

# Art Safety Guide

*Important information for Students, Faculty, and Staff  
in the Newcomb Art Department*



**Tulane University**  
Office of Environmental Health and Safety

November 2015

## PREFACE

This Art Safety Guide is provided by the Tulane University Office of Environmental Health and Safety (OEHS) and the Newcomb Art Department to familiarize faculty, staff and students with important environmental health and safety information as it relates to the visual arts. The contents of this guide have been kept as concise and as specific to the Newcomb Art Department as possible.

Many health and safety program areas (e.g., Hazard Communication, Personal Protective Equipment, Injury/Illness Reporting, Fire Safety, etc.) have been touched upon only briefly since more detailed information on Tulane's environmental health and safety program is provided in the "Environmental Health and Safety Policies and Procedures Manual." References to specific sections of the EHS Policies and Procedures Manual are provided throughout this Art Safety Guide. (Example: P & P Section xx)

Art Department employees in particular, are advised to review Section 25 (Fine Arts Safety) of the EHS Policies and Procedures Manual as well as other applicable portions of the Manual.

**The Manual and other safety information is available on-line at the OEHS home page at: <http://tulane.edu/oehs>**

Questions, comments, or requests for additional information should be directed to the OEHS:

- **OEHS locations:**

<b>Main Office</b> Tidewater Building 1440 Canal Street, Suite 1156	<b>Uptown Campus</b> Bruff Commons (Bldg 48) Room 107
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- **Mailing address:** Tulane University  
Office of Environmental Health & Safety, # 8480  
1430 Tulane Avenue  
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- **Telephone:**

Main Office:	(504) 988-5486
Uptown Campus:	(504) 865-5307
  
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Main Office:	(504) 988-1693
Uptown Campus:	(504) 862-8981
  
- **Web Site:** <http://tulane.edu/oehs>

**THIS PUBLICATION SUPERSEDES ALL PREVIOUS PUBLICATIONS**  
**Office of Environmental Health & Safety**  
November 2015

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# Tulane University Art Safety Guide

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# INTRODUCTION

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 and can also lead to regulatory fines.

*Remember: If you have any questions or concerns about safety, talk to your professor or graduate assistant---they are there to help you.*

# RESPONSIBILITIES

The Tulane University Office of Environmental Health and Safety (OEHS) serves the University community by providing technical support, information and training, consultation and periodic audits of environmental health and safety practices and regulatory compliance.

The Departmental Safety Representative (DSR) for the Newcomb Art Department serves as a liaison between the OEHS and the Art Department. The DSR is a point of contact for Art Department faculty, staff, and students for environmental health and safety issues.

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 DSR 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.

## **EMERGENCY RESPONSE PROCEDURES (P & P Section 1)**

For any emergency, including fire, explosions, accidents and medical emergencies, contact Tulane Police at 865-5911 or pick up an emergency phone located on each floor of the Art Building. The emergency phones on the second and third floors of the Newcomb Art building connect automatically to Tulane Police. Tulane 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 E.S.C.A.P.E.:**

<b>E</b> valuate	the situation
<b>S</b> ecure	the area by notifying and removing all occupants from the immediate danger area
<b>C</b> lose	door(s) to the room or area where the fire is located, after all occupants are out of the room
<b>A</b> ctivate	the building fire alarm system
<b>P</b> hone	Tulane Police (865-5911) and state the exact location of the fire
<b>E</b> xtinguish	the fire with a portable fire extinguisher, if possible and you are trained in how to do so

A fire contained in a small vessel (like a waste basket) 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.

**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. Go to the designated assembly area (Newcomb Quad) and stay with other building occupants. When Tulane Police representatives 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 Tulane Police or local fire department officials.

## **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.
- Review the Safety Data Sheet (SDS) or the container label for information on protective equipment and handling procedures.
- If the spill cannot be handled safely by Art Department personnel, notify Tulane Police. Tulane Police will then contact OEHS staff for assistance with spill cleanup.
  
- Report the following details if known:
  - location of the spill,
  - chemical or product name,
  - approximate quantity spilled, and
  - other pertinent information

## **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.

### Chemicals on Skin

1. 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.
2. If medical attention is needed, call 865-5911 and explain what chemicals were involved.
3. Review the Safety Data Sheet (SDS) for any delayed effects.

### Chemicals in Eyes

1. 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.
2. If applicable, remove contact lenses while rinsing. Do not attempt to reinsert them after rinsing.
3. Seek medical attention regardless of severity. Call Tulane Police and explain what chemicals were involved.
4. Review SDS for any delayed effects.

### Chemical Inhalation

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

## **INJURY/ILLNESS (P & P Section 4)**

If someone is injured while visiting, working or attending classes at the Newcomb Art Department, it is important that the incident be reported as described below.

***In all cases, if the injury is serious, call Tulane Police (865-5911) immediately!***

### **Employees**

Employees who suffer any work-related injury/illness (even if it is minor and medical care/treatment is not provided) must report the incident to their supervisor immediately and complete a [First Report of Occupational Injury/Illness](#) form. Supervisors are responsible for completing and signing the form and assisting with the incident investigation. If the injury is serious, call Tulane Police immediately. Tulane Police will call 911 if deemed necessary.

☞ Phone numbers for Tulane Police or other emergency responders vary depending on the facility. Check your facility's emergency plan for important details.

If the injury is not serious or life-threatening but still requires medical attention, please notify Workers' Compensation at 504-247-1716 to request authorization for the doctor's visit. After authorization has been provided, the employee may proceed to the nearest clinic/hospital or to their personal physician for evaluation and treatment. **Personal health insurance should NOT be used for treatment of work-related injuries.**

**NOTE: A copy of the completed *First Report of Occupational Injury/Illness* must be submitted to Workers' Compensation (phone 504-247-1716; fax 504-865-6796) within 24 hours of the incident.** The claim cannot be processed unless the form is filled out completely (both pages) and is on file with Workers' Compensation. Delays in reporting could jeopardize Workers' Compensation benefits.

### **Visitors**

Immediately notify Tulane Police of any injury or illness involving visitors.

### **Students**

In case of medical emergency, on-campus students should call Tulane Police; off-campus students should call 911. Students who suffer an injury or become ill should report to the Student Health Center (SHC) for evaluation and treatment. If the injury or illness is related to on-campus activities or an unsafe condition in a University building or on Tulane property that may require follow-up by OEHS, the student should complete a [Student Report of On-Campus Environmental Injury or Disease](#) form which can be found on the OEHS website.

If the injury occurs during classroom activities, the course instructor should be notified immediately and a *Student Report of On-Campus Environmental Injury or Disease* form should be completed by the course instructor. A copy of the report should be forwarded to the OEHS immediately regardless of whether or not the student reports to the SHC.

# 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 (P & P Sections 12 & 29)

*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'll be using?*

The two best sources of information on chemical hazards are the product's label and its Safety Data Sheet or 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 or to present an inhalation hazard 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.

OSHA regulations require Tulane to maintain an inventory of hazardous materials and SDSs on each product. SDSs on materials used at Newcomb Art are maintained in each studio area and in the Art Department office. If you can't locate an SDS, contact your instructor or OEHS for assistance.

### **Physical Hazards**

Exposure to physical hazards of acoustic, electromagnetic, and thermal nature can cause adverse health affects. Physical hazards in the Art Department may include high noise (woodworking and metal working operations), optical radiation (infrared/ultraviolet light in welding and glass-making), 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, belts), high noise. Do not use equipment if you are not authorized to do so, haven't 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 (P & P Section 31)**

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. The OEHS can provide assistance with selection of ergonomic hand tools.

### **Ergonomic Hazards (P & P Section 11)**

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 or use mechanical aids. Always 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. 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 the OEHS and other online sources.

### **Compressed Gas Cylinders (P & P Section 30)**

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.

## **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. Typically, more than one control method is used.

**Engineering controls** include: changes in the process, substitution, isolation, ventilation. 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.) 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 Newcomb 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 (photography and printmaking darkrooms, clay mixing room).

**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 respirators, hearing protection, eye protection (glasses or goggles), hand protection (gloves), face protection (face shield), 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).*

## **FIRE SAFETY (P & P Section 26)**

See [Emergency Response Procedures](#) section of this Art Safety Guide for additional information.

Preplan your response to a fire emergency. Review the Emergency Action Plan (EAP) for the Newcomb Art building. (The EAP should be reviewed by Art Department personnel and students at the start of each semester.) Know where the nearest fire alarm pull station, fire extinguisher, exit stairwells, and outside assembly area (Newcomb Quad) are located. Remember, elevators can not 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 Police or local 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.

## **PERSONAL PROTECTIVE EQUIPMENT (PPE) & CLOTHING** **(P & P Section 14)**

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. 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 can not 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

More details on PPE and the hazard assessment process are provided in the EHS Policies & Procedures Manual.

### **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. The OEHS can provide information or assistance with the selection of appropriate gloves.

### **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 (P & P Section 15)**

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 strongly urged to shave their beards before wearing a respirator.

Respirators can be reused as long as they perform adequately and do not become damaged or 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 OEHS for more specific information.

## **Eye and Face Protection**

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; eye protection 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:

<b>ACTIVITY</b>	<b>POTENTIAL HAZARD</b>	<b>MINIMUM EYE PROTECTION</b>
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 faceshield</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</li> <li>• If desired, also wear faceshield 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>

### <sup>1</sup>***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.*

### <sup>2</sup>***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.

### <sup>3</sup>***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. However, because of heat exposure, contact lens use is prohibited in the Newcomb Art glass studio.

### ***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.

## **WORKING ALONE/UNSUPERVISED**

Students are reminded that they should not work in shop areas (i.e., wood shop, metal shop, glass area, foundry, and kiln room) without supervision 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 Newcomb Art building is locked after normal work hours. ***Don't jeopardize the building security or your personal safety by propping windows and doors open.*** Tulane 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.

## **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 the OEHS.

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 OEHS):**
  - 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 (oily rags)
  - Waste glazes from ceramics

Note: *Contact the OEHS for specific information on collection and disposal of wastes.*

## GENERAL SAFETY SUMMARY

1. **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.
  
2. **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)
  
3. **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.
  
4. **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.

5. **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, 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.
  
6. **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.
  
7. **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, glass making). 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.

8. **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 (anonymously if desired) Tulane's Office of Environmental Health and Safety (OEHS) for assistance.*

## **ART SAFETY REFERENCES**

A lot of art safety information has been published or is available on the Internet. Check out other art schools or do a key word search on “art safety.” Here are a couple of excellent art safety publications and web sites:

*Health Hazards Manual for Artists*, Michael McCann, 6<sup>th</sup> ed., 2008, Rowman & Littlefield Publishers

*Artist Beware-The Hazards in Working with All Art and Craft Materials and the Precautions Every Artist and Craftsperson Should Take*, Michael McCann, 2<sup>nd</sup> ed., 2005, Rowman & Littlefield Publishers

*The Artist’s Complete Health and Safety Guide*, Monona Rossol, 3<sup>rd</sup> ed., 2001, Allworth Press

[www.artscraftstheatersafety.org](http://www.artscraftstheatersafety.org) Arts, Crafts and Theater Safety: a non-profit corporation providing safety and hazard information for the arts

[www.uic.edu/sph/glakes/harts/index.htm](http://www.uic.edu/sph/glakes/harts/index.htm) Great Lakes Centers for Occupational and Environmental Safety and Health, Occupational Health Service Institute, “Health and the Arts Program”

<http://sis.nlm.nih.gov/enviro/arthazards.html> *Keeping the Artist Safe: Hazards of Arts and Crafts Materials*, Enviro-Health Links, U.S. Department of Health & Human Services

## Suggested Art Safety Training Outline

- I. University EHS Resources**
  - A. Office of Environmental Health & Safety (OEHS)
  - B. EHS Policies and Procedures Manual
  - C. Art Safety Guide
  
- II. Responsibilities**
  - A. OEHS
  - B. Departmental Safety Representative (DSR) program and designee for Newcomb Art
  - C. Art faculty/instructors
  - D. Artists
  
- III. Emergency Response Procedures**
  - A. Fire emergency (E.S.C.A.P.E)
  - B. Hazardous material spill
  - C. Chemical exposure (eyewash locations)
  - D. Injury/Illness
  - E. Emergency phones
  
- IV. Potential Hazards (Review each topic on pages 6-9)**
  
- V. Hazard Control Measures**
  - A. Engineering controls (local exhaust ventilation, process changes)
  - B. Work practice controls (training, housekeeping, good work practices)
  - C. Personal Protective Equipment (PPE)
  
- VI. Fire Safety**
  - A. Emergency Action Plan for Newcomb, designated assembly area (Newcomb Quad)
  - B. Fire safety precautions
  - C. Flammable/combustible liquids
  
- VII. Personal Protective Equipment (PPE) and Clothing**
  - A. Hazard assessment/hazards that may warrant PPE
  - B. Hand protection
  - C. Hearing protection
  - D. Eye and face protection
  - E. Respiratory protection
  
- VIII. Working Alone/Unsupervised**
  - A. Security
  - B. Supervision
  
- IX. Waste Management and Disposal**
  - A. Types of waste
  - B. Hazardous waste (handling, labeling, disposal)
  
- X. General Safety Summary (Review each item on pages 17-19)**

## STUDIO SAFETY HAZARDS AND PRECAUTIONS

- [Ceramics](#)
- [Digital Lab](#)
- [Drawing/Painting](#)
- [Glassmaking](#)
- [Photography](#)
- [Printmaking/Lithography](#)
- [Sculpture – Metalworking](#)
- [Sculpture – Woodworking](#)

## **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.

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
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>

### **Other Important Notes:**

1. Don't use kilns, mixers, or other pieces of equipment until you have been trained by a ceramics faculty member.\*
2. 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!
3. Wear non-slip shoes in the mixer area or other areas where wet floors may be present.
4. Use proper lifting techniques when handling large bags of clay or other heavy materials.
5. Wet mop floors and work surfaces daily to minimize dust levels and prevent dry scraps from becoming pulverized.
6. 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

## 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
Computer use	<ul style="list-style-type: none"> <li>Musculoskeletal disorders such as carpal tunnel syndrome, neck strain, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain a <u>neutral body posture</u>:               <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 hang 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 (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. 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 see: <http://www.osha.gov/SLTC/etools/computerworkstations/index.html>

## **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.

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
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 N-95 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 N-95 respirator if necessary</li> <li>Never spray fixative in or near the building except in designated spray booths.</li> </ul>

### **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

## **GLASSMAKING**

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.

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
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 (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 powders, 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 #3 welders shade).</li> <li>• NOTE: Sunglasses <u>don't</u> 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> <li>• Use of lighter fluid on torches</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> <li>• Never pour lighter fluid directly on a hot or burning object</li> <li>• Store containers of lighter fluid away from sources of ignition</li> </ul>

### **Other Important Notes:**

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

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

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

## **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.

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
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). 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:**

1. Don't use processing chemicals and equipment until you have been trained by a faculty member.\*
2. Substitute less hazardous materials whenever possible. It's better for both you and the environment!
3. Work in well ventilated areas. If local and dilution ventilation systems are not working properly, notify course instructor.
4. Dispose of waste chemicals properly. Contact course instructor or OEHS for assistance.
5. Find out where the nearest emergency eyewash station is located.
6. 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

## **PRINTMAKING/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.

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
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>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 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:**

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

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

- Presses
- Lithography

## **SCULPTURE – METALWORKING**

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.

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
Metal casting (mold making, removing molds)	<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>
Metal casting (melting and pouring metal)	<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 products.</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>
Metal forging	<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>
Welding, brazing, soldering	<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>

## **SCULPTURE – METALWORKING (continued)**

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
Operating mechanical equipment	<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>

### **Other Important Notes:**

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

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

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

# **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.

<b>ACTIVITY</b>	<b>HAZARDS</b>	<b>PRECAUTIONS</b>
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:**

- |  |              |
|--|--------------|
| • Wood Shop Rules  | • Jointer    |
| • Abrasive finishing machines (belt sander, disc sander) | • Lathe      |
| • Angle grinder  | • Miter saw  |
| • Band saw   | • Planer     |
| • Drill press  | • Radial saw |
|  | • Scroll saw |
|  | • Table saw  |