SHOP / MAKERSPACE SAFETY - PROGRAM ADMINISTRATION

1. Does your shop / makerspace have a copy of last year’s self-assessment form and have all needed safety corrections documented on the form been completed?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: If a self-assessment was completed last year, obtain a copy and determine current status of the shop. If necessary, contact EH&S [650-723-0448] for help.

2. Does your shop / makerspace have a current Shop / Makerspace Designation MOU form “Attachment 3” filed with the Shop Safety Committee and EH&S?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Every shop / makerspace must be designated for use for this purpose. To designate a space for use as a shop / makerspace, complete the Shop / Makerspace MOU Attachment 3 that identifies the space location, size, owner, shop manager, hazardous processes done in the space, and who will represent the shop / makerspace on the Shop Safety Committee. In addition, Student Groups using a shop / makerspace are granted space-use for up to one year using this MOU. Attachment 3 MOUs are available on the EH&S website. Contact EH&S [650-723-0448] with any questions.

3. Are “visitor spaces” versus access-restricted work areas clearly defined in the shop / makerspace? And, are only ‘authorized’ personnel, and their escorted visitors, allowed in restricted ‘work areas’ when wearing appropriate PPE?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Determine where visitors to the shop must stay, beyond which they must be escorted when entering into a shop work area / restricted space. Assure that visitors only enter shop work areas with an escort, and require that all people entering the restricted shop work areas wear appropriate PPE. Provide PPE to visitors as shop hazards may dictate.

Completion Date: ________________________________

4. Does the shop / makerspace have a process to ‘authorize’ personnel to work unescorted in restricted work areas?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Determine what hazards are present in the shop and what locations are ‘safe’ for unescorted visitors to stay in. Determine what users must know about the shop / makerspace to ‘work safe’ and then implement training and other processes to “authorize” users to work unescorted, and to escort visitors if needed. Use “Attachment 1” of the Shop Safety Program to document each shop / makerspace user’s authorization to work in the shop / makerspace. Use “Attachment 6B” for documenting specific training any shop / makerspace users undergo prior to being ‘authorized’ to work unescorted in the shop / makerspace.

Completion Date: ________________________________
5. Does the shop / makerspace have a policy to prohibit solo work, or develop a “Solo Work Risk Reduction Plan” using Attachment 4 when users must do solo work?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: The Shop Safety Committee has adopted a policy that Solo Work is hazardous and must not be routinely done. If solo work must be done, a “Solo Work Risk Mitigation Plan” must be completed before solo work is done. This plan is completed by the solo worker and the shop manager using Attachment 4.

Completion Date: _______________________________________

6. Are shop / makerspace users and visitors provided with eye, face, and hand protection such as safety glasses, face shields and gloves where needed?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Ensure shop users and visitors have appropriate safety equipment and PPE available for use at no cost to them. Contact EH&S [650-723-0448] with any questions.

7. Are shop / makerspace users and visitors provided hearing protection, such as ear plugs or ear muffs, while operating or when nearby noisy pieces of equipment? Are locations where hearing protection is required clearly marked with signage?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Workers exposed to excessive noise may need to be enrolled in the hearing conservation program. More information about this can be found on the EH&S website, or by calling EH&S at [650-723-0448].

SHOP / MAKERSPACE - SAFETY INFORMATION / TRAINING

8. Does the shop / makerspace have Job Safety Analyses, Standard Operating Procedures, or Operations Manuals that address hazards for all power tools and hazardous processes?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Obtain operator's manuals from the manufacturer or write and/or adapt an existing job safety analysis for each power tool, piece of equipment or shop process. Ensure that the JSAs are kept in the “Shop Safety Reference Manual” and that shop users are familiar with the manual. Many JSAs are available online, can be written by shop users or can be adapted from other shop's JSAs. Contact EHS at [650-723-0448] for help in developing JSAs and building your Shop Safety Manual.

Completion Date: _______________________________________
9. Is there a file or binder of Safety Data Sheets (SDS) for each chemical stored or used in the shop? Or, are all shop personnel trained on how to access and use the online campus SDS access system?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Information regarding SDSs is available at EH&S Chemical Safety Database [https://ehs.stanford.edu/services/safety-data-sheet-database]. Obtain missing SDSs from product vendors and populate a hard-copy of the SDS in the Shop Safety Manual. Or, post clear information on how to access the campus’ online SDS system, and train all shop users on how to access/use the online system. Contact EH&S at [650-723-0448] for further information / support as needed.

Completion Date: _________________________________________

**HOUSEKEEPING**

10. Do all work areas have adequate ventilation, particularly for hazardous operations (e.g., welding, soldering, painting, spray coating, solvent use)?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Contact EH&S [650-723-0448] to have ventilation evaluated if there is a concern. Provide additional exhaust ventilation for operations that create dust, fumes, mists, or vapors.

Completion Date: _________________________________________

11. Are exit/egress pathways maintained clear and all exits clearly marked?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Clearly define egress pathways and enforce keeping these pathways clear at all times. Assure that exit signs are visible from all shop locations.

Completion Date: _________________________________________

12. Are shop / makerspace users required to clean up their work area(s) prior to departure?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: All shop / makerspace users are required to clean up after themselves. It must be part of shop / makerspace culture that every user is responsible for the mess they make, and clean up to return the work area to a “work ready” condition for the next user.

Completion Date: _________________________________________
FIRE / EMERGENCY SAFETY

13. Are egress pathways / exit aisles clearly identified and kept unobstructed to exit doorways?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Ensure that all exit pathways are at least 32” wide and kept clear. Remove any obstructions and stabilize or secure anything that could fall into an egress pathway during an earthquake.

Completion Date: __________________________________________

14. Are emergency evacuation routes clearly identified using a building map, and communicated to shop / makerspace users as part of their training?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: All shop / makerspace users must know the evacuation plan for the space, where to go for a muster-point during an emergency and how to get there. This information must be part of any shop / makerspace user’s orientation / training before using the space.

Completion Date: __________________________________________

15. Are fire alarm pull boxes and fire extinguishers clearly identified and unobstructed?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Ensure that all fire alarm pull boxes and fire extinguishers are clearly labeled. Remove any obstructions in front of fire alarm pull boxes and fire extinguishers.

Completion Date: __________________________________________

16. Are portable fire extinguishers tagged with current annual inspections?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Contact EH&S to have fire extinguishers inspected if they have not been inspected within the last 12 months. Every extinguisher should have a tag attached to it with the expiration date indicated. The extinguisher is OK if the date is more than 30 days in the future.

Completion Date: __________________________________________
17. Are the emergency eyewashes tested (flushed) monthly, with the tests documented?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Assign a shop user to test all emergency eyewashes monthly. Document each test in a logbook or on an attached tag. Contact LBRE for repairs. Call EH&S for a tag [650-723-0448], if one is needed.

Completion Date: ________________________________

18. Are all eyewash and emergency shower stations free of obstructions that would prevent quick access by someone temporarily blinded?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Remove all obstructions from emergency eyewashes and showers and the pathways leading to them. Keep access open at all times.

Completion Date: ________________________________

19. Are flammable gas cylinders and oxygen cylinders separated by a fire-rated wall or stored at least 20 feet apart?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Separate flammable gases from oxygen by a fire wall or a distance greater than 20 feet. Note: Storage of oxygen and acetylene cylinders on welding carts that are designed for the purpose/use of flame-welding / cutting are permitted.

Completion Date: ________________________________

20. Are covered metal containers used for oily, solvent, paint-soaked waste?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Ensure that covered metal containers are provided and used for the disposal of oily and paint-soaked rags.

Completion Date: ________________________________

ELECTRICAL SAFETY and ENERGY ISOLATION

21. Are electrical panels accessible, with at least 36” clearance at the front of the panel?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Ensure that there is a minimum of 36” of clearance in front of all electrical panels, and a 32” wide pathway to access the panel area.

Completion Date: ________________________________
22. Is there a procedure for removing or isolating dangerous (damaged, broken, unguarded) power-tools or equipment from service?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Establish a procedure such as using “out of service” tags to identify and prevent the use of dangerous items.

Completion Date: _________________________________________

23. Does your shop use Energy Isolation - Lock out Tag out (EI-LOTO) to isolate equipment before machine guards are removed, or before damaged equipment can be repaired?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable – we don’t do this work)

Corrective Action: If your shop builds, repairs, modifies or otherwise works with or on equipment that is 'hard wired' or 'hard plumbed' to a facility, utility or other energy source, EI-LOTO must be practiced. Contact EH&S Occupational Safety and Health Team for more information on Stanford University’s Energy Isolation - Lock out Tag out (EI-LOTO) Program.

Completion Date: _________________________________________

HAND TOOLS and POWERED HAND TOOLS

24. Are all hand-operated tools free of defects (such as cracked handles, frayed or damaged cords, missing parts, missing guards, etc.) that make them unsafe?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Remove defective tools from service. Either have them repaired, or replace them with new equipment that is in good working condition.

Completion Date: _________________________________________

POWERED MACHINERY

25. Do all powered machines have manufacturer-supplied, or otherwise appropriate, machine guards on all pinch points, crush points, rotating parts, blades, tooling, chucks, etc.?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Install and use manufacturer-supplied machine guards on all powered equipment. For equipment that is too old for manufacturer-supplied guards, assure that all areas of the equipment have a ‘home-made’ guard to prevent accidental access to powered parts. Contact EH&S [650-723-0448] for assistance with machine guarding assessment, design and use.

Completion Date: _________________________________________
26. Does the shop have a process to change out and/or sharpen tooling and drill bits when they become dull or damaged?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Sharp tooling allows powered equipment to perform safely and predictably, run without excessive heat buildup and machine workable materials more quickly. Shops should have a process to change out dull or broken tooling routinely.

Completion Date: ________________________________

27. Does the shop require users to remove hand/wrist jewelry, neck and other body jewelry, loose fitting clothing, as well as require that long hair is tied or worn under a hat or cap while operating powered equipment?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: All shop users must prepare to safely work with powered equipment by removing jewelry from hands/wrists, loose neck and other body areas, when working with powered equipment. Hair and loose-fitting clothing must always be under control and kept away from powered equipment.

Completion Date: ________________________________

MATERIAL HANDLING / CRANES / HOISTS / RIGGING

28. Are materials in excess of 50 lbs routinely handled with the assistance of material handling devices such as pallet jacks, pump trucks?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Ensure proper lifting techniques and equipment are used. For questions about safer material handling devices, contact EH&S at [650-723-0448].

Completion Date: ________________________________

29. If materials in excess of 50 lbs are handled with the assistance of devices such as cranes, chain-falls, hoists, rigging, etc., has this equipment been load tested/inspected by an OSHA certifying inspection agent?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Cal-OSHA requires cranes, hoists, slings, hooks and other lifting gear be inspected and load tested. EH&S can arrange for and provide training for safe operation/load testing/rigging inspections. For questions about cranes, hoists or rigging devices, contact EH&S at [650-723-0448].

Completion Date: ________________________________
30. If materials in excess of 50 lbs are handled with the assistance of forklifts or other type of industrial lift-trucks, are the lift-trucks routinely inspected for safety before use and are operators ‘licensed’ to operate these truck(s) through the EH&S Industrial Lift Truck Safety / Training program?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Cal-OSHA requires forklifts, pallet stackers and other industrial lift-truck operators are trained and licensed prior to equipment use. In addition, equipment must be routinely inspected for safety through documented safety inspections. EH&S provides classroom and hands-on training for safe equipment inspection, operation and licensing for using Industrial Lift-Trucks. For questions about Industrial Lift Truck Safety, or to enroll shop users for training / licensing, contact EH&S at [650-723-0448].

Completion Date: _________________________________

HAZARDOUS MATERIALS and HAZARDOUS COMMUNICATIONS (HAZCOM)

31. Are emergency procedures and telephone numbers clearly posted?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Post emergency procedures, evacuation routes and muster-locations, telephone numbers (police, fire, ambulance) near the telephone(s) where shop users have access.

Completion Date: _________________________________

32. Is a Shop Hazard Communication Program HAZCOM template completely filled out and posted in the shop? Does a ‘shop safety orientation’ for personnel include reference to the HAZCOM information for the shop?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Obtain and complete the HAZCOM template available from EH&S [650-723-0448]. Post in a conspicuous place, and include training about HAZCOM for the shop as part of your shop’s user safety training.

Completion Date: _________________________________

33. Are all containers of chemicals labeled with the contents and primary hazard(s)?

☐ Yes (Satisfactory)  ☐ No (Needs Correction)  ☐ N/A (Not Applicable)

Corrective Action: Properly label all chemical containers, including stored and temporary containers.

Completion Date: _________________________________
34. Are incompatible chemicals stored separately (e.g., acids separate from bases, oxidizers separate from flammables)?

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Contact EH&S [650-723-0448] for assistance with chemical storage and segregation, or go to EH&S website for further information on chemical storage safety.

Completion Date: ________________________________

35. Are all compressed gas cylinders adequately secured with non-combustible restraints to keep the cylinder(s) from falling during an earthquake? (If chains are used, two should be present for each cylinder.)

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Contact EH&S [650-723-0448] for advice on how to properly secure cylinders. Bench clamps may not be used for securing cylinders. Train shop personnel to cap compressed gas cylinders when not in use.

Completion Date: ________________________________

36. Has a current chemical inventory materials door sign (provided by EH&S) been posted at the shop / makerspace entrance following your most recent chemical inventory update (within last 12 months?)

☐ Yes (Satisfactory) ☐ No (Needs Correction) ☐ N/A (Not Applicable)

Corrective Action: Locate and post the updated door sign at the shop / makerspace entrance or contact EH&S at [650-723-0448] for another copy.

Completion Date: ________________________________