

## QUEST SELF-ASSESSMENT CHECKLIST for SHOPS

Area assessed: \_\_\_\_\_

People who did the assessment: \_\_\_\_\_

### GENERAL SAFETY

Talk to the Shop Manager. Can the Shop Manager clearly explain who has been authorized to use the shop and the requirements for shop use? Are required work authorizations (WPC Activities) readily available? Are lists of authorized personnel and work authorization levels up-to-date?

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Do all non-routine operations, (such as short-term projects, clean-up/construction projects, or vendor equipment servicing) with significant hazards have a documented hazard analysis and required work authorizations (such as WPC Activity, Construction Safety permits, SJHA, Hot Work permits)?

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Do all entrances to shops have signs next to doors describing hazards, PPE requirements, and contact people? Are there any outdated or non-standard signs? **Contact the Area Safety Lead to update door signs. Check bulletin boards and remove any outdated materials.**

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Is appropriate PPE (safety glasses, shop coats, gloves, etc.) conveniently available, properly stored, and in good condition in areas where it is required? Are closed-toed shoes worn in all shop areas and safety shoes worn where heavy or sharp objects could cause injury?

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Are food and beverages kept out of shops? Is there a conveniently located and clearly marked room or area where food and beverages are allowed to be consumed?

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Are sharp cutting tools (razor blades, scalpels, knives, etc.) stored with the blade covered? Are there red sharps disposal containers available near where sharps are used?

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Are ladders clean and in good condition, with non-slip safety feet?

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Check the chairs in your area. Are there any other damaged or defective chairs or stools that need replacement?

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## EMERGENCY PREPAREDNESS

Are copies of the Emergency Guide (red/orange/yellow flip chart) posted? **Tip: A new version of the Guide is anticipated soon -- contact Pat Thomas ext. 6098 to request copies.**

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Are there any outdated or non-standard signs that need to be removed? Check bulletin boards and remove any outdated materials.

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Talk to your Building Emergency Team Leader(s):

- Are there Building Emergency Team members assigned to each area that may need to be evacuated?
  - Have Building Emergency Team members completed required training?
  - Do all Building Emergency Team members know how to use the emergency radio?
  - Is the information in the BET WPC Activity up-to-date?
  - Is there a current Building Emergency Plan available?
  - Do all team members know where the nearest trauma kit and emergency equipment box are located? Does the Emergency Team Leader have a key to the emergency equipment box?
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Are aisles, walkways, stairways, and exit doors unobstructed? Is the area free of tripping hazards?

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Check the area outside your building. Are there any burned-out lights, tripping hazards, worn or damaged steps, or other conditions that make walking hazardous? Are there any areas where traffic / bicycle / pedestrian safety could be improved?

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Have all heavy objects (furniture, computers, large equipment) that could fall during an earthquake been secured safely (chocks or wheel locks in place for equipment on wheels)?

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Is fire extinguisher access unobstructed? Are the types of fire extinguishers appropriate to the type of fire you might have in the areas (A= ordinary combustibles, B=flammable liquids, C=electrical, D=metals)?

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Are fire sprinkler lines free of attached cords, lines, equipment, decorations or other materials?

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Is there a current permit from the Fire Department in place for any operation that produces flames, sparks, or heat (welding, heat treating, grinding, thawing pipe, powder-driven fasteners, hot riveting, etc.)?

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Have eyewashes and safety showers been inspected within the last 3 months? Are they in good condition? Is access unobstructed? Are eyewashes located so that someone with chemicals in their eyes would be able to reach the eyewash within 10 seconds?

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Are there adequate numbers and types of spill kits (e.g., flammable, acid, and base) available in work areas?

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Are there any types of shop work in your area that should not be performed alone? This might include work with significant hazards where a person might become so severely injured that they could not summon help, work in a location where a person would not be seen if they were incapacitated, or work by people who are inexperienced or unfamiliar with the area. Does your group have documented controls in a WPC Activity for any work that should not be performed alone?

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### **ELECTRICAL SAFETY**

Is access to electrical panels, including breaker boxes and disconnects, unobstructed?

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Does each electrical panel have a schedule posted nearby indicating the purpose of all breakers and disconnects? Are all breakers and disconnects numbered or otherwise identified?

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Are electrical panels and breaker boxes in good condition (intact, screws in place, door latches work, no materials stored on top)?

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Are all wall-mounted plug strips, receptacles and outlets in good condition? Are outlets near machines protected from metal chips?

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Are labeled ground fault circuit interrupters (GFCIs) located on electrical outlets near water outlets and other areas where they may get wet, and attached to any outdoor extension cords?

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Are electrical feeds to machines in good condition and grounded?

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Are **extension cords** in good condition:

- marked as approved by "UL" or "ETL"?
  - 3 intact prongs on plug (indicating there is a ground wire) and plug attached to cord with no exposed wires?
  - cord jackets in good condition, with no frayed insulation, exposed wiring, splices or other signs of tampering, kinks, or taped-over damaged areas?
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Have all **extension cords** been in use for  $\leq 1$  month?

Are unused extension cords rolled up and stored properly?

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Are **extension cords** used properly:

- appropriate for the load?
  - two extension cords of the same gauge may be used together (but not more than 2).
  - covered with a bridge (not under carpet or rug) in walkways?
  - not draped over furniture or fire sprinkler lines?
  - not extending through doors or windows, or through holes in ceilings or floors?
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Are **relocatable power taps** (also known as plug or power strips or surge protectors) in good condition:

- marked as approved by "UL" or "ETL"?
  - no cracks in plastic or metal case, no damage to cord or plug, no deformed or dark spots indicating overheating?
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Are **relocatable power taps** (also known as plug or power strips or surge protectors) used properly:

- not daisy chained (should be plugged directly into wall, not attached to extension cords or other power strips);
  - not permanently attached so that tools are required for removal (may be mounted with slots or keyholes if provided by manufacturer);
  - not connected to equipment over 600 Watts/5 amps, such as heaters, cooking appliances, or fans (unless specifically rated for this type of service)?
  - only used in dry, indoor locations?
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Are **space heaters** in good condition:

- electric powered and marked as approved by “UL” or “ETL”?
  - 3 intact prongs on plug (indicating there is a ground wire) and plug attached to cord with no exposed wires?
  - cord jackets in good condition, with no frayed insulation, exposed wiring, splices or other signs of tampering, kinks, or taped-over damaged areas?
  - clean, not dusty?
  - automatic shut-off working? (*Test by tilting.*)
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Are **space heaters** used properly:

- placed on a level and sturdy surface?
- not used where flammable or explosive vapors, or dust, toxic, or radioactive materials, may be present?
- kept away from combustible materials such as papers, magazines, drapes, or office furniture?  
*Note: Follow manufacturer guidelines for placement of the heater. If no manufacturer guidelines are present, provide at least a 36-inch clearance in front of the heater and an 18-inch clearance from all sides, the top, and the back.*
- not used in or near wet areas, such as locker/shower rooms?
- not placed in an exit, hallway, or stairwell where the cord can become a tripping hazard? (*Note: power cord may not be run under a carpet or floor mat – this can cause overheating.*)
- turned off and/or unplugged when area is unoccupied for  $\geq 1$  hour?

Are space heaters  $\geq 800$  W plugged directly into a permanent wall outlet (not plugged into extension cords or plug strips)?

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Are there any space heaters  $\geq$  1500 Watts? *(Note: May require online registration/training. May indicate need for HVAC improvements in area.)*

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Are portable metal ladders clearly labeled "Do Not Use Around Electrical Equipment" and kept away from areas where the ladder or person using the ladder could come in contact with energized equipment?

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Are electrical conduits free of attached cord, lines, equipment, decorations or other materials? *(Tip: Use unistrut instead of conduits to support materials.)*

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Is electrical equipment on metal carts or tables bonded, and grounding provided for metal carts used for electrical equipment?

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Is someone assigned and trained to survey non-NRTL electrical equipment in your area? Is there any non-NRTL equipment that has a potential of 50 Volts or greater anywhere in the equipment that has not been inspected and approved by the Electrical Equipment Inspection Program?

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Is there any electrical equipment labeled "Failed" or "Conditionally Accepted" that is in use? Have actions been taken to ensure this equipment is either repaired or taken out of service?

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## MACHINE GUARDING AND CONTROLS

Check all machine tools that have reasonably accessible points of operation, pinch and nip points, rotating parts, and flying chip or spark hazards that may expose an employee to injury. Have all these hazards been guarded to prevent injuries:

- Points of operation (cutting, shaping, boring, bending, punching, etc.)
- Power transmission apparatuses (pulleys, belts, flywheels, couplings, cams, spindles, chains, cranks, gears, etc.)
- Nip and pinch points
- Entanglement hazards
- Chips/flying materials, splashes, or sparks?

Do the guards themselves pose a safety hazard?

**Tip: See ES&H Manual, Chapter 25, Appendix B for examples or contact Herb Toor for assistance.**

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Are starting and stopping controls within easy reach of the operator? Are machines protected from restarting automatically after a power interruption?

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For grinders, does the guarding cover at least 75% of the wheel, including the spindle nut? Is the work rest adjusted closely to the wheel with a maximum clearance of 1/8 inch, and the adjustable tongue or end of the peripheral member at the top of the housing adjusted to within 1/4 inch of the wheel?

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For vertical band saws, is the guard lowered to the table when not in use?

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Are machines designed for a fixed location securely anchored to prevent movement?

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Is there sufficient clearance around and between machines to allow for safe operations, set up and servicing, material handling and waste removal?

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## **CRANES, HOISTS, and FORKLIFTS**

Is there a current, qualified employee designated as Crane Manager for each crane or hoist?

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Is any electric powered crane that is not attended by a qualified operator for an entire shift and during off hours secured by locked controls, or equivalent means such as preventing access to the crane by locking the doors, or locking up radio controls?

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Is secondary lifting gear in good condition?

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Are all LBNL proof load tags and inspection stickers current? Does the load limit on the tag match the marking on the crane/hoist? Is the rated load of each crane/hoist legibly marked and visible to the operator?

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Have all active lifting devices (such as screw pin shackles, hoist rings, commercial equipment, etc.) and fixtures (such as spreader bars, special slings, equipment designed at the Laboratory, etc.) undergone a Non-Destructive Examination within the last 4 years? Are all inactive lifting devices and fixtures clearly marked "STOP DO NOT USE"?

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Are the controls of hoists plainly marked to indicate the direction of travel or motion?

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Is there a daily inspection tag or logbook? Is it being filled out whenever the crane/hoist is in use? Are cranes inspected at least once a month (whether or not they are used)?

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When forklift trucks are left unattended, are the forks lowered, controls neutralized, hand brake set, wheels chocked, and keys removed from the ignition?

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## REFRIGERATORS AND FREEZERS

Is each refrigerator, freezer, or cooler prominently marked to indicate whether it meets the requirements for safe storage of flammable liquids? Are there any flammable liquids stored in non-approved units?

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Are refrigerators and freezers in labs labeled "Caution – Do Not Store Food or Beverages in this Refrigerator"? (NOTE: If you have not received this new label, contact Julie Zhu.) Are there any food or beverages in the chemical storage units?

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Are refrigerators and freezers plugged directly into a wall outlet (not an extension cord or power strip)? Is there enough space near the outlet for a person to unplug/plug the unit safely?

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## CHEMICAL SAFETY

Are floors and work surfaces free of chemical residues?

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Are chemical containers and gas cylinders labeled with name of chemical contents and hazard?

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Are the chemicals needed (current or near-future planned use, not degraded or expired)?

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Have chemicals been entered into the Chemical Management System? (Check for a barcode on the container or on a Multi-Container Inventory Sheet posted nearby.) Have chemicals >1 gallon inside equipment been inventoried (bar code on equipment or on Multi-Container inventory sheet)?

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Do workers know how to find and use Material Safety Data Sheets or Safety Data Sheets? *Pick a chemical container or gas cylinder. Ask a worker in the area to show you the MSDS/SDS and identify the hazards of the chemical.*

- Does the worker know what "GHS" and the GHS symbols/pictograms mean?
  - Does the worker know what an MSDS or SDS is?
  - Can they quickly produce a current MSDS or SDS (either hard copy or from the website)?
  - Can they find the hazard information?
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Are chemicals and gases stored properly?

- Acids separated from bases?
- Corrosives (acids and bases) separated from flammables and toxics?
- Flammable liquids separated from oxidizing liquids?
- Acetic acid stored with flammables?
- Flammables >10 gal. stored in flammables cabinet?
- Water reactive solids stored separately from flammable liquids?
- Flammables and gas cylinders protected from heat and sources of ignition?
- Stored in approved containers, tightly closed and covered when not in use?
- Containment pans under liquids? Separate containment pans for liquids with different hazards?
- Chemicals stored away from stairs and exits?
- Overhead storage shelves equipped with shelf lips or latched doors?
- Hazardous liquids stored away from sinks and drains?

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Are gases stored properly? *Examples:*

- Gas cylinders protected from heat and sources of ignition?
- Gases stored away from stairs and exits?
- Flammable gases stored in designated flammable gas storage areas (not in flammable liquid cabinets or with non-flammable gases)?
- Gas cylinders secured by metal bracket, top and bottom chains, or on a cart secured to prevent rolling or tipping?
- When gas cylinders are on carts, are the gases intended for use that day? (*If not, authorized personnel should remove regulators from cylinders and return cylinders to storage racks*)

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Are flammable liquid storage cabinets:

- clearly marked? C
- approved for flammable liquid storage? A
- in good condition, with doors that close automatically released? I
- free from accumulated chemical residue? F

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Are ventilation systems uncluttered (air flow not blocked)? Is there a sticker indicating ventilation systems have been inspected and tested within the last year?

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Have potential lead hazards been identified and controlled (lead bricks and shielding covered, lead not needed for shielding removed from work areas, no old paint peeling or chipping)?

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For cryogenics, has the Oxygen Deficiency Hazard been evaluated?

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## HAZARDOUS WASTE and SATELLITE ACCUMULATION AREAS

Is the Satellite Accumulation Area (SAA) near the point the where the waste is generated? Can access to the SAA be controlled by the responsible person (locked up or within visual contact from work area?)?

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Has an SAA sign been posted at each hazardous waste accumulation area? Has the sign been filled out completely and accurately with the name of the responsible person, building/room, telephone number, and type of waste?

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Is there a Hazardous Waste label attached to each container? Is the label filled out with the name and phone number of the generator, building/room location, type of waste, hazards, waste form (solid/liquid), and accumulation start date?

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Are there any wastes that have been in the SAA for more than 9 months?

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Are there any wastes (such as waste oil) in volumes > 55 gallons?

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Are all waste containers in good condition (not leaking, bulging, etc.)?

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## SUSPECT/COUNTERFEIT PARTS

Do key shop personnel know how to identify and report suspect parts? (How long since they received training?)

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Are periodic inspections of facilities, equipment, spaces and parts stocks being conducted to identify suspect parts?

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Are high strength fasteners (bolts, nuts, screws, and washers) certified and controlled since purchase? Are certifications for installed high-strength fasteners available for review?

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Are the following types of items assessed for possible suspect/counterfeit parts when received through procurement or obtained from other groups:

- High-strength fasteners (bolts, nuts, screws, washers);
  - Electrical/electronic components (circuit breakers, current and potential transformers, fuses, resistors, switch gear, overload and protective relays, motor control centers, heaters, motor generator sets, DC power supplies, AC inverters, transmitters, computer components, semiconductors);
  - Piping components (fittings, flanges, valves and valve replacement products, couplings, plugs, spacers, nozzles, pipe supports);
  - Pre-formed metal structures;
  - Elastomers (O-rings, seals);
  - Spare/replacement kits from suppliers other than the original equipment manufacturer;
  - Weld filler material;
  - Diesel generator speed governors; and
  - Pumps?
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## SHOP WORK BEHAVIOR OBSERVATIONS and DISCUSSION

***(NOTE: Any observations of unsafe behaviors should be noted without using names of people observed – just note the location.)***

Lifting: tests weight before lifting; gets help with large/awkward items; avoids awkward body positioning; bends knees when lifting; avoid bending over, twisting, overextending; checks path for hazards before carrying

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PPE: wears protective equipment required in shop and appropriate to the job. Consider eye/face protection (goggles, face shield, safety glasses), gloves, hearing protection, foot protection, respiratory protection, clothing (shop coat, coveralls, apron).

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Procedures: plans work, identifies hazards, ensures controls are effective, gets permits/work authorizations, checks condition of equipment before using, follows written procedures, obeys signs, performs LOTO when needed, leaves equipment and work area in clean and safe condition

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Tool use: selects the right tool for the job; only uses tools and equipment the worker is trained and authorized to use; ensures tools are in good condition and guards in place before using; uses proper techniques; does not work alone in shop

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