



Environmental Health & Safety

Policy & Procedure Manual



Title: Machine Shop Safety

Program: Occupational Safety

Effective Date: December 2011

1. **Purpose:** This policy identifies the requirements for campus machine shops to operate safely and educate students on safe techniques to use the equipment.
2. **Scope:** This policy applies to all Machine Shops and areas where power tools that are typically found in a machine shop are operated on University property. These tools include, but are not limited to lathes, milling machines, table saws and drill presses.
3. **Policy:** Department heads and supervisors are responsible for ensuring that all employees, students and visitors work safely in machine shops or when working with any machine or tool that can cause injury. The safety requirements include, but are not limited to access control, training and work rules and procedures.
4. **Responsibilities:**

Machine Shop Supervisor must:

 - 4.1 Enforce the EH&S and specific shop “Machine Shop Safety Rules”.
 - 4.2 Maintain specific records for a minimum of three years. These records include:
 - a. Training records for the EH&S EOS 029 and specific shop safety training
 - b. Safety agreements signed by students
 - c. Sign in book showing who is using equipment
 - d. Safety Data Sheets (MSDSs) and chemical inventory for all hazardous materials in the shop
 - e. Accident forms for any accident that occurred in the area
 - 4.3 Maintain machine guards, safeguarding devices and safeguarding methods in place and ensure they are properly used.
 - 4.4 Label all emergency shut off switches or buttons.
 - 4.5 Enforce the use of Personal Protective Equipment (PPE) by everyone working on the tools and ensure the PPE is appropriate for the hazards.
 - 4.6 Regularly inspect equipment for safe operating condition, adjustment and repair in accordance with the manufacturer’s information. This inspection must occur no less than once per year. This inspection must be documented either on the tool (e.g., tag) or in a logbook. The *Machine Shop Inspection Checklist* in Appendix 2 should be used. This inspection shall include:
 - a. All power cords, machines, and tools
 - b. Any personal tools brought in by students/staff before they are permitted to be used in shop
 - 4.7 Establish Lock-Out Tag-Out (LO/TO) procedures for machines

- 4.8 Provide instruction on machine use to all shop users according to manufacturer's requirements. The *Machine Shop Tool Risk Assessment* in Appendix 1 can be used as part of this training. At a minimum, this training must include:
- The function, location and use of controls;
 - Specific startup and stopping procedures;
 - A safe method for installing, removing, and adjusting tooling;
 - The location and method for installation and adjustment of protective devices and guards, and method to test to assure the proper function of safeguarding method;
 - The use of safe working procedures;
 - The control strategy designed to eliminate or reduce the identified hazards;
 - Who to report any apparent defect, damage, malfunction or inconsistent or unpredictable performance of the machine; and
 - Any specific training recommended by the manufacturer.
- 4.9 Make minor repairs to machines or take machine "out of service" until repairs are made by qualified technician/staff.
- 4.10 Keep doors to shop locked or secured when no one is working or in the office.

Environmental Health & Safety (EH&S) will:

- 4.11 Develop and maintain *EOS 029 Machine Shop Safety* course.
(<http://www.stonybrook.edu/ehs/training/courses.shtml?eos029>)
- 4.12 Audit machine shops for compliance with this policy. The *Machine Shop Inspection Checklist* in Appendix 2 will be used for these audits.

5. References:

- 5.1 EH&S Policy 3-2 *Control of Hazardous Energy (Lock-Out/Tag-Out) or*
<http://www.stonybrook.edu/ehs/occupational/lockout.shtml>
- 5.2 Occupational Safety and Health Administration (OSHA)
29 CFR 1910.211 through 242
Machinery and Machine Guarding
Hand and Portable Powered Tools and Other Hand-Held Equipment
Machine Guarding (<http://osha.gov/SLTC/etools/machineguarding/index.html>)
Lockout/Tagout (<http://osha.gov/dts/osta/lototraining/index.html>)
Compressed Air Guns
(http://osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=1742)
- 5.3 American Nation Standard Institute (ANSI)
a. ANSI B11.0-2010
Safety of Machinery – General Requirements and Risk Assessment
b. ANSI B11.6-2001 (R2007)
Safety Requirements for Manual Turning Machines with or without Automatic Control

6. Definitions:

Independent Authorized User: A person qualified to work in a Machine Shop. This person must have:

- a. Stony Brook University ID
- b. Successfully completed specific shop course
- c. Successfully completed EH&S Shop Safety course EOS 029
- d. Sign Shop Safety Rules and agrees to abide by all rules

Machine Shop: A workshop or area where power-driven tools are used for making, finishing, or repairing machines or machine parts. Machining processes include, but are not limited to turning, drilling and milling, shaping, planing, boring, broaching and sawing. Advanced machining techniques include electrical discharge machining (EDM), electro-chemical erosion, laser cutting, or water jet cutting to shape workpieces. These machines may have automatic capability but may not be equipped with automatic part handling or bar-feed mechanisms nor automatic tool changing systems.

7. Procedure:

7.1 Everyone working on machines must have:

- a. Stony Brook University ID
- b. successfully completed specific shop course
- c. successfully completed EH&S course; students must repeat the course every 5 years
- d. students must sign the shop safety rules agreement annually

7.2 Students and visitors must sign in (Name, Date, SBU ID, machines to be used) before using machines.

7.3 No student is permitted to work on machines unless there is someone else with appropriate safety training present. No working alone!

7.4 Everyone must be appropriately dressed for working on machines:

- a. No loose garments. Shop aprons, lab coats with tight cuffs or work coveralls must be worn over loose clothing/religious garb
- b. Long pants
- c. Closed-toe shoes
- d. No jewelry, rings, hanging earrings, neckties, chains etc.
- e. Shoulder length or longer hair must be tied up and secured (not hanging), or in a hat or hair net

7.5 Everyone working in machine shops with eye hazards must wear appropriate eye protection.

7.6 All machine shop users must follow all appropriate policies, procedures and instructions for working with the tools.

7.7 All machine shop users shall not circumvent, remove or otherwise disable an existing safeguard or device required on the machine.

7.8 Report all accidents following University policy

[http://naples.cc.sunysb.edu/Admin/HRSForms.nsf/2fc74c45d6732a3c85256a810051fa5f/c3b33ad401634bd085256aa1006276bc/\\$FILE/SUSB3019.pdf](http://naples.cc.sunysb.edu/Admin/HRSForms.nsf/2fc74c45d6732a3c85256a810051fa5f/c3b33ad401634bd085256aa1006276bc/$FILE/SUSB3019.pdf).

All rules will be strictly enforced and violations will be documented following established disciplinary procedures. Non-compliance with this policy can result in loss of “independent authorized user” status and no longer being allowed to work in the machine shop.

7.9 Every Machine Shop must have:

- a. Door sign stating: “Authorized Personnel Only”
- b. First Aid Kit

- c. Fire Extinguisher available – this is generally located in the corridor
- d. Emergency eyewash if chemicals that can injure the eye are used
- e. Emergency phone numbers posted (emergency numbers to include University Police and the Machine Shop Supervisor)
- f. Rules specific to the machine shop must be posted
- g. Operating manuals or other equivalent resources for each piece of equipment
- h. Compressed air guns reduced to 30 psi or less (reduce pressure at compressor *OR* use safety guns)
- i. Area around machines must be marked off to delineate a “safety zone” where only the operator should be standing when the machine is in operation. This can be tape on the floor for permanently installed equipment or a temporary barrier for equipment that is moved.

8. Related attachments, forms or documents:

8.1 EOS 029 Machine Shop Safety training program

<http://www.stonybrook.edu/ehs/training/courses.shtml?eos029>

8.2 Machine Shop Safety Rules and Agreement (on EH&S EOS 029 webpage)

8.3 Student Accident Form <http://naples.cc.sunysb.edu/Admin/HRSForms.nsf/pub/EHSD0333/>

8.4 Machine Tool Risk Assessment (Appendix 1)

8.5 Machine Shop Safety Audit (Appendix 2)

Appendix 1. Machine Shop Tool Risk Assessment

This list is not all-inclusive. Not all hazards will apply to a particular machine. Always refer to the manufacturer's instruction manual for specific information.

| Hazard Class | 1 | 2 | 3 | 4 | 5 |
|---------------------------|---|--|---|---|--|
| Power | Low power hand/small bench tools (2-4 amp @ 120 VAC, <9V cordless) | Medium power tools (1/4 to ½ hp; <10 amp @120 VAC; 14-18V cordless; specialized enclosed NC-computer tools) | Powerful portable and small benchtop tools (>1/2 hp; 10-15 amps @ 120 VAC; 24-36V portable, pneumatics, hydraulics) | Light industrial tools (typically benchtop; <1/2 hp, pneumatics, hydraulics) | Large industrial tools (manual and NC-controlled) |
| Common Examples | <ul style="list-style-type: none"> • Dremel tool • Cordless drill under 18V • Palm Sander • Soldering iron/gun • Heat gun • Hot melt glue gun • Sewing machine • 3D printer | <ul style="list-style-type: none"> • Jig Saw • 3/8" hand drill • Corded devices <1/3 hp • 18-24V cordless drill • Laser cutter/engraver • Thermal foam cutter | <ul style="list-style-type: none"> • Circular saw • Belt sander • Framing nailer • ½ hp geared drill • Reciprocating saw • >18V cordless tool • Chop/miter saw • Router • Mini-lathe • Angle grinder • Printing press | <ul style="list-style-type: none"> • Small bandsaw • Small drill press • Small/benchtop milling machine • Small/benchtop lathe • Belt/disc sander • Horizontal saw • Scroll saw • Planer/jointer • Bench grinder • SawStop style tablesaw | <ul style="list-style-type: none"> • Full sized milling machine • Full sized metal lathe • Table saw (non-SawStop) • Radial arm saw • Large drill press • Large band saw • Surface grinder • Large jointer/planer • Shaper/moulder • Power shear |
| Potential Injuries | Cuts Abrasions Minor burns Minor struck-by flying objects Electric shock | <i>As for Class 1, plus:</i> Lacerations Punctures Minor crushing injuries Eye injuries | <i>As for Class 2, plus:</i> Severe bleeding Minor amputations | <i>As for Class 3, plus:</i> Minor entanglement | <i>As for Class 4, plus:</i> Immediately life threatening injury or death |
| Potential Severity | Low: First Aid | Low: First Aid or minor injury requiring emergency room visit | Medium: Immediate emergency room visit Permanent disability or disfigurement | High: Immediate emergency room visit Permanent disability or disfigurement | Highest: Serious injury or death |

| Task | Hazard | Danger Zone | Risk Reduction Methods |
|---|---|---|---|
| Workpiece clamping | Crushing | Between fixed and moving part including work clamping (chuck or tailstock) and tool magazine | <p>Safeguarding:</p> <p><i>Guards:</i> Fixed, interlocked, adjustable, moveable</p> <p><i>Devices:</i> Movable barrier devices; Light curtains/beam device; Two-hand operating lever, trip and control device; Safety mat device</p> <p><i>Awareness:</i> Barriers; Signals; Safety signs</p> <p><i>Other measures:</i> Safe-distance guarding</p> <p>Equipment:</p> <p>Emergency Stop device (palm or push button)</p> <p>Safety blocks, locking pins or limiting pins</p> <p>Slide locks</p> <p>Work holding equipment</p> <p>Process malfunction, detection & monitoring equipment</p> <p>Safety interface/relay modules</p> <p>Shields</p> <p>Enabling devices</p> <p>Hold-to-run controls</p> <p>Measures for isolation and energy dissipation</p> <p>Information and Training:</p> <p>Signage</p> <p>Instruction</p> <p>Operating Manuals</p> <p>Safe Work Procedures</p> <p>Supervision</p> <p>Permit-to-work system</p> <p>Personal Protective Equipment</p> |
| Whipping bar stock | Crushing | Either end of spindle | |
| Moving axis | Shearing | Between tool/spindle and table | |
| Spindle or tool running or cutting | Cutting or severing | At spindle or tool | |
| Part feeding | Entanglement | By moving part including bar feed and tool magazine | |
| Rapid travel of table or spindle head | Drawing in or trapping | Envelope of movement of workpiece on table axes or tool in spindle head | |
| Moving or rotating tool | Impact | At spindle or tool | |
| | Stabbing or puncture | At sharp tool faces | |
| Maintenance or repair | Electrical contact (direct or indirect) | Direct or indirect contact with normally live parts | |
| | | Electrical noise | |
| | | Electrostatic discharge | |
| | | Arc flash hazard | |
| | | Improper wiring or grounding | |
| | | Liquid or wet locations | |
| | | Overvoltage or overcurrent | |
| Control system failure: <ul style="list-style-type: none"> • Modification of control system • Defect or failure of one or several components of the control system • Variation or failure in power supply to control system • Inappropriate selection, design or location or control devices | Crushing Shearing Cutting Severing Entanglement Trapping Impact Puncture Electrical contact | Dropping or ejection of a mobile part of the machine or of a workpiece clamped by the machine | |
| | | Failure to stop moving parts | |
| | | Machine action resulting from defeating or failure of safeguarding devices | |
| | | Uncontrolled speed change | |
| | | Unintended or unexpected start-up | |

This list is not all-inclusive. Not all hazards will apply to a particular machine. Always refer to the manufacturer's instruction manual for specific information.

Based on Yale EH&S Student Shop Safety Policies & Procedures, ANSI B11.0 and B11.6

Appendix 2. Machine Shop Inspection Checklist

| | |
|--|---|
| Location: | Date: |
| Shop Supervisor: | Inspected By: |
| General Safety Not applicable to this Shop <input type="checkbox"/> | |
| 1. Do employee(s)/student(s) have SBU ID? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 2. Did the student(s) "sign-in" the log book prior to using machinery? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 3. Is the student(s) authorized to work alone? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 4. Are the employee(s)/student(s) appropriately dressed for working on machines? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 5. Did the employee(s)/student(s) successfully complete EH&S (On-Line/Live) Machine Shop Safety training prior to using machinery? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 6. Did the student(s) read the "Machine Shop Safety Rules" and sign the "Machine Shop Safety Agreement" form prior to using machinery? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 7. Did the student(s) receive proper safety training by machine shop supervisor prior to using machinery? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 8. Long loose hair must be contained in a scarf, under a cap or other fashion when operating machinery. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 9. Loose clothing, loose neck wear and jewelry are not being worn when operating or in close proximity to, machinery. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 10. Are safety signs (danger, warning or caution, etc.) posted where necessary? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 11. Is an "Authorized Personnel Only" sign posted? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 12. Is student(s) access limited to regular hours of operation? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 13. Is protective eyewear worn at all times? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 14. Are there manufacturer's manual or other reference manuals available? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Housekeeping <i>Inspect all shop areas for the following:</i> Not applicable to this Shop <input type="checkbox"/> | |
| 15. Is the shop floor free from slip, trip, and fall hazards (water, oil, debris, etc.)? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 16. Are shop materials, including scrap, stored in a safe manner? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 17. Are shop tools safely stored away and not left on machines? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 18. Are oily rags stored in appropriate metal containers? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Electrical Safety <i>Inspect all power tools, machinery, electrical receptacles and extension cords for the following:</i> Not applicable to this Shop <input type="checkbox"/> | |
| 19. Have damaged, defective equipment been removed from service? (Ex. missing ground prongs, cut/pinched cords, etc.) | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 20. Are hand-held power tools either grounded or marked as "double insulated"? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 21. Are GFCIs used in wet or damp locations? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 22. Is the area free of recognized electrical hazards that are likely to cause death or serious physical harm? (Ex. missing knockouts, missing circuit breakers, missing/broken/damaged covers, exposed live electrical components, open/unlocked electrical panels, etc.) | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 23. Are circuit breaker panels unobstructed? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 24. Extension cords rated for "heavy duty"? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 25. Extension cords in good condition? (i.e. no missing ground prongs, cord not damaged) | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 26. Extension cords protected from damage (i.e. not run through doors, windows, on floors where they can be run over, creating a tripping hazard)? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| Eyewash Stations <i>Inspect all eye wash stations for the following:</i> Not applicable to this Shop <input type="checkbox"/> | |
| 27. Is the required eye wash station available? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 28. Eyewash flushed on a weekly basis? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 29. Eyewash station ready to use? (i.e. access not blocked) | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 30. Eyewash station clearly labeled? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 31. Eyewash station functioning properly? (i.e. water flows at the appropriate rate) | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |

| Fire Safety <i>Inspect flammable liquids and combustibles and other fire issues for the following:</i> | | Not applicable to this Shop <input type="checkbox"/> | | |
|---|--|---|-----------------------------|------------------------------|
| 32. | Flammable liquids stored in approved flammable liquid cabinets? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 33. | Flammable liquid cabinets located away from ignition sources and exits? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 34. | Combustibles minimized and stored properly (i.e. at least 3' away from ignition sources, not violating proper ceiling clearances)? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 35. | Exits, corridors, stairways, and aisles unobstructed? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 36. | Exits, where not obvious, marked with appropriate exit sign(s)? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Hazard Communication <i>Inspect hazardous chemical products for the following:</i> | | Not applicable to this Shop <input type="checkbox"/> | | |
| 37. | Is there a chemical inventory list of all hazardous chemicals readily available? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 38. | Are Material Safety Data Sheets (MSDS) readily available for all hazardous materials in the shop? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 39. | Are all hazardous substances properly labeled, used and stored? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 40. | Are satellite accumulation areas properly maintained? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 41. | Is universal waste (used florescent bulbs/batteries) labeled and stored properly? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Machinery <i>Inspect each piece of machinery for guarding and safety issues:</i> | | Not applicable to this Shop <input type="checkbox"/> | | |
| 42. | Are all machines and rotating equipment properly adjusted and guarded? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 43. | Are all machines free of debris? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 44. | Are all machines securely anchored to prevent "walking"? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 45. | Do dust-generating tools and machinery have adequate controls to minimize dust? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 46. | Are all emergency shut-off switches, brakes, etc. working properly and labeled? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 47. | Is there a hook or a brush available to remove debris from machinery? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Personal Protective Equipment <i>Inspect all PPE use:</i> | | Not applicable to this Shop <input type="checkbox"/> | | |
| 48. | Are safety glasses made available to visitors before entering the shop area? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 49. | Is PPE available and being worn by shop personnel and students? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 50. | Are signs for PPE use posted? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Compressed Air | | Not applicable to this Shop <input type="checkbox"/> | | |
| 51. | Is compressed air used for cleaning regulated to 30 psi? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 52. | Clothes are not being cleaned (dusted off) with compressed air? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Welding/Cutting (Hot Work) <i>Inspect welding/cutting areas for the following:</i> | | Not applicable to this Shop <input type="checkbox"/> | | |
| 53. | Are protective screens or dividers provided to protect against welding arc, sparks and slag? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 54. | Is the area free from flammables and combustible materials (35 feet from welding)? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 55. | Are welders wearing appropriate clothing and PPE to protect from sparks, slag, and UV light? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 56. | Is there adequate ventilation in the area? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 57. | Are the welding leads in good condition? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Compressed Gas Cylinders <i>Inspect all compressed gas cylinders for the following:</i> | | Not applicable to this Shop <input type="checkbox"/> | | |
| 58. | Oxidizers and fuel gases in storage separated by at least <input type="checkbox"/> 20 feet or by a <input type="checkbox"/> 5-foot wall with a 30-minute fire resistance rating (if not supplied on demand)? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 59. | Are individual cylinders labeled as to their contents? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 60. | Cylinders properly secured by a chain or stand to prevent tip over and damage? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 61. | Oxygen/acetylene cylinders in use kept in an approved cart? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 62. | Regulators removed and replaced with cylinder caps when not "in use"? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 63. | Are all regulators at 0 psi when off? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Overhead Cranes, hoists, etc. <i>Inspect all cranes, hoists, chain falls, etc. for the following:</i> | | Not applicable to this Shop <input type="checkbox"/> | | |
| 64. | Rigging (i.e. slings, shackles, etc.) in good condition? (no broken strands, kinking, damage, etc.) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 65. | Are chains & hoists inspected in accordance with manufacturer's requirements? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 66. | Are load capacity signs clearly posted? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 67. | Crane/hoist and the lift path properly barricaded? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 68. | Hard hats available and used during lifts? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |