

## QUEST SELF-ASSESSMENT CHECKLIST For LABS

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

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

### GENERAL SAFETY

For systems with safety-related interlocks, are interlock test procedures readily available? Are interlock systems being tested as required? (Test records should be readily available.)

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Are required work authorizations (WPC Activities, RWAs) readily available for experiments? 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 experiments, 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 labs 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 Are there any outdated or non-standard signs?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 Check bulletin boards and remove any outdated materials.**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 (eyewear, lab coats, gloves, etc.) conveniently available, properly stored, and in good condition in areas where it is required? Are closed-toed shoes worn in all lab areas and safety shoes worn where heavy or sharp objects could cause injury?

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Are food and beverages kept out of areas where chemicals or radioactive materials are stored or used? Is there a conveniently located non-technical 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 areas where sharps are used? (Note any full containers that need to be picked up.)

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

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## EMERGENCY PREPAREDNESS

Have up-to-date emergency evacuation routes and assembly areas been posted?

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Are there any outdated or non-standard signs that need to be removed?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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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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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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Check the condition of telephones in the area.

- Are any inoperable phones marked "out of service"?
  - If there are no operable landline phones, do personnel working in the area have cell phones, and are they able to get good reception from the area where they are working?
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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 that could fall during an earthquake been secured safely (no bungee cords)?

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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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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 appropriate types of spill kits (e.g., flammable, acid, and base) available in work areas where they may be needed?

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Are there any types of lab 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?

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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?

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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 cable trays properly grounded and used correctly (not overfilled, electrical and water lines separated)?

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Are all unused openings (including conduit knockouts) in electrical enclosures and fittings closed with appropriate covers, plugs, or plates?

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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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Have all grounding hooks and control rods been inspected, resistance tested, approved for use, and entered into the Quickbase Glove and Electrical Tracker database?

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### **EQUIPMENT GUARDING & SAFETY**

Does any laboratory equipment 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? (Examples include presses, heat sealers, polishers, cutting equipment, and rotating transmission components such as belt drives, gears, and rotating shafts over 10 rpm.) 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?
- Hot surfaces?
- Entanglement hazards?
- Chips/flying materials, splashes, or sparks?

Do the guards themselves pose a safety hazard?

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

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If there are manufacturer's maintenance and operating procedures, are they being followed?

For laboratory-made equipment, have maintenance and operating procedures been developed?

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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 in good condition (not leaking, rusted, dented, etc.)?

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

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Are chemical containers (including secondary containers such as squeeze bottles, beakers, or flasks) and gas cylinders clearly labeled with name of chemical contents and hazard?

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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)?

Has the maximum quantity of each gas or cryogen that may be used or stored in the room been entered into the Chemical Management System?

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Do workers know how to find and use Material Safety Data Sheets / 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.* )

- 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/SDS (either hard copy or from the website)?
  - Can they find the hazard information?
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Are chemicals stored properly? *Examples:*

- Acids separated from bases?
  - Corrosives (acids and bases) separated from flammables and toxics?
  - Flammable liquids separated from oxidizing liquids?
  - Acetic acid stored with flammables?
  - Flammable liquids >10 gal. stored in flammables cabinet?
  - Water reactive solids stored separately from flammable liquids?
  - Flammables protected from heat and sources of ignition?
  - Chemicals 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 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 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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## LAB 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; avoids bending over, twisting, overextending; checks path for hazards before carrying. Note any potential problems you observe for follow-up by ergonomist:

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Repetitive Motion: Plans work and gets help before taking on extended repetitive tasks. Takes breaks as needed to prevent overuse injuries. Re-evaluates when workload or schedule changes. Note any potential problems you observe for follow-up by ergonomist:

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