

	<h2>Shop Safety Policy (Machinery)</h2>	Document Number:
		Effective Date: 1/1/16
		Revision Date:

1.0 Purpose and Applicability

1.1 This policy has been developed in in collaboration with UMass departments and schools, as well as shop supervisors from academic and non-academic areas for the purpose of reducing the risk of injury or death to faculty, students and staff who work in a University owned shop. The requirements presented in this policy meet or exceed the requirements of federal, state and local authorities, as well as consensus and industry standards adopted by other schools and universities in the United States.

1.2 The Shop Safety Policy is applicable to any location on campus that contains hazardous machinery used for the purpose of fabricating materials, testing or conducting research including, but is not limited to machine shops, carpentry shops, art studios, scene shops, testing facilities, laboratories, etc. The method for determining the hazard level for a machine will be based on the severity of the injury it is capable of causing. The severity of injury for each type of machinery is based on Yale University's *Machine Risk Assessment* which can be found in **Appendix A** of this policy.

2.0 Definitions

(Section Intentionally Left Blank)

3.0 Roles and Responsibilities

3.1 University Schools and Departments

Schools and departments are responsible for ensuring the safety of faculty, students and staff who use their shops. In addition, each school and department will be responsible for:

- Enlisting a qualified shop supervisor to manage the shop;
- Supporting shop supervisors on all issues regarding safety;
- Ensure that shop machinery and other equipment meets the minimum standard for safety;
- Coordinating the opening and decommissioning of their shops with Environmental Health and Safety (EH&S).

3.2 Shop Supervisors

Shop Supervisors are responsible for all aspects of safety in their shop and for implementing and enforcing this policy. In addition, shop supervisors will be responsible for:

- Providing training to students and faculty, and providing training records to EH&S;
- Ensuring that professional staff attend EH&S required training;
- Ensuring machinery and equipment are maintained in good working condition;

- Authorizing personnel to use their shop;
- Developing and enforcing shop safety rules;
- Attending Shop Safety Committee meetings;
- Reporting incidents and injuries to EH&S.

3.3 Shop Users

Shop Users include students, faculty and staff who intend to use a University owned shop. Shop Users are responsible for their own safety and for complying with the requirements of this policy. In addition, Shop Users will be responsible for:

- Completing training as prescribed by the Shop Supervisor and/or EH&S;
- Working in a safe manner;
- Working in accordance with the Shop Safety Rules;
- Following the direction of the Shop Supervisor at all times;
- Reporting damaged machinery and equipment to the Shop Supervisor.

3.4 Environmental Health and Safety (EH&S)

EH&S will be responsible for maintaining and updating this policy. In addition, EH&S will be responsible for:

- Assisting Shop Supervisors, departments and schools with the implementation of this policy;
- Providing technical expertise, as it relates to safety in the shop;
- Conducting annual safety inspections for all University owned shops and providing recommendations for deficiencies;
- Maintaining training records for EH&S provided training and Shop Supervisor training upon request;
- Coordinating and facilitating Shop Safety Committee meetings;
- Providing training to professional staff;
- Investigating accidents and injuries.

4.0 Procedure

4.1 Shop Safety Controls

The following safety controls are intended to reduce the risk of injury or death when working with hazardous machinery:

- Qualified Shop Supervisors
- Training
- Authorization
- Standard Operating Procedures
- Shop Safety Rules
- Condition of Machinery
- Access
- Shop Supervision (Student Use Shops)

4.1.1 Qualified Shop Supervisors

Each shop will employ a Shop Supervisor who will be responsible for all aspects of safety for the shop. In order to be deemed “Qualified,” the Shop Supervisor must have a good working knowledge of each piece of hazardous machinery in the shop. He/she must also be capable of training others on the safe and proper use of the machinery.

4.1.2 Training

Training requirements and user access to the shop will vary based on user and department. For the purpose of this policy, the training has been broken down by the type of user:

- **Shop Supervisors**
- **Faculty/Students**
- **Professional Staff**

Regardless of the type of user, training must be documented. EH&S will manage training records for all professional staff and other University employees. EH&S is available to assist shop supervisors with managing training records for student/faculty training.

Shop Supervisors are required to complete “Right to Know” and “Hazardous Waste Management” on an annual basis. Shop Supervisors are responsible for developing documented training materials and maintaining attendance sheets. EH&S will be available to import attendance records into their training database.

Faculty/Students: Shop Supervisors are responsible for training faculty and students who wish to use their shop. Each shop user must complete hands-on training for each piece of machinery he/she will be authorized to use. Trainees must also review the requirements of this policy and the Shop Safety Rules developed by the Shop Supervisor.

At a minimum, training must include the following topics:

- Review of the UMass Shop Safety Policy
- Review of Shop Safety Rules
- Tool Specific Training (hands-on)
 - Hazards and limitations
 - Guard placement and adjustments
 - Cleaning and maintenance
 - Machinery use demonstration
- Personal Protective Equipment requirements
- Any other topics the Shop Supervisor feels should be covered

To help A generic Student/Faculty Training Management Form is available in Appendix D of this policy.

Professional Staff includes trades groups and other employees who work in a shop as part of their job duties. EH&S will be responsible for providing health and safety-related training. Supervisors will be responsible for ensuring his/her employees attend training. Training will be dependent on the level of professional experience, but, at a minimum, will include:

- Hand and Portable Power Tools
- Machine Guarding
- Right to Know
- Hazardous Waste
- Personal Protective Equipment

4.1.3 Authorization

Authorizing access to the shop for students, faculty and staff will be left up to the discretion of the Shop Supervisor. Authorization will be contingent upon several factors including training, experience and behavior. The shop supervisor also has the authority to revoke authorization to anyone who fails to meet the requirements of their shop safety rules and this policy or demonstrates behavior that could impact their safety and/or the safety of other shop users.

The Shop Supervisor will maintain a list of authorized users either in writing or electronically.

4.1.4 Standard Operating Procedures

Each piece of equipment must have a "Standard Operating Procedure" (SOP) posted on it or next to it. The SOP will provide safe operating information specific to the machinery. Newer machines will typically come with SOP's installed by the manufacturer and are usually titled "WARNING" or "CAUTION." Generic SOP's for common types of machinery are available through EH&S or can be developed by the Shop Supervisor.

4.1.5 Shop Safety Rules

Each shop is responsible for having its own shop safety rules. These rules must be posted in an area of the shop that is visible to shop users. At a minimum, shop safety rules can include:

- Restricted Access To Shop
- Hours of Operation
- No Food/Drink
- Clothing/Shoes
- Personal Protective Equipment
- Hair Tied Back
- One Person Per Machine
- Sleeves Rolled Past Elbows
- Cleaning and Housekeeping
- Do Not Leave Tools Unattended
- First Aid Kit Location

A "Generic Shop Safety Poster" is available in **Appendix B** of this policy.

4.1.6 Condition of Machinery

Machinery and other equipment must be in good working condition and meet the minimum safety requirements for guarding required by the Occupational Safety and Health Administration and the manufacturer. If a piece of machinery does not meet these requirements, it will be tagged out of service until it can be repaired or replaced. Examples of proper guarding for common shop machinery can be found in **Appendix C**, *Shop Equipment Self-Assessment Guide*, of this policy.

4.1.7 Access

Every shop must develop a method for controlling the access of unauthorized personnel into their shop. Acceptable methods for controlled access includes:

- **Lock and Key:** Keys should only be issued to the Shop Supervisor, Shop Monitors and Building Maintenance personnel.
- **Card Key:** Card key access can be given to anyone who has been authorized by the shop supervisor. Card key systems should be programmed to account for the shop's hours of operation (i.e., shop user cards will not work after a set time when the shop is closed).
- **Power Isolation:** Power can be locked for the entire shop or at each piece of equipment. *Please note that isolating the power at a circuit breaker is not an acceptable method for locking out power and should not be done. A separate disconnect switch or control system may be used.*

4.1.7.1 The type of access control used will be left up to the discretion of the department and/or Shop Supervisor. Signage deterring unauthorized individuals from entering the shop will also be installed. At a minimum, the language on the sign will read:

NOTICE: Machine Shop, Authorized Personnel Only

4.1.8 Shop Supervision (Student Use Shops)

Students may not work with hazardous machinery alone. The Shop Supervisor will determine what level of supervision is necessary to ensure student safety. The following are examples of how supervision can be implemented:

- **Buddy System:** When students will be working in the shop with low hazard machinery only.
- **Trained Monitors:** The Shop Supervisor may choose to identify certain students (excluding undergrads) to remain in the shop when he/she is not there. In these situations, the Shop Supervisor may provide additional training for the monitors and/or restrict the use of certain high hazard pieces of machinery.
- **Full Supervision:** The shop is only open when the Shop Supervisor is present to supervise users.

Ultimately, it is the responsibility of the Shop Supervisor to determine what level of supervision is required for his/her shop.

5.0 Key References

- 5.1 Yale University's "***Student Shop Safety Policies and Practices***" Developed by Yale University.
- 5.2 Occupational Safety and Health Administration (OSHA) "***Guide for Protecting Workers from Woodworking Hazards***" Small Business Safety Management Series, US Department of Labor, OSHA 3157 1999
- 5.3 Occupational Safety and Health Administration (OSHA) CFR 1910.212 "***Machinery and Machine Guarding***" Requirements for all machine
- 5.4 Lovegreen Industries and Machine Guarding, Lovegreen Inc. "***Machine Self-Assessment***" checklist



Environmental Health and Safety
117 Draper Hall
40 Campus Center Way
Amherst, MA 01003
(413) 545-2682

Appendix A

Yale University's Machinery Risk Assessment
(pdf)



Environmental Health and Safety
117 Draper Hall
40 Campus Center Way
Amherst, MA 01003
(413) 545-2682

Appendix B
Generic Shop Safety Poster



Environmental Health and Safety
117 Draper Hall
40 Campus Center Way
Amherst, MA 01003
(413) 545-2682

GENERIC MACHINE SHOP SAFETY RULES

SHOP NAME _____

HOURS OF OPERATION:

Sun	Mon	TUE	WED	THR	FRI	SAT
_____	_____	_____	_____	_____	_____	_____

ACCESS TO THE SHOP DURING NON-HOURS OF OPERATIONS IS STRICTLY PROHIBITED

- Tools and Machines may only be used by **AUTHORIZED PERSONNEL**
- Only work with tools and machines that you have been authorized to use
- Do not use equipment if you are using any medication or under the influence of drugs, alcohol, etc.
- **NEVER** work in the shop alone
- No loose clothing including ties, necklaces, floppy sleeves, jewelry, etc.
- Long hair **MUST** be tied back
- Safety glasses **MUST** be worn at all times
- Wear non-slippery, thick, leather work shoes, preferably rubber-soled
- Open-toed footwear is not permitted in the shop
- Safety guards **MUST** be in place at all times, ensure guides and fences are tight
- Report damaged safety guards, machines and tools to the Shop Supervisor
- Report unsafe issues to the Shop Supervisor
- Keep you work area clean, do not place tools and materials on the machine table
- Put tools away when you are done using them
- **NEVER** leave tools unattended
- Only one person may work on a machine at a time
- Keep blades covered as much as possible
- **NEVER** push a cutter towards any part of your body
- **NEVER** make heavy cuts with planers, jointers, and routers
- Plywood and particleboard must **NOT** be worked with the jointer or planer
- Do not work small pieces on power machinery use hand tools
- Always secure the work piece with clamps or a vise
- **NEVER** remove metal chips, turnings, or shavings with your hands
- **NEVER** use compressed air without a safety nozzle to clean machines or clothing
- No running or horseplay
- No eating in the shop area
- Always follow the Shop Supervisor’s directions
- Report **ALL** injuries (even small ones) to the Shop Supervisor or Facility Manager
- The First Aid Kit is located _____
- The Eyewash Station/Flush is located _____

Shop Supervisor _____ Phone _____

Facility Manager _____ Phone _____

Appendix C

**Lovegreen Inc. Shop Equipment Self-Assessment Guide
(pdf)**



Environmental Health and Safety
117 Draper Hall
40 Campus Center Way
Amherst, MA 01003
(413) 545-2682

Appendix D

Generic Student Training Form

Shop Safety Training Form

Shop Name _____ Shop Supervisor _____
Hours of Operation _____ Phone _____
_____ Email _____

Shop dress requirements: To ensure your safety eye protection must be worn at ALL times when you are in the shop. No loose clothing including ties, necklaces, floppy sleeves, jewelry, etc. Long hair must be tied up in a bun. Shoes must be close toed. Pants must be worn (no shorts) and long sleeves must be roll up past the elbows.

Shop Rules

1. Think through the entire job before starting. Ask the Shop Supervisor if you are ever unsure for any reason
2. Tools and Machines may only be used by **AUTHORIZED PERSONNEL**; if you see unauthorized individuals in the shop, report it to the shop supervisor immediately.
3. Only work with tools and machines that you have been authorized to use. If there is a particular tool you would like to use, ask the shop supervisor.
4. Do not use equipment if you are tired, using any medication or under the influence of drugs, alcohol, etc.
5. **NEVER** work in the shop alone. The shop may only be used during normal shop hours and under direct supervision.
6. Safety guards **MUST** be in place at all times, ensure guides and fences are tight.
7. Whenever possible secure you work with a clamp, strap or other means as directed by the Supervisor. NEVER hold the work down with your hand.
8. **NEVER** make adjustments or modifications to the equipment unless authorized by the Supervisor. This includes moving or removing safety guards, changing belts or blades or applying lubricant.
9. Report damaged safety guards, machines and tools to the Shop Supervisor. Warn other in the shop that the machine is damaged and should not be used.
10. Keep you work areas clean; do not place tools and materials on the machine table. Chips and debris must be swept up after you are done.
11. Use compressed air (not your hands) to clean chips and debris located near blades, bits and other areas where you could be injured by using your hands. Air PSI must **NEVER** exceed 30 PSI
12. Put tools away when you are done using them; wrap up electrical cords.
13. Only one person may work on a machine at a time.
14. Keep blades covered as much as possible.
15. **NEVER** leave a machine unattended or leave materials in the machine. Remember to **REMOVE THE CHUCK KEY** before starting your work.
16. Heavy sanding or painting must be done in well ventilated area.
17. **NEVER** push a cutter towards any part of your body
18. **NEVER** make heavy cuts with planers, jointers, and routers
19. Plywood and particleboard must **NOT** be worked with the jointer or planer
20. Do not work small pieces on power machinery use hand tools.
21. **NEVER** remove metal chips, turnings, or shavings with your hands.
22. **NEVER** use compressed air without a safety nozzle to clean machines or clothing.
23. No running or horseplay
24. No eating or drinking in the shop area
25. Report **ALL** injuries (even small ones) to the Shop Supervisor or Facility Manager
26. The First Aid Kit is located _____
27. The Eyewash Station/Flush is located _____

I have read and understand the rules and procedures outlined in this document:

Signature _____ Date: _____

Shop Safety Training – Hands on Instruction

Equipment	SOP & Safety Reviewed	Hands On Training Provided	Supervisor Initials	Date Trained
Abrasive Cut-Off Saw	<input type="checkbox"/>	<input type="checkbox"/>		
Band Saw – Horizontal	<input type="checkbox"/>	<input type="checkbox"/>		
Band Saw - Vertical	<input type="checkbox"/>	<input type="checkbox"/>		
Belt Sander	<input type="checkbox"/>	<input type="checkbox"/>		
Belt/Disc Sander	<input type="checkbox"/>	<input type="checkbox"/>		
Bench Grinder	<input type="checkbox"/>	<input type="checkbox"/>		
Break	<input type="checkbox"/>	<input type="checkbox"/>		
Chop/Miter Saw	<input type="checkbox"/>	<input type="checkbox"/>		
CNC Enclosed	<input type="checkbox"/>	<input type="checkbox"/>		
CNC Open	<input type="checkbox"/>	<input type="checkbox"/>		
Disc Sander	<input type="checkbox"/>	<input type="checkbox"/>		
Drill Press	<input type="checkbox"/>	<input type="checkbox"/>		
Horizontal Mill	<input type="checkbox"/>	<input type="checkbox"/>		
Jig Saw	<input type="checkbox"/>	<input type="checkbox"/>		
Jointer	<input type="checkbox"/>	<input type="checkbox"/>		
Lathe	<input type="checkbox"/>	<input type="checkbox"/>		
Oxy-Acetylene Torch	<input type="checkbox"/>	<input type="checkbox"/>		
Panel Saw	<input type="checkbox"/>	<input type="checkbox"/>		
Planer	<input type="checkbox"/>	<input type="checkbox"/>		
Press	<input type="checkbox"/>	<input type="checkbox"/>		
Radial Arm Saws	<input type="checkbox"/>	<input type="checkbox"/>		
Router	<input type="checkbox"/>	<input type="checkbox"/>		
Scroll Saw	<input type="checkbox"/>	<input type="checkbox"/>		
Shear	<input type="checkbox"/>	<input type="checkbox"/>		
Skill Saw	<input type="checkbox"/>	<input type="checkbox"/>		
Table Saw	<input type="checkbox"/>	<input type="checkbox"/>		
Robotic Equipment	<input type="checkbox"/>	<input type="checkbox"/>		
Vertical Mill	<input type="checkbox"/>	<input type="checkbox"/>		
Water Cutter	<input type="checkbox"/>	<input type="checkbox"/>		
Welder – Arc	<input type="checkbox"/>	<input type="checkbox"/>		
Welder-Mig	<input type="checkbox"/>	<input type="checkbox"/>		
Welder – Tig	<input type="checkbox"/>	<input type="checkbox"/>		
Welding – Plasma	<input type="checkbox"/>	<input type="checkbox"/>		
Other	<input type="checkbox"/>	<input type="checkbox"/>		