Shop Safety
Contacts and Objectives

<table>
<thead>
<tr>
<th>Web: <a href="http://www.usf.edu/ehs">www.usf.edu/ehs</a></th>
<th>Mail: OPM 100</th>
<th>Phone: 813-974-4036</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Waste Management</td>
<td>• Occupational Safety</td>
<td></td>
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<tr>
<td>• Industrial Hygiene</td>
<td>• Lab Safety</td>
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<tr>
<td>• Asbestos/Indoor Air Quality</td>
<td>• Insurance/Risk Management</td>
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<tr>
<td>• Fire Safety</td>
<td>• Building Code Administration</td>
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</table>

Working in academic shops carries risk of exposure and injury due to hazardous materials and machines. Shop equipment and processes can cause physical injury, illness, or cause fires if not properly used. It is essential for everyone working in a shop to understand shop hazards and how to protect themselves and those working around them.

Training Objectives

• To provide safety guidelines for workers and researchers in academic shops and studios
• To increase awareness of environmental compliance regulations
• To provide safety-related contact information and resources for shops and studios

Individual Responsibilities

The key to having a safe shop/studio environment lies with an individual's commitment to safety. The USF Chemical Hygiene Plan outlines the responsibilities of individuals working in chemical “laboratories”, which includes shops/studios. All individuals are required to:
• Follow all University safety procedures and shop-specific Standard Operating Procedures (SOPs) as outlined by the Chemical Hygiene Plan, EH&S, and the Principal Investigator/supervisor
• Attend all required safety trainings
• Report any conditions deemed unsafe to the Principal Investigator, Lab Supervisor, or EH&S

Supervisor Responsibilities

The USF Chemical Hygiene Plan also outlines the responsibilities of Principal Investigators/Supervisors working in chemical laboratories. All supervisors are required to:
• Write job-specific safety and compliance procedures and make them available to everyone
• Ensure all tools/equipment are in good working order and regularly maintained
• Provide required safety equipment to staff
• Ensure that everyone receives appropriate safety training and it is documented
• Ensure that everyone follows safety and compliance procedures
• Ensure correction of identified hazards
• Report all injuries/illnesses to Environmental Health & Safety
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Machine and Tool Safety

- Complete training with an experienced user. Do not use any machine or tool unless you have been trained and are familiar with its use.
- Read and follow the Standard Operating Procedure (SOP). See Appendix 1 for a template.
- Use the appropriate machine or tool for the job.
- Wear Personal Protective Equipment (PPE) appropriate for the machine or tool.
- Perform a start-up check before beginning work:
  - Is the machine well-maintained and in good working order?
  - Is the work area and floor clean and free of slip/trip hazards?
  - Are machine guards in place on machines with moving parts?
  - Are blades at the appropriate height, unbroken, sharp, and secure?
  - Are clamps in position and secure?
  - Are bits secure?
  - Have chuck keys been removed?
  - Do you know where the ON/OFF switch is?
- Do not use any machine or tool if you are overly tired, sick, or otherwise impaired.
- Do not work alone.
- Be aware of the hazards of electricity:
  - Working with electricity presents special hazards related to shock and fire.
  - Do not run wires where they may be damaged.
  - To avoid shock, remove metal rings, bracelets, and watches from hands.
  - Make sure hands, tools, equipment, and floor are dry.
  - Inspect equipment before use and report frayed wires and bent or missing prongs on plugs.
  - Turn off and unplug equipment before performing maintenance on it.
  - Know the location of the emergency power off, or shunt, which is usually a large red button.
  - EH&S Lockout/Tag Out Training is required for anyone servicing or maintaining machines or equipment in which the unexpected energizing or startup of the machines or equipment or the release of stored energy could cause injury to employees.
<table>
<thead>
<tr>
<th>Tool/Machine</th>
<th>Description</th>
<th>PPE</th>
<th>Before Use</th>
<th>Tips During Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band Saw</td>
<td>A continuous metal blade with teeth on one edge. Used with wood, metal, and other materials</td>
<td>Safety glasses. Face shield if material is likely to chip. NO gloves or long sleeves.</td>
<td>Secure saw to floor or bench. Guard should cover entire blade except for working part. Table should be clean. Blade should be tight.</td>
<td>Use a push stick.</td>
</tr>
<tr>
<td>Bench Grinder</td>
<td>A machine that spins abrasive wheels. Used to sharpen or clean metal parts.</td>
<td>Face shield, ear protection, leather gloves, and a leather apron.</td>
<td>Tongue guards, side guards, and eye guards must be in place.</td>
<td>Stand off to the side when starting. Do not grind on the side of the wheel. Dip metal in water to cool.</td>
</tr>
<tr>
<td>Drill Press</td>
<td>A type of drill where the chuck and spindle are moved vertically using a set of handles in the head. Used with wood, metal, or other materials.</td>
<td>Safety glasses. Face shields are recommended.</td>
<td>Clamp work. Use appropriate drill bit and speed setting. Secure bit and remove chuck key.</td>
<td>For deep holes, raise bit periodically to clear cuttings and cool bit. Free a bound drill by first turning off power, then turn chuck backwards by hand.</td>
</tr>
<tr>
<td>Lathe</td>
<td>A wood or metalworking machine that shapes materials by rotating the work against a cutting tool.</td>
<td>Safety glasses and hearing protection. NO gloves or long sleeves.</td>
<td>Clamp work. Remove the chuck key before starting machine.</td>
<td>Do not reach over the spinning chuck.</td>
</tr>
<tr>
<td>Milling Machines</td>
<td>A versatile family of machine that uses rotary cutting action to precisely shape parts.</td>
<td>Safety glasses with side shields or goggles and hearing protection.</td>
<td>Clamp work. Make sure spindle is free to rotate. Power off to change cutters and remove tightening wrench after use.</td>
<td>Stay at the machine. Take light cuts and feed slowly.</td>
</tr>
<tr>
<td>Router Table</td>
<td>A table with a hole through which the bit of a tool protrudes. Used to hollow out space in wood or plastic.</td>
<td>Safety glasses and hearing protection.</td>
<td>Cutter should be sharp, clean, and clear to rotate.</td>
<td>Feed work slowly. Use jigs, fixtures, and templates when possible.</td>
</tr>
<tr>
<td>Table Saw</td>
<td>A circular saw blade that protrudes through a table supporting the stock being cut. Used with wood.</td>
<td>Safety glasses, goggles, or face shields. NO gloves or long sleeves.</td>
<td>Guards, anti-kick back devices, and spreaders must be in place. Blades should be clean and sharp, and height should be no more than $\frac{1}{4}”$ above stock.</td>
<td>Use push sticks on stock less than six inches wide-do not use a metal push stick. Disconnect power before changing blade. Do not reach behind or over a spinning blade. Stand to the side of the blade, not directly in line with it.</td>
</tr>
</tbody>
</table>
Chemical Safety: Resources

1.) Manufacturer’s Label
The manufacturer of a chemical must provide a label that indicates:
• Full name of chemical
• Hazard warnings
• Name and address of manufacturer
* Chemical containers without manufacturer’s labels should be returned to the manufacturer.

2.) Safety Data Sheets (SDS)
An SDS (formerly called MSDS) is a document, prepared by the manufacturer, which contains safety information for materials containing hazardous chemicals. It tells about:
• Material components
• Dangers
• Safe handling of material
An SDS is shipped with each chemical but can also be found online. Be sure that you have immediate access to the SDS for chemicals you are working with.

3.) NFPA Label

This label was developed by the National Fire Protection Association to identify and rank a material’s hazards. Hazards are rated from 0 (no hazard) to 4 (extremely hazardous).

- **Fire Hazard** – labeled in red
- **Health Hazard** – labeled in blue
- **Reactivity Hazard** – labeled in yellow
- **Specific Hazard** – labeled in white (OX=oxidizer, W=use no water, CORR=corrosive, ALK=alkali)
4. GHS Classification

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS), is a universal approach to defining chemical hazards, criteria to compare these hazards, and hazard communication. Hazardous chemical labels and SDSs will present information in alignment with the GHS. It is important to remember that, within the GHS, hazards are rated from 1 (extremely hazardous) to 4 (no hazard), which is the opposite of the NFPA system.

Chemical Safety: Hazard Classes

**FLAMMABLE**
- A material that may catch fire and burn in air
- Any liquid having a flashpoint below 100 degrees F (37.8 degrees C).
- Flammable vapors are usually heavier than air (vapor density > 1), so it is possible for the vapors to travel along floors and, if an ignition source is present, result in a flashback fire.
- Store flammable liquids only in specially designed flammable storage cabinets and refrigerators/freezers or explosion-proof refrigerators/freezers away from ignition sources and oxidizers.

**OXIDIZER/REACTIVE**
- An unstable material that may ignite, explode, or produce toxic gas under certain conditions
- Examples include sodium, t-butyl lithium, aluminum nitrate, perchloric acid, nitric acid, and sodium peroxide.
- Store away from flammable materials and place in a secondary containment when stored with incompatible materials.

**CORROSIVE**
- A material that destroys metal and can cause destruction of tissue upon exposure
- Has a pH of less than 2 or greater than 12.5
- Examples include strong acids such as hydrochloric acid and sulfuric acid, and strong bases such as potassium hydroxide and sodium hydroxide.

**POISON/TOXIC**
- A material that is harmful or fatal if ingested or absorbed
- Toxic chemicals have an LD50 of 50 - 500 mg/kg, single oral dose for rats. Highly toxic chemicals have an LD50 of < 50 mg/kg, single oral dose for rats.
- Store in a secure, sealed container below shoulder level. Use only in designated areas.

Chemical Safety: Storage

- Do not store chemicals above eye level, especially corrosive liquids. Do not store chemicals in the fume hoods, on bench tops, or on the floor.
- As a general rule, separate chemicals by hazard class. Some chemicals belong to more than one.
- Flammable liquids must be stored in approved flammable cabinets and flammable-rated refrigerators.
• Acids and bases (caustics) should be stored in chemical resistant cabinets either separately or in secondary containment.
• Store oxidizers and toxics near a fume hood.

Minimizing Hazards: Exposure and Risk

Chemicals can enter the body four different ways:
• Absorption through the skin
• Inhalation
• Ingestion (eating and drinking)
• Injection (needles or sharp pieces of glass, plastic, or metal)

Whether or not your exposure will result in injury depends on:
• Exposure frequency
• Exposure duration
• Age, sex, and genetics

Assess your risk by considering these questions:
• What are the hazards?
• What is the worst thing that could happen?
• What can be done to prevent this from happening?
• What can be done to protect from these hazards?
• What should be done if something goes wrong?

Exposure risk can be minimized using:
• Substitution of less hazardous materials
• Engineering controls (example: working in the fume hood)
• Administrative controls (Chemical Hygiene Plan, training)
• Personal protective equipment (PPE)

Minimizing Hazards: Personal Protective Equipment & Engineering Controls

Everyone in the shop, including visitors, should wear long pants and sturdy, non-slip shoes that cover the entire foot. Persons working with hazardous chemicals or equipment must have on additional protective equipment.

EYE PROTECTION
• Safety glasses protect eyes against flying debris
• Splash goggles protect eyes against liquid splashes
• Full face shields over splash goggles provide extra protection when working with corrosive chemicals
• UV-rated glasses protect against UV exposure, such as while using a transilluminator
• Since 2005, The National Institute for Safety and Health (NIOSH) has recommended that contact lenses be permitted during work with hazardous chemicals provided suitable eye protection was worn and written guidelines and a hazard assessment were in place.
GLOVES
- Wear when handling hazardous materials, sharp, or very hot or cold items
- Do not wear gloves when there is a risk they might get caught in the machine.

SHOP APRONS
- Denim and leather aprons protect clothing against spills and dust
- Impervious aprons provide extra protection against corrosive liquids.

RESPIRATOR
- Consult EH&S before use. Federal regulations prohibit the use of respirators by untrained employees. If EH&S determines use is necessary, the individual must participate in the University’s respirator program. This includes an annual medical evaluation, respirator fit test, and training.

HEARING PROTECTION
- Earplugs or earmuffs
- Exposure to machine noise can result in hearing loss
- Use when noise levels exceed 85 decibels

FUME OR VENTILATION HOOD, OR SNORKELS
- Protects against exposure to hazardous fumes or dusts
- Work at least six inches inside sash or position snorkel no more than six inches away from work and avoid sudden movements
- If fume hood alarms, contact EH&S at (813) 974-4036

Emergency Response: Spills
Small spills may be cleaned up by the shop as long as personnel have proper supplies, knowledge, PPE, and are comfortable doing so.
- Consult the SDS of the spilled chemical & wear proper PPE prior to clean-up.
- Spread absorbent around spill site and over liquid’s surface and wait 15 minutes.
- Collect wet absorbent & transfer to a plastic bucket or bag using dustpan & brush.
- Dispose of as hazardous waste.

SPILL KIT
- Store in an accessible location
- Absorbent material, goggles, gloves, broom, dustpan, bucket

If one of the following conditions occurs, call EH&S:
- Spill is large
- Spill involves extremely hazardous chemicals
- Ventilation is inadequate
- No spill clean-up materials
- Personnel uncomfortable handling clean-up
- If a spilled chemical enters the drain, soil or water body

**Emergency Response: Accidents**

If there is an emergency, call 911 or University Police. Be prepared to give detailed information about your location.

**EYEWASH**

- If chemicals get into eyes, flush eyes for 15 minutes
- Lab personnel must flush eyewash weekly and keep a record
- Do not block with glassware or equipment

**SHOWER**

- If chemicals get onto clothes/skin, rinse for 15 minutes, removing contaminated clothing
- FM-Ops flushes quarterly and performs maintenance inspection annually during one of the quarterly flushes. Do not store items under shower

**FIRST AID KIT**

- Know location
- Check completeness and expiration dates

**Emergency Response: Fire**

You are not expected to fight the fire. Follow these emergency procedures to assure your safety:

1. Yell out FIRE FIRE FIRE!
2. Alert other building occupants by activating the fire alarm by using the manual pull station.
3. Attempt to extinguish fire, if it is small and you know how to use an extinguisher.
4. Close all doors behind you as you evacuate the building.
5. Call 911 or University Police soon as possible outside the building.
6. Give as much information as possible to the emergency dispatcher.
7. Meet in the designated relocation area at least 150 feet from the building.

**FIRE EXTINGUISHER**

- USF tests annually
- EH&S offers training, call for more information
- To use, remember P.A.S.S. (Pull the pin, Aim at the base of the fire, Squeeze the lever, and Sweep back and forth)
Fire Code Violations
The top ten violations recorded by the State Fire Marshal are:

1. Extensions cords used as permanent wiring
2. Daisy chaining power strips (i.e., plugging one power strip into another)
3. Blocked exit doors
4. Furniture in exit corridors that block clear egress width
5. Excessive storage that blocks access to fire alarm and electrical panels
6. Storage within 18 inches of a fire sprinkler head
7. Propping open fire doors with door wedges
8. Gas cylinders not properly secured or removed from lab when empty
9. Improper storage of flammable liquids
10. Unapproved portable heaters

Emergency Response: Incident Reporting
Fill out an incident report form, available online at http://www.usf.edu/administrative-services/environmental-health-safety/reporting/index.aspx
Workers’ Compensation (WC) covers faculty, staff, and official volunteers at the University of South Florida. Teaching and graduate assistants are included as staff.
If you are injured on the job:
• Notify your supervisor
• Supervisor will contact AmeriSys at 800-455-2079
• Proceed to approved medical facility
• Send injury report to EH&S within 24 hours

Hazardous Waste
In 1976, Congress passed the Resource Conservation and Recovery Act (RCRA). This law gave the Environmental Protection Agency (EPA) the authority to regulate all individuals who generate and accumulate hazardous wastes. All labs, studios, and shops that generate and accumulate hazardous wastes are subject to unannounced inspections from the Florida Department of Environmental Protection and/or EPA and are thus subject to fines.

Universal Waste
These materials are subject to hazardous wastes regulations unless they are managed or recycled according to the universal waste regulations.
• Nickel Cadmium, Lithium Ion, Nickel Metal Hydride, Lead Acid, Mercury or Silver Hydride batteries must be segregated and collected in a container labeled with its contents.
• Fluorescent and High Intensity Device (HID) lamps (either used or broken) must be stored in a plastic lined box or metal container labeled “Waste Mercury Bulbs”.
- Mercury thermometers, thermostats, and barometers must be stored in a plastic lined box or metal container labeled “Waste Mercury Devices”.

**Chemical Waste**
- At USF, all chemical waste must be treated as hazardous waste and must be collected. No dumping of hazardous wastes, including rags, in the trash or down the drain.
- Empty chemical containers can be disposed in the lab trash or reused to store hazardous wastes, EXCEPT for empty containers that stored acutely hazardous wastes (EPA P-listed). These cannot go in the trash and must be disposed of through EH&S.
- Before disposal, remove or deface the label with a marker and write “Empty” on the bottle. The lids on empty flammable containers should be removed before disposal.
- Lead solder remnants must be collected and disposed of as hazardous waste.
- Only completely empty spray cans with intact nozzles can be put into regular trash. If the nozzle is missing or the container is not empty it is hazardous waste.

**Metal Waste**
- Some metal shavings may be considered hazardous waste due to the presence of heavy metals and must be disposed of appropriately. Check with your supervisor or EH&S before disposing.
- Polishing wheels may also need to be disposed of as hazardous waste due to the presence of heavy metals.
- Scrap metal should be recycled if possible or appropriately disposed of.

**Figure 1: Chemical Waste Handling**

**Collect Waste**
- Containers for solid or liquid waste, tags, and labels are available through the Hazardous Inventory Tracking System (HITS)
- Must be labeled “Hazardous Waste” and include the date, the percent content of each chemical, and a description of its hazard class (for example: toxic)
- Attach a yellow waste tag when waste is first added

**Store Waste**
- Keep in a Satellite Accumulation Area (SAA)
- Do not use food or drink containers to store waste
- Floor storage must have secondary containment
- Containers must be kept closed, funnels removed

**Waste Pick-up**
- Log on to HITS at to request pick-up
- Use the Lab Cleanout form to request pick-up of more than 20 items
- Contact Facilities Management at (813) 974-2500 to pick up universal waste lamps and batteries
References

Chemical Hygiene Plan is a broad outline of chemical safety procedures and must be available to all Principal Investigators, students, lab workers, and volunteers https://www.usf.edu/administrative-services/environmental-health-safety/documents/chemical-hygiene-plan.pdf


Ethics Point collects anonymous reporting of activities that may involve misconduct, unsafe conditions, or other violations of USF System policies https://secure.ethicspoint.com/domain/media/en/gui/14773/index.html


NIH, ChemIDplus provides chemical, physical and toxicological information https://chem.nlm.nih.gov/chemidplus/


RCRA Online is a database of documents covering the management of non-hazardous, hazardous, and medical waste http://www.epa.gov/rcraonline

Wireless Information System for Emergency Responders (WISER) provides information on hazardous substances and is available as a standalone application on computers and mobile devices https://wiser.nlm.nih.gov/
Appendix 1: Studio and Shop Safety Checklist

<table>
<thead>
<tr>
<th>Building/Room No.:</th>
<th>Purpose:</th>
<th>Faculty:</th>
<th>Hazards:</th>
</tr>
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<tbody>
<tr>
<td>College:</td>
<td>☐ Routine ☐ Follow-up</td>
<td>☐ Chemical ☐ Physical</td>
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<tr>
<td>Department:</td>
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</table>

<table>
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<tr>
<th></th>
<th>Documentation</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Comments</th>
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<tbody>
<tr>
<td>1.1</td>
<td>Emergency information posted and current</td>
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<tr>
<td>1.2</td>
<td>Updated chemical inventory available</td>
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<td>1.3</td>
<td>Copy of Chemical Hygiene Plan (CHP) available</td>
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<tr>
<td>1.4</td>
<td>SDS access to all personnel in lab</td>
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<tr>
<td>1.5</td>
<td>All accidents and spills reported to supervisor and EH&amp;S</td>
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<tr>
<td>1.6</td>
<td>Document status of training records of faculty, supervisors, and GRA’s in pre-inspection</td>
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<td>1.7</td>
<td>List past deficiencies in pre-inspection</td>
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<td>2</td>
<td>Training</td>
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<tr>
<td>2.1</td>
<td>All training documentation available</td>
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<tr>
<td>2.2</td>
<td>Personnel have received safety training on procedures involving exposure hazards</td>
<td></td>
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<tr>
<td>2.3</td>
<td>Lockout/Tag Out program in place where required</td>
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<td></td>
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<tr>
<td>2.4</td>
<td>Lab-specific SOPs have been read and signed by applicable lab personnel</td>
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<tr>
<td>2.5</td>
<td>Chemical-specific SOPs are developed for extremely hazardous chemicals</td>
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<tr>
<td>2.6</td>
<td>Process-specific SOPs include safety procedures for the handling of hazardous materials</td>
<td></td>
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<tr>
<td>2.7</td>
<td>Equipment specific SOPs are developed for the safe use of machinery</td>
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<tr>
<td>3</td>
<td>Chemical Storage</td>
<td></td>
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<tr>
<td>3.1</td>
<td>Chemical containers labeled to identify contents</td>
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<tr>
<td>3.2</td>
<td>Flammables stored in flammable cabinets and flammable refrigerators</td>
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<tr>
<td>3.3</td>
<td>Quantity of flammable liquids does not exceed storage limits for daily use</td>
<td></td>
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<tr>
<td>3.4</td>
<td>Chemicals are segregated by hazard class (acids, bases, etc.)</td>
<td></td>
<td></td>
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<tr>
<td>3.5</td>
<td>Chemicals not stored on floor, fume hoods, bench tops</td>
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<tr>
<td>4</td>
<td>Housekeeping</td>
<td></td>
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<tr>
<td>4.1</td>
<td>Emergency exits unobstructed/36&quot; of clear access width to reach all exits</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4.2</td>
<td>Work areas free of clutter</td>
<td></td>
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<tr>
<td>4.3</td>
<td>Broken glassware disposed in container labeled “Broken Glass Trash”</td>
<td></td>
<td></td>
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<tr>
<td>4.4</td>
<td>Razor blades, scalpels and other sharps are not left unattended when not in use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td>Razor blades are disposed of appropriately</td>
<td></td>
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<tr>
<td>4.6</td>
<td>Sawdust should be cleaned up daily to prevent accumulation</td>
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<tr>
<td>5</td>
<td>Cylinders</td>
<td></td>
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</tr>
<tr>
<td>5.1</td>
<td>Properly labeled, segregated &amp; stored upright</td>
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</tr>
</tbody>
</table>
5.2 Attached to a permanent fixture
5.3 Empty cylinders are marked, and not be stored in shop
5.4 Regulators are not obstructed
5.5 Capped when not in use
5.6 Only one spare cylinder allowed per operation in the shop

6 Safety and Emergency

6.1 Personal protective equipment (PPE) available to all personnel
6.2 All users wear appropriate street clothing and PPE (long hair/beards confined, no loose clothing, no jewelry, etc.)
6.3 Food, drinks, and applying cosmetics prohibited in studios and shops
6.4 Fume hoods, snorkels and ventilation hoods have current inspection/certification
6.5 Sashes kept closed when not in use
6.6 Air flow monitor operates appropriately
6.7 Spray painting operations are done inside approved spray paint booths and filter change protocol in place
6.8 Emergency eyewash/safety shower accessible
6.9 Eyewashes are flushed weekly
6.10 If NIOSH approved respirators used, copy of written Respiratory Protection Plan accessible
6.11 If NIOSH approved respirators are needed, personnel have enrolled in Respiratory Protection Program
6.12 First aid kit available and no expired contents
6.13 Spill kit available and no expired contents

7 Hazardous Waste

7.1 Containers labeled “Hazardous Waste”, include contents, and hazard
7.2 Hazardous Waste stored in a designated Satellite Accumulation Area (SAA)
7.3 Hazardous wastes are being stored in compatible containers
7.4 Hazardous wastes are segregated by hazard class within the SAA
7.5 Hazardous waste labels and tags are used to identify wastes
7.6 All hazardous waste containers are closed
7.7 All lead solder and scrap metal are collected for recycling or disposal as hazardous waste
7.8 Oily/Solvent soaked rags are managed as hazardous waste in appropriate metal flame proof container with lid
7.9 Contaminated rags disposed of as hazardous waste
7.10 Used mercury containing lamps are being managed appropriately
7.11 Spent lead-acid and recyclable batteries are being recycled
7.12 All chemical spills have been appropriately decontaminated and surfaces cleaned regularly

8 Fire Safety

8.1 Exit signs illuminated & emergency lights operational
8.2 No permanent use of extension cords
8.3 All fire safety equipment are accessible with a 36” access in front
8.4 Electrical cords in good condition
8.5 All storage kept at least 18” below fire sprinklers
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<thead>
<tr>
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<tbody>
<tr>
<td>8.6</td>
<td>All storage must be kept below 24” from ceilings in non sprinklered buildings</td>
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<tr>
<td>8.7</td>
<td>Appropriate fire extinguisher charged/mounted within 75’ of all work stations</td>
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<tr>
<td>8.9</td>
<td>Flammable dispensing containers bonded to prevent static electricity</td>
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<tr>
<td>9</td>
<td>Machine Operations</td>
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<tr>
<td>9.1</td>
<td>Machinery and tools periodically inspected and maintenance/repairs provided as needed</td>
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<td>9.2</td>
<td>All tools returned to appropriate locations at end of the day</td>
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<tr>
<td>9.3</td>
<td>Machinery has adequate clearance for safe operation</td>
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<td>9.4</td>
<td>Circuits grounded/ground pins on plugs</td>
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<td>9.5</td>
<td>Electrical cords inspected (not frayed, damaged, etc.)</td>
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<tr>
<td>9.6</td>
<td>Electrical cords across walkways protected</td>
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<td>9.7</td>
<td>Kilns are inspected and managed appropriately</td>
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<td>9.8</td>
<td>Barrier guards on moving machine parts</td>
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<tr>
<td>9.9</td>
<td>Rotating shafts guarded</td>
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<tr>
<td>9.10</td>
<td>Anti-restart on wood working machines</td>
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<tr>
<td>9.11</td>
<td>Fixed machinery anchored to prevent movement</td>
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<tr>
<td>9.12</td>
<td>Safety zones around shop equipment</td>
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<tr>
<td>9.13</td>
<td>On/Off switch accessible without reaching across point of operations</td>
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</tbody>
</table>

**Additional Safety Concerns:**
Laboratory Safety Training
Hazardous Waste Refresher
Biomedical Waste Refresher
Hazardous Communication
Personal Protective Equipment
Slips, Trips, and Falls
Hearing Conservation
Golf Cart Training
Asbestos Awareness Training
Fire Prevention Safety Training

Environmental Health & Safety
4202 E. Fowler Ave. OPM 100
Tampa, FL 33620
(813) 974-4036
http://www.usf.edu/ehs/