

Purpose

This pre-work hazard assessment tool will be used to communicate laboratory hazards and/or specific entry procedures to University Facilities & Services (F&S) personnel before maintenance, repair, renovation, decommissioning, or construction activities take place in a potentially hazardous or sensitive laboratory space. Alternative processes may be developed and utilized to streamline the communication process (e.g., written standard operating procedures for preventative maintenance work on equipment with repetitive, known usage).

Hazard Assessments: A document designed to capture relevant hazard information, entry protocols and protective measures, then made accessible to F&S personnel assigned to work in designated laboratory spaces.

Notice signage: Serves as communication to laboratory personnel to cease use of affected equipment, appliances, systems, and/or areas prior to work starting. It will also notify F&S personnel that equipment is ready for service work or disposal. Complete and post “NOTICE” signage when requested F&S services include but not limited to...

- Ventilation equipment, excluding house vacuum pumps, used in research or teaching labs;
- Laboratory devices for disposal, such as refrigerators, freezers, and ovens; and
- Equipment or laboratory spaces requiring decontamination prior to service or maintenance work (e.g., cold storage with elevated radiation levels or an unmitigated chemical spill).

Process and Responsibilities

Process for pre-work hazard assessments submissions and review

Unless otherwise stipulated by a specific Job Hazard Assessment (JHA) or written protocol, pre-work assessments will be completed collaboratively prior to service start dates in laboratory spaces.

1. **Unit Contact submits a work request, or a Preventative Maintenance work order is generated** for F&S (repair, maintenance, relocation, or decommissioning laboratory equipment).
2. The **F&S Shop Representative completes the Project Information section 1** of the Hazard Assessment and sends to the Unit Contact requesting the completion of a pre-work assessment form.
3. **Sections 2 and 3 of the Hazard Checklist are completed by Unit Contact.** After completing these sections, submit the document for review by a designated F&S Safety Coordinator via email. Unit Contacts can complete these sections in advance and submitted at the time of the service request.
4. An **F&S Safety Coordinator will conduct a review of the assessment** and provide recommendations for additional PPE or precautions, then provides a copy of the completed Hazard Assessment to all affected parties. Additionally, the reviewer will provide “Notice” signage to Unit contacts to be completed and posted after the work area is decontaminated but before work is scheduled to begin.
5. **The F&S employee(s) performs work in accordance with the safe work practices identified in the Hazard Assessment Checklist**, asks questions if actual conditions are not consistent with those identified in the Hazard Assessment Checklist, and removes the Notice sign upon completion of work.

Requesting Unit and Occupants

Unit Contact(s): Can be a Facility Coordinator, Principal Investigator or Laboratory staff but they should be familiar with lab operations and hazards. It is important that a knowledgeable laboratory member complete the Hazard Assessment document and to provide as much information as possible.

- The Unit Contact(s) conducts the securing of hazardous materials, relocation of any items necessary for safe access to work area, and decontamination of the work area, equipment or appliance in accordance with the DRS [Process for Decontaminating Laboratory Equipment](#).
- The Unit Contact(s) completes and posts the provided “Notice” signage in a highly visible location on the equipment or laboratory entrance.
- If necessary, the Unit Contact(s) will provide safe and proper entry protocols for spaces with sensitive equipment or specific hazards (such spaces with exclusion zones for magnetic fields or clean rooms with sensitive materials)

Facilities and Services

- Safety Coordinators review Hazard Assessments for F&S and provides safe work guidance.
- The F&S Shop Representative reviews the Hazard Assessment and confirmation of hazards. Recommendations for additional PPE and safety precautions are noted for communication to employees performing work.
- A F&S supervisor will review the hazards and safe work practices with the employee(s) assigned to the work.

Division of Research Safety

- Provides assistance with hazard identification, safe work practices, and decontamination recommendations as needed.

1. Project Information (To Be Completed by F&S Shop)		
Building #:	Building Name:	Room(s) #:
Estimated Start Date and Duration:		F&S Contact:
Email:		Phone:
Description of Maintenance:		
Date Submitted to Unit:		Date Returned:
2. Research Information (To Be Completed by Unit Contact)		
Facility / Lab Contact:	Email:	Phone:
Current PI:	Email:	Phone:
Specific Entry Protocols for F&S: (i.e. exclusion zones, pre-approval contacts, or limited access, etc.)		
Identify laboratory equipment, appliance(s), and/or systems included in the service request. N/A <input type="checkbox"/>		
Exhaust Equipment	Plumbing Systems	Appliances
<input type="checkbox"/> Chemical Fume Hood	<input type="checkbox"/> Lab Sink / Drain	<input type="checkbox"/> Refrigerator/Freezer
<input type="checkbox"/> Biological Safety Cabinets	<input type="checkbox"/> Fume Hood Sinks / Drain	<input type="checkbox"/> Oven
<input type="checkbox"/> Laminar Flow hood	<input type="checkbox"/> Neutralizing Sump / Drain	<input type="checkbox"/> Furnace
<input type="checkbox"/> Vacuum system	<input type="checkbox"/> Gas lines	<input type="checkbox"/> Climate Controlled Rooms
Other:		
Are any of the following hazards in and/or around the designated work area? (Check all that apply)		<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Flammable	<input type="checkbox"/> Compressed Gas: F <input type="checkbox"/> T <input type="checkbox"/> Ox <input type="checkbox"/> Non <input type="checkbox"/>	<input type="checkbox"/> Radioactive Materials
<input type="checkbox"/> Explosive	<input type="checkbox"/> Corrosive	<input type="checkbox"/> Laser(s)
<input type="checkbox"/> Oxidizing	<input type="checkbox"/> Irritant	<input type="checkbox"/> Strong Magnetic Fields
<input type="checkbox"/> Health Hazards	<input type="checkbox"/> Cryogenics	<input type="checkbox"/> Radio Frequencies
<input type="checkbox"/> Toxic	<input type="checkbox"/> Biological Materials	<input type="checkbox"/> Shock Hazards
<input type="checkbox"/> Environmental Hazard	<input type="checkbox"/> Perchloric Acid	<input type="checkbox"/> High Voltage
<input type="checkbox"/> Other:		
Have active experiments in and/or near the work area been discontinued?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Have hazardous materials secured and/or relocated properly?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Has the equipment, appliances, surfaces and/or work area been properly decontaminated? (see section 3 for details)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

3. Equipment and Appliance Decontamination Procedure (To Be Completed by Unit Contact)

Select potential contaminate and briefly describe the decontamination process. DRS provides general procedures for decontamination [here](#) and can be contacted for further assistance.

Radioactive: Chemical: Biological: Perchlorates: Other: _____

Method:

Reviewed By:

Date:

4. Safe Work Practices for F&S Employees (To completed by F&S Safety Coordinator)

Recommended PPE and other Precautions:

Reviewed By:

Date:

Appendix 1
Definitions

Hazardous Materials: are potentially hazardous chemical, biological, radioactive, or environmental that non-lab personnel.

Work Area: a work area consists of the area that F&S members will need access to in a lab space to conduct maintenance, repair, renovation, and decommissioning or construction activities. This area needs to be properly cleared of lab equipment, hazardous materials, and decontaminate prior to the start of work.

Chemical Fume Hood: The purpose of a chemical fume hood is to prevent the release of hazardous substances into the general laboratory space by controlling and then exhausting hazardous and/or odorous chemicals.

Biosafety cabinets (BSCs): are one type of biocontainment equipment used in biological laboratories to provide personnel, environmental, and product protection.

Laminar flow hoods protect the working environment from dust and other airborne contaminants by maintaining a constant, unidirectional flow of HEPA-filtered air over the work area.

Neutralizing Sumps: are designed to facilitate the dilution and neutralization of harmful wastes that may be discharged from laboratories, industrial processes, or other polluting sources.

Climate Controlled Room: is utilized to create certain types of environments for research purposes. They maintain an accurate and constant level of temperature, humidity, etc.

Flammable: A liquid with a flash point under 100°F is considered flammable. Examples: gasoline, acetone, toluene, diethyl ether, alcohols. **Hazard:** May produce ignitable vapors at normal ambient temperatures.

Explosives: chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Oxidizing chemicals are materials that spontaneously evolve oxygen at room temperature or with slight heating or promote combustion.

Health Hazards: includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

Toxic (poisons): have an immediate and severe toxic effects.

Environmental Hazard: these chemicals produce a negative effective in wildlife and/or ecosystems.

Compressed Gases: are compressed gases include oxygen displacement, fires, explosions, and toxic gas exposures, as well as the physical hazards associated with high pressure systems. Special storage, use, and handling precautions are necessary in order to control these hazards.

Corrosive chemicals can have a severe effect on eyes, skin, respiratory tract, and gastrointestinal tract if an exposure occurs. Corrosive solids and their dusts can react with moisture on the skin or in the respiratory tract and result in an exposure.

Biological Safety Level 1: labs are used to study infectious agents or toxins not known to consistently cause disease in healthy

adults. They follow basic safety procedures, called Standard Microbiological Practices and require no special equipment or design features.

Biological safety Level 2: This biosafety level covers laboratories that work with agents associated with human diseases (i.e. pathogenic or infectious organisms) that pose a moderate health hazard.

Radiation hazard: means to the health of an individual arising from exposure to ionizing radiation, whether due to external radiation or to radiation from radioactive substances within the body.

Laser hazard: Improperly used laser devices are potentially dangerous. Effects can range from mild skin burns to irreversible injury to the skin and eye. The biological damage caused by lasers is produced through thermal, acoustical, and photochemical processes.

Magnetic Fields: There is also a risk of personal injury if the magnetic field is strong enough to create projectiles through the attraction between ferrous objects and the magnet. Additionally, there may also be potential for damage to magnetic media (ID cards, credit cards, cellular devices, hard disk drives, etc.)

Radio Frequency: intensities can result in heating of biological tissue and an increase in body temperature. Tissue damage in humans could occur during exposure to high RF levels because of the body's inability to cope with or dissipate the excessive heat that could be generated.

Shock Hazard: A shock hazard is the potential electric shock (greater than 50 volts) to a person that can be caused by many circumstances. It occurs when there is a voltage difference that a person may encounter.

High Voltage: Voltage that is too high (greater than 600volts) can cause premature failure of electrical and electronic components (e.g. circuit boards) due to overheating. The damage caused by overheating is cumulative and irreversible.

Perchloric Acid hazard: At elevated temperatures, vapors from perchloric acid can condense on surfaces in the ductwork of the hood, where they form perchlorate salts that are often highly shock-sensitive and that pose a serious explosion hazard.

Decontamination: Sterilization, disinfection, and antiseptics are all forms of decontamination. All infectious materials and all contaminated equipment or apparatus should be decontaminated before being washed, stored, or discarded. Autoclaving is the preferred method.

NOTICE

F&S will be conducting maintenance in this Laboratory:

Start Date: _____

End Date: _____

Building: _____

Room: _____

Time: _____

Date Posted: _____

Make: _____ Model: _____ Serial#: _____

DO NOT USE this laboratory equipment or work area!

If you need to speak to the F&S Personnel conducting this maintenance please call:

Name: _____ **Phone#:** _____

Before maintenance work can begin the Unit Contact or a designee must attest to the below statement.
I verify that all known hazardous materials have been removed from the work area and/or equipment and surfaces have been properly decontaminated in accordance with the procedures described on the "Hazard Assessment"

Name: _____ **Signature:** _____

Date: _____ **Phone:** _____

In an emergency call 911