Cornell University **Office of the Vice Provost for Research** **Weill Hall Life Science Technology Building**	**Standard Form**	
Title: Pre-Operational Safety, Health & Environmental Review Form (POSHER)	**Number:** WH-F-01	**Revision:** #8 / 08-01-08

Research Process Overview					
Date:		**Project #:**		**Principal Investigator (PI):**	
Lab Safety Officer:				**EHS Representative:**	
Other Review Team Members:				**Lab Location:**	
Reason for POSHER:	☐ Initial Review ☐ New Chemical or Process ☐ Response to Audit ☐ Specific Request				
Brief Overview of Research/ Laboratory Process:					
Brief Description of Primary Hazards:					

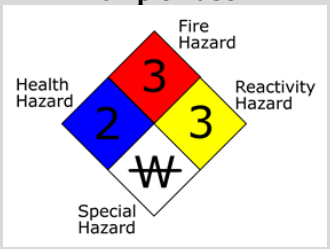
Facilities Services Requirements Review				
What Type of Facilities Services Do You Need?	**Yes**	**No**	**If Services Don't Exist, Then List Actions Required**	**Action Owner**
House Compressed air?				
House Vacuum?				
House DI/RO Water?				
House Natural Gas?				
Local process cooling water?				
Local (process specific) gas sources?				
Fume Hood?				
Cold Room?				
Electromagnetic Interference (EMI) protection?				
Is this process likely to be a source of EMI to others?				
Vibration protection?				
Is a sanitary drain required?				
Will a biosafety cabinet be required? If yes, initial and annual certification is required. If relocating the biosafety cabinet from another location, the cabinet should be decontaminated. Contact the Biological Safety Officer at EHS (254-4888, fac2@cornell.edu)				
Are hazardous gases (flammable, toxic, corrosive, etc.) used? How?				
Are non-hazardous compressed gases used? How?				
Are there special electrical requirements for your equipment (Voltage, Amperage, Phase or Plug Connections)?				
Are there specific labels / signage required beyond basic HASP lab signage? (i.e. Laser ,x-ray, radioactive, biohazard, etc)				

Hazard Identification

Which Type of Hazards Exist in Your Work?	Yes	No	Comments	If "Yes", Go to Section:
Chemical Hazards (Solids, Liquids or Gases)				A
Biological Hazards (Pathogens, Pesticides, Animals, etc.)				B
Ionizing Radiation Hazards (Radioactive Material, RPE)				C.1
Non-ionizing Radiation Hazards (Lasers, RF, magnetic fields, etc.)				C.2
General Equipment/Process Hazards (e.g. high temp. or noise)				D

Section A – Chemical Hazard Review

Section A.1 – Hazardous Chemical Use Information, based on MSDS data and OSHA definitions of hazardous chemicals, 29CFR 1910.1200

List: All hazardous chemicals, biological agents, and by-products associated with this process that present a significant health hazard (i.e. a rating of 3 or 4 in the blue square on the NFPA chemical hazard label shown below or some other similar means of warning label): **Example Label**  	**Identify:** Solid Liquid Gas	**Estimate:** Maximum hourly and annual use rates	**Indicate:** Storage capacity, size of container	**Estimate amount to:** Drain Exhaust Hazardous waste	**Indicate if:** Toxic Pyrophoric Flammable/Combustible Oxidizer Dust source Corrosive Odour detectable Volatile organic compound Radioactive Asphyxiant Carcinogenic Reproductive toxin

Section A.2 - Chemical Hazard Review Questions/Action Items				
Chemical Process Details	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Are there pressurized process or system liquids? (i.e. pumped chemical lines, hydraulics)				
Are there pressurized process gas systems?				
Are external chemical delivery systems required (liquids)?				
Are there open liquid chemical baths (wetbench)?				
Beyond standard Right to Know (MSDS), are communications to employees working with individually regulated chemicals required? (e.g. Formaldehyde, asbestos, methylene chloride, lead, mercury)				
Is a chemical delivery procedure document required/provided?				
Is a Standard Operating Procedure for gas connection/purging or chemical filling required?				
Is special chemical handling training required?				
Is there special chemical handling equipment or personal protective equipment required?				
Is chemical storage required near the process? (In addition to chemical/gas in use). Storage capacity?				
Will manual chemical mixing be required? Explain.				
Is there a chemical reaction in the process?				
It is assumed that ALL containers are properly labelled. Are there special container-labelling requirements? (e.g. biohazard)				
Is there adequate laboratory security in light of chemical and operational hazards?				
Is heat required or generated in the process?				
Is there appropriate door signage per the HASP program?				

Section B – Biological Hazard Review				
Biological Process Details	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Does the process involve the use of hypodermic syringes and needles? If yes, then the individual or department (preferably) must have a Certificate of Need issued by the NYS Department of Health, http://www.health.state.ny.us/forms/doh-2278.pdf. Unused stocks and supplies of hypodermic needles and syringes must be secured in a locked cabinet or drawer. The lab must keep a log of supplies and distribution.				

Section B – Biological Hazard Review				
Biological Process Details	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Will this process involve the use of controlled substances? If yes, then a license must be obtained from the US DEA and NYS DOH for handling controlled substances. • The NYS application is available from the following web site http://www.health.state.ny.us/forms/doh-4330.pdf and must be submitted by mail. • Once the NYS license is obtained, the Federal license can be obtained online at http://www.deadiversion.usdoj.gov/drugreg/reg_apps/onlineforms_new.htm.				
Does the process involve occupational exposure to blood, human body fluids, unfixed tissues or organs, HIV/ HBV containing cell or tissue cultures? If yes, Bloodborne Pathogen training is required. Contact the Biological Safety Officer at Environmental Health & Safety (254-4888, fac2@cornell.edu)				
Does the process involve the use of non-human vertebrates? If yes, then has the "Protocol Review Form for the Use of Live Vertebrates in Research, Teaching, or Demonstration" been reviewed and approved by the Institutional Animal Care and Use Committee (IACUC)? Provide Protocol Approval #. (refer to http://www.iacuc.cornell.edu/)				
Will this process involve the use of human subjects? If yes, then attach approval letter or protocol # from the Cornell University Committee on Human Subjects. (refer to http:/ www.osp .cornell.edu/Compliance /UCHS/homepage UCHS.htm)				
Does the process involve use of pesticides? If so, attach any applicable SOPs and MSDS forms for each chemical. • Any employee who works with plants that may be treated with pesticides must attend *Worker Protection Standard training*, unless s/he is a certified pesticide applicator. Contact: Eric Harrington; 255-0485; eh22@cornell.edu • Any employee who works with pesticides, with the exception of laboratory-scale experiments with pesticides, must become a licensed pesticide applicator in New York State. Contact: Eric Harrington; 255-0485; eh22@cornell.edu				

Section B – Biological Hazard Review				
Biological Process Details	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Will the process involve the centrifugation, blending, sonication or maceration of infectious or biohazardous materials? If yes, you must perform these operations in a certified biological safety cabinet or utilize other suitable secondary containment (e.g. centrifuge safety cup).				
Does the process involve the use of biohazardous agents as listed below? • Infectious/pathogenic agents classified in the following categories: o Risk Group 2 bacterial, fungal, parasitic, viral, rickettsial or chlamydial agents as identified in lists from the NIH , CDC, ABSA or other resources o Note: Risk Group 3 and 4 infectious agents are not allowed in Weill Hall. • Other agents that have the potential for causing disease in healthy individuals, animals, or plants: o Regulated plant pests as published in Animal, Plant Health Inspection Service (APHIS) of USDA. o Select biological agents and toxins as published in lists at CDC and APHIS. • Human or mammalian cell lines or materials. If yes, then has this process been approved by the IBC? Provide IBC protocol approval number # and any applicable SOP's. (Refer to http://www.ibc.cornell.edu/). These SOPs must include the method used to sterilize the pathogen.				
Does the process involve the use of recombinant DNA molecules or gene therapy? • Molecules which are constructed outside living cells by joining natural or synthetic DNA segments to DNA molecules that can replicate in a living cell or, • DNA molecules that result from the replication of those described above. • Delivery of exogenous genetic material (DNA or RNA) to somatic cells for the purpose of modifying those cells. If yes, then has this process been approved by the IBC? Provide IBC protocol approval number # and any applicable SOP's. (Refer to http://www.ibc.cornell.edu/).				

Section C – Radiation Hazard Review Section C.1 – Ionizing Radiation Hazards				
Radiation Process Details	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Does this process involve the use of ionizing radiation devices (i.e. Radiation Producing Equipment)? **Examples:** accelerators, x-ray machines (diagnostic, therapy, diffraction, CHESS), electron microscopes, reactor or fusion devices: • A permit must be obtained from the RSO in advance of any use or acquisition (by purchase, transfer, loan, donation or otherwise) of ionizing RPE at Cornell. • Have training and user forms been completed? • Please refer to the following web site for additional detail: http://www.ehs.cornell.edu/rad/rad_safety.cfm				
Does this process involve the use of radioactive material? • All possession and use of radioactive material requires a formal written authorization issued by the RSO or RSC. • A permit or registration is required for the use of sealed sources of radioactive material. • Have training and user forms been completed? • Please refer to the following web site for additional detail: http://www.ehs.cornell.edu/rad/rad_safety.cfm				

Section C.2 – Non-ionizing Radiation Hazards				
Radiation Process Details	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Does any equipment present a source of RF/Microwave energy which can present a hazard in normal use or in service? If yes, are there interlocks or other user protection?				
Does the equipment involve the use of Class 2 or 3a lasers? If yes, are the following requirements in place for labelling: • "Caution LASER" • Hazard class • Power of the LASER • Type of LASER • Wavelength • Pulse duration if applicable Note: For Class 3a LASER – Door should be labelled with the same info as the LASER label.				

Section C.2 – Non-ionizing Radiation Hazards				
Radiation Process Details	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Does the equipment involve the use of Class 3b or 4 lasers? If yes, then are the following requirements in place? • Have all users attended Laser Safety training offered by EHS? • Has the laser been registered with EHS? • Is there appropriate entryway protection and access control for the laser work area? • Is there appropriate eye protection available? • If excimer lasers are present, is Cl or F gas properly supplied and vented? (e.g. gas cabinets for cylinders and sufficient exhaust for the laser?) Note: Contact the EHS Radiation Safety Office (RSO) for assistance. (255-7397; jal247@cornell.edu)				
Are there any other sources of non-ionizing radiation that require controls to ensure personnel safety? (e.g. magnetic fields >5 gauss, UV, etc.) Note: Contact the EHS Radiation Safety Office (RSO) for assistance. (255-7397; jal247@cornell.edu)				

Section D – General Equipment/Process Hazard Review				
General Equipment/Process Issues	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Are there processes or equipment that should have "off hour" use restrictions for normal use or service? Describe and explain.				
Should the equipment or process have buddy-system requirements for normal use or service? Describe and explain.				
Are there noises over or approaching 85db? If yes, then hearing protection and appropriate signage will be required.				
Are there exposed sources of electrical voltage?				
Are there exposed hot surfaces?				
Is a written standard operating procedure (SOP), including start up / shut down of equipment, available?				
Are there special hazards associated with start up or shut down?				
Is equipment specific training required for users? How are training records maintained?				
Is personal protective equipment required for the user/operator?				
Is maintenance required while the equipment is on? Interlocks?				
Is mechanical guarding required?				
Are there vibration sources? Vibration mitigation?				

Section D – General Equipment/Process Hazard Review				
General Equipment/Process Issues	**Yes**	**No**	**Engineering Controls / Details**	**Action Owner**
Is there a potential health risk from normal operation or does the procedure present reproductive health hazards? If so, provide additional detail.				
Is a health surveillance required for users or staff other than those surveillances already required for animal use or radioactive material use?				
Are there ergonomic concerns with the process or equipment?				
Is a local process exhaust required? Why?				
Will the process involve the production of chemical waste, regulated medical waste, biological waste, radioactive waste, or other hazardous waste? If yes, then how will it be collected and disposed of (red bags, sharps, burn boxes)? Have personnel been trained accordingly?				
Will the process involve the shipping or transfer of any hazardous materials (e.g. dry ice)? If yes, have all shippers of hazardous material been trained and have received a certification from EHS to show compliance with U.S. DOT regulations?				

Training Assessment				
Minimum Training Requirements	**Yes**	**No**	**Comments/Action Items**	**Action Owner**
The following training is required for your lab regardless of the type of process or research utilized. • Weill Hall Orientation Training • Laboratory Safety Training • Chemical Waste Disposal Training	 **X** **X** **X**			
Additional Training Requirements	**Yes**	**No**	**Comments/Action Items**	**Action Owner**
Identify the additional training required for laboratory personnel based on the hazards involved. **Note:** Please refer to the EHS training assessment tool at http://www.ehs.cornell.edu/kerb/ehs_exposure.cfm. Examples of additional training are Radiation Safety for Radioactive Material Users, Laser Safety Training, Formaldehyde Awareness, or HF Acid Awareness.				

Final Review & Assessment

Emergency Requirements	Yes	No	Engineering Controls / Details	Action Owner
Are eyewash / showers required?				
Are chemical spill kits required?				
Is local fire suppression required?				
Is Toxic Gas Monitoring Required?				
Are Local Alarms/Indications Required?				
Will changes be required to ERT response protocol?				
Is there a copy of the Cornell University Emergency Response Guide posted next to each phone in the space?				
Are there any special lab shutdown procedures?				

Summary of Attachments: *List all documents and SOPS that are or will be provided in association with the POSHER*
Examples include: IBC MUA, IACUC Protocol #, Radiation Permit, Equipment Operating Procedure including emergency shut down start up, Equipment Information Sheet, etc.

Risk Assessment Guide Questions

NOTES:

1. Identify consequences assuming there are no controls in place.
2. identify the hazard level of the consequences assuming there are no controls (High, Medium, Low) in place
3. Identify the controls designed to mitigate the consequences
4. Identify the Risk Level taking the controls into account.
   Acceptable (A) = Low
   Unacceptable (U) = High, Medium
5. Actions: Identify actions and detail on the action list tabled at the end of the review.

WHAT IF…?	CONSEQUENCE	Hazard level	CONTROLS	Risk	Actions
…there is a gas release?					
…there is a chemical spill?					
…there is a radiation incident?					

WHAT IF…?	CONSEQUENCE	Hazard level	CONTROLS	Risk	Actions
…there is a biohazard incident?					
... there is a power failure?					
... there is an exhaust failure?					
...Other (specify)					

Conclusion

Given what is currently known and assuming all open actions are closed, can this research process be safely conducted in Weill Hall?	Yes		No		

Action Registry			
Issue	**Action Required**	**Action Owner**	**Status**