



TEXAS TECH UNIVERSITY  
J.T. & Margaret Talkington College of Visual & Performing Arts  
School of Art

# JEWELRY STUDIO GUIDE & SAFETY PLAN

**Rooms Covered – Art 3D Annex 100, 100A, 100B, 102, 103, 103A and the outdoor patio area of the Art 3D Annex**

**Responsible Individual – Robly A. Glover 742-3825, office Art 3D Annex 103B**

**Department Safety Officer – Mark Bond 834-1559, office Art 101**

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## **Emergencies**

**In case of fire** exit the building through the front doors. If that direction is blocked exit through the woodshop or the back door near the vending machines. DO NOT exit into the patio area because you might get stuck. You can exit out the door to the kiln yard if you know that the gate in the parking lot is open. Meet out in front of the Physical Plant, next door towards the Rec Center. There are fire alarm pull stations near the exit doors, if you pull it also call 911 to inform them of the situation.

The **Emergency Gas shutoff switch** is located on the east wall of Room 100B. Shut off the gas in case of fire – if you can get to it safely!

**In case of an Active Shooter** lock the hallway door, turn off the lights, hide out of sight and remain quiet. If you know the shooter is in your immediate area barricade the door with anything you can to prevent or slow entry and call 911. Silence your phone but check it or your email for instructions from TechAlert! Wait until there is an “all clear” announcement from TechAlert! before leaving, do not rely on social media for information.

**In case of a medical** or security emergency call 911 or use the blue emergency call box located near room 105.

**In case of a tornado** or severe weather, go to the center hallway or the restrooms.

## **Chemical Spills**

Small chemical spills can generally be handled in the studio with the spill containment kit. Spill containment kits are clearly marked and are in rooms 100, 100A, 100B, 102 and 103. Spills should be handled in the following manner:

1. Assess the need to evacuate the lab /studio.
2. If you don't know what the chemical is, call Environmental Health and Safety (EH&S) **(806) 742-3876** (during regular business hours) or **(806) 742-3328** (after hours).
3. Look up the chemical in Safety Data Sheet (SDS)
4. If you feel confident following the cleanup instructions on the SDS proceed with cleanup.
5. If you don't feel confident or don't have the materials on hand for cleanup, because the spill is too large, call EH&S.
6. Report all spills that need more than paper towels cleanup to the SOA DCHO [mark.bond@ttu.edu](mailto:mark.bond@ttu.edu). He will arrange for waste pickup.

### **First Aid**

1. There are eyewash stations in rooms 100, 100A and 103. If you get irritating chemicals in your eye immediately splash water in your affected eye(s) for fifteen (15) minutes unless otherwise instructed. If you get foreign matter lodged in your eye (metal, wood, etc.) do NOT rub your eye! The eyewash station may not dislodge something stuck in your eye; you will need to go to the emergency room in that case.
2. The First Aid kits are located throughout the studios and are clearly marked.
3. There are two kinds of burns that need attention:
  - a. **Minor cuts / burns** – can be attended to in the lab/studio. (examples – cuts that are not deep and stop bleeding and burns without large blisters) Minor cuts should be cleaned with antiseptic spray, alcohol wipes, or triple ointment. Cover them with a sterile Band-aid. Minor burns should be immersed in cool (not cold) running water for 15 minutes. Then apply a sterile bandage. Do not apply ice or ointments. If the wound does not heal properly seek medical attention.
  - b. **Major cuts / burns** - these are deep cuts or burns that will need IMMEDIATE medical attention. (examples – cuts pulsing blood or will not stop bleeding, or more than ¼” deep or with jagged edges. Major burns develop large blisters or char the skin. Major cuts should have pressure applied with a clean compress. Major burns should NOT be immersed in cool water, but covered with a clean compress and held above heart level if possible. In both cases, seek immediate medical attention.

**When in doubt, always seek professional medical attention – use the blue emergency box or dial 911.**

The complete Texas Tech University Chemical Hygiene Plan and other helpful documents can be found online at <http://www.depts.ttu.edu/ehs/Web/Default.aspx>

Records of Employee / Student training are located in the School of Art main office.

## Introduction

We at the School of Art endeavor to create a safe, healthy environment for all to work in so they can have a long and productive creative life. The following information will help you achieve these goals. Failure to follow the safety policies and procedures may lead to disciplinary action.

Be aware that words such as “water based,” “all natural,” and “organic” or “green” do not indicate the safety of a material. There are many items in nature that are hazardous to humans. Art supplies and materials may be “non-toxic” when “used as directed” but can become hazardous when not used as directed, such as heating, sanding or spraying the material.

Personal safety is usually more of an issue when fewer people are around in the evenings and weekends. Always be aware of your surroundings, know who is around you or not, keep your ears open by keeping music low and not using headphones. When working with machinery or hazardous processes always have more than one person present. Do not work when impaired by lack of sleep, illness, drugs or alcohol. All the buildings have combination locks on at least one door, so never prop open exterior doors to help keep unauthorized people out. Classroom doors can remain open during class time and when the room is occupied by an authorized person. Doors must be kept locked when the room is not occupied.

## General rules

All students must have signed the Student Safety Training Form BEFORE they can participate in any hands on studio / lab activities.

The Safety Data Sheets for Jewelry Metals are located in the soldering lab (Room 100B) next to the teaching table in the yellow binder.

Chemicals and materials not listed in the Safety Data Sheet yellow binder cannot be stored or used in this lab without the consent of the Responsible Individual and the Safety Data Sheets being added to the SDS binder.

Any container other than the original container a chemical comes in is considered a “secondary container.” This includes open containers such as trays. Food or drink containers cannot be reused as secondary containers. All secondary containers (including water) **must be** labeled according to the OSHA GHS standard. The safety coordinator can answer GHS labeling questions. The RI will provide appropriate secondary containers.

No spraying may be done in these rooms. For approved locations contact your instructor.

All flammable and combustible liquids and gasses must be stored in the yellow flammable cabinet when not in use. After class, or any work sessions all flammables and combustibles **must be** returned to flammable cabinets. Lockers or open shelves are not acceptable storage for flammable or combustible liquids or gasses. NO EXCEPTIONS!

All solvents and corrosives must be barcoded into the inventory system by Environmental Health and Safety, including any student purchased. For details contact the SOA Safety Coordinator.

Procedures that are not listed in the Standard Operating Procedures section cannot be used without consent of the Responsible Individual and until the new procedures **have been added** to this Safety Plan.

Food and drink are not allowed to be stored or consumed in these rooms.

No tobacco use is allowed in the studio, including smoking, vaping and smokeless tobacco.

Long pants and closed toe shoes are required in all Jewelry Metals labs.

Housekeeping is to be kept up with to provide a safe work space. Aisles and exits are to be kept free of slip, trip and fall hazards. Bench tops are to be free of excess storage and clutter.

Extension cords can only be used temporarily and must be picked up at the end of class or work periods.

Sharp objects, such as xacto knife blades, utility knife blades and saw blades must be disposed of in an approved “Sharps” container, never the regular trash.

Art Installations must be pre-approved by the Safety Coordinator if they involve public spaces. If in doubt, ask first.

Never stand on anything other than a ladder or stepstool to increase your reach. Climbing on chairs, stools and tables frequently leads to falls and injuries.

Nothing can be hung or stacked closer than 18” (in the vertical dimension) to a fire sprinkler.

Do not hang anything from any pipes, sprinkler heads or conduit. You may hang objects of less than one pound from suspended ceilings. If you need to hang multiple objects get approval from the Building Manager first.

No bicycles, skates, roller blades, skateboards, scooters, etc., are allowed in buildings.

Pets and animals are not allowed in buildings. Service animals for persons with disabilities are permitted as long as they are in compliance with section 7 of TTU OP 34.22.

Children are not allowed in Studios / Labs without Minors in Laboratory forms filled out and approved in advance.

No smoking inside the building, including e-cigarettes or vaping, or within 20 feet of any doorway. No alcohol or illegal drugs in any Studios / Labs.

Wash hands upon leaving the studio.

## **Standard Operating Procedures**

## A. STUDIO LAB VISITOR POLICY

Children, pets, or non-enrolled persons are NOT to be allowed in the studio lab for their own safety.

## B. DOORS AND LOCK BOXES

1. Hallway doors to all rooms (100, 102, 103) may remain open during class hours but **must be locked** after class hours.
2. There is to be no tampering with the designated codes in the lock boxes.
3. The key should remain attached to the punch card at all times.
4. The hallway doors should never be left unlocked after class hours. These doors are to remain locked for the students' safety.
5. Even if a student goes to the bathroom, make sure the door is locked behind.

## C. POLICY ON CONTAINERS

1. No containers may be brought into the studio unmarked. All containers must be clearly and permanently labeled with the following information: ALL chemicals must be clearly labeled with:
  - a. Student name
  - b. **Name of the substance**
  - c. Date
  - d. Semester, Course number and section
  - e. **GHS Hazard Communication Pictogram**
  - f. **Signal word – one of two words (either Danger or Warning)**
  - g. **Precautionary statement – GHS standard phrases (see SDS sheet or contact Safety Coordinator)**
2. There are ink pads, stamps, and self-adhesive labels will be provided for labeling for containers including boric acid, denatured alcohol, distilled water, and flux. These supplies are located on the top shelf of the blonde tool cabinet in the southwest corner of room 100. These materials are to be used by ALL students, undergraduate and graduate. We cannot have any unmarked containers in the jewelry metals lab. Sometimes these materials are located next to the flammable cabinet for convenience at the beginning of the semester.

## D. ETCHING Health and Safety Protocols for the Spray Etching Machine and Acid Room.

1. **Intro to Jewelry metals students (3333) may NOT use etching room or etching materials.**
2. Protection: Always wear mandatory health and safety equipment, including: goggles/safety glasses, gloves, face shields, and apron.
3. When in doubt concerning proper usage of the spray etching liquid, ferric chloride, consult the Safety Data Sheets (SDS) located in the soldering room 100B next to the ventilation switch.
4. Etching must ONLY be done during class under the supervision of a RI (instructor/graduate student). Students must be checked into and out of room by RI on duty.
5. Always make sure that the machine is unplugged while you are setting up the machine or moving the storyboard in and out of the machine. Never leave the storyboard stored in the machine - it must be totally rinsed with clean water, dried thoroughly and stored outside of the machine.
6. The machine should never be operated when the lid is not properly sealed. Failure to secure the lid will result in etching solution being sprayed all over the room, causing severe injury to anyone in the room.

7. The tank must be carefully wheeled to the sink so the storyboard can be removed and rinsed- as demonstrated in class. If you are not familiar with this procedure do not proceed without proper instruction!
8. Always maintain one clean hand and one dirty hand that can work with the etching solution. Failure to do this will result in etching solution being spread all over the etching room and beyond. Always rinse your hands before removing your etching gloves. Never proceed to the next step wearing gloves that are contaminated with etching solution. This is imperative for health and safety reasons.
9. When small spills occur, the etching solution (ferric chloride) can be neutralized with baking soda and cleaned up with paper towels and cold water. After putting on clean gloves, make sure that you wipe the soiled area multiple times in order to assure that the etching solution has been thoroughly removed. Be courteous to your fellow students by leaving a clean working area.
10. Failure to comply with any of these safety protocols will result in the immediate suspension of access for all students to the etching room and any processes that happen there.
11. When in doubt always consult with an Instructor on the proper use of the equipment. Failure to comply with these procedures could result in grievous injury and destruction of University property, which will not be tolerated!
12. The etching room contains materials and equipment for electroforming and various types of anodizing. There are many hazardous chemicals stored in this room as well as equipment that can cause harm when improperly used. Do NOT use any equipment that you are not familiar with.
13. Chemical storage: There are numerous types of mild acids and chemicals that are not compatible. All containers and funnels must be thoroughly rinsed and dried prior before and after use. It is your responsibility that the chemicals that you use are returned to the original container, re-sealed, and that the container label identifying contents is readable and up-to date.
14. Ventilation: During ANY type of chemical process work, the ventilation system in the Acid Room 100A must be turned on using the red switches to the immediate left on the inside of the Acid Room wall and the doors must be kept closed.
15. Horseplay: Due to the confined nature of the Acid Room and the potentially dangerous effects of improperly used chemicals, horseplay of any type is FORBIDDEN. Horseplay in this area (or any area of metals) could cause harm to yourself, your fellow students, and could also result in damage to University property.
16. Skin and eye irritation can occur when using mild acids located in this room. If acids come in contact with skin wash the area with soap and water. If acids come in contact with eyes rinse eyes in the eyewash station for 15 minutes. If irritation persists, seek medical attention.

## **E. ANODIZING**

1. Anodizing is a potentially dangerous activity.
2. When anodizing, goggles, rubber gloves and a rubber apron must be worn.
3. Individuals with pacemakers or other electrical implants should not enter the room while this process is being conducted and a notifying sign must be posted on the door.
4. Anodizing can only be done in class under the supervision of an RI (instructor/graduate student).
5. Lead is a hazardous material and you must not let lead come in contact skin or transfer to the mouth.
6. The lead sheet is cleaned under running water and should never be rubbed when dry.
7. The caustic soda (lye), nitric acid, sulfuric acid, dyes, and sealing salts should not come into contact with skin or eyes.
8. There is the potential for electrical shocks when anodizing.

9. The fumes should not be inhaled and anodizing should always be carried out under a ventilation hood.
10. When anodizing processes are underway, ventilation must be turned on and door to room 100A must be kept closed until process is complete.

#### **F. STEAM CLEANER**

1. Only advanced level students are permitted to use this equipment.
2. The steam cleaner is a potentially dangerous piece of equipment because of the potential to cause severe burns.
3. Eye protection when using this piece of equipment is mandatory.
4. Always hold the work to be cleaned with rubber coated tongs.
5. Never open shuttlecock valves on the top or bottom of the machine. Opening these valves when under pressure will cause an extreme stream of steam and boiling liquid to flood the area around the machine potentially resulting in mild to serious burns.
6. Use only distilled water and de-scaling solution in machine.
7. The foot pedal should be held down when filling the machine with fluid. The machine cannot be filled when under pressure.

#### **G. FLAMMABLES**

1. The following chemicals and gasses are used in the studio lab on a routine basis. These materials when exposed to flame can catch fire. Extreme care should be exercised at all times when dealing with these gasses/chemicals.
2. Denatured alcohol and turpentine may only be used in or in the vicinity of the sinks in rooms 100, 100A, 100B, 102, and 103. Never pour alcohol or turpentine at the work or soldering stations. Never store alcohol lamps with alcohol in them, instead place the denatured alcohol container in the sink and using a funnel pour alcohol from the lamps back into the original container and place in flammables cabinet.
3. Flammable gasses (natural gas, acetylene) are located at the soldering stations. Never trap or contain gases in a hollow container or form. This could result in an explosion. Always utilize these gases through the control of torch handles, etc.
4. These gasses can be turned off using the red Emergency Off Switch, located on the east wall of 100B, soldering hall.
5. Storage locations of chemicals/gasses is as follows:
  - Denatured alcohol – must be stored in yellow flammables cabinet at all times.
  - Turpentine (paint thinner) – must be stored in yellow flammables cabinet at all times.
  - Natural gas – can only be used in conjunction with torch handles and tips during soldering procedures. Acetylene – can only be used in conjunction with torch handles and tips during soldering procedures.
6. In the event of a fire mishap, use the fire extinguisher on object or people to put out flames. The emergency showers in rooms 100, 100A and 103 may also be used to extinguish flames on clothing, hair, etc.
7. The fire alarm pull boxes are located in Rooms 100, 102, and 103 and are shown during the safety orientation.

#### **H. MECHANICAL OR PHYSICAL**

1. When operating mechanical equipment or soldering safety glasses must be worn.

2. Long hair **MUST** be kept in a secure manner, away from moving parts of equipment so as not to get caught or snagged, causing injury.
3. All loose flowing clothing must be kept away from flames and mechanical equipment.
4. When working with airborne materials such as sprays, mists, or dust the studio lab ventilation systems and/or the proper respirator must be used. Students and faculty must participate in the TTU respirator program before a university approved respirator can be worn.

#### **I. BUFFER**

1. Buffer can only be used in class under the supervision of a RI (instructor/graduate student). The buffer is a potentially dangerous piece of equipment if not properly operated. Long hair will not be loose while using the buffer, hair must be held securely back from the work.
2. No long sleeves will be worn when operating the buffer.
3. Eye protection is mandatory.
4. No gloves can be worn while using the buffer.
5. Chains cannot be buffed.
6. The buffer vacuum system must be turned on when buffer is being used.
7. Buffer and surrounding area will be vacuumed with the ShopVac and thoroughly cleaned after use.
8. Greystar is the only buffing compound approved for use on buffer.

#### **J. DRAW BENCH**

1. The draw bench is a potentially dangerous piece of equipment if used improperly.
2. Eye protection is mandatory when using this piece of equipment because when the wire exits the draw plate, it could puncture the eye or skin.
3. The thin metal shavings produced during the drawing process are extremely sharp and can lacerate the skin or eyes.
4. Steel plates and tongs are heavy and could cause injury if dropped on a foot. Steel plates and tongs must be returned to their appropriate drawer after use in order to prevent injury for the next user.

#### **K. ROLLING MILLS**

1. The rolling mills are potentially dangerous pieces of equipment because it has the potential to crush or pinch fingers when used improperly.
2. Students should never force fingers into the rolling mill platens.
3. No steel or ferrous metals should be rolled through the rolling mills.
4. No wet materials of any kind are allowed in the rolling mills. Organic materials, etc. should be thoroughly dried prior to rolling. If in doubt concerning a rolling material, please consult the instructor.
5. Upon completion, rolling mill and surrounding area must be thoroughly vacuumed and clean of debris.

#### **L. SANDBLASTER**

1. The sandblaster is a potentially dangerous piece of equipment if used improperly.
2. Never operate the sandblaster with the lid open.
3. Always latch the lid firmly closed.
4. Do not manipulate the pressure of the sandblaster without the assistance of the RI (instructor/graduate student).
5. Upon completion, sandblaster and surrounding area must be thoroughly vacuumed and free of debris.

#### **M. ENERPAC HYDRAULIC PRESS**

1. The hydraulic press is a potentially dangerous piece of equipment if used improperly.
2. Eye protection when using this piece of equipment is mandatory. There is a potential for blowouts caused by the extreme pressure.
3. No foreign materials should be placed in the platens of the hydraulic press.
4. All materials should be dry when placed under the press to prevent slippage and rust.
5. The hydraulic press should never be red zoned. The hydraulic fluid could explode into the room.
6. Never exceed pressure of 10,000 psi.
7. Excessive repetitive motion can damage tendons and strain muscles. Sensible working practices are advised. It is also advisable to take breaks during use of the hydraulic press.

#### **N. BAND SAW**

1. The band saw can be a potentially dangerous piece of machinery if not handled correctly.
2. Safety glasses are mandatory.
3. Fingers must be kept away from the blade, outside the circle plate.
4. The blade guard **MUST** be engaged at a level appropriate for the material/s being cut. The guard should only be high enough to allow material to pass through.
5. Upon completion, saw and surrounding area must be thoroughly vacuumed and cleaned of debris.

#### **O. SANDER**

1. The sander is a potentially dangerous piece of equipment if used improperly.
2. Long hair must be securely fastened away from the machinery.
3. Safety glasses are mandatory.
4. No long sleeves, or flowing clothes that could get caught in the moving parts of the machinery.
5. Do not operate the sander with your face on the same level as the belt, in case the work would fly off the belt.
6. Upon completion, sander and surrounding area must be thoroughly vacuumed and cleaned of debris.

#### **P. DRILL PRESS**

1. Drill presses can be potentially dangerous machinery if not handled correctly.
2. Safety glasses are mandatory.
3. Large drill press may only be used under the supervision of a RI (instructor/graduate student).
4. When using the large drill press, the work must be pinned with vises and c-clamps to the bed of the drill.
5. When using the large drill press, surrounding students must be warned prior to engaging drill. Be wary of kickback. Never try to stop a piece of material that has been snagged by the drill. Simply turn the machine off and stand back until rotation ceases.
6. Upon completion, drill press and surrounding area must be thoroughly vacuumed and free of debris.

#### **Q. METAL SHEARS**

1. Keep hands and foreign materials away from the table.
2. Only cut sheet brass, copper, or sliver. No tubing, wire, or steel.
3. Never force sheet metal shears; it could potentially ruin a very expensive piece of equipment.
4. Be mindful of the location of your fingers when using the shears.
5. On large shear, never cut anything smaller than 3", instead use the smaller tabletop shear. On the tabletop shear, never cut anything smaller than 2".

6. Do not jump on or force either shear.
7. Upon completion, shear and surrounding area must be thoroughly cleaned and free of debris and metal slivers. Scraps will be placed in appropriate drawers/boxes.

## **R. FLEX-SHAFTS**

1. The flex-shafts are potentially dangerous pieces of equipment if used improperly.
2. Long hair, loose clothing and jewelry must be pulled back and secured.
3. Eye protection are mandatory when using this equipment.
4. When working with the flex-shaft as a drill, you must have your piece on top of a piece of scrap wood, so that you do not drill into the table. NEVER drill directly into the table.
5. Always use a lubricant (BurLife) when using flex shafts as a drill in order to help prevent drill bit breakage/snapping.
6. Your Flex shaft motor may be operated in a vertical or horizontal position, but it should not be enclosed or confined so as to restrict air circulation. If the motor is hung up above a workbench, be sure it is fastened securely to the wall or motor hanger. The motor may develop a high operating temperature (up to 100 ° F + ambient) after prolonged use, and it will be too hot to hold. This will not harm the motor, which is designed to operate at this temperature for prolonged periods.
7. Do not force the tool .  
Let the speed of the tool do the work. Avoid using too much pressure. Generally, slower speeds are used for rougher, heavier work or when greater control over the accessory is required for precise, delicate work. Higher speeds are used for buffing, cutting and polishing.
8. If grinding woods or other materials, respiratory masks are mandatory in order to protect yourself from upper respiratory infections. However, if using a respirator, you must attend a respirator safety class and wear a TTU approved respirator. Exotic woods such as purple heart, padauk, ebony, etc. may harbor microorganisms that can cause severe upper respiratory infections. These woods are not allowed in the jewelry metals studio for these reasons. These woods may be worked with the proper safety gear and under supervision in the wood shop and assembled in the jewelry metals studio lab.
9. Clean up the area after using the flex shafts. Tables, floors, and flex shaft machinery must be vacuumed free of all debris. Big Sister is watching.

## **S. Burrs/Bits/Drills**

1. Eye protection is mandatory when utilizing burrs, bits, and drills.
2. These tools produce small slivers of debris that can cause lacerations to skin and eyes. Never wipe your eyes after using these tools.
3. Vacuum or sweep up sharp slivers of metal, plastics, etc. This is mandatory!
4. These tools are generally stored on racks or indexes and should be returned to their proper containers or index.
5. Keep tools dry and clean when storing.
6. Never drop or leave burrs, bits, or drills on floors because they can create a significant slip hazard.

## **T. Files**

1. Eye protection is mandatory when utilizing a file.
2. Small sharp fragments of metal are produced that can cause serious to annoying lacerations.
3. Metal fragments can also cause serious injury to eyes when transferred from fingers to eyes. Never wipe your eyes after filing.

4. All fragments produced from filing must be thoroughly swept and or vacuumed in order to protect the next student user.
5. Files that have tangs when dropped can puncture and cause serious injuries to feet, legs, etc. Always manage your tools and keep them away from the edge of the work surface.
6. Files can be cleaned with a file card brush and should be stored in a dry, clean environment.
7. Large files should be carried to the side of the user like knives and scissors.

#### **U. Hammering stakes**

1. Eye protection is mandatory when using stakes to protect against metal shards.
2. Most raising stakes are extremely heavy and compose a significant risk to toes, feet and legs.
3. Always keep fingers away from strike areas when using these tools.
4. Stakes can never be clamped into vices metal to metal. Rawhide or paper wraps must be utilized to protect the tool from checking, i.e. sharp points left from unprotected vice jaws.
5. All stake tangs/tines must be wrapped with paper or leather before engage in stakeholders, i.e. sharp points left from unprotected stakeholders
6. Stakes should be cleaned with oil and stored in a dry environment

#### **V. Hammers: Standard and Raising**

1. Eye Protection is mandatory.
2. Use the right hammer for the job (claw hammer suitable for pounding in nails, ball peen hammer suitable for driving a chisel or a punch, mallet or rubber hammer suitable for delicate work has a soft head, raising hammers are suitable for moving metal on stakes).
3. Check the hammer before use. Look for firm attachment of the head to the handle. Check for splinters, loose wrapping or other defects in the handle. If the hammer has any defects or is wobbly, DO NOT USE. Prior to hammering ensure the area is free from hazards and no one is around you that could bump into you. If others are helping, ensure they are following the proper safety procedures and effective communication is maintained.
4. Get a firm grip on the handle, this will ensure that you don't lose your hold on the hammer and have it flying out of your hand.
5. Hold the hammer at the end of the handle with your dominant hand. Beginners are often more comfortable holding the hammer midway. It is more energy efficient to grip the handle firmly at the end, but hold it a bit higher up while you are learning if that feels most comfortable and secure for you.
6. Hit your surface squarely with the hammer. Avoid banging a hammer sideways. Hit only with the head of the hammer and do not use the handle or the side of the hammer.
7. Keep your wrist straight and use your whole forearm to lift and drop the tool.
8. Let the hammer do most of the work, using its weight to drive the nail or move the metal, rather than pounding on it with your full force.
9. Place your work against a hard surface. Do not try hammering work on soft surfaces, such as wood.
10. Check before you swing, keep your workspace clear of other objects and check that nobody is standing behind you or too near. You need plenty of space to swing the hammer without catching your arm or the hammer on another person or object.

#### **W. Power and Hand Tools (Including drills)**

1. General

- a. All tools, regardless of ownership, shall be of an approved type and maintained in good condition. (Tools are subject to inspection at any time. A supervisor has the authority and responsibility to condemn unsafe tools, regardless of ownership).
  - b. Unsafe tools shall be taken out of service to prevent their use.
  - c. Students and employees shall always use the proper tool for the job to be performed. Makeshift and substitute tools shall not be used.
  - d. Hammers with metal handles, screwdrivers with metal continuing through the handle, and metallic measuring tapes shall not be used on or near energized electrical circuits.
  - e. Tools shall not be thrown from place to place or from person to person.
  - f. Tools shall never be placed unsecured on elevated places.
  - g. Impact tools such as chisels, punches, and chasing tools that become mushroomed or cracked shall be dressed, repaired, or replaced before further use.
  - h. Wrenches with sprung or damaged jaws shall not be used.
  - i. Pipe shall not be used to extend a wrench handle for added leverage unless the wrench was designed for such use.
  - j. Tools shall be used only for the purposes for which they have been approved.
  - k. Tools with sharp edges shall be stored and handled so that they will not cause injury or damage.
  - l. Tools shall not be carried in pockets unless suitable protectors are in use to protect the edge.
  - m. Wooden handles that are loose, cracked, or splintered shall be replaced. The handle shall not be taped or lashed with wire.
  - n. Tools shall not be left lying around where they may cause a person to trip or stumble.
  - o. The insulation on hand tools shall not be depended upon to protect users from high voltage shock.
2. Portable Electric Tools
    - a. All powered tools shall be examined prior to use to insure general serviceability and the presence of all applicable safety devices.
    - b. Powered tools shall be used only within their design and shall be operated in accordance with the instructions of the manufacturer.
    - c. All tools shall be kept in good repair and shall be disconnected from the power source while repairs or adjustments are being made.
    - d. Electrical tools shall not be used where there is hazard of flammable vapors, gases, or dusts.
3. Pneumatic and Hydraulic Tools
    - a. Compressed air and compressed air tools shall be used with care.
    - b. Compressed air shall not be used for cleaning purposes, except where reduced to less than 30 psi and then only with personal protective equipment.
    - c. Compressed air shall not be used to blow dust or dirt from clothing.
    - d. The manufacturers stated safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.
    - e. The use of hoses for hoisting or lowering tools shall not be permitted.
    - f. Before making adjustments or changing air tools, unless equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled at the tool before breaking the connection.
    - g. Powered tools are to be operated only by competent persons who have been trained in their proper use.

## **X. Hand Tools (including pliers)**

- a. Use the right tool for the job. For example, do not use a screwdriver as a chisel. Do not attempt to modify or adapt a tool to extend its capabilities.
- b. Inspect every tool before use and remove damaged or defective tools from service. Do not use tools with defective, broken, or compromised handles, guards, or ancillary parts (e.g., warped, dull, or cracked blades, marred or chipped drill bits, checked hoses, frayed cords, sprung gripping surfaces, mushroomed heads, etc.). Most power tools must be equipped with guards and positive pressure switches (or other safety controls).
- c. Operate and maintain tools in accordance with manufacturer recommendations. Store tools in a clean and dry location.
- d. Use the proper apparel and Personal Protective Equipment. Avoid loose clothing and jewelry. Minimum PPE will generally consist of protective eyewear, long pants and sturdy shoes. Depending on the task or tool, additional or specialized PPE may be needed (e.g., hearing protectors, face shields, goggles.)
- e. Take action to minimize ancillary hazards posed by the work place. For example, remove accumulated debris or tools to prevent trips; dry or clean up slippery surfaces; use portable lighting in poorly lit areas, etc.

#### **Y. Jeweler's Saw and Hand Saws**

- a. Eye protection is mandatory when using jeweler saws and general handsaws.
- b. All saws are sharp and pose significant cut risks to users.
- c. Never place fingers in front of teeth of saws.
- d. When using a jeweler's saw, always keep fingers behind the blade in order not to be cut.
- e. Always use bench pin or vices to hold work being sawed.
- f. Sawing produces slivers of metal, plastic, etc. and this debris must be swept or vacuumed by the user at the end of the work session in order to properly maintain a safe work environment.
- g. Jeweler's saws should never be stored with jeweler blades under tension.
- h. The user must let the saw do the work and should NEVER force the blade through the materials. This could result in serious injury to the user.
- i. The jewelry saw should be stored in a clean, dry environment.

#### **Z. Knives/Saw Blades/Sharps**

Sharps are items that can easily puncture the skin. Examples include needles, x-acto blades, and broken glass. All sharps must be handled and disposed in a manner that protects you and others from exposure and possible injury.

##### **General Precautions**

- a. Safety glasses are required when using x-acto knives, and other knives.
- b. Substitute plastic-ware for glassware whenever possible. Routinely inspect glassware and remove from service items that are damaged, cracked, or chipped.
- c. Make sure lighting is adequate and the workspace is not crowded for the task at hand.
- d. Be alert at all times when handling sharps. Don't look away or become otherwise distracted while handling a sharp object.
- e. Select rounded or blunt end devices when practicable.
- f. Keep sharp tools sharp.
- g. Use the right tool for the task.
- h. Do not handle sharp objects (i.e., broken glass) with bare hands. Use mechanical devices.

- i. Do not leave unprotected sharps (i.e., razor blades, saw blades, scalpel tips, etc.) on bench tops or loose in drawers. Use protective shields, cases, Styrofoam block tube holders, etc.
- j. Protect the sharp when passing from one person to another.
- k. Use needle syringes without the needles.
- l. Keep a sharps disposal container immediately accessible. Do not allow it to get overfilled. Do not try to retrieve items from sharps disposal containers.

#### **AA. Pressure Washer**

- a. Always wear eye protection – goggles are always required. And, if extra protection is needed, add a face shield. Also, protective clothing, gloves, and rubber boots will be required when operating the machine to protect yourself from burns caused by hot spray, fluid injection, or debris dislodged by high pressure spray.
- b. Never point the spray gun at other persons or any part of the body.
- c. Never put hands or fingers over the spray tip while in operation.
- d. Never use your hands to stop or detect leaks.
- e. Always shut off the unit and trigger the pressure gun to relieve system pressure before removing the spray tip or before performing any machine service.
- f. Never alter or modify this equipment! Your personal safety as well as the safety of other persons is at stake.
- g. Never exceed the factory pressure or temperature rating of the system. Be sure all accessory equipment and system components used will withstand the pressure developed.
- h. Never let the pump run without water supply flowing through the unit.
- i. Never let the unit run for more than five minutes with the gun in the closed position.
- j. Never allow children or any unauthorized persons to operate the machine. Keep all persons at a safe distance when using the machine.
- k. Never attempt to clean or wash down the machine using its own spray gun. The machine is water protected, but not waterproof. Cleaning the machine in this manner will increase the hazard of electrical shock and/or damage to the machine.
- l. Never leave an operating machine unattended. Always shut off the machine and relieve pressure before leaving the machine.
- m. Never spray liquids or toxic chemicals such as insecticides or weed killer.
- n. Do not operate the machine where combustible fumes or dust may be present.
- o. Do not use detergents, which are not compatible with the discharge hose. Read and follow the instructions given by the detergent's manufacturer. Also follow directions on the container regarding contact with the eyes, nose, and skin.
- p. Comply with all national, state, and local codes for locating, venting, and using the machine in enclosed areas. Exhaust fumes contain odorless, invisible gases, which can kill without warning.
- q. Always connect the machine to the correct electrical supply outlet. Comply with all local and national codes and ordinances regarding electrical requirements.
- r. Do not allow electrical extension cord connections to fall or lay in water. Use only extension cords rated for use with this machine. Use only with a GFI circuit.
- s. Always respect and be alert to the potential hazards of electrical equipment, moving parts, and high-pressure spray.
- t. Always be certain that the machine safety decals are kept clean and legible; replace any decals that become damaged, lost, or painted over.
- u. Always disconnect the electrical plug before performing any repairs or service on the machine. DO NOT attempt repairs or modifications you do not understand. Contact your servicing dealer.

- v. Always keep guards or shields in place. Replace any that must be removed for service or that may be damaged.
- w. DO NOT route hose in a manner that will cause sharp bending, kinking, cutting, abrasion, or exterior damage.
- x. DO NOT pull on the hose to move the machine, untangle knots, or use any other excessive pulling stresses.
- y. DO NOT use the hose if cuts, leaks, abrasions, bulges, or coupling damage is evident.
- z. DO NOT use the hose if any reinforcement is exposed.
- aa. Always examine hose couplings and quick disconnect (if provided) before each operation. If leaking is evident, do not use. Contact a qualified pressure washer service representative.
- bb. Never leave the discharge hose lying on the floor or ground to be driven over by vehicles or damaged by falling objects. Always coil and hang the hose immediately after use.
- cc. If there is any doubt about hose condition, replace the hose immediately.
- dd. To prevent unexpected energizing, start-up, or release of energy that could cause injury to the employees working on the equipment the following steps must be followed:
  - Turn off equipment.
  - Dissipate or release all residual energy in the machine.
  - Shut off main power by removing cord, or shutting off electrical disconnect switch.
  - Secure the power cord near the machine.
  - Check all previous steps, and then try to operate the machine to assure that it won't work.

## **BB. Vacuums**

- a. Read all instructions before using.
- b. Do not leave appliance when plugged in.
- c. Do not use with damaged cord or plug. If appliance is not working as it should, has been dropped, damaged, left outdoors, or dropped into water, notify the PI.
- d. Do not pull or carry by cord, close a door on cord, or pull around sharp edges or corners. Do not run appliance over cord. Keep cord away from heated surfaced.
- e. Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- f. Do not handle plug or appliance with wet hands.
- g. Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair, and anything that may reduce air flow.
- h. Keep hair, fingers, and all parts of body away from openings and moving parts.
- i. Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes.
- j. Do not use without dust bag and/or filters in place.
- k. Vacuums and filters should be routinely cleaned or replaced.
- l. Turn off all controls before unplugging.
- m. Do not use to suck up any liquids, flammable or combustible liquids such as gasoline or use in areas where they may be present.
- n. Use extra care when cleaning on stairs.

## **CC. Lapidary system**

- a. Always wear safety glasses.
- b. Lapidary equipment can produce dangerous rock dust that can cause serious health issues. Extreme care must be taken when dealing with this material. Never allow grinding materials to become airborne and inhaled. Keep the rock dust wet at all times until it is disposed of.

- c. Always keep the wheels lubricated with water. If the wheels get dry, it will ruin the diamond-cutting wheel. Each wheel costs over \$100 and can be ruined by not lubricating with water. One user could ruin over \$1000 worth of wheels.
- d. Always use six drops of lubricant in each pan when the water is changed out.
- e. Keep this area impeccably clean. Wipe everything down multiple times and do not let the white hazing build up.
- f. Each pan must be rinsed and washed after use. In the event of heavy use, there will be a thick mud buildup on the bottom of the pan. Scrape this out into the trash and then wash the pan. Never wash this mud down the sink.
- g. Water can build up on the floor. It is your responsibility to keep this water mopped up in order to keep people from slipping and hurting themselves.
- h. The diamond saw can never be operated without the proper solution. The saw wetting solution is kept in a water jug adjacent to the saw. If this blade becomes dry, the diamond saw will burn and be destroyed.
- i. Never force equipment or strong arm it. This machine is only for cutting precious and semi precious stones. Never use metal. It will ruin the machine.
- j. All lapidary equipment has an element of danger. Hair and clothing can be snagged by the equipment and has the potential to pull you into the equipment, resulting in burns, cuts, and concussions. It is not uncommon for the user to be burned by the abrasive wheels. This is particularly painful, but typically only needs general first aid. However, infections can occur if the wound is not taken care of properly.
- k. No organic material such as ivory, shell, or bone. These materials harbor dangerous bacteria that can be airborne when cutting.
- l. There are certain stones such as malachite that have arsenic as a component in their molecular structure that is poisonous to humans. You must check with the instructor on what materials you are going to cut before you cut them.
- m. The user must be particularly careful when cutting or grinding glass. Small chards can become lodged in the skin or large fractures can severely cut the user. Cut glass slowly with plenty of water.
- n. The equipment may only be used during class until the user gains approval from the professor for after hour use. This is for your protection and the protection of the equipment.
- o. If at any time there is a problem with the equipment, immediately stop and report the issue to the instructor or graduate student. Never continue to use the equipment.
- p. There is approximately \$8,000 worth of lapidary equipment at your disposal. This equipment is delicate; however, if it is properly maintained and taken care of, it will last for many years. I expect each of you to respect my wishes and act in good faith. Failure to do so will mean the removal of the equipment.

## **DD. OUTSIDE FACILITIES**

1. Students are responsible for cleaning up after themselves when using the outside facilities.
2. No tobacco products are allowed in the outside facilities – this is still a classroom of the Texas Tech campus.
3. There are two trashcans on the outside pad and students are expected to use them. Students must also return any chairs on the pad to their appropriate positions. Wooden chairs are to be stored at an angle, to prevent water from being collected and warping their surfaces.
4. If students make a mess on the picnic tables outside, they are expected to wash the tables and clean them up.

## EE. GENERAL CHEMICALS

1. All chemical substances are potentially hazardous. **Read and keep all safety instructions on any chemical you use or bring into the studio to use.** Always use them in compliance with the manufacturer's instructions.
2. **Small spills** can generally be handled in house with a spill containment kit. Spill containment kits are clearly marked and are in rooms 100, 100A, 100B, 102 and 103. Spills should be handled in the following manner if at all possible:
  - Contain
  - Capture
  - Clean and neutralize

In the event of a **large spill**, if possible, *first call the RI* (instructor/graduate student). If the RI (instructor/graduate student) is unavailable or it is determined that the spill is beyond in house cleaning capabilities and poses a significant risk, call TTU Environmental Health & Safety at **(806) 742-3876** (during regular business hours) or **(806) 742-3328** (after hours).

3. ALL chemicals must be clearly labeled with:
  - a. Student name
  - b. **Name of the substance**
  - c. Date
  - d. Semester, Course number and section
  - e. **GHS Hazard Communication Pictogram**
  - f. **Signal word – either Danger or Warning**
  - g. **Precautionary statement – GHS standard phrases (see SDS sheet or contact Safety Coordinator)**
4. Resin has the potential to destroy the working surfaces of the studio, which is HIGHLY inconsiderate. This takes hours to clean up (floors, sinks, tables, etc.) and is also highly flammable. Anyone caught not cleaning up after using resin will be expected to scrape up the mess and will be banned from further use of resin in the jewelry labs.
5. Spray paint is NOT ALLOWED in the Jewelry Design and Metalsmithing area except within the outdoor spray booth. This includes the outside and surrounding areas of the building, sidewalks, tables, etc. Anyone caught using spray paint outside the spray booth can be expelled from his or her jewelry class.
6. When using the spray booth, it is mandatory to cover the interior of the booth with brown paper so as to prevent buildup of over-spray.
7. Fluxes: there are only 4 fluxes allowed in the studio:
  - Boric Acid** (mixed 50/50 with denatured alcohol) this material may only be mixed in the soldering room, 100B. The mixing of this material MUST happen on the northwest sink, away from flames. Never mix boric acid in the presence of flame as this can trigger a fire event.
  - Superior Flux** (mixed 50/50 with distilled water) this material may only be mixed in the soldering room, 100B.
  - Handy Flux** (mixed with distilled water until the consistency of whole milk) this material may only be mixed in the soldering room, 100B.
  - Battern's Self-Pickling Flux** (for gold only, not to be mixed with any other material)

All 4 fluxes can cause irritation if in contact with skin/eyes. If contact occurs, wash the skin with soap and water. If eye contact occurs, rinse eyes for 15 minutes in eyewash station. Never breathe fumes from flux materials. If irritation persists, seek medical help.

## **FF. PATINAS**

1. All commercial patinas must be used in compliance with manufacturer's Health and Safety directions. Generally, rubber gloves are required while applying patina. Patinas must be applied in well-ventilated area, such as backdraft vent on the south wall of either the acid etching room (100A) or the advanced room (room 103).

2. The following patinas are the only patinas approved for studio use. Any other patina must specifically be approved by RI (instructor/graduate student) for use in the studio.

Liver of sulfur

Black Max

Red/Brown patina (Rio Grande)

Black/Brown patina (Rio Grande)

Turquoise patina (Rio Grande)

Rock salt

Ammonia (household cleaner strength)

Copper carbonate (non-scientific grade)

3. Disposal of these chemicals must comply with manufacturer's MSDS (Material Safety Data Sheets). In the event of large spills, use the emergency spill kit.

## **GG. WAX WORK**

1. Prior to beginning work, cover work area with brown craft paper. When working with wax for casting, all wax shavings must be cleaned up – including from the floor. If students leave wax on the floor, especially brown soft microcrystalline wax, it sticks and forms lumps. Students will be expected to take scrapers or razor blades to properly clean the mess.

2. If using a glass alcohol lamp during waxwork, fill lamp with denatured alcohol in the sink in Room 100 to contain spills.

3. Prior to replacing alcohol lamp back in cabinet after use, pour denatured alcohol out of the lamp and back into the denatured alcohol canister (stored in the flammable cabinet next to the hallway door in Room 100) using a funnel. Alcohol lamps CANNOT be stored in the cabinets or lockers while still full of denatured alcohol as this poses a fire risk.

4. Do not light alcohol lamps with the soldering torches.

5. Use caution when using sharp wax tools. Always carve away from your body.

6. When preparing wax for placement in investment flask, be sure to leave room from the highest point of the wax original for a mandatory ¼” (or greater) layer of investment to avoid blowouts during the casting process. **Blowouts pose the most risk to students and instructor associated with the casting process.**

## **HH. INVESTMENT**

1. Eye protection and rubber gloves are mandatory when mixing investment. If investment comes in contact with skin, wash it with soap and water. If investment comes in contact with your eyes, rinse them for 15 minutes at the eyewash station. If irritation continues, seek medical help.
2. Investment, used in casting, should be handled with care.
3. Investment will only be mixed during class, in the presence of the RI (Instructor/graduate student), in room 103, in front of the backdraft vent located on the southeast corner next to the sink.
4. Cover ALL countertop space with at least 2 layers of brown craft paper prior to beginning work.
5. When mixing investment, material should never become airborne. Working slowly and deliberately is essential when handling this material.
6. Ventilation system must always be on when mixing investment.
7. Ransom & Randolph Ultravest BANDUST is the only investment material that can be used in the studio.
8. Meticulously clean up the area after you mix the investment utilizing a wet sponge with at least 3 rinses. Wiping area once will NOT be sufficient to clean all investment residue from surfaces. Failure to clean investment properly could result in contamination issues.
9. Dispose of leftover investment in brown craft paper, taking care not to spill any on the floor. Wrap all investment and paper up and throw into the trash.
10. Messes will NOT be tolerated – remember, “Big Sister” is watching. Any students failing to follow this protocol will lose their casting privileges and/or have their access to the jewelry lab suspended for no less than two weeks (or longer).

## **II. CASTING AREA**

1. The centrifugal casting unit is a potentially dangerous piece of equipment if used improperly.
2. Students can **only** cast during class time when a RI or Instructor is present. No exceptions.
3. Tinted safety glasses must be worn when casting.
4. Long hair or loose fitting clothing have the potential to catch fire or become caught in the casting unit and must be properly restrained in order to prevent injury. Gauze, lace, or other fine fabric garments should not be worn during casting process, long sleeve cotton shirts and aprons are encouraged.
5. Only gold (multiple karats), silver (fine, sterling, or Argentium), and ancient bronze can be cast. NO other materials are allowed due to contamination issues. When blowing organic materials out of flasks wear safety goggles and protect those around you.
6. In the event of emergencies, shut off the gas using the Emergency Gas Shut Off switch on the east wall of Room 100B.
7. Casting flame must be appropriate to material. Overheating metal, crucibles, or other casting unit components will not be tolerated. Overheating poses an extreme danger to the student casting and other students in the area.
8. Mandatory ¼” (or greater) layer of investment must above the highest point of the wax original.

## **JJ. COMPRESSED GASES**

1. Torches at the soldering station must be turned off at the end of each period of use in order to avoid an explosive fire hazard.

2. The **red Emergency Off switch** is located on the east wall of the soldering hall, room 100B. When this button is depressed it turns off the flow of gas to all stations. Remember, it takes a short time for the gas remaining in the lines to burn off. Leave button depressed and do not lift until hazard subsides. If there is ever a problem with gas or fire in the soldering hall push this button in to minimize the damage.
3. The **Emergency Off** switch must be pushed in to turn off the flow of gas at the end of every day. If you are the last person in the studio, push this button. No exceptions – “Big Sister” is watching.
4. RIs and graduate students must understand that when not properly used the compressed tanks are potentially deadly. They can act as projectiles and can explode if they are mishandled. They should never be removed from the cage and should be treated with the utmost respect. If a graduate student is not 100% confident, they should NEVER attempt to change the tanks. This activity is reserved for the most experienced and approved graduate students.
5. Undergraduates and graduates should not adjust the regulation system at any point in the torch system. This also applies to the ventilation system. These systems are very carefully checked and monitored and should never be manipulated.
6. **At no time should an undergraduate student touch the outside tank system.** If there is any issue with the gas, report it to the RI, instructor, a lab technician, or Mark Bond. Anyone caught tampering with the valves or gates on tanks immediately, and without exception, is expelled from class. This is highly dangerous and there is no excuse for anyone to risk tampering with this equipment.

## **KK. SOLDERING**

1. Soldering is a potentially dangerous activity if done improperly.
2. Wear safety glasses when soldering.
3. Avoid breathing fumes and solder with the ventilation system on.
4. Operate the torch in a responsible manner so as not to burn yourself or others and keep flammable materials away from the soldering area.
5. After you have finished soldering turn off all gas and bleed the gas remaining in the hoses. This also ensures that no gas will leak or bypass the shutoff valve. If gas escape continues, seek the help of an RI (instructor/graduate student) immediately.
6. Clean up the area after soldering utilizing a wet sponge with at least 3 rinses. Wiping area once will NOT be sufficient to clean all residue from surfaces. Failure to clean properly could result in contamination issues.
7. Return all torch tips, pumice pans, strikers, bricks, etc. to the appropriate drawer. Turn off all torches and dimmer lights. Failure to comply with all cleaning protocols will result in suspension or expulsion from the studio lab.

## **LL. KILNS**

1. Working with a burn out kiln is a potentially dangerous activity if used improperly.
2. When in use, kilns are extremely hot and can cause severe burns.
3. When blowing organic materials out of flasks, be sure to wear safety goggles and protect those around you.
4. Whenever the kilns are in use, the casting ventilation system must be on.
5. There must be a safeguard buddy system in place. Kilns can never be left unmonitored for more than 24 hours. If you cannot cast at your appointed time, there must be a buddy who will take your place. That individual must have access to your metal and understands what needs to be done.

Remember, casting can only be done in class under the supervision of a RI (instructor/graduate student).

6. Enamel kilns can NEVER be left unattended. A pyrometer could fail and the kiln could overheat and trigger a major fire event. Never operate a kiln without knowing what temperature at which it is operating. Overheating a kiln can significantly shorten the life of a kiln and its components.
7. Experimental kilns in outdoor work area can also never be left unattended.

### **MM. PITCH**

Pitch is a potentially dangerous material capable of inflicting serious burns if not handled properly. If pitch is contained in an enclosed space and heated it has the potential to explode, possibly causing severe burns to yourself and myself.

Mandatory safety precautions when using pitch:

1. The area must be free of other students, several layers of brown craft paper must be layered in work area, and extreme caution taken when using the pitch. Upon completion, craft paper must be discarded and work area must be thoroughly cleaned.
2. The heat gun is the ONLY method acceptable for heating pitch to temperature. Heating pitch with torches is expressly forbidden.
3. Eye Protection must be worn
4. Face Shield must be worn
5. Cotton Gloves must be worn
6. Long Sleeve Shirt and Apron must be worn

### **NN. GRADUATE STUDIO**

1. There is to be no entrance into the graduate studios without specific permission or invitation.
2. No food, drink, or medicines are to be stored or kept in the graduate labs.
3. Graduate students are required to maintain SDS on any chemical or material they bring into the studio. Graduate students will be provided with an SDS folder to store these sheets. SDS must be kept in a generally accessible area adjacent to the student's bench in the studio lab.
4. Only Metals graduates are allowed to use the equipment and computers stored in the graduate studios.
5. The office of the department head is also restricted – no undergraduates are to use the computer or equipment within this office.
6. Furnishings may not be moved or manipulated due to Fire Marshal regulations.

### **OO. Sodium Bisulfate (SPAREX )**

1. The pickling acid "Sparex"(sodium bisulfate) is a potentially dangerous acid if not properly used. **Beginners are NEVER allowed to mix Sparex.** It's a dry form of acid, and so is the dust!!
2. Consult the SDS (safety data sheet) located in the soldering room under the ventilation switch for safety hazards, safe usage, spill cleanup and disposal of sodium bisulfate.
3. Begin the process with wearing the proper health and safety equipment. Safety glasses, gloves and a TTU approved respirator are mandatory safety equipment.
4. Make sure there is an adequate supply of baking soda available to neutralize the acid if there are spills, drips or mishaps.
5. Acid drips on clothes can be neutralized with a liberal amount of baking soda allowed to dry and then brushed free from clothing. This procedure will prevent small holes from appearing in your freshly laundered clothing.

6. Begin the disposal process by placing a red rubber bucket in the chemically resistant sink. Turn cold water on and carefully pour the Sparex acid from the crockpot into the bucket. Make sure you don't over spill or get the liquid anywhere other than inside the sink and bucket. This is paramount in the proper transfer of the acid to the bucket. The acid may be hot so it is important to be extremely careful! Place a large quantity of paper towels on the cabinet counter top and then set the bucket on the paper towels and wipe all the excess liquid away from the bottom edge of the bucket.
7. You're now ready to proceed to the blue safety container on your left marked "danger acid". The blue safety container is rimmed by a yellow safety enclosure. Do not step on this enclosure. Remove the screw cap from the safety container. Place the large blue funnel into the safety container and carefully pour the bucket contents into the blue safety container. Use the pouring spout on the side of the bucket to allow proper pouring. Please remember that the blue safety container has a rim, but this rim does not contain the liquid. There are two holes on either side of the barrel that allows the acid to drip down the side. Do not assume that this rim will hold back the acid.
8. It is essential to take your time and allow the liquid to slowly pour out of the bucket into the container slowly, avoiding any spills or drips. Do not overwhelm the funnel by pouring liquid too quickly. If drips or spills occur, immediately neutralize the spill with baking soda powder. There will be a visual and audible chemical reaction when the baking soda comes in contact with the acid. This is nothing to worry about as it confirms that the acid is being neutralized. Wipe up the neutralized acid with a cellulose sponge and rinse it in the sink.
9. Replace the screw top on the container and clean up any drips or spills that are on or around the blue safety container. Proceed to the sink and rinse the bucket thoroughly with a small amount of baking soda and cold water. Turn the bucket upside down and allow it to dry.
10. Failure to comply with these health and safety requirements will result in a grade reduction and possible expulsion from the studio.
11. **Mixing fresh Sparex:** maintaining your health and safety equipment, mix one package of Sparex with approximately 2 gallons of warm water and follow the instructions on the package of the Sparex acid. If the Sparex reaches a boil, a thick brown liquid that resembles jelly will form on the top of the crockpot. This can be removed by skimming off the top with a paper towel and discarding it in a Ziploc bag and throwing it in the trash. During this procedure, make sure to be extremely cautious because the pickle is generally hot and can result in burns. Removal of this brown scum will not affect how the acid works.
12. If you have any concerns or questions immediately seek help from a graduate student or one of the professors. Graduate students are the primary individuals who take care of the pickle disposal and mixing. Graduate students are the individuals that first need to be contacted about the pickle that has been contaminated or is no longer working.

## **PP. TUMBLER PROTOCOL**

1. When using the tumblers, the student is responsible for cleaning them after use.
2. The student should always run a tumbler inside of a plastic safety tray.
3. If a tumbler pops open and spills shot and liquid, the student who is using it is responsible for cleaning it up.
4. There is, under no circumstances, to be any transfer of tumbler shot. The shot in the tumblers has been weighed for safety and longevity of the equipment.
5. If the tumbler soap supply runs short immediately notify the instructor or lab technician. Do not run a tumbler without soap.
6. When the motor is not running, the tumbler barrel must be stored outside of the roller tracks – leaving the barrel resting on the tracks can damage the equipment.

7. If you encounter any problems with a tumbler, stop use immediately and report the problem to your instructor.

#### **QQ. MILLING MACHINE/METAL LATHE**

1. Only advanced level students are permitted to use this equipment during class and while under the supervision of a RI (instructor/graduate student).
2. The milling machine and the metal lathe are potentially dangerous pieces of equipment if used improperly.
3. Eye protection when using this equipment is mandatory.
4. There is the potential for severe cuts when using this equipment.
5. Students are required to familiarize themselves with the instructional manuals before using either of these tools.
6. It is essential that the student keep track of all small components using in operating the lathe. Keep all materials together in accompanying toolboxes.

#### **RR. VULCANIZER**

1. Only advanced level students are permitted to use this equipment during class and while under the supervision of a RI (instructor/graduate student).
2. The vulcanizer is a potentially dangerous piece of equipment if used improperly.
3. This unit produces high heat and could cause serious burns if used improperly.
4. Students are encouraged to wear cotton gloves while using this equipment.
5. Rubber molds are cut using a surgical scalpel, this tool is twice as sharp as an X-acto blade and extreme caution must be used while cutting molds. The vulcanizing equipment can never be left unattended and must be shut off at the end of its use.
6. After use, the area surrounding the vulcanizer must be thoroughly vacuumed and cleaned and all equipment put away. The student is responsible for waiting until the unit is cool in order to put it away.

#### **SS. WAX INJECTOR**

1. Only advanced level students are permitted to use this equipment during class and while under the supervision of a RI (instructor/graduate student).
2. The wax injector is a potentially dangerous piece of equipment.
3. Eye protection is mandatory when using this piece of equipment because the contents are hot and under pressure, which could result in serious eye injury.
4. This unit produces high heat and could cause serious burns if used improperly.
5. The wax is hot and under pressure and the student can cause serious injury if they exceed 4 lbs. PSI when using this equipment.

#### **TT. WHEEL POLICY**

No bicycles, rollerblades, skates, or any other wheeled leisure equipment is allowed within the 3-D art annex. Bikes, scooters, etc. also cannot be stored or housed in any manner within the walls of the building.

#### **UU. DAMAGED EQUIPMENT**

1. If a student damages or breaks a tool or piece of equipment, they must immediately report it to the instructor. This is imperative for the safety and stability of the lab.

2. Mistakes are obviously understood, but persistent negligence will be met with severe consequences.
3. Failure to report damaged equipment greatly increases the likelihood of injuries due to damaged equipment. Individuals who do not report damages bear the responsibility for injury.
4. In the event of damaged equipment, it is mandatory that the student or RI (instructor/graduate student) put a sign on the broken equipment indicating the malfunction.

## **VV. LOCKER POLICY**

Any locker abandoned for more than two semesters will have its lock cut and the contents will be discarded. You may not use a locker if you are not concurrently enrolled in a metals class. We are not a storehouse for your materials. Over one hundred students per year use this room and we cannot afford to tie up lockers. Lockers will be cleaned out once a year by the Graduate Lab technicians.

## **WW. VIDEO SURVEILLANCE**

1. The Jewelry/Metals labs are under video surveillance in order to protect you and your fellow students. If you are caught misusing equipment or not cleaning up after yourself your actions will be documented on videotape and you will be held responsible. Practice the following procedures:
  - a. **At all times while in studio lab**, especially while soldering, protect your eyes from heat and flying debris by wearing safety glasses.
  - b. Utilize the proper ventilation systems and/or respirators as necessary. (TTU approved respirators may be used **if certain EH&S tested conditions are met**. Then the student must receive a physical and get the TTU respirator fit test.
  - c. Do not let any chemical touch your skin, eyes, or clothing – wear the appropriate safety gear.
  - d. Materials not allowed in the studio: lead, spray paint, wood dust, Naptha, and any new substance not found in the studio that has not been cleared by the RI.