

## Herrick Laboratories Safety Check

### Design of the Experiment

The safety check should not be the final step in the design and construction of an experiment. The project design process should include safety considerations from the very start.

- You should be able to describe and answer any questions concerning your experiment.
- You should prepare a handout/ for the inspection team, it may include the following:
  - What is the purpose of this experiment?
  - Schematic or diagram
  - Step-by-Step procedural check list for start –up and shut-down. Sometimes photos help clarify various details.
  - Some set ups with multiple operators will require an operation logbook check list form be developed and maintained by the operators.

### Safety Check

It is the student's responsibility to arrange for the final safety check. You must schedule your professor, another HERL faculty member and a Herrick shop staff member (who did not help build your set up). Schedule sufficient time for both the safety check and to find and schedule faculty members for the safety check.

Before safety check:

- Complete Safety Check form, Sections A and B
- Distribute the procedure and any supporting documentation to all who will be participating in the safety check.
- Be pro-active, anticipate questions and formulate answers.
  - What do you do in case of an emergency?
  - Where is the closest telephone?
  - Where are the fire extinguishers? On what kind of fires should each type be used?
  - Who are the main contacts for this experiment? Complete the top portion of form below.
  - What PPE is appropriate for the experiment? Have you been trained to use this PPE? Are you dressed appropriately? Closed toe shoes, PPE available for inspection team, etc.
  - Does everyone have the required training to perform the experiment? Is additional training required to run any of the equipment?
  - Are SDSs for chemicals used attached and available?
- General "housekeeping" is important to safety, the student is expected to keep the experiment and the area assigned to him/her neat and clean. Tools and equipment not in use should be stored in an appropriate location.

During safety check:

- Expect to actually start-up, shut-down, and demonstrate (run) your experiment.
- Don't be nervous, take your time, don't rush through the demonstration.
- Mark off items on the check list as you complete them, as you should do whenever you run the experiment (as you should do whenever you run the experiments).
- During the final inspection and Safety Check a decision will be made as to whether one or two persons will be required during operation, operating hours, and if any additional operational limits are to be imposed.

After the safety check:

- Make any procedural changes as discussed during the safety check.
- Shop staff and faculty will sign off on the safety check.
- Print a copy of the procedure, safety check form, and hazard assessment. These will need to be posted while the experiment is running.

## PRE-SAFETY CHECKLIST

- Complete Hazard Communication (HazCom) training. This must be renewed annually. Faculty members participating in the safety check must also complete HazCom training.
- Complete PPE (Personal Protective Equipment) Training. This is typically done as part of the Herrick Laboratories onboarding process as it is required for building access.
- Schedule the safety check with the Safety Officer. Provide the account number and professor's name to facilitate the work order needed.
- Email procedures to all participating in the safety check prior to the safety check.
- Acquire all Safety Data Sheets (SDS) for any chemicals or products that will be used during the experiment. Attach these to the Docusign form.

## SAFETY CHECK LIST FOR EXPERIMENTAL INSTALLATIONS AT HERRICK LABS

This form must be completed and filed with the Herrick Staff before the initiation of the experiment.

### A. General Information (Account numbers must be provided.)

Project Title: \_\_\_\_\_

Project Account Number: \_\_\_\_\_

Supervising Professor/PI: \_\_\_\_\_

Office: \_\_\_\_\_ Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Student/Operator: \_\_\_\_\_

Office: \_\_\_\_\_ Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**Pls this a Proprietary Project?** ( Yes or No)

**B. Safety** (print this page once the Safety Check is complete and display near the experiment)

**Brief Task Description:**

**Safety Variables** (maximum possible value should be given):

Pressure (psi): \_\_\_\_\_

Toxic Materials (lbs and type): \_\_\_\_\_

Sound Level (db) \_\_\_\_\_

Toxicity (ppm): \_\_\_\_\_

Combustibles (Fuels, solvents, gasses, etc.): \_\_\_\_\_

Rotating Machinery (rpm): \_\_\_\_\_

Flow Rate/ Quantity Stored in System: \_\_\_\_\_

**Hazard Assessment**

	Hazards Identified	PPE Required
Eye and Face:	_____	_____
Head:	_____	_____
Electrical:	_____	_____
Whole Body:	_____	_____
Respiratory:	_____	_____
Foot:	_____	_____
Hand:	_____	_____
Other:	_____	_____

**Other control measures:**

**CERTIFICATION:** I certify this hazard assessment was conducted in accordance with the provisions of the Purdue University Personal Protective Equipment Policy.

Student Signature: \_\_\_\_\_ Date: \_\_\_\_\_

PI Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Herrick Shop Representative: \_\_\_\_\_ Date: \_\_\_\_\_

**Initial to confirm Hazard Communication certification is current.**

Student: \_\_\_\_\_ Date: \_\_\_\_\_ PI: \_\_\_\_\_ 2<sup>nd</sup> Faculty: \_\_\_\_\_

### C. General Experimental Equipment Checks:

Any member of the Herrick Laboratories' faculty can participate in safety checks.

		Student	Herrick Shop	Principle Investigator	2 <sup>nd</sup> Faculty	Comments
1.	Pressure vessel installed properly. (Examples: current date proof test, overpressure protection relief valves or example burst diaphragms, cleanliness such as oxygen service, etc.)					
2.	Piping or tubing properly installed (Examples: pressure rating, tied down if containing high pressure flanges and fittings proper rating, meets cleanliness for example oxygen service, etc.)					
3.	Flexible hoses (hydraulic or gas) properly installed (Examples: pressure rating, current date proof test, tied down if containing high pressure, meets cleanliness for example oxygen service, etc.)					
4.	Exhaust and venting systems installed properly (Examples: no leakage, vented to an inter-lock, etc.)					
5.	Personnel safety equipment work or installed properly (Examples: ear protection, respiratory protection, protective clothing, gloves, shoes, eye protection hood or safety glasses, etc.)					
6.	Fuels, solvents, paints and toxic stored and handled properly (Examples: quantity stored limited by state and university regulations, etc.)					
7.	Equipment safety shield installed properly (Examples: belt guards, rotating shaft guards, optical barriers for lasers etc.)					
8.	Electrical wiring installed properly. (Examples: equipment properly grounded, circuits fused, high voltage shielded or interlocked, etc.) No loose wires.					
9.	Laser properly installed (Examples: warning signs or lights posted, door interlocks if high energy laser is used, etc.)					
10.	Fire extinguisher equipment location established (Examples: proper extinguishing material, and extinguisher charged, etc.)					
11.	Gas cylinders installed and stored properly (Examples: chained to wall or rack, capped when not in use, etc.)					
12.	Laboratory area properly certified for intended use.					
13.	Laboratory area properly secured against accidental entry (Examples: signs indicating hazard, doors secured, personnel barriers if hazardous area exists during the conduction of the experiment). These items for laser covered in Item 9 above.					
14.	Special considerations:					

#### D. Safety Check Review:

		Herrick Shop Representative
1.	Written or posted operations checklist has been prepared. (Examples: apparatus start up, run, and shutdown procedures, night and weekend securing procedures, posting of critical shut off locations for fire department, shutdown considerations, etc.)	
2.	All relevant Safety Data Sheets were provided and reviewed by the student.	
3.	Student demonstrated adequate knowledge of Herrick Laboratories emergency procedures.	
4.	Student demonstrated proper PPE usage during the safety check.	
5.	Student has completed all applicable training required to perform the experiment. (Examples: Compressed gas training, Ladder Training, etc.)	

Notes:

#### F. Experiment Runtime and Requirements

Number of people present while running equipment: \_\_\_\_\_

Approved hours of operation: \_\_\_\_\_

Maximum duration of test time: \_\_\_\_\_

PI: \_\_\_\_\_ Date: \_\_\_\_\_

Herrick Shop Representative: \_\_\_\_\_ Date: \_\_\_\_\_