jigs as appropriate for the task.</li> <li>• No jewelry or loose clothing allowed when using equipment.</li> <li>• Tie back long hair, including beards.</li> <li>• Eye protection is required when power tools are in use in the studio. In addition to safety glasses, face shields are required when using the stationary grinder, stationary sander, angle grinder, die grinder and cutoff tools.</li> <li>• Utilize dust collection systems, wear gloves and dust mask when working with treated or toxic wood.</li> <li>• Ear muffs/hearing protection devices are available in PPE cabinet.</li> <li>• HEPA vacuums available to clean up dust generated by equipment.</li> <li>• North Arts Studio coordinator performs repair and maintenance of equipment only.</li> </ul>
Use of Hand Tools (non-powered)	<ul style="list-style-type: none"> <li>• Sharp or pointed tools can cause cuts or puncture wounds.</li> </ul>	<ul style="list-style-type: none"> <li>• All users must be trained before using hand tools.</li> <li>• Wear appropriate task-dependent PPE such as eye protection, leather work gloves.</li> <li>• Cut away from the body and keep hands and fingers clear of the sharp object. Store tools safely, protecting sharp edges or blades when not in use.</li> </ul>

**Other Important Notes:**

1. All students are required to complete Sculpture Shop Safety training and sign NAS training log.
2. During open shop hours, employee must verify student training before allowing use of equipment in the studio.
3. Emergency contact information must be provided to the instructor prior to using equipment.
4. Working with mechanical equipment alone is not allowed.
5. Solvents are flammable. Store mineral spirits and other solvent containers in the flammable cabinet when not in use. Rags containing mineral spirits are placed into a designated flammable waste can.
6. In case of equipment malfunction, place out of service sign on equipment and notify NAS coordinator.
7. A qualified, trained individual must perform lock out/tag out procedures for malfunctioning equipment before starting service.
8. All users of the NAS must know the location of the emergency shower and eyewash station.
9. Report all injuries or near misses to the supervisor immediately; for emergencies, call 911 to reach CMU Police.
10. Consult the CMU Shop Safety Policy for further information. [https://www.cmich.edu/fas/fsr/rm/EHS/Written\\_Plans/Documents/CMU%20Shop%20Safety%20Program2015.pdf](https://www.cmich.edu/fas/fsr/rm/EHS/Written_Plans/Documents/CMU%20Shop%20Safety%20Program2015.pdf)