

 **West Texas A&M University**<sup>TM</sup>  
**ACADEMIC RESEARCH ENVIRONMENTAL HEALTH AND SAFETY**  
**STANDARD OPERATING PROCEDURES**

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**SOP No. 24.99.01.W1.01AT WTAMU General Art Safety**

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Environmental Health and Safety at WTAMU is composed of two distinct but integrated environmental safety departments that report to the Vice President of Research and Compliance.

Academic and Research Environmental Health and Safety (AR-EHS) is responsible for research and academic related compliance, which includes laboratory and academic research and the associated compliance committees. Fire and Life Safety (FLS-EHS) is responsible for fire related compliance and conducts fire and life safety inspections of campus buildings and assists with the testing all fire detection and suppression systems.

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## 1. Purpose

Much of what we do in art brings us into contact with hazardous materials and processes, as well as tools and equipment that need proper safe procedures. Don't be alarmed—be aware. This safety guide provides basic information on the primary hazards associated with different artistic mediums along with the safe use of tools and equipment.

This information is not meant to discourage you from practicing your art! Instead, it is meant to make you a wiser and healthier art practitioner—all that you have to do is 1) read this information, 2) know what you're dealing with before you start working in an area where hazardous materials or processes are used and 3) follow the recommended precautions.

Improper use of equipment, poor work practices, inappropriate handling, storage, and disposal of hazardous materials can have dire consequences on your health and safety.

## 2. Scope

This procedure applies to all buildings and structures owned/leased by West Texas A&M University, to all employees and students of the University, to all occupants of University buildings, and the external organizations who work in or use any WTAMU facility.

Areas addressed in this SOP:

- Ceramics
- Digital Labs
- Drawing and Painting
- Glassmaking
- Photography
- Printmaking/Lithograph
- Sculpture – Metalworking
- Sculpture – Woodworking

### **3. Procedures**

#### **3.1. Yearly inspections**

Annual inspections and evaluations of art and fine art; work areas and related equipment will be performed by EHS to ensure safe operation, cleanliness, and effective performance of the environmental control systems, laboratory work areas, and related equipment. This will reduce the risk of potentially harmful exposure to faculty, staff, students, and visitors. Records will be kept and maintained by EHS documenting all investigations, evaluations, and maintenance operations.

#### **3.2. Equipment Inspections**

The Principal Investigator (PI), Designated Faculty/Instructor, and EHS will also conduct inspections and training for safe operations of equipment used in conjunction with any Fine Arts course, faculty/student research, or public exhibition.

Safety Investigation Protocol:

- Investigating complaints from building occupants.
- Performing visual assessments of the workplace; for example, unsecured equipment, potential electrical hazards, potential flammable hazards, etc.
- Conducting appropriate environmental monitoring.
- Recommending appropriate corrective measures.
- The PI or Designated Faculty/Instructor will maintain recordkeeping and retention for future reporting and evaluations.

### **4. Responsibilities**

#### **4.1. Visitor Safety – Access Control:**

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 EHS and their Departments on environmental health and safety issues and concerns.

Art Department faculty and staff are responsible for following the Visitor Safety – Access Control Program (SOP No.24.02.W1.01AR) for all visitors to any studio or other teaching or research lab.

Artists (student, faculty, visiting scholars and other individuals working in these areas) 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 and access by student artists may result in expulsion from the studio and other disciplinary action. Overall environmental health and safety compliance by the WTAMU Art Department will be handled through EHS.

Read and understand installation and operating manuals as well as the controls manual before operating your any equipment in your teaching/research areas. If you have any questions, please contact the PI or EHS.

The staff working in and around teaching/research practicum areas must maintain a monthly report documenting maintenance records, work assignments, periodic training opportunities, and injuries.

#### 4.2. Emergency Actions

In the case of emergency or injury, activate 911. SOP 24.01.01.W1.02AR WTAMU Hazard Communications Program outlines reporting protocols of hazards in the research areas.

#### 4.3. Hazardous Material Spill

Spills of hazardous materials (acids, solvents, etc.) should be confined in a safe manner, if possible. 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. It may be necessary to unplug electrical equipment or turn off sources of ignition in the event of a solvent or flammable liquid spill.

In case of a hazardous material spill:

- Alert others in the immediate area and evacuate the area if necessary.
- If the spill cannot be handled safely by Art Department personnel, notify EHS for cleanup.
- Report the following details if known:
  - location of the spill,
  - chemical or product name,
  - approximate quantity spilled, and
  - other pertinent information

#### 4.4. 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. Also refer to Injury/Illness procedures in the next section.

#### 4.5. Chemicals on Skin

- Immediately flush the affected area with water for no less than 15 minutes. Remove any contaminated jewelry or clothing to facilitate removal of residual material.
- If medical attention is needed, call Tulane Public Safety and explain what chemicals were involved.

- Review SDS for any delayed effects.

#### 4.6. Chemicals in Eyes

- Flush eyes with water for at least 15 minutes. Hold eyelids open and rotate eyeballs so all surface areas can be rinsed. Use of an eyewash station is desirable so hands are free to hold the eyes open.
- If applicable, remove contact lenses while rinsing. Do not attempt to reinsert them after rinsing.
- Seek medical attention regardless of severity. Call EHS and explain what chemicals were involved.
- Review SDS for any delayed effects.

#### 4.7. Chemical Inhalation

- Provide fresh air (open windows, close chemical containers, provide fans).
- If symptoms (headaches, nose or throat irritation, etc.) persist and medical attention is needed, call Tulane Public Safety and explain what chemicals were involved.
- Review SDS for health effects.

#### 4.8. Injury/Illness

If someone is injured while visiting, working or attending classes at WTAMU Art Department, it is important that the incident be reported as described below. In all cases, if the injury is serious, call 911 immediately!

- Employees
  - Employees who suffer any work-related injury/illness must report the incident immediately to their supervisor and complete an Incident/Injury report. Supervisors are responsible for signing the form and assisting with the incident investigation.
  - If the injury is not serious or life-threatening but still requires medical attention, the employee should proceed to the nearest hospital or clinic, or to their personal physician for evaluation and treatment.
  - **NOTE:** A copy of the Injury/Illness report must be submitted to Personnel within 24-48 hours of the incident
- Visitors
  - Immediately notify EHS of any injury or illness involving visitors.
- Students
  - Students who suffer any course-related injury/illness must report the incident immediately to the PI (Primary Investigator), faculty member, instructor or graduate assistant and complete an Incident/Injury report. Supervisors are responsible for signing the form and assisting with the incident investigation.
  - If the injury is not serious or life-threatening but still requires medical attention, the student should proceed to student health services, nearest hospital or clinic, or to their personal physician for evaluation and treatment.
  - **NOTE:** A copy of the Injury/Illness report must be submitted to EHS within 24-48 hours of the incident

- In case of medical emergency, on-campus students should call 911. Students who suffer an injury or become ill during classroom activities should notify the course instructor or graduate assistant immediately and report to the Student Health Services for evaluation and treatment. If the injury or illness is related to on-campus activities or an unsafe condition in a University building that may require follow-up by EHS personnel, the student must complete an Incident/Injury report.
- If the injury occurs during classroom activities, the course instructor or graduate assistant should complete an Incident/Injury report and forward a copy to EHS regardless of whether or not the student reports to the Student Health Services. **Even minor injuries should be reported since these may indicate trends and/or the need for corrective actions.**

#### 4.9. Potential Hazards

- 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 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 identity and the appropriate hazard warning--words like Danger-Inhalation Hazard. Never transfer chemicals into old food and beverage containers unless the food label is removed

or completely obscured. 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.
- 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 glassmaking), and thermal burns/heat (glass-making.)
  - 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, and belts), fast moving abrasives or cutting and high noise. 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 and 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. EHS can provide assistance with selection of ergonomic hand tools.
- 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, glassblowers, and weavers involves repetitive motion. Persons who spend a lot of time using computers are also at risk of repetitive motion disorders and/or repetitive strain injuries. 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. Further information on ergonomics can be obtained from EHS as well as the Internet.
- Compressed Gas Cylinders
  - Compressed gas cylinders must be properly secured in an upright position at all times by means of an appropriate stand, chain, or strap. (This includes empty 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 or oxy-propane cart for specified torches.

#### 4.10. Hazard Control Measures

Typically, in 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: isolation, ventilation. 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 WTAMU Art Department include spray booths (glaze room, printmaking studio), canopy exhaust hoods over the kilns, chemical fume hoods (printmaking, glaze room), and specially designed slot exhaust ventilation (printmaking darkrooms, clay mixing room).
  
- Work Practice or Administrative Controls
  - Include: changes in the process, substitution, training, good housekeeping and good work practices. Process 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.) Additional examples include: 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)
  - Include: use of respirators, hearing protection, eye protection (glasses or goggles), hand protection (gloves), face protection (face shield), and foot 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).
  - NOTE: Students and employees that use processes and/or materials that require a respirator must have the proper training and health clearance before being allowed to use a respirator. It should therefore be understood that the processes and/or material requiring the use of a respirator must not be used without a respirator.

#### 4.11. Fire Safety

Preplan your response to a fire emergency. Review the posted Evacuation Routes for the room or area you are working. Know where the nearest fire alarm pull station, fire extinguisher, exit stairwells, and outside assembly area 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 Tulane Security 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 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 (preferably a chemical fume hood) and keep them away from sources of heat and ignition. Note: Always remove butane lighters from pockets before working around hot processes such as glassmaking and welding.
- Store flammable/combustible liquids properly. If the total quantity of flammable liquids in a single storage area exceeds 10 gallons, approved safety cans or a FM/UL approved flammable liquid storage cabinet may be necessary.

#### 4.12. Personal Protective Equipment (PPE) and Clothing

PPE 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 (respirator, dustmask). 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. Some clothing can actually be hazardous to artists. For example, synthetic fabrics should not be worn around hot processes (i.e., glassmaking, welding, furnaces) because they can catch fire, melt and cause serious burn injuries. Loose clothing (sleeves, neckties, scarves, etc.) and jewelry (rings, watches, etc.) can become caught in machinery; these items should be removed before starting work with power tools.

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.

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

Selection of PPE first requires a hazard assessment to identify conditions or processes that can produce the following hazards:

- Falling 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
  
- 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 the SDS. Glove manufacturers provide chemical resistance ratings for various types of gloves and chemicals. EHS can provide information or assistance with the selection of appropriate gloves. It may be assumed because of the process that using gloves is necessary for the process, which may be similar to other processes. However, some equipment, mainly those with fast moving parts, requires that gloves must not ever be worn to protect the operator/user. In this case, if gloves are worn the fast moving part may pull the hand into the machine and create a very serious and potentially life-threatening injury.
  
- Hearing Protection
  - As a general rule of thumb, 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 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 levels may be produced. (See studio safety information for details.) One fundamental and important issue regarding respirators is the need for a good seal between the 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 required to shave their beards before wearing a respirator. 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 EHS for more specific information.
  
- Eye and Face Protection

- It is important to realize that face protection and eye protection is not the same thing. Use of a face shield alone does not provide adequate eye protection; eye protection (safety glasses) is always required whenever a face shield is used.
- Eyes must be protected against a variety of hazards. Specific information on eye protection is summarized in the following table:

ACTIVITY	POTENTIAL HAZARD	MINIMUM EYE PROTECTION
Sanding, grinding, chipping, woodworking	Impact, flying particles <sup>1</sup>	<ul style="list-style-type: none"> <li>• Safety glasses with side shields or</li> <li>• Goggles (direct vent)</li> </ul>
Chemical handling, pouring	Chemical splash <sup>2</sup>	<ul style="list-style-type: none"> <li>• Goggles (indirect vent)</li> <li>• If severe exposure, also wear face shield</li> </ul>
Kiln or furnace operations, casting glass or molten metal	Glare, heat, optical radiation <sup>3</sup>	<ul style="list-style-type: none"> <li>• Shaded goggles or glasses with a minimum rating of 99.9%UV and 92.5% IR</li> <li>• If desired, also wear face shield to reduce heat and provide face protection</li> </ul>
Welding (electric arc)	Optical radiation <sup>3</sup> , sparks	Welding helmet or welding shield (filter shade 10-14)
Welding (gas)	Optical radiation <sup>3</sup> , sparks	Welding goggles or hand shield (filter shade 4-5)
Cutting, brazing, soldering	Optical radiation <sup>3</sup> , sparks	Welding goggles or hand shield: <ul style="list-style-type: none"> <li>• Cutting (filter shade 3-6)</li> <li>• Brazing (filter shade 3-4)</li> <li>• Soldering (filter shade 1.5-3)</li> </ul>

### 1 Protection against impact or flying particles

Protection against impact or flying particles is available with three types of eyewear: safety glasses with impact-resistant lenses and side shields, flexible or cushioned goggles, and chipping or eyecup goggles. A combination of goggles and face shield is recommended for some processes where face protection is also necessary. Always look for the American National Standards Institute (ANSI) Z87 logo on eye and face protective equipment. *NOTE: Regular eyeglasses do not provide impact protection.*

### 2 Protection against chemical splash

Selection of suitable protection against chemical splash depends on the particular chemical and the quantity involved. For the limited quantities of acid solutions handled at Newcomb, use of either goggles and a face shield or goggles with baffled ventilation will provide adequate eye protection. If chemical splash to the eyes/face does occur, proceed to the nearest eyewash station and flush the eyes with water for 15-20 minutes. Follow other injury response and notification procedures described in the Emergency Response section of this guide.

### 3 Protection against optical radiation

The type of protection needed against optical radiation depends on the type of radiation exposure. Carbon arcs and electrical welding require protection against ultraviolet (UV), visible and infrared radiation. UV radiation can cause conjunctivitis ("arc eye"), sunburn and skin cancer. A face shield is necessary as well as goggles. A general rule of thumb is to use the darkest shade possible that is compatible with visibility. In oxy-acetylene welding, glassmaking, soldering, kiln use, and foundry work involving molten metal, the concern is mostly with protection against visible and infrared radiation. Chronic exposure to infrared radiation can lead to development of cataracts. Shaded goggles are recommended where infrared radiation hazards are present. For glassblowing and foundry work, a shade number of 3-5 is often used. If there is a possibility of splashing molten metal (foundry pours), a face shield is recommended in addition to eye protection.

- Contact lenses - Recent evidence has shown that contact lens wearers are not at an excess risk of eye damage in the presence of potentially harmful chemicals, dusts, etc. as long as the proper eye protection is worn over them.
- Equipment Maintenance - Protective eyewear and face shields should be inspected regularly for scratching, pitting, etc. and replaced if necessary. If the equipment is used by more than one person, it should be cleaned and disinfected after use. Equipment should be stored away from heat, light, and further contamination.

#### 4.13. Working Alone/Unsupervised

Students are reminded that they are not allowed to work in shop areas (i.e., wood shop, metal shop, glass area, foundry, and kiln room) without supervision or a second person in the facility until they have experience and training to do so; typically first year students are not authorized to work without supervision.

Work involving hazardous equipment and processes really should not be done alone-especially after hours. Use of a buddy system is strongly recommended. Due to numerous security and safety hazards, some shops and studios are locked after hours. Also, some equipment is locked out or de-energized to prevent unauthorized usage.

Building security is in place to protect you. The Art building is locked after normal work hours. Don't jeopardize the building security or your personal safety by propping windows and doors open. University Police should be notified of your presence in the building after hours. Anyone found not in compliance with safety and security practices will be subject to disciplinary action and all access to the art studios removed or denied.

#### 4.14. Waste Management and Disposal

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 EHS.

In order to minimize hazardous waste issues, consider the following:

- Don't purchase more of a material than you expect to use in the foreseeable future. Costs of disposal can exceed bulk purchase savings.
- Substitute with a less hazardous material whenever possible.
- Make sure all chemical and waste containers are properly labeled.
- Keep chemical and waste containers closed when not in use.
- Don't accept donations or gifts of potentially hazardous materials

In general, waste from the art department can be categorized into 3 categories: recyclable waste, regular waste, and hazardous waste. Some examples of art wastes which fall into these categories are listed below:

- Recyclable waste:
  - Broken glass
  - Aluminum

- Regular waste:
  - Wood, water-based paints (after drying in container), glazes (after being fired)
- Hazardous waste (commercial disposal through EHS):
  - Concentrated acids and bases
  - Organic oils (linseed oil, tung oil, turpentine, etc.)
  - Enamel or oil-based paints
  - Solvents (mineral spirits, acetone, toluene, xylene, etc.)
  - Solvent soaked rags and paper towels

#### 4.15. 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:
  - Choose water-based materials instead of solvent-based ones.
  - Eliminate toxic metals like lead and cadmium (e.g., use cadmium-silver solders and lead-free glazes and enamels).
  - Use wet techniques instead of dry techniques to minimize dust production (e.g., wet sanding or wet grinding).
  - Apply coatings by brushing or dipping instead of spraying.
  - 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:
  - Eyewash stations and safety showers
  - Fire alarm pull stations, fire extinguishers, designated evacuation assembly area
  - Emergency phones
  - Injury response procedures (notification, recordkeeping, healthcare resources)
  - Locations of Safety Data Sheets (SDSs)
- 3. Practice good hygiene. It's a simple way to avoid exposure to toxic substances.
  - Never eat, drink, smoke, chew gum/tobacco, or apply cosmetics in the studio or shop or wherever there is a potential for chemical exposure.
  - 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.
  - Never use toluene, turpentine, or other solvents to remove paint, inks or stains from your skin. Baby oil can be used to remove paint.
  - 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.
  - 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.
  - Dusty work areas should be cleaned on a regular basis (preferably daily).

- Clean up wet floors and small spills immediately.
- Store tools and equipment when not in use and keep them in good working order.
- 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.
  - 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.
  - 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, fume hood, etc.).
  - 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.
- Handle and store equipment and supplies properly.
  - Don't block access to emergency equipment (fire extinguishers, fire alarm stations, etc.)
  - Keep exit routes, aisles, and exit doors clear of obstructions.
  - Choose appropriate containers. Avoid breakable glass containers whenever possible and don't put chemicals in empty food or beverage containers.
  - Don't store incompatible chemicals in close proximity. Refer to SDS for information.
  - 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.
  - Make sure all containers are labeled with contents and hazard warning information.
  - Cover containers when not in use to prevent liquids from evaporating and powders from spilling.
  - 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.
  - Avoid wearing jewelry, loose long hair, or loose clothing around mechanical equipment.
  - Wear non-synthetic (cotton) clothing when working with hot objects (welding, glass making). Polyester and other synthetic clothing is prohibited for hot work projects.
  - Minimize exposed skin and avoid bare midriffs when working with hazardous chemicals or hot objects.
  - Do not go barefoot in art studios. Sandals and other open shoes are not allowed to be worn when working in any of the 3D Labs (Sculpture Studio: metal or wood shops, when handling or mixing plaster, Ceramics Studio, Glass Studios: kiln room, hot shop or cold shop or Print Studio: moving lithography stones).
  - 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.
  - 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.

- 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.
- 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.
- 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.
- 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.

## 5. Studio Specific Safety Hazards and Precautions

### 5.1. Ceramics

Hazards associated with ceramics are related to three aspects of the process: preparing and molding the clay, glazing, and firing the clay. There is also a concern about lead and other metals leaching into food and drink from pottery fired with certain glazes. Carefully review Safety Data Sheets (SDS) for the products you use-particularly the glazing compounds.

ACTIVITY	HAZARDS	PRECAUTIONS
Working with clay	<ul style="list-style-type: none"> <li>• Clays contains crystalline silica which can cause the lung disease silicosis.</li> <li>• Some clay additives (talc) may be contaminated with asbestos and other hazardous contaminants.</li> <li>• Handling/mixing clay 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 (don't sweep, work wet whenever possible)</li> <li>• Wear a dust mask if necessary</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.</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 (don't sweep, work wet whenever possible)</li> <li>• Use fume hood or wear a dust mask if necessary</li> <li>• If possible, avoid spray application of glazes which can create aerosols</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>
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**Other Important Notes:**

- Don't use kilns, mixers, or other pieces of equipment until you have been trained by a ceramics faculty/instructor member.\*
- Substitute less hazardous clays and glazes whenever possible. (i.e., use lead-free glazes, use water as a vehicle for glazes instead of solvents, etc.) It's better for both you and the environment!
- Wear non-slip shoes in the mixer area or other areas where wet floors may be present.
- Use proper lifting techniques when handling large bags of clay or other heavy materials.
- Wet mop floors and work surfaces daily to minimize dust levels and prevent dry scraps from becoming pulverized.
- Wash your hands with soap and water after working with clay and glazes.

**\* Observe posted instructions and procedures for the following:**

- Firing gas kilns
- Firing electric kilns
- Firing raku kilns
- Soldner clay mixer
- Pugmill operation
  - Mixing and spraying glazes
  - Mixing and handling plaster

5.2. Digital Lab

The primary hazards associated with computer use are visual and musculoskeletal stresses from prolonged use of the computer. Proper design of the computer work area, use of ergonomically designed equipment (mouse, chair), good work practices and maintaining a neutral body posture can help avoid potential problems.

ACTIVITY	HAZARDS	PRECAUTIONS
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Computer use	<ul style="list-style-type: none"> <li>• Musculoskeletal disorders such as carpal tunnel</li> <li>• syndrome, neck strain, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain a neutral body posture: <ul style="list-style-type: none"> <li>○ Hands, wrists, forearms are straight, in-line and roughly parallel to the floor</li> <li>○ Head is level or bent slightly forward and in- line with the torso</li> <li>○ Shoulders are relaxed and upper arms hand normally at the side of the body</li> <li>○ Elbows are close to the torso</li> <li>○ Feet are fully supported by floor or footrest</li> <li>○ Back is fully supported with lumbar support</li> <li>○ Thighs and hips are supported by a well-padded seat and are parallel to the floor</li> </ul> </li> <li>• Place keyboard and monitor directly in front of you.</li> <li>• Adjust chair height and arrange mouse and keyboard to achieve a neutral wrist posture.</li> <li>• Use a mouse pad with a wrist rest.</li> <li>• Change positions frequently. Stretch, get up and walk around periodically.</li> </ul>
	<ul style="list-style-type: none"> <li>• Eyestrain from improper viewing distances, glare or reflections on the monitor</li> </ul>	<ul style="list-style-type: none"> <li>• Place monitor perpendicular to window. Use blinds or drapes to reduce glare.</li> <li>• Tilt screen slightly to avoid glare from lights and windows. Use indirect or diffused lighting.</li> <li>• Position monitor so top line of screen is at or below eye level.</li> <li>• Place monitor directly in front of you and at least 20 inches away.</li> <li>• Periodically clean and dust computer monitor.</li> <li>• Instead of bifocals, use single vision glasses with a focal length designed for computer work</li> <li>• (Avoid having to tilt head back to see the monitor)</li> </ul>
	<ul style="list-style-type: none"> <li>• Electrical hazards</li> </ul>	<ul style="list-style-type: none"> <li>• Use only power cords provided in the Lab.</li> <li>• Extension cords and power strips brought in from the outside are prohibited.</li> </ul>

**Other Important Notes:**

- Food and drinks are not allowed in the Digital Lab.

For further information, visit this [OSHA page](#).

5.3. Drawing/Painting

Paints are pigments mixed with a vehicle or binder. Drawing media includes crayons, pencils, inks, felt-tip markers, oil pastels as well as dust-creating media such as charcoal and pastels which are often fixed with spray fixatives. 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. Carefully review Safety Data Sheets (SDS) for the products you use and review specific hazard control measures.

ACTIVITY	HAZARDS	PRECAUTIONS
Painting and solvent use	<ul style="list-style-type: none"><li>• Mixing dry powders and sanding can create inhalation and ingestion hazards.</li><li>• Some natural resins may cause skin irritation or allergies.</li><li>• Some solvents and vehicles used in paints can evaporate quickly and contaminate the air 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></ul>	<ul style="list-style-type: none"><li>• Review the SDS</li><li>• Mix dry pigments in a chemical fume hood. Avoid creating dust.</li><li>• Wear a dust mask or N95 respirator if necessary.</li><li>• Avoid skin contact with solvents. Wear nitrile gloves.</li><li>• Wash hands before eating, drinking, smoking</li></ul>
Spray application	<ul style="list-style-type: none"><li>• Airbrushes, and aerosol spray cans release very fine mist particles that can remain in the air for several hours and are readily inhaled.</li><li>• Aerosol spray paints and other products contain propellants that are extremely flammable.</li><li>• Spray application of some solvents and paints can create a flammable atmosphere.</li></ul>	<ul style="list-style-type: none"><li>• Never spray solvent-based materials in or near the building except in designated spray booths.</li><li>• Use water-based airbrushing paints and inks rather than solvent-based.</li></ul>

Drawing Media	<ul style="list-style-type: none"> <li>• Dust from charcoal sticks, pastels, and colored chalks can cause problems for individuals with asthma</li> <li>• Pastels can contain toxic pigments which can be hazardous by inhalation or accidental ingestion.</li> <li>• Spray fixatives contain toxic solvents and flammable propellants.</li> <li>• Some drawing inks and permanent felt tip markers can contain solvents.</li> </ul>	<ul style="list-style-type: none"> <li>• Don't blow off excess pastel or charcoal dust.</li> <li>• Wet wipe or mop dusty surfaces.</li> <li>• Wear a dust mask or N95 respirator if necessary</li> <li>• Never spray fixative in or near the building except in designated spray booths.</li> </ul>
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**Other Important Notes:**

- Do not use miter saw and other pieces of equipment until you have been trained by a faculty member.\*
- Substitute less hazardous materials whenever possible. (i.e., use lead-free paints, use water-soluble materials instead of solvents, etc.) It's better for both you and the environment!
- Avoid use of pigments which contain toxic metals such as lead, cobalt, cadmium, chromates, mercury, etc.
- Hazardous metal fumes may be produced when coated surfaces are heated or burned.
- Do not use solvents to clean skin--remove paint from your skin with baby oil then use soap and water.
- Wash your hands with soap and water after working with painting and drawing materials.

**\* Observe posted instructions and procedures for the following:**

- Solvent and fixative use
- Miter saw operation

5.4. Glass Making

There are a number of hazards associated with glassmaking: burns, razor sharp objects, hazardous chemicals in glass, exposure to heat, carbon monoxide from incomplete combustion and eye damage from optical radiation and flying glass. Carefully review the Safety Data Sheet (SDS) for the products you use.

ACTIVITY	HAZARDS	PRECAUTIONS
Hot Work (working with molten glass, hot objects and heat sources)	<ul style="list-style-type: none"> <li>• Burns</li> <li>• Clothing can melt or catch fire</li> <li>• Prolonged work in a hot environment can cause heat stress (heat exhaustion)</li> <li>• Hot glass can release toxic gases and metal fumes</li> </ul>	<ul style="list-style-type: none"> <li>• Wear Kevlar gloves when handling hot objects.</li> <li>• Be careful not to grab hot objects (wrong end of punty)</li> <li>• Wear cotton or wool clothing-including underwear</li> <li>• (not nylon or polyester)</li> <li>• Drink plenty of water and take breaks as necessary.</li> <li>• If desired, wear a heat resistant face shield in addition to eye protection.</li> </ul>

Cold Work (handling glass powder, colorants, grinding glass, blasting)	<ul style="list-style-type: none"> <li>• Glass (especially colors) can contain heavy metals (lead, cadmium arsenic, etc.) that can be poisonous if inhaled or accidentally ingested.</li> <li>• Sand contains crystalline silica which can be an inhalation hazard</li> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS.</li> <li>• Use least hazardous materials whenever possible.</li> <li>• Avoid creating dust (use wet process, blasting cabinet, etc.)</li> <li>• Wear a dust mask if necessary</li> </ul>
Looking into furnace or glory hole	<ul style="list-style-type: none"> <li>• Optical (infrared) radiation from the glowing fire can cause cataracts and other eye damage.</li> </ul>	<ul style="list-style-type: none"> <li>• Wear tinted eye protection (minimum rating of 99.9% UV and 92.5% IR).</li> <li>• NOTE: Sunglasses don't protect against infrared radiation.</li> </ul>
Glass handling, glass recycling, glass crushing	<ul style="list-style-type: none"> <li>• Cracked and flying glass can form as glass cools</li> <li>• Glass can cut or puncture or cut skin</li> </ul>	<ul style="list-style-type: none"> <li>• Wear safety glasses.</li> <li>• Wear cut resistant gloves.</li> </ul>
Operation of gas burning equipment	<ul style="list-style-type: none"> <li>• Carbon monoxide can be produced if flame in furnace or pipe warmer is not burning properly</li> <li>• Gas leaks</li> </ul>	<ul style="list-style-type: none"> <li>• Do not use equipment if not properly trained.</li> <li>• Make sure good ventilation is provided.</li> <li>• Periodically inspect all gas line connections with soapy water.</li> <li>• If gas odor is noted, turn off gas supply and check for leaks.</li> </ul>

**Other Important Notes:**

- Do not use furnaces or other pieces of equipment until you have been trained by a faculty member.\*
- Wear appropriate eye protection. If your eyes hurt, you should be wearing more eye protection.
- Wear natural fiber clothing and sturdy shoes or boots.
- Remove watches and jewelry. Tie back long hair.
- Remove butane lighters from pockets when working around furnace and other heat sources.
- Dispose of hot glass properly. Never dispose of hot glass with regular trash.

**\* Observe posted instructions and procedures for the following:**

- Hot shop rules
- Lighting a glory hole
- Lighting a pipe warmer
- Grinding wheel
- Belt sander
- Sand blaster (blasting cabinet)
- Annealers (take off and loading)

5.5. Photography

Taking photos is the safest part of photography but there are many chemical hazards in the developing process. Some of these chemicals may cause allergic reactions in certain individuals; some 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. Carefully review Safety Data Sheets (SDS) for the products you use and review specific hazard control measures.

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. Use tongs and wear appropriate clothing and PPE.</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, formaldehyde, hydrogen sulfide, sulfur dioxide).</li> <li>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 use in photo processing are highly toxic if ingested.</li> </ul>	<ul style="list-style-type: none"> <li>Wash hands before eating, drinking, smoking.</li> <li>Don't 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>Do not mix stock solutions with incompatible materials.</li> <li>Store incompatible materials separately.</li> <li>Label all containers</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.</li> <li>Install ground fault circuit interrupters on all electrical outlets within 5 ft. of water source.</li> </ul>

**Other Important Notes:**

- Don't use processing chemicals and equipment until you have been trained by a faculty member.\*
- Substitute less hazardous materials whenever possible. It's better for both you and the environment!
- Work in well ventilated areas. If local and dilution ventilation systems are not working properly, notify course instructor.
- Dispose of waste chemicals properly. Contact course instructor or EHS (806.651.2270) for assistance.
- Find out where the nearest emergency eyewash station is located.
- Wash your hands with soap and water after working with processing chemicals.

**\* Observe posted instructions and procedures for the following:**

- Standard B & W film developer
- Archive fixer remover
- Record speed fixer
- Block stop bath
- Quicksilver print developer

5.6. Print making/Lithography

Hazards associated with printmaking relate to chemicals found in inks, pigments, solvents, acids, adhesives and other materials that may be used. 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. Carefully review Safety Data Sheets (SDS) for the products you use and review specific hazard control measures.

ACTIVITY	HAZARDS	PRECAUTIONS
Use of inks, pigments, solvents (mineral spirits, alcohol, etc.)	<ul style="list-style-type: none"> <li>• Some solvents and vehicles used in paints can evaporate quickly and contaminate the air 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> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS</li> <li>• Mix dry pigments in a chemical fume hood. Avoid creating dust.</li> <li>• Wear a dust mask or N95 respirator when necessary.</li> <li>• Avoid skin contact with solvents. Wear chemical resistant clothing (apron, gloves)</li> <li>• Wash hands before eating, drinking, smoking</li> </ul>

Acid handling (typically small amounts of glacial acetic acid and nitric acid)	<ul style="list-style-type: none"> <li>• Contact with acids can irritate skin and mucous membranes and can cause chemical burns.</li> <li>• Inhalation may cause adverse effects on internal organs, not recommended for users that may be pregnant</li> <li>• Acid spills can damage clothing and equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Always wear chemical splash goggles and neoprene gloves when handling acids.</li> <li>• Only authorized persons are allowed to mix acids.</li> <li>• Mix acid solutions in the fume hood</li> </ul>
Moving lithography stones	<ul style="list-style-type: none"> <li>• Back injuries may occur from lifting heavy stones.</li> </ul>	<ul style="list-style-type: none"> <li>• Use mechanical lift or get help when moving stones larger than</li> <li>• 12 inches in diameter.</li> </ul>
Use of non-powered hand tools	<ul style="list-style-type: none"> <li>• Sharp or pointed tools can cause cuts or puncture wounds</li> <li>• Frequent and prolonged use of hand tools can cause carpal tunnel syndrome.</li> </ul>	<ul style="list-style-type: none"> <li>• Cut away from the body and keep hands clear of blade.</li> <li>• Store tools safely; protect sharp edges or blades when not in use.</li> <li>• Use ergonomically designed tools that fit the hand well.</li> </ul>

**Other Important Notes:**

- Don't use presses until you have been trained by a faculty member.\*
- Substitute less hazardous materials whenever possible. It's better for both you and the environment!
- Dispose of waste properly.
- Don't use put paints or solvents in food or drink containers.
- Remove paint from your skin with baby oil or soy-based cleansers then use soap and water. Don't use solvents to clean skin.
- Wash your hands with soap and water after working with painting and drawing materials.

**\* Observe posted instructions and procedures for the following:**

- Presses
- Lithography

5.7. Sculpture/Metal Working

The hazards associated with metalworking depend on the type of work performed and 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 (very small particles that can penetrate deep into the lungs). Carefully review Safety Data Sheets (SDS) for the products you use and identify the hazardous materials in them.

ACTIVITY	HAZARDS	PRECAUTIONS
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<p>Metal casting (mold making, removing molds)</p>	<ul style="list-style-type: none"> <li>• Sand has a high silica content which can become airborne during mold handling and create an inhalation hazard.</li> <li>• Some resins are moderately toxic by skin contact and inhalation.</li> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS. If possible, avoid using formaldehyde and polyurethane resins in molding sand.</li> <li>• Use silica-free sand.</li> <li>• Mix molding sand in well ventilated area (preferably with local exhaust ventilation)</li> </ul>
<p>Metal casting (melting and pouring metal)</p>	<ul style="list-style-type: none"> <li>• Toxic metal fumes can be produced.</li> <li>• Welding and furnaces can generate combustion gases (carbon monoxide)</li> <li>• Furnaces release a lot of heat and infrared radiation that can lead to heat stress, skin burns, and eye damage.</li> <li>• Molten metal can burn organic resins and binders in the sand mold and release toxic decomposition</li> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS</li> <li>• Work in a well ventilated area.</li> <li>• Be sure exhaust ventilation system on furnace is functioning properly.</li> <li>• Work in pairs when pouring molten metal into molds</li> <li>• Never pour directly over cement or water.</li> </ul>
<p>Metal forging</p>	<ul style="list-style-type: none"> <li>• Shaping hot or cold metal with hammers can general high noise levels and potential crushing injuries.</li> <li>• Molten metal can cause severe burns.</li> </ul>	<ul style="list-style-type: none"> <li>• Wear eye and hearing protection.</li> <li>• Wear heat resistant gloves and other protective clothing.</li> <li>• Be sure tools are in good condition.</li> </ul>
<p>Welding, brazing, soldering</p>	<ul style="list-style-type: none"> <li>• A number of air contaminants are produced including toxic metal fumes and gases (ozone, oxides of nitrogen, carbon monoxide).</li> <li>• Base metals that are coated with paint can release toxic materials when heated.</li> <li>• Base metals such as stainless steel or galvanized steel can release highly toxic fumes (zinc, chromium).</li> <li>• Welding can produce ultraviolet and infrared radiation.</li> <li>• Heat and slag can cause serious burns and fires.</li> </ul>	<ul style="list-style-type: none"> <li>• Review SDS for base metals, welding rods, flux, etc. If possible, avoid using metals that contain lead, zinc, nickel, chromium and other toxic metals.</li> <li>• Remove any preservative coatings from base metal before welding or cutting.</li> <li>• Work in a well ventilated area</li> <li>• Wear a respirator if working on stainless or galvanized.</li> <li>• Wear shaded eye protection</li> <li>• Wear natural fiber clothing, sturdy close-toed shoes, leather gloves and other protective clothing</li> </ul>

<p>Operating mechanical equipment</p>	<ul style="list-style-type: none"> <li>• Improper use of equipment can cause injuries.</li> <li>• Clothing, hair, fingers can get caught in moving equipment.</li> <li>• Damaged electrical cords, plugs and switches can cause fires or electrical shock.</li> <li>• Prolonged exposure to high noise levels can cause hearing loss.</li> <li>• Extended use of vibrating hand tools can cause damage to the muscles and tendons in the hand.</li> </ul>	<ul style="list-style-type: none"> <li>• Don't use equipment without prior training.</li> <li>• Keep guards in place.</li> <li>• Use push sticks.</li> <li>• Always turn equipment OFF when making adjustments.</li> <li>• Remove watch, jewelry, tie back long hair.</li> <li>• Wear appropriate PPE (eye protection, hearing protection, etc.)</li> </ul>
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**Important Notes:**

- Don't use equipment until you have been trained by a faculty member.\*
- Substitute less hazardous materials whenever possible.
- Never store or use chlorinated hydrocarbons or flammable materials in the welding area.
- Use a welding curtain to shield your work from others.
- Don't let molten metal come in contact with water, grease, oil or other organic materials.
- When finishing working or leaving the studio, wash hands thoroughly.

**\* Observe posted instructions and procedures for the following:**

- Metal Shop Rules
- Abrasive cut-off machine (chop saw)
- Electric welders (Arc/TIG/MIG/plasma cutter)
- Oxy-acetylene (gas) welding/cutting
- Angle grinder
- Band saw
- Bench grinder
- Drill press
- Forge
- Natural gas furnace
- Sand mixer
- Trip hammer

**5.8. Sculpture/Woodworking**

Woodworking hazards include the wood itself, preservatives that may be present within the wood, hand and machine tools used to shape it, glues, and finishing compounds. Wood sculpture can use many different types of hard and soft woods including many exotic tropical woods. Carefully review Safety Data Sheets (SDS) for the wood and other products you use.

ACTIVITY	HAZARDS	PRECAUTIONS
Working with wood	<ul style="list-style-type: none"> <li>• Dusts from many hardwoods are sensitizers and both hard and softwoods can cause allergic reactions of the eyes, skin, and respiratory system.</li> <li>• Some woods may be toxic (particularly hardwoods) or treated with chemical preservatives.</li> <li>• Dust produced during cutting/sanding operations can present inhalation hazards</li> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS.</li> <li>• Use tools and equipment that is equipped w/ a dust collection system.</li> <li>• Wear gloves and a dust mask when working with treated or toxic wood.</li> <li>• Clean up wood dust and debris frequently.</li> </ul>
Operating mechanical equipment	<ul style="list-style-type: none"> <li>• Improper use of equipment can cause serious injuries.</li> <li>• Clothing, hair, fingers can get caught in moving equipment.</li> <li>• Damaged electrical cords, plugs and switches can cause fires or electrical shock.</li> <li>• Prolonged exposure to high noise levels can cause hearing loss.</li> <li>• Extended use of vibrating hand tools can cause damage to the muscles and tendons in the hand.</li> </ul>	<ul style="list-style-type: none"> <li>• Do not use equipment without prior training.</li> <li>• Keep guards in place.</li> <li>• Use push sticks.</li> <li>• Remove jewelry (watch, rings, etc.) back long hair, roll up sleeves.</li> <li>• Always unplug equipment and turn it OFF to clean or adjust it.</li> <li>• Wear appropriate PPE (eye protection, hearing protection, etc.)</li> </ul>
Using non-powered hand tools	<ul style="list-style-type: none"> <li>• Damaged or defective tools can cause injuries.</li> <li>• Improper storage can damage the tool and/or cause injury.</li> </ul>	<ul style="list-style-type: none"> <li>• Report damaged equipment to instructor.</li> <li>• Store tools neatly. Protect sharp edges.</li> </ul>
Working with hazardous materials (coatings, adhesives, solvents)	<ul style="list-style-type: none"> <li>• Some materials contain toxic chemicals that can be hazardous by inhalation or skin contact.</li> <li>• Some materials are flammable.</li> </ul>	<ul style="list-style-type: none"> <li>• Review the SDS.</li> <li>• Apply hazardous materials in a well-ventilated area (spray booth).</li> <li>• Wear gloves to prevent skin contact with hazardous materials.</li> <li>• Keep containers closed when not in use.</li> <li>• Dispose of solvent soaked rags properly.</li> </ul>

**Other Important Notes:**

- Do not use mechanical equipment until you have been trained by a faculty member.\*
- Substitute less hazardous materials whenever possible.
- Use proper lifting techniques (and get help) when handling awkward or heavy materials.

- Clean floors and work surfaces after use.
- **\* Observe posted instructions and procedures for the following:**
  - Abrasive finishing machines (belt sander, disc sander)
  - Angle grinder
  - Band saw
  - Drill press
  - Jointer
  - Lathe
  - Miter saw
  - Planer
  - Radial saw
  - Scroll saw
  - Table saw

## 6. Training

West Texas A&M University Environmental Health and Safety will follow the Texas A&M University System Policy [33.05.02 Required Employee Training](#). Staff and faculty whose required training is delinquent more than 90 days will have their access to the Internet terminated until all trainings are completed. Only Blackboard and Single Sign-on will be accessible. Internet access will be restored once training has been completed. Student workers whose required training is delinquent more than 90 days will need to be terminated by their manager through Student Employment.

## 7. Record Retention

No official state records may be destroyed without permission from the Texas State Library as outlined in [Texas Government Code, Section 441.187](#) and [13 Texas Administrative Code, Title 13, Part 1, Chapter 6, Subchapter A, Rule 6.7](#). The Texas State Library certifies Agency retention schedules as a means of granting permission to destroy official state records.

West Texas A&M University Records Retention Schedule is certified by the Texas State Library and Archives Commission. West Texas A&M University Environmental Health and Safety will follow [Texas A&M University Records Retention Schedule](#) as stated in the Standard Operating Procedure [61.99.01.W0.01 Records Management](#). All official state records (paper, microform, electronic, or any other media) must be retained for the minimum period designated.

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## Related Statutes, Policies, or Requirements

24.01.01.W1.02AR WTAMU Hazard Communication Program  
24.01.01.W1.24AR WTAMU Lockout/Tagout Hazardous Energy Procedure  
24.01.01.W1.33AR WTAMU Chemical Hygiene Plan

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## Contact Office

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