

SHOP SAFETY MANUAL



University of California, Davis



VER 1.0 2015

University of California, Davis
Environmental Health and Safety

Revision History

Shop Safety Manual		
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PRINCIPLES of SAFETY

The University of California, Davis is committed to the safety and well being of its community. Our ultimate goal is to provide a safe environment for our students, faculty, staff and visitors by implementing policies and procedures that protect people, facilities and resources.

OUR VISION

A Culture of Safety

We envision an incident-free campus where students and employees alike are educated and equipped to work safely. With support from campus safety professionals, they are empowered to take responsibility for safety at work, at home and in their communities.

OUR MISSION

Think Safe. Act Safe. Be Safe.

AS A CAMPUS: We actively support programs at all levels of the organization that promote health, security and the protection of resources.

AS INDIVIDUALS: We learn and follow safe practices. We take the initiative to identify unsafe or unhealthy conditions and to resolve them with a sense of urgency.

VALUES FOR A SAFETY CULTURE



Community Spirit

We recognize our professional and personal obligation to our community. By engaging in safe behaviors we show our respect for the well-being of those in our community.



Collaboration

We value collaboration in cultivating a sustainable culture of safety on our campus. We are open and responsive to individual concerns and ideas for improvement.



Adherence to Law and Policy

We follow all applicable laws and University policies regarding safe working conditions and procedures that protect people, facilities and the campus and its surroundings.



Investment

We allocate appropriate resources to safety programs.



Continuous Improvement

We recognize that safety and health can always be further enhanced, and we believe in continuous improvement in advancing a safety culture.



Accountability

We hold ourselves accountable for reporting our performance and progress.

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List of Acronyms

Acronym	Definition
AHJ	Authority Having Jurisdiction
ALS	Area Laser Scanner
ANSI	American National Standards Institute
Cal/OSHA	California Occupational Safety & Health Administration
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CIS	Chemical Inventory System
CNC	Computer Numerically Controlled
CSSC	Campus Shop Safety Committee
DSC	Department Safety Coordinator / Safety Officer
EFR	Employer's First Report
EH&S	Environmental Health and Safety
HECP	Hazardous Energy Control Procedure
IIPP	Injury and Illness Prevention Program
JSA	Job Safety Analysis
LMS	Learning Management System
LOTO	Lock Out Tag Out
MIG	Metal Inert Gas
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety & Health
NRTL	Nationally Recognized Testing Laboratory
NTP	National Toxicology Program
OSHA	Occupational Safety & Health Administration
PI	Principal Investigator
PLC	Programmable Logic Controller
PPE	Personal Protective Equipment
PPM	Policy and Procedure Manual
PSSD	Presence Sensing Safety Device
RPM	Revolutions Per Minute
SDS	Safety Data Sheet
SFPM	Surface Feet Per Minute
SOP	Standard Operating Procedure
TIG	Tungsten Inert Gas

1. Purpose

This campus Shop Safety Manual is a guide to help shops comply with the Campus' Shop Safety Program as outlined in the UC Davis Policy and Procedures Manual section 290-58. The manual describes the proper access controls, training, engineering controls, safe work practices and procedures to be followed by faculty, staff, students, visiting scholars, and all other personnel working in shops at UC Davis. It also outlines the requirements for establishing a written Shop Safety Plan specific to each shop. This manual must be made available to all applicable personnel.

2. Applicability / What Is a Shop?

A Shop at UC Davis is a place, a room (s) or designated area that has stationary equipment for uses including: fabrication, manufacturing, modification and repair. Examples include:

- A. Metal working, including sheet metal forming, machining, grinding, riveting, cutting, threading, casting, forging, heat-treating, quenching, welding, brazing, soldering, etc.
- B. Carpentry and woodworking, including cutting, drilling, sanding, carving, routing, grinding, planing, gluing, bonding, fastening, etc.
- C. Surface modification and coating, including sandblasting, painting, surface preparation, laminating, burning, etching, masking, etc.
- D. Glass work, including glass blowing, glazing, annealing, tempering, bonding, grinding, drilling, hot-work with glass materials, etc.
- E. Electrical / electronic work, including equipment building, circuit design / building, wiring, control system building/repair, etc.
- F. Plastics and composites work, including machining, bending, burning, bonding, cutting, drilling, gluing, melting, forming, etc.
- G. Equipment development / model building work, including machine building, hydraulics building / use, compressed air use, equipment building, research equipment repairs / maintenance, model building, etc.

Site work areas and laboratories with hand tools should follow guidelines and policies listed here as appropriate.

If you would like assistance determining if this policy applies to your work area, please contact healthandsafety@ucdavis.edu

3. Definitions, Roles and Responsibilities

- A. Authorized User- A person who is authorized by the Shop Manager to work in a specific Restricted Area.
- B. Restricted Area- An area identified by the Shop Manager as containing hazards requiring controlled access that is delineated by visual indicators. A Restricted Area may be an entire shop.
- C. Shop- A room(s) or designated area that has stationary equipment for uses including: fabrication, manufacturing, modification and repair.
- D. Shop Manager- The person responsible for oversight, management and supervision of shop activities and equipment. The Shop Manager has exclusive authority to authorize users and designate Shop Monitors.
- E. Shop Monitor- An Authorized User delegated by the Shop Manager to provide oversight of shop activities on their behalf.
- F. UC Davis Shop Safety Manual- The official campus manual prepared by the Shop Safety Committee pertaining to management and mitigation of shop hazards.
- G. Shop Visitors- People, other than Authorized Users, permitted by the Shop Manager or Shop Monitor to enter the unrestricted areas of the shop. Entry to Restricted Areas by Shop Visitors should generally be avoided.

Roles and Responsibilities

Shop Manager

The Shop Manager is responsible for implementing the UC Davis Shop Safety Manual as it pertains to the hazards and processes in their shop. Per PPM 290-58, all plans and programs shall be developed in consultation with, and approved by, the department head or their delegate. Shop Managers are encouraged to collaborate with each other on best practices and efficient and effective ways to implement this manual.

The Shop Manager must create and or maintain a written Shop Safety Plan and maintain all records under the shop-specific safety program as described in section 5.

On an operational level, the Shop Manager is responsible for ensuring that each Authorized User has received documented training or has sufficient experience to safely operate each piece of equipment that they use. Authorized Users may be limited to enter only specific Restricted Areas and to operate only specific pieces of equipment. The Shop Manager is responsible for ensuring that Authorized Users abide by the safe practices established in the plan including:

- A. Working only in the Restricted Areas in which they are authorized.
- B. Using only the tools and equipment that they have been trained to operate safely.
- C. The use of Personal Protective Equipment (PPE).

The Shop Manager has the authority and responsibility to grant, suspend or revoke user authorization, or stop work at any time. The Shop Manager is also responsible for conducting periodic shop self-inspections and coordinating periodic shop safety assessments and corrective action with Environmental Health & Safety (EH&S).

Shop Monitor (optional)

Shop Monitors are Authorized Users who have been designated by the Shop Manager to oversee shop operations on their behalf. Shop Managers may grant limited or full operational authority and responsibility to Shop Monitors.

Authorized Users

Authorized Users may include faculty, staff, students or non-University affiliated persons. Authorized Users are responsible for obtaining authorization from the Shop Manager and using only those pieces of equipment for which they are authorized. Authorization in one shop or Restricted Area does not necessarily imply authorization in another shop or Restricted Area.

Shop Visitors

Anyone entering a shop who is not an Authorized User is a Shop Visitor. Shop Visitors must have appropriate safety orientation and wear PPE. Generally, Shop Visitors will be required to stay in unrestricted areas.

Department/unit Safety Coordinator (DSC) or Officer

The role of the Department Safety Coordinator (or Officer) may vary by unit and shop. DSCs should consult with their unit head and Shop Manager(s) to determine their role in the implementation of this manual. This may include assisting with hazard analyses, auditing, training and other program elements.

The Office of Environmental Health & Safety

EH&S provides assistance and technical support to the Campus Shop Safety Committee and maintains the UC Davis Shop Safety Manual. EH&S also provides information about the program on its website, informs responsible units of the program requirements and conducts periodic Shop Safety Reviews.

Campus Shop Safety Committee (CSSC)

The CSSC establishes and interprets policies and best practices for shop safety in coordination with EH&S. Upon request by a Shop Manager or Department head, the CSSC also evaluates hazardous processes and equipment and provides the requesting department with a written risk assessment and recommendations. Other functions of the CSSC include: reviewing incidents and disseminating lessons learned; reviewing training material for relevance; developing long term training programs and a communication strategy to inform the campus community about the shop safety program.

Department Heads

Department heads are responsible for implementing shop-specific safety programs to provide a safe and healthy work environment for employees, students, visitors and volunteers. These responsibilities may be delegated to Shop Managers or other departmental personnel. Department heads must provide the resources necessary to mitigate risk from potential hazards, assure appropriate training and help in the application of campus policies and procedures.

4. Shop Safety Hazards and Controls

A hazard assessment must be conducted and appropriate hazard controls integrated into the shop safety plan. This includes identifying hazards in the workplace and implementing hazard controls. The Shop Manager may request assistance from EH&S to accomplish this requirement. Hazards must periodically be re-evaluated and the shop safety plan updated as hazards change. The shop safety plan must use the following Hierarchy of Controls. The control of some hazards requires the combined use of all four control methods to reduce the hazard as much as possible, but at least to meet regulatory standards. Shops are not restricted to a single approach if using a combination achieves a greater level of worker safety than if only one approach was used.

Hierarchy of Hazard Controls

Eliminate the Hazard or Find a Safe Substitute

The most effective means to improve safety is to eliminate hazards so they cannot cause injury or loss. Shops are encouraged to eliminate hazards if practicable. An example would include replacing a machine that makes excessive noise with a quieter model – thereby eliminating the hazard.

Engineering Controls

Whenever possible, hazards should be eliminated or controlled at their source – as close to where the problem is created as possible – using engineering controls. The basic concept behind engineering controls is that, to the extent feasible, the work environment and the job itself should be designed to eliminate hazards or reduce exposure to hazards. Examples of such controls would be machine guards, guardrails, dust collection systems, fail-safe controls, interlocks and Emergency Power Off (EPO) buttons.

Administrative Controls

Administrative controls are commonly used in conjunction with engineering controls. When engineering controls alone cannot mitigate a hazard, administrative controls should be used to further mitigate the hazard to a level that is as low as reasonably achievable. Examples include lock-out/tag-out/block-out protocols, safe work practices, job procedures, policies, rules and training programs.

Personal Protective Equipment

People in shops will need to use PPE to reduce the potentially harmful effects of exposure to hazards. PPE may reduce the hazard to the wearer, but is only effective if used appropriately. PPE is not a substitute for other hazard control measures. Examples of PPE include gloves, protective eyewear, hair nets, aprons, long-sleeve shirts, long pants, hearing protection, respiratory protection and safety footwear. Workers must be trained on the proper use, selection and limitations of the PPE they are required to use.

See Appendix ___ for examples of hazard control methods for various types of shop equipment.
See Appendix ___ for examples of tool-specific resources.

5. Shop-Specific Safety Program Requirements

5.1 Shop Safety Plan – Minimum Requirements

The Shop Manager must create and maintain a written Shop Safety Plan (See [Attachment 1 example](#)) that includes:

- A. Statement of Purpose.
 - 1. A brief statement of the department's policies and procedures for implementing the Shop Safety Program. This section should be endorsed with the Department Chair's signature and dated.
- B. General Shop Information.
 - 1. Identify the shop and the shop manager.
 - 2. Identify groups that have access to the shop.
 - 3. Identify how access to the shop is controlled.
- C. Shop Policies and Procedures.
 - 1. Define the shop's hours of operation.
 - 2. List the minimum appropriate shop policies and procedures for each shop.
- D. Inventory of Shop Equipment.
 - 1. List of all the powered portable and stationary tools in the shop.
 - 2. Include the manufacturer, model number and UC Davis asset number.
- E. Shop Inspection Form.
 - 1. Develop a shop inspection form or utilize the template from the EH&S website.
- F. Standard Operating and Maintenance Procedures.
 - 1. Develop SOPs for each machine type or use the templates from the EH&S website.
 - 2. Develop maintenance and adjustment procedures for each machine type.
- G. Training.
 - 1. List a general description of the training programs for each type of machine or process. Must include review of the SOP and hands-on instruction.
 - 2. Develop a training sign in roster or use the template from the Shop Safety Plan template found on the EH&S website.
- H. Authorized Users.
 - 1. List of Authorized Users for each shop.
- I. Restricted Areas.
 - 1. Provide a floor plan of the restricted areas for the shop.
- J. Signage.
 - 1. Provide a graphic showing the signage to be posted on each shop entrance.
- K. Record Keeping
 - 1. Completed User Authorization Form ([Attachment 2 example](#).) for each Authorized User. This document must be kept for the duration of employment, tenure or work-study term plus 3 years.
 - 2. Copies of any training rosters ([Attachment 3 example](#)) and training content must be kept for 3 years.
 - 3. Copies of any procedures or protocols developed for shop safety must be kept for as long as they are current.

4. Copies of all shop Hazard Assessments must be kept on file. ([Attachment 4 example](#)).
5. Copies of Annual Shop Safety inspection checklists must be kept on file. ([Attachment 5 example](#)).
6. Copies of all crane and hoist load tests and inspections must be kept on file.

EH&S maintains the following documentation:

7. A master copy of the Shop Safety Program and maintains this program to meet or exceed Cal-OSHA requirements.
8. CSSC meeting minutes.
9. A web-based [Library \(Appendix 1\)](#) that contains material specific to shop equipment and safe-work practices.
10. Any documents relating to shop incident investigations and “Lessons Learned” via the Shop Safety Committee e-distribution list.
11. Any product safety recalls or safety alerts issued by tool manufacturers, which shall be communicated to the tool owner, the Shop Safety Committee e-distribution list and the DSC e-distribution listing in a timely manner.

6. Mandatory Safe Work Practices

Controlled Access

The Shop Manager is responsible for the creation and enforcement of a process to limit access to the shop Restricted Areas and equipment only to Authorized Users. Authorized User access should be determined by specific certification on each piece of equipment.

Impairment

Under no circumstance will anyone use equipment under an impaired state. This includes:

- A. Being under the influence of alcohol or illicit substances.
- B. Being under the influence of medications with a warning to avoid driving or using equipment, unless a release is provided by a licensed physician.
- C. Being distracted by the use of phones, ear buds or other electronic devices.
- D. Feeling fatigued as might be caused by sleep deprivation or other conditions.

Working Solo

Working outside of supervised hours or working solo carries additional risk, therefore the following 3 items should be followed:

- A. Shop access outside of supervised hours may be restricted to specific Authorized Users based upon the Shop Manager's discretion.
- B. Solo work shall only be conducted with approval of the Shop Manager.
- C. Shop Manager shall discuss issues of solo work and working outside of normal hours with the Department head before authorizing clearance.

Personal Protective Equipment

PPE must be stocked and supplied by the Shop Manager to all Authorized Users. Selection and use of PPE for any piece of equipment must be in accordance with the specific Hazard Assessment described in Section 4.

At minimum, any person entering a Restricted Area will:

- A. Have on closed toed shoes, long pants or equivalent and safety glasses.
- B. Remove or otherwise secure loose clothing, jewelry or hair.
- C. Wear other PPE as required for each specific piece of equipment.

Pre-Use Equipment Inspection

Prior to use of any given piece of equipment, the Authorized User should verify:

- A. All safety guards are in place and operating as originally intended.
- B. Location of machine stop control is readily accessible and functional.
- C. Equipment is in a clean orderly state and entrance/egress areas are clear to allow freedom of movement.

If any maintenance, repair or safety issue is noticed during the pre-inspection, the Authorized User will unplug the equipment or otherwise disconnect, post a warning 'do not use' sign on the equipment and immediately notify the Shop Manager that a repair is required.

Equipment Failure or Malfunction

In the event of an equipment failure, the Authorized User will immediately turn off the equipment and notify the Shop Manager.

In the event of equipment malfunction or operational abnormality that was not covered under training, the Authorized User will immediately turn off the equipment and notify the Shop Manager.

If the Shop Manager is not readily available, the Authorized User will disconnect power to the equipment to the extent that is possible and post a notice on the equipment indicating it is inoperable until the Shop Manager corrects the problem.

Hazardous Waste Disposal

Absolutely no hazardous waste is to be poured down the shop drains. Waste is considered hazardous if it is flammable, corrosive, reactive, toxic or contains heavy metals.

All hazardous materials and hazardous chemicals must be picked up by EH&S or an EH&S-approved contractor. Instructions and forms to request pickup are available on the EH&S website, or by contacting EH&S at hazwaste@ucdavis.edu.

Compressed Air

Compressed air or other compressed gas streams shall not be directed toward any person. Use suction devices or other cleaning methods instead. Compressed gases used for cleaning equipment shall be regulated to 30 psig and the air line must be equipped with a safety nozzle.

Building Emergency

In the event of a Building Emergency (such as when the fire alarm goes off), the Authorized User will shut down the machinery and immediately exit the building.

Incident Reporting

An unanticipated event that could have caused damage to the equipment or injury to the user should be reported to the Shop Manager. The Shop Manager will utilize the reporting mechanism outlined in their department's IIPP to document these occurrences.

Finishing Work

The Authorized User will leave the machine and work space in a clean and orderly condition prior to leaving the work area.

Restricted Areas

Only persons who are Authorized Users may work in Restricted Areas of shops on campus. Any person who is not an Authorized User may only enter Restricted Areas of shops with an escort by an Authorized User from that shop.

The Shop Manager must determine the physical space within the shop that is the Restricted Area, and take measures to clearly demarcate these areas as separate from other non-restricted shop space.

A person may only conduct work in a shop for which they have specifically been authorized. Shop Managers who oversee multiple shops may authorize a person to work in more than one shop under their direction, but this must be clearly stated on the authorization documented for that individual.

Visitors

The Shop Manager is responsible for determining the appropriate safety orientation and PPE requirements for visitors.

7. Resources and Reference

Campus Resources

SafetyNets: Programs & Services — Safety Services
Injury & Illness Prevention Program (IIPP) — Safety Services
Safety and Health Topics | Control of Hazardous Energy (Lockout/Tagout)
Shop Safety Program | Environmental Health & Safety
Guide for Protecting Workers from Woodworking Hazards
UC Davis Policy and Procedure Manual Section 290-50, Protective Clothing and Equipment.
UC Davis Policy and Procedure Manual Section 290-15, Safety Management Program.

Shop Safety Resources

OSHA PPE requirements: General requirements. - 1910.132
Machines: <http://www.oseh.umich.edu/pdf/guideline/MachineShopAppE.pdf>
Checklist: <http://umaine.edu/sem/files/2011/09/Machine-Shop-Checklist.pdf>
Checklist: http://www.oseh.umich.edu/pdf/machine_shop_inspection_form.pdf

Regulations

General industry safety orders: 8 CCR 3328 (d)
OSHA general safety standards: Regulations (Standards - 29 CFR)
Cal OSHA California regulations: DIR Title 8 Index Page
California Code of Regulations, Title 8, General Industry Safety Orders
Safeguarding Equipment and Protecting Employees from Amputations 29CFR1910.147
Electrical Safety Orders, Group 1. Low-Voltage Electrical Safety Orders 8 CCR 2320.1
http://www.dir.ca.gov/dosh/dosh_publications/Electrical_Safety.pdf
California Code of Regulations, Title 8, Section 4184. Guarding Required.
California Code of Regulations, Title 8, Section 3575. Scope and Definitions.
California Code of Regulations, Title 8, Section 4319. Automatic Lathes (Shoe Last, Spoke and All Other Automatic Lathes of the Rotating Knife Type).
California Code of Regulations, Title 8, Section 1605.14. Hoisting Machines.
California Code of Regulations, Title 8, Section 4300. Circular Ripsaws Manual Feed (Class B).
California Code of Regulations, Title 8, Section 5194. Hazard Communication.
California Code of Regulations, Title 8, Section 4300.1. Table Saws - Manual Feed (Class B).
General Industry Safety Orders, Group 8. Points of Operation and Other Hazardous Parts of Machinery
California Code of Regulations, Title 8, Section 3942. Type of Guarding Required.
California Code of Regulations, Title 8, Section 3944. Guard Clearances.
California Code of Regulations, Title 8, Section 3380. Personal Protective Devices.
Operation of Agricultural equipment: View Document - California Code of Regulations
California Code of Regulations, Title 8, Section 5097. Hearing Conservation Program.

Human Hospital Standards- JCACO

Joint Commission Accreditation Commission Organization: [About Our Standards | Joint Commission](#)

Attachments and Templates

ATTACHMENT 1Shop Safety Plan Template

ATTACHMENT 2 Shop User Authorization Form

ATTACHMENT 3 Training Roster Template

ATTACHMENT 4 Shop Hazard Assessment Checklist

ATTACHMENT 5Periodic Shop Review Checklist

ATTACHMENT 1

Shop Safety Plan Template

(SHOP NAME)

Shop Safety Plan

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1.0 STATEMENT OF PURPOSE

This Shop Safety Plan documents the commitment of this department to comply with the requirements of PPM 290-58. It has been developed by the Shop Manager and it will be reviewed annually or when new or modified equipment is introduced into the shop. A complete list of Authorized Users will be kept current.

Documentation including shop policies, inventories of equipment, standard operating procedures, training materials and training records will be kept in a central location and readily available for review.

Signature, Department Chair

Date

2.0 GENERAL SHOP INFORMATION

Shop Name: _____

Machine Shop Wood Shop Combination Hot Work Operations

Department: _____

Lab: _____

Building : _____

Location: _____

Supervisor: _____

Phone: _____

Email Address: _____

Shop Manager: _____

Phone: _____

Email Address: _____

Primary Use:

Maintenance Hobby Research
 Teaching Other _____

Student Access

Yes No
 Undergraduate Students Graduate Students
 Interns (Seasonal/Term) Post-Doctoral/Fellows

Access Controls

Yes No
 Card Key Access Energy Isolating
 Other

Keys Maintained By: _____

3.0 SHOP POLICIES AND PROCEDURES

HOURS OF OPERATION:

Day	Hours
Sunday	_____
Monday	_____
Tuesday	_____
Wednesday	_____
Thursday	_____
Friday	_____
Saturday	_____

General Policies and Procedures

- Tools and machines may only be used by Authorized Users.
- Only work with tools and machines that you have been authorized to use.
- Do not operate tools and machines when you are fatigued.
- Do not use equipment if you are using any medications with a warning to avoid driving or using equipment, unless a release is provided by a licensed physician.
- Do not use equipment if you are under the influence of alcohol or illicit substances.
- Do not use phones, headphones, ear-buds, or other electronic devices while operating machinery or tools.
- Safety glasses must be worn at all times while in a restricted area.
- Wear other PPE as required for each specific piece of equipment.
- Do not work alone in a shop unless you have written authorization by the Shop Manager.
- Open-toed footwear is not permitted in the shop.
- Wear non-slippery, thick, leather work shoes, preferably rubber-soled.
- Long pants (or equivalent) must be worn. (A shop apron cannot be worn in lieu of long pants.)
- Neck ties, necklaces, bracelets, jewelry, watches, long sleeves, etc. must be removed or rolled up before operating machinery.
- Long hair must be tied back to avoid entanglement in machinery.
- 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 Manager.
- Report unsafe issues to the Shop Manager.
- Keep your 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 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 with power machinery. Instead, 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 to clean clothing.
 - Compressed air used for cleaning equipment must be regulated to 30psig and be equipped with a safety nozzle.
 - No running or horseplay.
 - No eating in the shop area.
 - Always follow the Shop Manager's directions.
 - Report all injuries (even small ones) to the Shop Manager.
 - The First Aid Kit is located_____
 - The Eyewash Station/Flush is located_____

Additional Policies and Procedures

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____


4.0 INVENTORY OF SHOP EQUIPMENT

Machine	Manufacturer	Model Number	UCD ASSET #
Arc Welder			
Abrasive Cut Off Saw			
Band Saw			
Belt Sander			
Belt Disc			
Bench Grinder			
Chop Saw			
CNC Machine			
Drill Press			
Horizontal Mill			
Jointer			
Metal Lathe			
Mig Welder			
Miter Saw			
Oxy-Acetylene Torch			
Planer			
Radial Arm			
Robotic Liquid Dispenser			
Router			
Shear			
Table Saw			
Vertical Mill			
Wood Lathe			
Other:			
Other:			

5.0 SHOP INSPECTION FORM

- Documented self-inspections of machine shops must be conducted on a periodic basis.
- Machine shops should be well organized and housekeeping closely monitored.
- Equipment should be periodically inspected to ensure safe operations and proper guarding.
- Unsafe equipment should be removed or locked out / tagged out until repaired.
- Never use damaged equipment or equipment that is missing its machine guard(s).

Machine Shop Self-Inspection Checklist.

 http://safetyservices.ucdavis.edu		Shop Safety Review Checklist One Shields Ave • Davis, CA 95616 Phone: (530)752-1493 Fax: (530)752-4527 E-mail: healthandsafety@ucdavis.edu				
U C Davis Environmental Health and Safety Shop Safety Review Checklist						
Reviewer:		Date:				
Shop Manager:		Phone:				
Building:		Room Number(s):				
Department:		Shop Name/Function:				
Please check Yes, No, Serious Violation or Not Applicable for each item. All No responses require follow-up within 30 days, unless otherwise noted and all Serious Violations require 3 day follow-up.						
#	Y	N	S	NA	ITEM	REFERENCE
DOCUMENTATION						
1					Shop Safety Plan is current and has been reviewed.	PPM 290.xx
2					Building Emergency Evacuation Route posted in buildings more than one story high.	CCR Title 19 §3.09, 5N19, 5N111
3					Emergency contacts posted at entrance to shop.	PPM 290.xx
4					Department illness and Injury Prevention Plan available and up-to date.	CCR Title 8 §3203, PP290-56
5					Emergency Action Plan available and up-to-date.	CCR Title 8 §3220, PP290-56, 5N19
6					Emergency assistance information posted.	CCR Title 8 §3400(f)
7					All Shop Hazard Assessment deficiencies corrected.	UCQP Policy, PP290.xx
8					Readily accessible Safety Data Sheets (SDS- hard copy or online).	CCR Title 8 §5194(g), PP290-27, 5N33
9					Annual self-inspection complete.	CCR Title 8 §3203
10					Staff aware of procedure to report exposures or concerns.	CCR Title 8 §3203
11					Staff aware of procedure to report incidents and near misses.	CCR Title 8 §3203
12					Written Standard Operating Procedures available and current.	PPM 290-xx
ELECTRICAL						
13					All equipment power cord attachment plugs are equipped with a dedicated ground conductor (3-prongs).	CCR Title 8 §2360.2

Last updated 8/25/2015 Shop Safety Review DRAFT

NOTE: The form is located on EH&S website. If you currently use your own inspection form, please insert it here.

6.0 STANDARD OPERATING PROCEDURES







Standard Operating Procedures (SOPs) for machine shop equipment is located on the EH&S website: <http://www.XXXX>

Generic Standard Operating Procedures for various shop equipment are located on the External Reference section of the website. Information is provided by Lovegreen Safety.
<http://www.lovegreen.com/risk/placard.html>

- EH&S recommends that SOPs be posted at the machine if possible or readily available in the machine shop area.
- The SOPs provide quick safety references/tips on safe equipment use. This information is not a substitute for manufacturer, OSHA or other equipment training materials.

SAFETY OPERATING PROCEDURES
Bridgeport Mill

DO NOT use this machine unless you have received instruction from EFL staff

<p> Safety glasses must be worn at all times.</p> <p> Sturdy footwear must be worn at all times in work areas.</p> <p> Rings and jewellery must not be worn.</p>	<p> Long and loose hair must be contained.</p> <p> Close fitting/protective clothing must be worn.</p> <p> Gloves must not be worn when using this machine.</p>
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- ◆ Check that machine guards are in position.
- ◆ Ensure cutter is in good condition and securely mounted.
- ◆ Check for sufficient flow of coolant.
- ◆ Do not reach around tool when the spindle is spinning.
- ◆ Faulty equipment must not be used. Immediately report suspect machinery to the Student Machine Shop Supervisors.
- ◆ Keep clear of moving machine parts.
- ◆ Follow correct clamping procedures – check that work piece is secure.
- ◆ Set the correct speed to suit the cutter diameter, the depth of cut and the material.
- ◆ Before making adjustments and measurements or before cleaning chip/debris accumulations, switch off and bring the machine to a complete standstill.

POTENTIAL HAZARDS

- ⇒ Sharp cutters can cut fingers!
- ⇒ Moving components – hair/clothing entanglement in rotating machinery!
- ⇒ Eye injury from metal chips!
- ⇒ Skin irritation from coolant exposure!
- ⇒ Metal splinters and burns can cut skin!
- ⇒ Flying debris can injure you or a bystander!

7.0 TRAINING & RECORDKEEPING

7.1 Training Content

Each shop is responsible for training its users. Training content should include two components; 1. “**Classroom Training**” to discuss shop rules, policies and safety procedures; and 2. “**Practical Hands-On Training**” for each piece of equipment the user will have access to.

Please list in detail the subjects you will train each student on. **NOTE:** If you already have forms, factsheets or other documents used for training, simply insert the most updated version here. These forms must include (but not limited to):

- Employees’ names (or other identifier)
- Training dates
- Subject matter covered
- Training providers

Bench Grinder (example)
Classroom Training Outline:

- Grinder operation- turning on/off, adjusting work rest and tongue guards.
- Nomenclature- parts of the grinder.
- Approved work materials – i.e. no Aluminum.
- Abrasive wheel types and their limitations.
- Proper PPE.
- Hands-on.

Practical (Hands On) Training Outline:

- Perform proper lock out before changing wheel.
- Remove and replace wheel- use of blotters, proper flanges, torque mounting nut.
- Perform ring test of wheel.
- Verify rpm rating of wheel is greater than motor rpm.
- Adjust work rest and tongue guard to proper clearances.
- Demonstrate proper dressing of wheel.
- Demonstrate proper grinding techniques.

7.2 Record Keeping

A. Record Keeping

The following documents must be maintained by the Shop Manager:

- a. A completed User Authorization Form (*Attachment 2 example*) for each Authorized User. This document must be kept for the duration of employment, tenure or work-study term plus 3 years.
- b. All training rosters (*Attachment 3 example*) and training content must be kept for 3 years.
- c. All procedures or protocols developed for shop safety must be kept for as long as they are current.
- d. All shop Hazard Assessments must be kept on file. (*Attachment 4 example*).
- e. Annual Shop Safety inspection checklists must be kept on file. (*Attachment 5 example*).
- f. Crane and hoist inspection reports and proof load tests, if applicable.

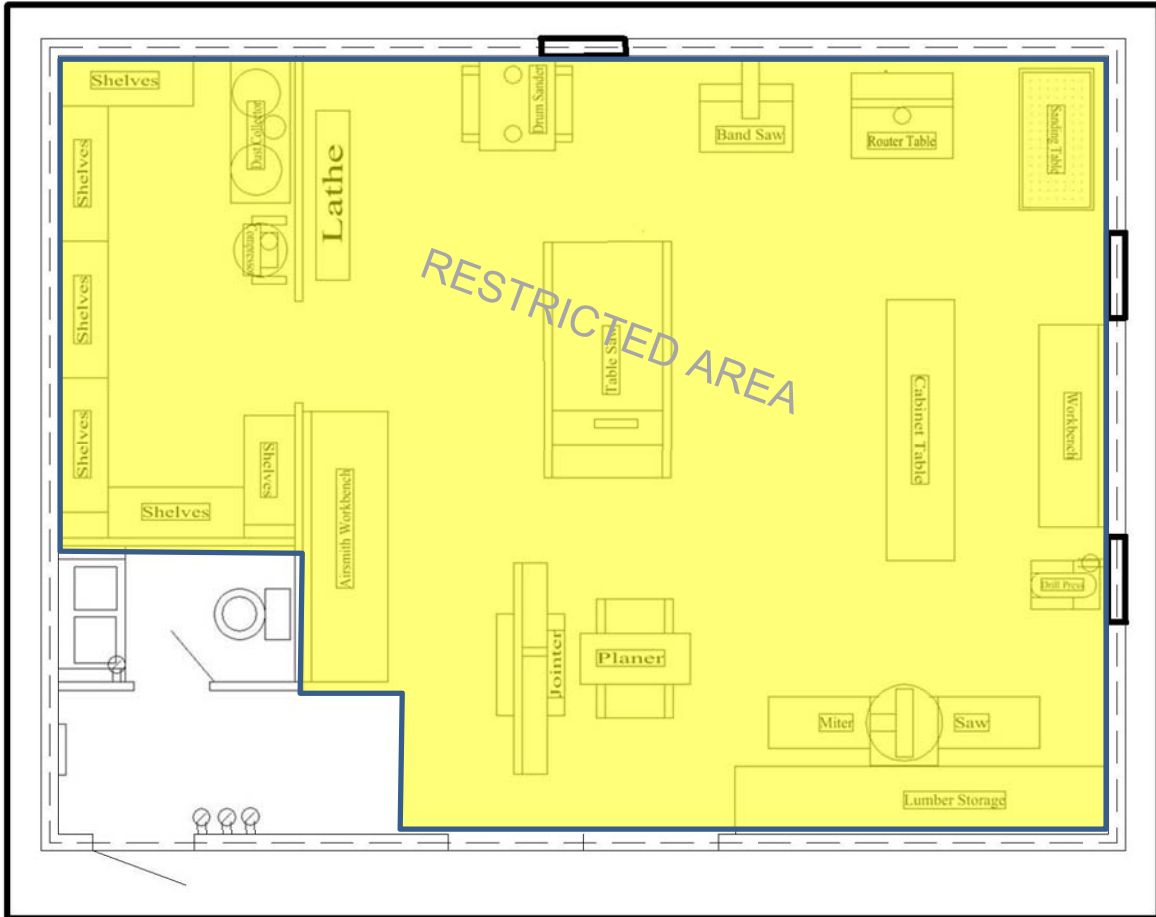
Please list any shop specific requirements for authorized users.

8.0 LIST OF AUTHORIZED USERS

Name	UC Davis Student ID	Phone	Training Completed	Date Authorization Given	Shop Manager's Initials
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		
			Yes / No		

9.0 RESTRICTED AREAS

Please insert a floorplan drawing below showing the restricted areas of the shop. A restricted area may be the entire shop or a portion thereof. If a restricted area is only the area surrounding a machine or process, the floor around that tool or process should be marked with a high visibility paint (or equivalent).



9.1 SIGNAGE

Entrances to all restricted shop areas must be posted with notices stating that entry is only allowed by Authorized Users. Visitors should be directed to the Shop Manager and telephone contact information should be provided.



ATTACHMENT 2

Shop User Authorization Form

SHOP USER AUTHORIZATION

Shop Managers may edit this form to fit their needs.

User Information

First name

Last name

Department

Shop Name

Authorized Tools \ Processes

Shop Manager comments:

By signing below, I confirm that the Authorized User listed above has met all training requirements for working in this shop.

Shop Manager's signature

Date

Authorized User's signature

Date

ATTACHMENT 3

Training Roster Template

SHOP SAFETY TRAINING ROSTER – Template Form
UC Davis – Shop Safety Training Roster

COURSE TITLE: _____ DATE: _____ HOURS _____ to _____

INSTRUCTOR(s) _____

COURSE OUTLINE ATTACHED OEM OPERATOR'S MANUAL LMS

Your Department and/or Supervisor's Name	Print Your Name	Sign Your Name
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		

ATTACHMENT 4

Shop Hazard Assessment Checklist

Shop Hazard Assessment Checklist-General

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Administrative						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is an up to date Shop Safety Plan available for review by all users authorized to use the shop? PPM 290-58		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are training records complete and up to date for every user authorized to use the shop? PPM 290-58		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is machinery being inspected and maintained as recommended by the manufacturer? CCR, Title 8 § 3328(b)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all hazards or unsafe conditions being reported in accordance with the department's Injury and Illness Prevention Program? CCR, Title 8 § 3203(a)(3)		
Section B- General Safety & Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all above ground piping systems serving the shop marked with contents, direction of flow, and maximum working pressure? CCR, Title 8 § 3321(a)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all machines and equipment that have the ability to start unexpectedly or that can restart unexpectedly after a power outage marked with an appropriate warning label/sign? CCR, Title 8 § 3320		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is compressed air that is used for equipment cleaning limited to 30 psig and is the air hose equipped with a safety nozzle ?? PPM 290-58		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do records show that all cranes, portable gantries, overhead travel cranes and their associated hoists are being subjected to a proof load test every 4 years and are legibly marked with their capacity? CCR, Title 8 § 5022(a), §4973		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all cranes, hoists, and their associated slings undergoing a documented inspection on a quarterly basis? CCR, Title 8 § 5031(c)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all areas of the workplace, store rooms, personal service rooms and passageways being kept in a clean, orderly and sanitary condition? CCR, Title 8 § 3362(a-g)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a Personal Protective Equipment Assessment been performed in the Shop? CCR, Title 8 §3380(f)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is PPE such as safety eyewear, face shields, hearing protection devices, welding helmets, etc. in good repair, sanitary and readily available? CCR, Title 8 §3380(d)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have all shop users been made aware of tasks where it is unsafe to wear gloves?		

#	YES	NO	N/A	Question	Comment	Date Corrected
				CCR, Title 8 § 3384 (b)		
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all compressed gas cylinders being properly handled, stored and secured? CCR, Title 8 § 4650(a-u)		
Section C- Fire & Life Safety						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the shop floor area is larger than 2,500 sq. ft. and the shop produces combustible dust, is it protected throughout by a supervised fire suppression system? CCR, Title 24, Part 9 § 903.2.4.1 (2013)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the shop is equipped with a dust collection system, is each exhaust duct 10 inches or greater in diameter equipped with internal fire suppression? CCR, Title 24, Part 9 § 903.2.11.4 (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is there an adequate number of fire extinguishers in the shop and are they being inspected and serviced on a periodic basis? CCR, Title 8 § 6151(d)(e)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	In shops that produce metallic shavings, is there at least one class D fire extinguisher available? CCR, Title 8 § 6151(d)(6)		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all shop aisles and walkways clear and in good repair, at least 24 inches wide, and maintain an overhead clearance of at least 80 inches? CCR, Title 8 § 3272(b)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Can employee emergency alarms be heard or seen while operating machines and wearing hearing protection devices? CCR, Title 8 § 6184(b)(3)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does the shop have, or is part of, an up to date emergency action plan? CCR, Title 8 § 3220(a-e)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are there at least two exits from the shop and are they clearly marked? CCR, Title 8 § 3228(a)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all designated oxygen gas welding areas being inspected annually by a Permit Authorizing Individual (PAI) in accordance with NFPA 51B? CCR, Title 8 § 4848(a)		
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does the shop have an adequately stocked first aid kit and is its location known to all shop users? CCR, Title 8 § 3400(c)		
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If required, does the shop have a compliant emergency eyewash and/or safety shower within a 10 second travel time? CCR, Title 8 § 5162(a-e)		
Section D- Electrical Safety						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do all electrical panelboards operating at 0-150 Volts have a minimum of 36 inches of clearance in front? CCR, Title 8 § 2340.16(b)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do all electrical panelboards operating at 151-600 Volts have a minimum of either 36, 42 or 48 inches of clearance in front- (depending on condition)? CCR, Title 8 § 2340.16(b)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are clear areas in front of electrical equipment free of stored items, furnishings, tools, etc? CCR, Title 8 § 2340.16(a)		

#	YES	NO	N/A	Question	Comment	Date Corrected
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	To assure ready access, does the Shop Manager have keys to all high voltage (>600V) panelboards that supply power to the shop? CCR, Title 8 § 2711		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Can all panelboard hinged covers open a minimum of 90 degrees? CCR, Title 8 § 2340.16(b)(2)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all electrical panelboards, panelboard breaker schedules and each disconnecting means legibly marked to indicate their purpose? CCR, Title 8 § 2340.22(a-f)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all power cords rated at 20 amps and below equipped with a grounding prong on the attachment plug? (exception: power tools rated as double insulated by an NRTL) CCR, Title 8 § 2395.45		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do all power cords rated at 20 amps and above meet the following criteria: are switch rated; are first make, last break design; have a retaining means and are within sight of the machine operator? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all machine power cords free of exposed wiring, frayed insulation or other deterioration? CCR, Title 8 § 2500.25		
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are flexible cords and cables free of splices or taps? CCR, Title 8 § 2500.9(a)		
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all unused openings (including conduit knockouts) in electrical enclosures and fittings closed with appropriate covers, plugs or plates? CCR, Title 8 § 2473.1(b)		
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are extension cords used only as temporary wiring and not running under carpets, doors or through walls and ceilings? CCR, Title 8 § 2405.1(a-c)		
13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are ground fault circuit interrupters (GFCI) installed in wet locations or within 6 feet of a sink? CCR, Title 24, Part 3, § 210.8(B) (2013)		
14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have all shop authorized users been trained in hazardous energy control procedures (LOTO) to be followed use when making minor tool adjustments, tool changes and other minor servicing activities? CCR, Title 8 § 3314(d)(1), (l)		
Section E- Chemical Storage and Hazard Communication						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Can shop users readily access Safety Data Sheets for all hazardous materials used in shop processes or maintenance activities? CCR, Title 8 § 5194(g)(8)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has the shop's chemical inventory and contact information been reviewed and updated in the Chemical Inventory System (CIS)? CCR, Title 8 § 5194(e)(1)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have all shop users received Hazard Communication (HAZCOM) training? CCR, Title 8 § 5194(h)		

#	YES	NO	N/A	Question	Comment	Date Corrected
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are chemical / solvent waste containers compatible with contents and in good condition? CCR, Title 22 § 66265.171, 172		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does the shop have adequate spill control materials for the amounts of coolants and oils being used? CCR, Title 22 § 66265.32		
Section F- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have noise levels been surveyed in all areas of the shop? CCR, Title 8 § 5097(b)(1)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all hazardous airborne by-products of machine operations being controlled to safe levels? CCR, Title 8 § 5141(a)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are ambient lighting levels adequate at each machine point of operation? CCR, Title 8 § 3317(a)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are welding shields used to protect the eyes of bystanders from welding arcs or plasma radiation? CCR, Title 8 § 4851(a)		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are welding helmets provided with various shades of eye protection? CCR, Title 8 § 3382(b)		

Shop Hazard Assessment Checklist-CNC Cutting Machine

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Type: Mill Lathe Router Plasma Cutter Waterjet Laser Cutter EDM

Supply Voltage _____ V 1φ 3φ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all points of operation, tool magazines, chip collection systems or other danger zones created by machine operations adequately safeguarded by one of the following: fixed guard, movable interlocked guard, presence		

#	YES	NO	N/A	Question	Comment	Date Corrected
				sensing safety device (PSSD) or awareness barrier? CCR, Title 8 § 4184(a), 4188		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all power transmission pulleys, belts, chains, gears and lead screws adequately guarded? CCR, Title 8 § 4070(a)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all protruding shaft ends guarded? (unless protruding less than ½ of the shaft's diameter beyond the bearing and with smooth edges) CCR, Title 8 § 4051(a)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Only authorized employees are allowed to access set-up mode, if applicable. CCR, Title 8 § 3314(b)		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all CNC plasma cutting areas equipped with non- combustible shields that will protect the eyes of bystanders during operation? CCR, Title 8 § 4850(b)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is eye protection that meets the requirements of ANSI Z49.1-94 available for operators of CNC plasma cutting equipment? CCR, Title 8 § 4850(b)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all class IV laser CNC cutting systems being operated in accordance with the UC Davis Laser Safety Manual?		

Shop Hazard Assessment Checklist- Bench / Floor Stand Grinder

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1φ 3φ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnect means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means enclosure marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is each wheel supported by a mounting flange on each side that is no less than 1/3 the wheel's diameter? CCR, Title 8 § 3579(a)		

#	YES	NO	N/A	Question	Comment	Date Corrected
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are both flanges used to mount the abrasive wheel of equal diameter and bearing surface? CCR, Title 8 § 3579 (d)		
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are blotters being used between each flange and the abrasive wheel? CCR, Title 8 §3579(g)		
13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have all abrasive wheels been ring tested prior to installation? CCR, Title 8 § 3580(a)		
14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are inorganic, organic and vitrified bonded wheels being replaced after a set life span as specified by the wheel's manufacturer? CCR, Title 8 § 3328(b)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the abrasive wheel protected by a fixed guard that allows no more than 90 degrees of the wheel's periphery to be exposed and does this guard opening begin at a point no more than 65 degrees above the horizontal plane of the wheel spindle ? CCR, Title 8 § 3578(a)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is each wheel guard equipped with a tongue guard at the top and is the tongue adjusted to be no more than ¼" from the wheel surface? CCR, Title 8 § 3578(g)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the abrasive wheel's maximum rated speed greater than or equal to the maximum speed of the grinder's motor? CCR, Title 8 § 3328(a)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is each abrasive wheel equipped with a tool rest that is adjusted to be within 1/8" of the wheel's periphery? CCR, Title 8 § 3577(e)		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are shields in place that will prevent flying metal particles from contacting the operator? CCR, Title 8 § 3303		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all hazardous airborne by-products of machine operations being controlled to safe levels? CCR, Title 8 § 5141(a)		

Shop Hazard Assessment Checklist- Milling Machine

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1 ϕ 3 ϕ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		

#	YES	NO	N/A	Question	Comment	Date Corrected
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all points of operation or other danger zones created by machine operations adequately safeguarded by one of the following: fixed guard, movable interlocked guard, awareness barrier? CCR, Title 8 § 4184(a), 4188		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all power transmission pulleys, belts, chains, gears and lead screws adequately guarded? CCR, Title 8 § 4070(a)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all protruding shaft ends guarded? (unless protruding less than ½ of the shaft's diameter beyond the bearing and with smooth edges) CCR, Title 8 § 4051(a)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are shields in place that will prevent flying metal particles from contacting the operator? CCR, Title 8 § 3303		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all raw turnings, chips, and swarf being collected daily and placed in closed-top metal containers located in a safe storage area? CCR, Title 8 § 5175(a)		

Shop Hazard Assessment Checklist- Metal Lathe

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1φ 3φ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all points of operation or other danger zones created by machine operations adequately safeguarded by one of the following: fixed guard, movable interlocked guard, awareness barrier? CCR, Title 8 § 4184(a), 4188		

#	YES	NO	N/A	Question	Comment	Date Corrected
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all power transmission pulleys, belts, chains, gears and lead screws adequately guarded? CCR, Title 8 § 4070(a)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all protruding shaft ends guarded? (unless protruding less than ½ of the shaft's diameter beyond the bearing and with smooth edges) CCR, Title 8 § 4051		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On lathes where revolving bar stock is being machined, that portion of the bar stock which extends beyond the machine is guarded by a trough or tube or by other effective means? CCR, Title 8 § 4233		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all raw turnings, chips and swarf being collected daily and placed in closed-top metal containers located in a safe storage area? CCR, Title 8 § 5175(a)		

Shop Hazard Assessment Checklist- Drill Press

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1φ 3φ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all points of operation or other danger zones created by machine operations adequately safeguarded by one of the following: fixed guard, movable interlocked guard, awareness barrier? CCR, Title 8 § 4184(a), 4188		

#	YES	NO	N/A	Question	Comment	Date Corrected
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all power transmission pulleys, belts, chains, gears and lead screws adequately guarded? CCR, Title 8 § 4070		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all protruding shaft ends guarded? (unless protruding less than ½ of the shaft's diameter beyond the bearing and with smooth edges) CCR, Title 8 § 4051(a)		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all raw turnings, chips and swarf being collected daily and placed in closed-top metal containers located in a safe storage area? CCR, Title 8 § 5175(a)		

Shop Hazard Assessment Checklist- Vertical Band Saw

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1φ 3φ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnect switches marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? CCR, Title 24, Part 3 § 670 (2013)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all portions of the saw blade (both above and below the work table) guarded except that portion between the bottom of		

#	YES	NO	N/A	Question	Comment	Date Corrected
				the guide rolls and the table? CCR, Title 8 § 4310		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are both wheels fully enclosed? CCR, Title 8 § 4310		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the saw equipped with a blade tension device and indicator that prevent blade over-tightening? CCR, Title 8 § 4310		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all raw turnings, chips and swarf being collected daily and placed in closed-top metal containers located in a safe storage area? CCR, Title 8 § 5175(a)		

Shop Hazard Assessment Checklist- Horizontal Band Saw

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1φ 3φ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all portions of the saw blade guarded except that portion at the point of operation? CCR, Title 8 § 4310		

#	YES	NO	N/A	Question	Comment	Date Corrected
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are both wheels fully enclosed? CCR, Title 8 § 4310		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the saw is equipped with a blade tension device and indicator that prevent blade over-tightening? CCR, Title 8 § 4310		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all raw turnings, chips and swarf being collected daily and placed in closed-top metal containers located in a safe storage area? CCR, Title 8 § 5175(a)		

Shop Hazard Assessment Checklist- Metal Shear

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1 ϕ 3 ϕ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all portions of the cutting blade guarded except that portion at the point of operation? CCR, Title 8 § 4227(a)		

#	YES	NO	N/A	Question	Comment	Date Corrected
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are hold downs sufficiently guarded? CCR, Title 8 § 4227(b)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the back side of the shear guarded by an awareness barrier or PSSD? CCR, Title 8 § 4227(e)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are foot operated controls protected from unintended operation? CCR, Title 8 § 4185		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the foot treadle enclosed to prevent contact by personnel? CCR, Title 8 § 4184(a)		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are hand tools provided for retrieving all scrap pieces with potentially sharp edges and is waste being placed in hard sided waste containers on at least a daily basis? CCR, Title 8 § 3330(a)		

Shop Hazard Assessment Checklist- Power Press or Press Brake

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1 ϕ 3 ϕ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		

#	YES	NO	N/A	Question	Comment	Date Corrected
Section B - Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the point of operation guarded by one of the following: PSSD, restraint device, pullback device, two handed control, type A or B gate or movable barrier or fixed barrier guard? CCR, Title 8 § 4214(a)(b)(e)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are foot operated controls protected from unintended operation? CCR, Title 8 § 4185		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are hand tools provided for retrieving all scrap pieces with potentially sharp edges and is waste being placed in hard sided waste containers on at least a daily basis? CCR, Title 8 § 3330		

Shop Hazard Assessment Checklist- Table Saw

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1 ϕ 3 ϕ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the saw equipped with a guard which completely encloses the blade and the		

#	YES	NO	N/A	Question	Comment	Date Corrected
				bottom of which is no greater than ¼" above the material being cut? CCR, Title 8 § 4300.1(a)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the saw equipped with a spreader for ripping operations? CCR, Title 8 § 4300.1(b)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the saw equipped with anti – kickback devices for ripping operations? CCR, Title 8 § 4300.1(c)(1)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are push sticks readily available for ripping narrow boards? CCR, Title 8 § 4300.1(c)(2)		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If so equipped, is the saw's power cord positioned so that it does not become a trip hazard to the operator or their assistants? CCR, Title 8 § 3273(a)		

Shop Hazard Assessment Checklist- Radial Arm Saw

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1 ϕ 3 ϕ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		

#	YES	NO	N/A	Question	Comment	Date Corrected
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the saw equipped with a guard which completely encloses the upper one half of the blade and covers the arbor ends? CCR, Title 8 § 4309		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the saw equipped with a guard which forms a physical barrier and visual warning for the lower one half of the blade? CCR, Title 8 § 4309		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If used for ripping, is the saw equipped with anti-kickback devices? CCR, Title 8 § 4309		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	When released from any point of its travel, does the saw carriage return to the back of the table smoothly without rebounding? CCR, Title 8 § 4309		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If so equipped, is the saw's power cord positioned so that it does not become a trip hazard to the operator or their assistants? CCR, Title 8 § 3273(a)		

Shop Hazard Assessment Checklist- Jointer and Hand Fed Planer

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1 ϕ 3 ϕ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a guard which automatically adjusts to cover the portion of the cutting head not protected by material during operation? CCR, Title 8 § 4311(b)		

#	YES	NO	N/A	Question	Comment	Date Corrected
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are feed rollers adequately guarded? CCR, Title 8 § 4311		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are cutter knives below the table fully guarded? CCR, Title 8 § 4311(d)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do cutter knives protrude no more than 1/8" above the cutter head? CCR, Title 8 § 4311(a)		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If so equipped, is the machine's power cord positioned so that it does not become a trip hazard to the operator? CCR, Title 8 § 3273(a)		

Shop Hazard Assessment Checklist- Belt / Disc Sander

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Supply Voltage _____ V 1φ 3φ OEM Operator's Manual Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine securely restrained to prevent movement in accordance with the machine manufacturer's recommendations or sound engineering practices? CCR, Title 8 §3328(d)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's electrical attachment plug connected directly to the building's wiring and is that wiring's ampacity rated for at least 125% of the machines full load current? CCR, Title 24, Part 3 § 670.4(A) (2013)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference)		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of branch circuit panelboards and transformers to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		

#	YES	NO	N/A	Question	Comment	Date Corrected
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all points of operation adequately guarded? CCR, Title 8 § 4184(a), 4188		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the belt sander equipped with guards that prevent contact with the nip points formed by the sanding belt and pulleys? CCR, Title 8 § 4312		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disc sander protected by a guard around the entire periphery of the disc? CCR, Title 8 § 4313		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the table of the disc sander adjusted to within ¼ inch of the disc at all points?? CCR, Title 8 § 4313		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all belt and pulley power transmission parts adequately guarded? CCR, Title 8 § 4070		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If so equipped, is the machine's power cord positioned so that it does not become a trip hazard to the operator? CCR, Title 8 § 3273(a)		

Shop Hazard Assessment Checklist- R&D Special Equipment

Date: _____ Name of Assessor: _____

Dept: _____ Building: _____ Shop: _____

Machine Manufacturer: _____ Model: _____ Serial No.: _____

Hazardous Energy : Hydraulic Pneumatic Vacuum Laser Radio Freq. X-Ray Tube Radioactive Materials Magnetic Fields Hazardous Process Materials Temperature Extremes

Supply Voltage _____ V 1φ 3φ


Design Drawings and Schematics Readily Available ? Y N

#	YES	NO	N/A	Question	Comment	Date Corrected
Section A- Installation						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has the installation of all special electrical equipment designed and built by the department for R&D purposes undergone a field evaluation by a person or parties acceptable to the Authority Having Jurisdiction? PPM 290.85 (NFPA 70E, Article 350)		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a Competent Person been identified for each piece of special equipment? PPM 290.85 (NFPA 70E, Article 350)		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are the machine's power cord and plug in good condition with no cuts or fraying of the insulation? CCR, Title 8 § 3328(c)		
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the machine equipped with a means to promptly disconnect power, such as a switch, in case of emergency? CCR, Title 8 § 4001		
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the machine is powered by permanent conductors from the building's wiring, is the incoming power supply circuit terminated at a disconnecting means located immediately adjacent to the machine? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the disconnecting means legibly marked to indicate the equipment it disconnects? CCR, Title 24, Part 3 § 670.1 (NFPA 79-2007 by reference) (2013)		
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all disconnecting means enclosures marked with a safety sign in accordance with ANSI Z535.4 to warn qualified persons of potential electric shock and arc flash hazards? PPM 290-85 (NFPA 70E 130.5 by reference.		
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a minimum of 36 inches of clearance provided in front of disconnecting means to ensure safe maintenance? CCR, Title 24, Part 3 § 110.26 (2013)		
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written and verified Hazardous Energy Control Procedure (LOTO) is readily available for the machine? CCR, Title 8 § 3314(g)		

#	YES	NO	N/A	Question	Comment	Date Corrected
Section B- Safeguarding						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all points of operation or other danger zones created by machine operations adequately safeguarded by one of the following: fixed guard, movable interlocked guard, awareness barrier? CCR, Title 8 § 4184(a), 4188		
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are shields in place that will prevent flying metal particles from contacting the operator? CCR, Title 8 § 3303		
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all belt and pulley power transmission parts adequately guarded? CCR, Title 8 § 4070		
Section C- Industrial Hygiene						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a noise survey been performed while the machine is in normal operation? CCR, Title 8 § 5097(b)		
Section D- Housekeeping						
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If so equipped, is the machine's power cord positioned so that it does not become a trip hazard to the operator? CCR, Title 8 § 3273(a)		

ATTACHMENT 5

Periodic Shop Review Checklist

 <p>UC DAVIS SAFETY SERVICES <i>Environmental Health and Safety</i></p> <p>http://safetyservices.ucdavis.edu</p>	Shop Safety Review Checklist One Shields Ave • Davis, CA 95616 Phone: (530)752-1493 Fax: (530)752-4527 E-mail: healthandsafety@ucdavis.edu
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U C Davis Environmental Health and Safety Shop Safety Review Checklist	
Reviewer:	Date:
Shop Manager:	Phone:
Building:	Room Number(s):
Department:	Shop Name/Function:
<p>Please check Yes, No, Serious Violation or Not Applicable for each item. All No responses require follow-up within 30 days, unless otherwise noted and all Serious Violations require 3 day follow-up.</p>	

#	Y	N	S	NA	ITEM	REFERENCE
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DOCUMENTATION						
1					Shop Safety Plan is current and has been reviewed.	PPM 290-58
2					Building Emergency Evacuation Route posted in buildings two or more stories in height.	CCR, Title 24, Part 9, § 408.3.1.1 (2013)
3					Shop manager emergency contact information posted at entrance to shop.	PPM 290-58
4					Department Illness and Injury Prevention Program available and up-to date.	CCR, Title 8 §3203, PPM 290-56
5					Emergency Action Plan available and up-to date.	CCR, Title 8 §3220
7					All Shop Hazard Assessment deficiencies corrected.	UCOP Policy, PPM 290-58
8					Readily accessible Safety Data Sheets (SDS- hard copy or online).	CCR, Title 8 §5194(g), PPM 290-27
9					Annual self-inspection complete.	CCR, Title 8 §3203
10					Staff aware of procedure to report exposures or concerns.	CCR, Title 8 §3203
11					Staff aware of procedure to report incidents and near misses.	CCR, Title 8 §3203
12					Written Safe Operating Procedures available and current.	PPM 290-58

ELECTRICAL						
13					Electrical power tools not rated as double insulated are equipped with power cord attachment plugs that include a dedicated ground conductor (3-prongs).	CCR, Title 8 §2395.59
14					Appropriate clearance in front of electrical panelboards, switchboards, and switchgear : 36”in front, 30” in width (15” bilaterally from center of panel) and 78” above (to top of equipment or 78”– whichever is greater) .	CCR, Title 8 §2340.16
15					Electrical cords in use do not pose a trip hazard.	CCR, Title 8 § 3273
16					Plugs, cords and receptacles in good condition.	CCR, Title 8 §2500.25, 2473.1, 2340.1
17					Extension cords used only temporarily (<90 days).	CCR, Title 8 §2500.8
18					No overloaded power outlets, no daisy-chained extension cords or relocatable power taps (RPT- aka power strips).	CCR, Title 8 §2340.2
19					GFCI devices used within 6’ of water source.	CCR, Title 24, Part 3, § 210.8 (2013)
20					High voltage (>600V) rooms or enclosures clearly labeled.	CCR, Title 8 §2932
21					High voltage (>600V) equipment properly guarded.	CCR, Title 8 §2930
22					Motorized or high amperage equipment plugged directly into wall receptacle.	CCR, Title 8 §2340.2
EQUIPMENT						
23					Safe Operating Procedures posted on equipment.	PPM 290-58
					Equipment properly guarded at point of operation and power transmission belts, pulleys, leadscrews, etc.	CCR, Title 8 §4184
25					All stationary machines restrained to prevent movement in accordance with the machine manufacturer’s recommendations or sound engineering practices.	CCR, Title 8 §3328(d)
26					Machines or equipment are located and guarded so that the product, waste stock or material being worked or processed does not endanger employees.	CCR, Title 8 §3273
FIRE-LIFE SAFETY						
27					Exits, aisles, and corridors free of obstruction.	CCR, Title 8 §3325
28					Fire alarm systems undergoing annual testing in accordance with NFPA 72.	CCR, Title 24, Part 9 §901.6 (2013)
29					Fire extinguisher properly mounted.	CCR, Title 8 §6151
30					Fire extinguisher maintenance tag current.	CCR, Title 8 §6151
31					Fire extinguisher available as required.	CCR, Title 8 §6151
32					Fire extinguisher fully charged. Safety pin and tamper seal intact.	CCR, Title 8 §6151
33					Fire doors unobstructed and easily closed.	CCR, Title 24, Part 9, § 703.2 (2013)

34				18" of clearance between stored items and fire sprinklers.	CCR, Title 8 §6170(c)10
35				Maximum of 60 gallons flammable liquid per approved storage cabinet.	CCR, Title 8 §5533(a)
36				Less than 10 gallons (in aggregate) of flammable liquids being stored outside flammable cabinet.	PPM 290-65 (NFPA 30 2015, sec. 9.6.2.2)
37				Flammable solid wastes such as metal turnings and sawdust are being cleaned up promptly and stored in closed, non-combustible containers.	CCR, Title 8 § 3221
38				Flammable liquid container volume no greater than 1 gallon each (2 gallon approved safety cans are allowed).	CCR, Title 8 §5538
39				First Aid Kit readily accessible and stocked with contents not past their expiration dates.	CCR, Title 8 §3400(c)
COMPRESSED GASES					
40				Oxygen and acetylene cylinders in-service, are securely fastened in a suitable truck, secured in suitable racks, or secured to a rigid structure to prevent falling over.	CCR, Title 8 §4650
41				Compressed gas cylinders stored upright and adequately secured.	CCR, Title 8 §4650
42				Compressed gas cylinders labeled with contents and hazards.	CCR, Title 8 §4649
44				Cylinders of incompatible compressed gases are being stored with adequate separation (at least 20 ft.)	CCR, Title 8 § 5164
45				Toxic gases properly stored in ventilated cabinet/fume hood.	CCR, Title 24, Part 9 § 6004.1.2 (2013)
46				Compressed gas cylinders capped when not in use.	CCR, Title 8 §4650
HYGIENE					
47				High noise areas clearly posted.	PPM 290.53
48				Hazardous airborne by-products of machine operations are being controlled to safe levels?	CCR, Title 8 §5141(a)
49				UV exposures from welding and plasma cutting operations being prevented by appropriate barrier shields and welding goggles/helmets.	CCR, Title 8 §3382
PERSONAL PROTECTIVE EQUIPMENT (PPE)					
50				Serviceable face shield available where required.	CCR, Title 8 §3382
51				Jewelry being removed and long hair being secured before using any rotating portable or stationary equipment.	CCR, Title 8 §3384
52				Long pants being worn as required by UCD PPE policy.	PPM 290-50
53				PPE being maintained in a safe, sanitary condition or is properly disposed of if defective.	CCR, Title 8 §3380(d)
54				Respirator users have been evaluated by EH&S and included in campus respiratory protection program.	CCR, Title 8 §5144
55				Eye protection available and used as required by UCD PPE policy.	CCR, Title 8 §3382

56				Adequate supply of specialty PPE available (i.e. UV/IR glasses, welding coat, cryogenic gloves, etc.).	CCR, Title 8 §3380(f)
WASTE					
57				Chemical waste containers compatible with contents and in good condition.	CCR, Title 22 §66265.171
58				Chemical waste containers closed except when in use.	CCR, Title 22 §66265.173, PP290-65
59				All hazardous waste disposed of by EH&S.	UCD PP290-65
60				Hazardous waste in secondary containment.	CCR, Title 22 § 66262.34
61				Chemical waste containers properly tagged/dated/labeled for disposal.	CCR, Title 22 § 66262.34
62				All wastes within being disposed of within regulatory time limits.	CCR, Title 22 § 66262.34
63				Universal waste properly labeled/discarded/contained; < 1 year.	CCR, Title 22 § 66262.35
Comments:					
Corrective Action Items:					
Follow Up:					
Shop Survey Conducted by:					
Shop Manager Signature:					Date:

CCR California Code of Regulations
HSC Health and Safety Code
NFPA National Fire Protection Association
PPM UCD Policy and Procedures Manual