Research Area Space Registration using HASP

RESEARCH AREA SPACE REGISTRATION

Beginning in the Spring of 2009, the Department of Environmental Health and Safety (EH&S) will be requiring all research spaces to be registered using the online Hazard Assessment Signage Program (HASP). While Facilities Services Space Inventory accounts for room function and type, Research Area Space Registration accounts for hazards present in rooms to facilitate regulatory compliance, identify training requirements, communicate hazards, and improve emergency response.

What Is the Registration Process?
Research areas must be reviewed and registered on an annual basis and upon notification by EH&S. The registration process consists of using the online HASP tool and entering contact information, hazards present in the room, risk levels of hazards, access limitations, warning messages, and emergency response information. The entire process of completing HASP for one room should only take a few minutes for each room. Once a research area has been initially entered into the system, annual updates can be completed in less time.

If you have any questions or encounter errors any errors with the HASP system, then please contact Robin Goodloe at jag16@cornell.edu.

HASP
HASP is a program designed to help laboratory supervisors identify the hazards present in their laboratory and then communicate this information, along with instructions on appropriate precautions, to anyone who enters the area. Supervisors complete a hazard assessment of the laboratory or research area and the information is incorporated into a door sign. In an emergency, EH&S uses the database to assess the potential hazards of the area and to contact laboratory staff. Completion of HASP is required for all research spaces.

What will the sign tell you?
- **Location Designation** - Facility name and room number
- **Supervisor And Other Information Contacts For The Area** – Individuals you can contact if you have a question
- **Access Limitations** - Who can enter the area
- **Area Hazards and Warnings**
  HASP is based on categories of hazards. Descriptions and examples are given on the following pages. Note that HASP uses a system of 3, color-coded, risk categories to classify the degree of risk that each hazard may pose:
  - **Gray**: **Low**; no special precautions need to be taken, no special restriction on who may enter the area
  - **Yellow**: **Moderate**; standard laboratory precautions should be followed, access usually restricted to trained laboratory staff or accompanied visitor
  - **Red: High;** special precautions are followed, special equipment in use, access limited to designated staff members
- **Special Requirements and Instructions**
  Including appropriate personal protective equipment and security restrictions
- **Emergency Information –** Instructions to emergency responders

How should you use this information?
- If you are not included in the list of individuals authorized for access, check with one of the listed contact people before entering.
- Be sure you understand and observe the special requirements and instructions listed for the area.
- If you have a question or concern about a potential hazard, or how to protect your safety and health, contact the people listed on the sign.

Instructions for Using HASP
The following pages provide information on getting started with HASP and on the hazard types and the risk levels used to describe the operations of a laboratory. Please consult them for assistance with your hazard assessment and signage preparation.

GETTING STARTED WITH HASP

Completion of HASP is required for all research spaces. Before getting started, you will need to be given authorization for your organization, building, department, and/or specific rooms. To obtain authorization for specific areas, contact Robin Goodloe at jag16@cornell.edu.

To get started with HASP:

1) Click on “My Locations” – these are the areas you have authorization for HASP

2) Select the specific room you would like to use for HASP

3) Click on the “Roster” tab and add primary and secondary contacts to the Room Roster. This can be accomplished by entering in a netid and the clicking the “Add” button and selecting primary or secondary. To add “off-hours contact” phone number, click on the pencil icon, enter the phone number and click save. If the name currently listed in incorrect, then click on the trash can icon to delete. Once all names needed for the room roster are complete, then click on “Hazard Inventory” to begin a hazard assessment.

4) In “Hazard Inventory”, scroll down the list and select all that apply. If none of the hazard sources apply, then select “Zero Sources” at the bottom of the page. After all hazard sources have been selected, then click “Save” to move to the risk assessment.

5) To complete the risk assessment, use the drop down menu to select risk levels for each hazard source. For help in choosing the appropriate risk level, click on the hazard source name for risk level definitions. After risk levels have been assigned to all hazard sources, then click “Save” to move to access notices.

6) To complete access notices, select all that apply or create a custom access notice by entering text in the “Other Access Notices” box. After access notices have been selected, then click “Save” to move to warnings.

7) To complete warnings, select all that apply or create a custom warning by entering text in the “Other warnings” box. After warnings have been selected, then click “Save” to move to emergency response.

8) To complete emergency response, select all that apply or create a custom warning by entering text in the “Other emergency response” box. After emergency response have been selected, then click “Save” to review all selections.

9) If any changes need to be made to selections, then on the left hand menu, select the item where changes need to be made (Hazard Inventory, Risk Assessment, Access Notices, etc), and make any changes and click on “Save”. To see all selections, go to “Emergency Response” and click on “Save”.

10) Then select the size of sign you want, either 8.5 x 11 inches or 5 x 7 inches. A separate window will open to show a pdf of the HASP sign. If everything on the sign is correct, then print the sign. If any information needs to be changed, then close the window and use the left hand menu to navigate to the items that need to be changed.

11) If there are other comments you would like to include for any hazard, such as the name of the biological agent being used, the location of shut off switches, or other emergency response information that you would like in the database, but not to be shown on the sign, then click on the Comments tab on the top menu, select the category you would like to add specific comments and then click “Add”.

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Hazard Type	Biohazards	Carcinogens	Compressed Gases	Corrosives
Definition & Examples	Organisms or their products that may cause harm to humans or animals. Example: disease-causing microorganisms. *Immuno-compromised individuals (who lack resistance to infection) may be at an increased risk of health effects from biohazards. These people should discuss their condition with their supervisor so that, if appropriate, additional precautions would be followed.*	Chemicals that cause malignant tumors, or other forms of cancer. Examples: some organic compounds (anthracene, aflatoxin), some solvents (chloroform, benzene), and some metals (hexavalent chromium).	Containers of compressed, liquefied, or solidified gases which pose a risk of asphyxiation, and/or the risk of rapid freezing of tissue. Examples: Compressed oxygen, liquid nitrogen, and dry ice (solid carbon dioxide). *Flammable and highly toxic gases (poison inhalation hazards) are excluded from this category, and are considered separately.*	Any material that irritates or destructively attacks body tissues such as skin. Corrosive chemicals are typically acids such as hydrochloric acid and sulfuric acid, and bases such as sodium hydroxide and ammonium hydroxide.
Risk Level **Low**	Microbiology lab using microorganisms that do not cause disease in healthy adults. Examples: *E. Coli* bacteria, yeast "Biosafety Level 1"	Occasional use of small amounts or dilute solutions. Example: Entomology lab using small quantities of dilute formaldehyde/water solutions to preserve specimens.	Use where a) the release rate of the gas can be controlled and b) the area is well ventilated and air is not recirculated. Example: Gas cylinder with regulator used in a well ventilated laboratory where air is exhausted by fume hoods that vent to the roof.	Routine use of dilute acid and base solutions, infrequent use of concentrated acids and bases. Example: undergraduate teaching laboratory
Moderate	Organisms that can cause moderate to serious illness in healthy adults. Infections seldom occur via inhalation unless the organism is dispersed into the air as an aerosol. Infections readily occur from needle sticks or accidental contact with mucous membranes such as eyes and mouth. Ex: *Salmonell*a bacteria, hepatitis B. "Biosafety Level 2"	Routine use of material in pure form, such as acrylamide powder or diaminobenzidine (DAB), or use of several liters per week of carcinogenic solvents, such as phenol/chloroform extraction procedures.	(1) Use of compressed gas with a low, well controlled flow rate in a area with poor ventilation or (2) the use of a container or gas supply system that could cause the sudden release of a large amount of gas.	Routine use of a variety of strong acids and bases in concentrated form. Example: average chemistry laboratory
High	Organisms that can cause serious illness or death in healthy adults. Exposure by inhalation is a risk from any sort of handling procedures or from spills or contaminated waste. Infections also readily occur from needle sticks or accidental contact with mucous membranes such as eyes and mouth. Example: the bacteria that cause TB. "Biosafety Levels 3 and 4".	Routine use of larger quantities of carcinogenic material where the risk of exposure is high because the material can be absorbed through skin or inhaled. Example: veterinary embalming facility	Use of any compressed gases, including solidified or liquefied gases, in small un-ventilated space. Example: Use of liquid nitrogen or dry ice in a cold room or environmental chamber. (Note: This applies to rooms/chambers with circulating fans. They do not supply fresh air.)	Labs with large quantities (more than 10 gallons) of concentrated mineral acids or bases in frequent use, and benchtop use of acid baths with acid concentrations of greater than 6 molar. Example: Kjeldahl extraction laboratory

Hazard Type	**Cryogens**	**Electrical Hazards**	**Explosive Materials**	**Flammable Gases**
Definition & Examples	Materials at ultra-low temperatures – lower than -73.3 C or -100 F are considered cryogenic. Some cryogens are materials that are normally a gas at standard temperature and pressure, but which have been super cooled so that they are a liquid or solid at standard pressure. Hazards include freezing of tissue, asphyxiation, toxicity, high pressure gas hazards, and flammability and explosion hazards. Examples are liquid nitrogen, liquid argon, liquid helium, and solid carbon dioxide (dry ice).	A situation where a person could be injured through contact with an energized electrical conductor. The degree of hazard depends on the type of contact (wet vs. dry, small area vs. large area), the voltage of the conductor, and the shock protection designed into the system (such as ground fault interruption -GFI).	A chemical compound, usually containing nitrogen, that detonates as a result of shock or heat. Examples: trinitrotoluene (dynamite) and ammonium nitrate. Wetted explosives are Flammable Solids because they ignite easily at low temperatures. *For extensive information about the potential for a compound to detonate or react to form an explosive mixture, consult Bretherick's Handbook of Reactive Chemical Hazards.*	Gases that ignite easily and burn rapidly. Common flammable gases are hydrogen, carbon monoxide, and acetylene.
Risk Level **Low**	Use of small quantities of cryogens in well-ventilated areas.	Use of only new, grounded, commercially available electrical devices. GFI circuits in wet areas.	Work that involves amounts that can not produce a harmful explosion or use of the material in form that is not explosive. Example: histology lab using picric acid solution as a stain.	Use of small individual low-pressure containers or piped supply systems. Example: aerosol can of spray paint with a flammable gas as a propellant.
Moderate	Use of moderate quantities of cryogens in well-ventilated areas	Use of old electrical devices which are not grounded. Work in dry areas that involves the construction or modification of equipment that operates at 24 volts or above.	Work that involves amounts that *can* produce a harmful explosion but use is limited to forms, such as aqueous solutions, that are not explosive. Example: Bouin's fixative	Routine use of large high-pressure flammable gas cylinders. Use and storage of up to five large, high pressure cylinders of flammable gases.
High	Use and storage of large quantities of cryogens in areas without good ventilation and/or use of cryogens that are highly toxic, highly flammable, or oxidizers.	Work that involves construction or modification of equipment that operates at 120 volts or above. Any area with electrical equipment under wet conditions, unless protected by GFI.	Use of explosive compounds, in quantities that *can* produce a harmful explosion, in procedures that could produce a form that *is* explosive. Examples: refluxing diethyl ether (potentially concentrating peroxides), drying of picric acid.	Daily use of several large high pressure cylinders of flammable gas. Use and storage of 6 or more cylinders in a laboratory. Use or storage of propane cylinders greater than 1.5 pounds.

Hazard Type	**Flammable Liquids**	**Flammable Solids/ Air Reactives/Pyrophorics**	**Lasers**	**Magnetic Fields**
Definition & Examples	Liquids that ignite easily and burn rapidly, and have a flash point less than 100F (37.7C). Examples: 95% ethanol, ether, hexane, acetone, and ethyl acetate	(1) Solids that ignite easily at low temperatures such as metal hydrides, some organic solids, and wetted explosives. Examples: lithium hydride, nitronaphthalene, wetted dinitrophenol. (2) Any liquid or solid that ignites spontaneously in air. Examples: phosphorus, tributylaluminum (liquid); titanium dichloride, many fine metal powders (3) Materials that are spontaneously flammable in moist air because they react with water. Examples: sodium, lithium hydride, butyllithium.	Equipment that emits energy as a beam of electromagnetic radiation. Some laser beams are visible light that can be seen when they are present. Some lasers emit infra-red or ultraviolet radiation that is invisible. Medium and high intensity lasers can cause serious eye damage. High intensity lasers can also burn skin and can ignite combustible materials.	Intense magnetic fields generated by superconducting magnets, or large room temperature magnets, can represent both a direct hazard from the fields as well as an indirect hazard from magnetic objects accelerated by the field. Field strengths listed below apply to occupied areas.
Risk Level **Low**	Daily use of small quantities. Example: microbiology lab using alcohol for wiping bench tops.	Infrequent use of small quantities under conditions known to be controllable. Example: undergraduate teaching lab burning small pieces of magnesium ribbon to demonstrate oxidation.	Only class I or II lasers are in use. Beams from class I and II lasers are always visible. There is no risk of injury unless an individual looks directly into the beam for an extended period of time. Example: HeNe lasers pointers used in classrooms	Steady state fields ONLY below 5 gauss in occupied areas with the potential to exceed this limit in normally unoccupied, but accessible, areas. All fields over 5 gauss should be avoided by people with pacemakers or magnetic implants.
Moderate	Routine use of highly volatile solvents in moderate quantities, away from ignition sources or the storage of up to 50 gallons. Examples: solvent extractions, refluxing or solvent distillation.	Routine use of moderate quantities of flammable solids or air reactive/ pyrophoric materials.	Class III laser is in use. Momentary viewing of the direct beam, or a beam reflected from a mirror-like surface, may produce serious eye injury. Beams may not be visible.	Steady state fields from 5 gauss to 600 gauss in occupied areas. Time varying field limits (up to 30 kHz) are dependent on the field frequency but generally 1 to 2 gauss RMS (to protect pacemaker users) up to 600 gauss RMS.
High	(1) Routine use of large quantities (2) any work with flammable liquids near an open flame or at elevated temperatures.	Routine use of large quantities of flammable solids or air reactive/ pyrophoric materials.	Class IV laser is in use. Viewing of the direct beam and viewing of any type of reflection is likely to cause serious eye injury. Beams can cause skin burns. Beams can cause materials to burn and/or release hazardous materials to the air.	Steady state fields over 600 gauss in occupied areas. Also for any field strength that represents an accelerated object hazard. Time varying field limits are dependent on the field frequency but generally any field over 600 gauss RMS.

Hazard Type	**Oxidizers**	**Poisonous Gases (Poison Inhalation Hazards)**	**Poisonous Liquids and Solids**	**Radiation – Ionizing**
Definition & Examples	Compounds that readily provide oxygen to support combustion. Oxidizers can initiate a fire as well as cause other materials to burn much more intensely than normal. Examples: peroxides, chlorates, perchlorates, nitrates, and permanganates	Highly toxic materials that are easily inhaled (gases, or liquids that have a high vapor pressure). Examples: chlorine, ethyl chloroformate, and phosgene.	Any substance which, in small quantities, can cause serious illness or death. Examples: arsenic, lead, and pesticides that block nerve transmission. *For extensive information about poisons, consult Prudent Practices in the Laboratory published by the National Research Council.*	Energy emitted from radioactive materials (alpha, beta, gamma radiation) or emitted by radiation producing equipment (X-rays) that can cause chemical changes in living cells that may result in immediate injury or an increased risk of cancer.
Risk Level **Low**	Infrequent use of small quantities under conditions known to be controllable. Example: teaching lab using 10% hydrogen peroxide in an experiment	None — Because of the toxicity, all use or storage of this material results in a moderate or high hazard level.	Use and storage of materials for which the lethal dose is more than an ounce (LD50 more than 500mg per kilogram) and that are not readily absorbed through the skin Examples: methyl ethyl ketone, acetaldehyde, benzoic acid, methanol, hexane	Locations where an individual could not receive a harmful exposure to ionizing radiation under any circumstances. Example: 1) laboratory where the total amount of radioactive material is less than the annual limit of intake for a radiation worker or 2) an X-ray diffraction unit that is entirely enclosed by shielding
Moderate	Routine use and storage of moderate quantities of oxidizers. Example: chromic acid bath used to clean glassware.	Any use or storage of **liquid** poison inhalation hazards. Examples: silicon tetrachloride , trimethyl gallium	Use and storage of materials for which the lethal dose is between an ounce and a teaspoon (LD50 between 50 to 500 mg per kilogram) OR less toxic compounds which can be absorbed through the skin Examples: pyridine (skin absorbed), phenol (skin absorbed), butylamine, coomassie blue, guanidine hydrochloride, zinc chloride	Locations where an individual will not receive a harmful exposure if basic precautions are followed. Example: use of several millicuries of radioactive material that emit gamma or high energy beta radiation that requires shielding.
High	Routine use and storage of large quantities of strong oxidizers Examples: hot perchloric acid digestion, fertilizer storage areas.	Any use or storage of a **gaseous** poison inhalation hazard. Examples: an ethylene oxide gas sterilizer, chlorine, phosphorus pentafluoride, vinyl chloride	Use and storage of materials for which the lethal dose is less than a teaspoon (LD50 less than 50mg per kilogram). Examples: sodium cyanide, osmium tetroxide, sodium azide, heptafluorobutyric acid	Locations where an individual could receive a harmful exposure to radiation unless appropriate precautions are followed. Example: use of sealed sources that contain curie amounts of radioactive material.

Hazard Type	Radiofrequency Fields	Ultraviolet Radiation	Water Reactive
Definition & Examples	RF fields are generally defined as electromagnetic frequencies from about 30 kHz to 300 GHz. Typical sources are radio transmitters, microwave processing equipment, satellite transmitters, and radar systems. RF sources are potentially induced current generators, especially in the kHz bands, so electrical shock may also be a hazard.	UV sources are those with a wavelength less than 400 nm to about 180 nm. Middle wavelength UV (about 300nm to about 240 nm) represents the most hazard due to strong absorption in the lens of the eye, potentially leading to cataracts. UV lasers are not included in this definition of UV sources.	Materials that react, sometimes violently, on contact with water, releasing heat. Flammable or toxic gases may also be released. Examples: sodium metal, sodium amide, and lithium aluminum hydride.
Risk Level **Low**	Sources that are shielded during normal operation, but may create RF exposures during maintenance and service. Exposures that may occur are below 1 mW/sq cm.	Sources that are shielded during normal operation, but may create UV exposures during maintenance and service.	Infrequent use of small quantities under conditions known to be controllable. Storage where the amount on hand would not cause a fire or serious health hazard if it came into accidental contact with water. Example: Demonstration of hydrogen production using sodium in a teaching laboratory.
Moderate	Sources or use conditions where personnel may be exposed to RF radiation and may be exposed to 1 to 10 mW/sq cm power density.	Sources or use conditions where personnel are routinely exposed to UV radiation over a short period of time.	Routine use of small quantities under conditions known to be controllable. The amount on hand could cause a fire or serious health hazard if it came into accidental contact with water. Example: an organic synthesis laboratory drying organic solvents using sodium metal
High	Sources or use conditions where personnel are likely to be exposed to RF radiation and may be exposed to more than 10 mW/sq cm power density.	A high potential exists for personnel to be exposed directly to intense UV sources, or are exposed over an extended period of time (e.g. 1000 sec or more).	Use of large quantities or use in new or original procedures that do not have a history of predictable results.