Stanford University—Shop Safety Program

Attachment 2: SHOP SAFE-WORK REQUIREMENTS, PROCEDURES AND PRACTICES

SHOP SAFE WORK REQUIREMENTS

It is the requirement of Stanford University and any department that owns / manages a “Shop” / “Makerspace” that:

- Only persons who are “Authorized” by a Shop Manager / Supervisor may work in restricted areas of shops unescorted.
- A person becomes “Authorized” as indicated by their need to work in a shop, and approval from their immediate Supervisor, PI or Instructor combined with a Shop Manager’s agreement that they possess the training and qualifications for safe work in the shop. This is documented using Attachment 1 and Attachment 2 of the Shop Safety Program.
- Authorization is done for each and every shop, regardless of owner. A Supervisor / PI / Instructor or “Other Shop Manager” cannot authorize access to any shop in which they are not the “Shop Manager” as designated by the Shop Owner using Attachment 3.
- Shop Managers define and maintain a “Restricted Area” within their shop in which high-hazard shop processes occur, and that only “Authorized Persons” may enter and work in unescorted. This is also documented in Attachment 3.
- Shop Managers determine the appropriate safe-work training needs for their shop, and assure that all “Authorized Persons” in the shop have received the orientation and training to their shop. At minimum this includes reading and signing Attachment 2 of Stanford’s Shop Safety Program.
- Stanford University Shops support a Stop Work Rule when unsafe work is witnessed. It is the responsibility of every Shop User to exercise this rule when unsafe work conditions or practices are observed. If you see unsafe behavior or activities, don’t hesitate to use the Stop Work Rule, immediately speak up and stop unsafe work.
- Stanford University Shops comply with Cal/OSHA regulations, the California Electrical Code and other established safety standards by applying this and other EH&S Safe-work Programs / Practices / Requirements as listed in the “Typical Shop Hazards and their Controls” section of the “Stanford University Shop Safety Program” on the EH&S website.
- All electrically energized shop equipment is used in a safe manner as intended by the manufacturer and within the equipment’s Nationally Recognized Testing Laboratory (NRTL) functional listing.
- Shop “Authorized Users” must resist the temptation to rush, and supervisors / instructors / PIs / shop manager must refrain from applying pressure on users to rush work.

USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

All Shop Managers are required to conduct hazard assessments of operations in their shops and apply the “Hierarchy of Hazard Controls” to controlling hazards in their shops. When the use of PPE is required, PPE must be stocked and supplied by the Shop Manager at no cost to all “Authorized Users” and “Visitors” who enter a “Restricted Area”. Selection is based upon evaluation of hazards that are present as follows:

- Appropriate face and/or eye protection whenever powered equipment or flying / airborne particles or hazardous substances or injurious light sources are present.
- Hair-nets or caps when long hair could get wrapped into rotating or rolling equipment, or could be exposed to flames or other such hazards.
- Hard hats or bump caps when someone is working over your head, head-banger obstructions exist, or when a Shop Manager / Supervisor requires them.
- Dust masks may be used by anyone at any time for airborne dust, but use of other respirators is determined by indoor-air-quality hazard assessment and are distributed to individual personnel through their enrollment in the Stanford University EH&S Respiratory Protection Program.
- Gloves and other hand protection must be selected and worn based upon hazards. Use EH&S’s Glove Selection Guideline for ideas on what kinds of gloves should be worn based upon hazards.
- Full-cover shoes with non-slip soles and an enclosed heel are required in all “Restricted Areas”. Safety boots, optionally with steel / composite toes, are required during the movement of heavy equipment and work materials, or the use of industrial lift equipment or cranes.

PERSONAL SAFETY

- Long and medium length hair, including facial hair, must be tied back and put into a bun or inserted under a shirt-collar, or contained in a hair-net, when entering and working in a “Restricted Area” of any shop.
- Open-toed shoes, flip-flops, clogs, sandals, shorts, scarves and loose-fitting clothing ARE NEVER WORN in any shop’s “Restricted Area”.
- No food or drink is to be brought into and/or consumed in a “Restricted Area” of any shop.
- Remove all dangling or bulky jewelry before working in a “Restricted Area”. Best practice is to remove all jewelry.

SOLO WORK RULES IN ACADEMIC / STUDENT SHOPS

1. Shop access outside of supervised hours is restricted to specific “Authorized Persons” based upon the Shop Manager’s discretion. Access for on-going solo work is not granted in any Academic Shop. On-going and/or routine working solo outside of ‘normally scheduled operation and/or staffed hours’ is strictly forbidden and may result in revocation of shop-use privileges by the shop’s owner department.

2. An “Authorized Person” may work solo in a Shop during ‘normally scheduled operation and/or staffed hours’ when communications means are made with the Shop Manager / Supervisor to assure the person’s continuous safety and ability to communicate immediately with emergency responders.

3. When using large fixed powered shop equipment, flammable solvents, acids and/or etchants, heat and/or spark-producing equipment, at least one other authorized person is to be in the shop area.

4. Provisions for solo-work on a case-by-case basis can be made between the shop manager and the solo worker by completing a “Solo Work Risk Mitigation Plan” (Attachment 4) as outlined in that section of the Stanford Shop Safety Program document.
SHOP SAFE—WORK PRACTICES

COMPRESSED AIR: Compressed air or other gases in excess of 10 pounds per square inch are never used to blow dirt, chips or dust from clothing while it is being worn, or from any surface as part of routine shop cleaning. Use suction devices or other cleaning methods instead.

DRAIN DISPOSAL: Hazardous waste may not be poured down the shop drain. The only materials that may be disposed down the drain are in the Non-hazardous chemical wastes list*. All hazardous and chemical wastes must be disposed of by EH&S. Failure to comply with local permit requirements for campus drain disposal could lead to substantial fines. For more information see the Stanford Water Planning and Stewardship SOP** and the document on Best Management Practices***.

*<https://ehs.stanford.edu/reference/list-non-hazardous-chemical-wastes>
**<https://suwater.stanford.edu/sites/g/files/sbiybj7756/f/glass_wash_sop.pdf>

ELECTRICAL SAFETY: All work on and development of electrical equipment must be conducted according to guidelines and compliance requirements set by Stanford University’s Electrical Safety Program. Work that must be done on energized electrical circuits must be done in accordance with NFPA70E requirements. Otherwise, work on electrical equipment must be done verified de-energized and locked / tagged out by all persons working on the equipment.

EMERGENCY PREPAREDNESS AND RESPONSE:
- Always consider electrical equipment, pressurized systems, mechanical components or compressed gas equipment “energized” until you yourself have positively proven it otherwise.
- Do not take someone else’s word that they turned off the electric power, or bled pressurized systems to zero pressure. Always verify for yourself that equipment is properly de-energized and stopped movement before removing machine guards or working in high-hazard areas of shop equipment.
- Learn and know how to shut down equipment in an emergency BEFORE there’s an emergency.
- Design and plan for safety by looking for hazards and anticipating problems.
- Whenever possible de-energize the equipment before testing or working on it.
- Positively ensure all hazards are identified before blocking, blinding, bleeding or conducting lock-out and tag-out.
- Lock-out and Tag-out broken, mothballed or unsafe equipment until it can be repaired or permanently removed.
- Refer to the shop’s Hazard Communication (HAZCOM) Program and Safety Data Sheets (SDS) to understand material / chemical hazards, emergency contact information, and emergency response procedures.

ENERGY ISOLATION – LOCK OUT TAG OUT: Know and apply the Stanford University Energy Isolation / Lock Out - Tag Out Program to all facility and equipment locations whenever:
- Hazardous energy release could cause unexpected movement of equipment,
- Unexpected flow of energy could cause injury or equipment damage,
- A machine-guard or interlock is removed or bypassed, or
- There is more than one energy supply to a machine, and the energy source cannot be simply ‘unplugged’ so that energy-control is exclusive to the person working on/with the equipment.

FORKLIFTS / AERIAL LIFTS: Only drivers / operators authorized by the Shop Manager / Supervisor and enrolled in the Campus Industrial Lift Truck Safety Program and/or Aerial Lift Safety Program who hold a current operator’s license issued by the EH&S Program Manager are permitted to operate such vehicles.

HAND TOOLS AND SHOP EQUIPMENT: Only persons authorized by the Shop Manager / Supervisor and trained in the safe use of hand tools and shop equipment are allowed to use them. Use hand tools and shop equipment only as they were designed / intended to be used.

HOUSEKEEPING: The work and surrounding area in which you are working must be kept neat, clean and safe at all times. If you see a mess, spilled liquid or debris, whether you created it or not, take the time to clean it up.

HYDRAULICS: Only persons authorized by the Shop Manager / Supervisor and trained in the safe operation and/or development of hydraulic systems are permitted to assemble, qualify, and operate hydraulic equipment connected to any shop hydraulic system.

OVERHEAD CRANES / HOISTS: Only persons authorized by the Shop Manager / Supervisor and trained on the Campus Crane Safety Program and who are deemed a “Qualified Crane Operator” according to the requirements of the program are permitted to operate such equipment.

WORK BRIEFING: Participate in a safe work briefing with all personnel in the area before commencing any shop work. Assure you discuss planned work with the Shop Manager / Supervisor, or their designee, to identify any hazards of your work, or other hazardous conditions nearby due to work being done by others. Know the Shop’s emergency procedures. Maintain the protection of covers, barriers and shielding of all electrical equipment, hot work, machine guards, chemical storage, etc. Never drill into a wall or floor slab without Shop Manager and Building Manager approval.
SHOP NAME: ____________________________________________________

LOCATION / DEPARTMENT: ________________________________________

I have read, had an opportunity to ask questions about, understand and been given a copy of Stanford University’s “Shop Safe Work Requirements, Procedures and Practices”. I pledge to only conduct work according to the safe requirements, procedures and practices outlined within the contents of the document. I understand that failure to follow requirements, procedures and practices outlined within the document may result in immediate expulsion and possibly permanent revocation of privileges to work in the shop noted above. In addition, other disciplinary action may be brought by the department and/or Stanford University management for failure to follow these requirements, procedures and practices.

Signature: X ______________________________________
(Authorized Shop User)

Print name: ______________________________________

Date: _________________________________________

Signature: X ______________________________________
(Shop Supervisor / Manager)

Print name: ______________________________________

Date: _________________________________________

Instructions to the Shop Manager / Supervisor: Please separate the 2-page “Shop Safety Requirements / Procedure / practices document and provide it as a ‘hand-out’ copy to every ‘Authorized User’ who will be working in your shop. Have each person sign / date this third page of the requirements / procedures / practices document and keep their signed page in your file as evidence of basic safety training / orientation to your shop. To save resources, it’s suggested pages 1 and 2 be printed front and back on one sheet of paper.

Provide additional training as you may determine is needed based upon assessment of your shop’s hazards, equipment and operations. Include a checklist of training subjects and materials covered as evidence of your training efforts.

This is Page 3 of 3 – Keep the signed copy on file as evidence of your shop safety training / orientation of each Authorized Shop User.