Policy

It shall be the policy of the University of Tennessee to provide emergency responders with information regarding the hazards on campus. Laboratories often contain hazardous materials, equipment and processes that could endanger first responders.

Scope

This policy shall apply to all laboratories on campus that contain or appear to contain hazards.

Door Signage Responsibilities

All rooms on campus that contain hazardous materials, hazardous equipment or other hazards shall be posted with a sign facilitated by Environmental Health and Safety. The Responsible Person shall be responsible for completing or updating the signs as information changes or annually, whichever occurs first. The Responsible Person is the Principle Investigator (P.I.), faculty member or staff manager to whom the room is assigned or the department head when no assignment is made.

The door placard may be created via a web dialog that will be made available on the EHS website or contacting EHS Lab Safety directly. EHS will print and deliver the final signage. In some circumstances there may be alternative methods to deliver the hazard data for each lab to Environmental Health & Safety

A reference sample is provided on the following page. Please note: the reset “buttons” on the form do not appear in the final delivered version.
CAUTION: The Selected Hazards May Be Present

- Biohazard
- Explosive/Reactive
- Gas Cylinders
- Cut Hazard
- Exclamation Mark
- Flammable Materials
- Corrosive Materials
- Health Hazard
- Oxidizers

Other Hazards
- Laser(s) (Class ___)
- High Pressure Equipment
- High Voltage ≥ 480 Volts
- Natural Gas
- Air/Water Reactive
- Hazardous Waste Storage
- Cryogenic Materials

Special Hazards or Precautions
Flammable liquids stored in flammable storage cabinet. Air/Water reactive chemicals stored in glove boxes under nitrogen.

Required PPE & MSDS/SDS Location
Eye protection and lab coat must be worn in lab work areas. Safety Data Sheets located in notebook near main door.

Contact Information

Dr. Principle Investigator 865-974-0000 865-555-1234
Dr. Post Doc 865-974-0000 865-555-1234
Dr. Safety Officer 865-974-0000 865-555-1234
Dr. Department Head 865-974-0000 865-555-1234

Emergency Contact

Police/Fire/Medical: 911
UT Police: 974-3111
EHS: 974-5084

Information is to be updated as information changes or annually, whichever comes first. For questions about this posting please contact Environmental Health and Safety.
Hazards Posting Guidelines:

The following will serve as a guide to responsible persons for completing the placard information. Please note that a responsible party may elect to post a hazard (if below the threshold for reporting) if he or she considers the hazard to pose a potential threat to emergency personnel. As of 2015 this information will be obtained via a web survey. The survey is self-guiding, however, should a better understanding each element be desired, they are described herein.

General Information:

Building: Enter the official Building Name. The building list is available on the Facilities Services website: http://fs.utk.edu/buildlist.asp

Room #: Enter the official room number

Department: Enter the official department name.

Lab Type: Enter an appropriate short description of the laboratory type. Some possible examples: Machine Shop, Genetic Sequencing, Microbiology, Organic Chemistry, Inorganic Chemistry, Cell Culture

Rev. Date: Enter the current date of revision in the format MM/DD/YY. This information is pre-populated by the web dialog and you should not have to manually enter it.

Pictograms:
The Globally Harmonized System of Hazard Communication adopted by OSHA includes the use of new pictograms on chemical containers. As of June 1, 2015 all chemical labels will be required to incorporate these pictograms. In anticipation of the full implementation of the standard, door placards will incorporate them to make a more cohesive representation of hazards present. However, it is recognized that de minimis levels of hazardous materials do not represent a hazard to first responders, and as such, thresholds for reporting hazards are set in terms of concentration, activity and quantity by Environmental Health and Safety.

The following table is to be used in conjunction with chemical container labels, and Material Safety Data Sheets/ Safety Data Sheets. If a threshold for reporting is met in the table, the corresponding pictograms should be checked. The web dialog will serve to guide the answering of these elements. Please note that amounts are based on reasonable estimates of current status as quantities vary over time. Where only liquids quantities are indicated the responsible person should use best judgement to determine if the quantity will pose a significant risk to emergency personnel during a medical, fire, or spill emergency.
<table>
<thead>
<tr>
<th><strong>Health Hazard:</strong> Carcinogen, Mutagenicity Reproductive Toxicity, Respiratory Sensitizer, Target Organ Toxicity, Aspiration Toxicity</th>
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</thead>
<tbody>
<tr>
<td><strong>The minimum amount required for posting is</strong> <strong>100 grams</strong></td>
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<table>
<thead>
<tr>
<th><strong>Flame:</strong> Flammables, Pyrophorics, Self-Heating, Emits Flammable Gas, Self-Reactives, Organic Peroxides</th>
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</thead>
<tbody>
<tr>
<td><strong>The minimum amount required for posting is</strong> <strong>5 Gallons (~20 Liters) or one lecture bottle</strong></td>
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<tr>
<th><strong>Exclamation Mark:</strong> Irritant (skin and eye), Skin Sensitizer, Acute Toxicity (harmful), Narcotic Effects, Respiratory Tract Irritant, Hazardous to Ozone Layer (Non-Mandatory)</th>
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</thead>
<tbody>
<tr>
<td><strong>The minimum amount required for posting is</strong> <strong>500 grams</strong></td>
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<table>
<thead>
<tr>
<th><strong>Gas Cylinder:</strong> Gases under Pressure</th>
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<tbody>
<tr>
<td><strong>The minimum amount required for posting is</strong> <strong>One Lecture bottle (aerosol cans are not counted here)</strong></td>
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<thead>
<tr>
<th><strong>Corrosion:</strong> Skin Corrosion/Burns, Eye Damage, Corrosive to Metals</th>
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</table>
| **The minimum amount required for posting is** **5 Gallons (~20 Liters)**  
If conc. strong acids or bases, a lower threshold of ~1-2 Gal (~ 4-8 Liters) is advised |

<table>
<thead>
<tr>
<th><strong>Exploding Bomb:</strong> Explosives, Self-Reactives, Organic Peroxides</th>
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<tbody>
<tr>
<td><strong>The minimum amount required for posting is</strong> <strong>Any Amount</strong></td>
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<tr>
<th><strong>Flame Over Circle:</strong> Oxidizers</th>
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<tbody>
<tr>
<td><strong>The minimum amount required for posting is</strong> <strong>500 grams or one lecture bottle</strong></td>
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<table>
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<tr>
<th><strong>Skull and Crossbones:</strong> Acute Toxicity (fatal or toxic)</th>
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<tbody>
<tr>
<td><strong>The minimum amount required for posting is</strong> <strong>100 grams or one lecture bottle</strong></td>
</tr>
</tbody>
</table>
**NFPA Diamond:** The NFPA 704 diamond is used as a recognized standard to indicate the general severity of hazards in buildings. However, it will not be used for the current door signage program.

**Other Hazards:**

- **Biohazards (Class ____):** Check if present and note Biosafety Level. Only BSL 2 or 3 requires additional signage through the Biosafety Office. Consult the Biosafety Office 974-5547.

- **Radioactive Materials:** Check radioactive materials and/or X-Ray producing equipment is present. Additional Radiation Safety signage may be necessary, which is administered by Radiation Safety Office. Contact the Radiation Safety Office for more information: 974-5580.

- **Laser(s) (Class ____):** Check if class IIIa, IIIb and IV lasers present and enter the class of lasers used. Contact Radiation Safety for more information. *Note: Do not include consumer products sealed-source lasers. This is oriented towards research lasers only.*

- **High Pressure Equipment:** Check if using pressurized equipment or apparatus under vacuum operating in excess of 30 psi-absolute (15 psi gauge). This does not apply to building utilities (steam pipes, waterlines, natural gas, and low pressure pneumatic lines). 100 psi pneumatic lines should be included. This section should not include a compressed gas cylinder in and of itself.

- **High Voltage ≥ 480 Volts:** Check if using greater than or equal to 480 Volts AC. This includes the presence of 480V electrical distribution panels.

- **Natural Gas:** Check if Natural Gas is supplied or is in use in the room. It may be advisable to include cut-off locations in the Special Hazards Section.

- **Air/Water Reactive:** Check if using Air or Water Reactive Compounds. If pyrophoric chemicals are involved, a special hazard statement may be prudent.

- **Hazardous Waste Storage:** Check if hazardous waste is stored in this room. In the special hazards section, the Hazardous Waste Storage location may be provided (e.g. “Hazardous Waste Storage is under fume hood”).

- **Cryogenic Materials:** substances that exist in a closed container below ~150 °C, ~238 °F or 123 K. Examples include liquid nitrogen and liquid helium. The minimum reporting threshold for this category is 4 liters.
**Special Hazards or Precautions:** Enter any additional Special Hazards in the room that might not be evident from the selections provided. Some examples of Special Hazards could include: Exposed electrical circuits/High magnetic fields within 5 feet of NMR/Hydraulic equipment in use. Trained personnel only/Poisonous by Inhalation Gases present etc.

**Required PPE:** Enter any required PPE or precautions. Examples could include. Safety Glasses and lab coats are required in this room. Special glove requirements may be required in this lab.

**Contact Information:** Four contacts shall be provided as available. The primary contact should be the Supervising Staff member or Principle Investigator. The Secondary Contact can be another person strongly associated with the lab such as a staff laboratory manager, the senior Post-Doc, or managing graduate student. The contact for the departmental chemical hygiene or safety officer shall be provided. The department head shall be provided as the final contact.
Appendix:
The following information is intended to familiarize the user with some definitions and potentially hazardous materials. The following can be used to help suggest Special Hazards or to help identify categorical hazards.

**Water-reactive chemicals** – can react violently or vigorously in contact with water, wet surfaces, or even the moisture in the air. These chemicals may react to give off a flammable gas (such as hydrogen) or a toxic gas, (such as phosgene) or spontaneously burn or explode. Water is obviously NOT a good choice for putting out fires caused by water reactive chemicals. A class D fire extinguisher is designed to be used to fight fires caused by certain water reactive chemicals.
Examples include potassium, lithium, sodium, calcium carbide, acid anhydrides, acid chlorides and salt hydrides.

**Air-reactive materials** – chemicals which react violently in contact with air or oxygen or with compounds containing oxygen. Sometimes air reactive chemicals are called spontaneously combustible or pyrophoric materials. Pyrophoric materials burst into flame spontaneously upon contact with air or oxygen. Spontaneous combustion means that the material does not need an ignition source to begin combustion, or to burn. These materials are sometimes sold in gas cylinders, although they may not be gases themselves. They may be sold packaged under nitrogen or some other inert atmosphere, or they may be created by a chemical reaction in your laboratory. The flame of certain pyrophoric materials is clear and not readily visible. Examples include alkali metals (potassium, cesium), finely divided metal dusts (nickel, zinc, titanium), hydrides (barium hydrides, diborane, diisobutyl aluminum hydride).

**Shock/Heat Sensitive Agents** – (These may be classified under the “Exploding Bomb” (explosive/reactive) pictogram. Chemicals which may decompose violently if struck or heated. Solids are also prone to explosive decomposition if ground, for example with mortar and pestle or by unscrewing the cap on the container where crystals may be present. Examples of shock sensitive chemicals are Acetylenic compounds, Acyl nitrates, Alkyl nitrates, Alkyl and acyl nitrates, Alkyl perchlorates, Amine metal oxosalts, Azides, Chlorite salts of metals, Diazo compounds, Diazonium salts (when dry), Fulminates, N-Halogen compounds, N-nitro compounds, Oxo salts of nitrogenous bases, Perchlorate salts, Peroxides and hydroperoxides, Picrates, especially picric acid when dry [creanine picric reagent or trinitrile phenol], Polynitroalkyl compounds, Polynitroaromatic compounds. Heat sensitive chemicals are materials with a Self-Accelerating Decomposition Temperature (SADT) such as some organic peroxides, high concentrations of hydrogen peroxide and hydrazine, ethylene oxide, peroxydicarbonate, peroxyacetate, nitro benzyl halides and hydroperoxides. Heat sensitive chemicals should be used in a thermally controlled area.
**Compressed Gas Cylinders** – substances held in a gaseous state in excess of 15 pounds per square inch gauge. This category includes all cylinders equal to a lecture bottle and larger. It does not apply to aerosol containers.

**Corrosives** – substances with a pH less than 3.5 or greater than 10.5. Corrosives can cause tissue damage or corrode metal.

**Carcinogenic Agents** – substances that have sufficient evidence of carcinogenicity from studies in humans, which indicates a causal relationship between exposure to the agent, substance, or mixture, and human cancer. Some examples include aflatoxins, inorganic arsenic compounds, azathioprine, benzene, benzidine, beryllium and beryllium compounds, 1,3-butadiene, cadmium and cadmium compounds, coal tar and coal tar pitches, cyclosporine A, diethylstilbestrol, estrogens, ethylene oxide, nickel compounds, dioxin, and vinyl chloride. (Classified under the “Health Hazard” Pictogram)

**Teratogenic Agents** – substances capable of causing harm to human embryos and fetuses. Exposure to teratogens can result in a wide range of structural abnormalities such as cleft lip, cleft palate, dysmelia, anencephaly, ventricular septal defect. In most cases, specific agents produce a specific teratogenic response. Some examples are 13-cis-retinoic acid, isotretinoin (Accutane), temazepam (Restoril; Normisson), nitrazepam (Mogadon), nimetazepam (Ermin), aminopterin, androgenic hormones, busulfan, captopril, enalapril, chlorobiphenyls (PCBs), Dioxin, coumarin, cyclophosphamide, diethylstilbestrol, diphenylhydantoin (Phenytoin, Dilantin, Epanutin), ethanol, ethidium bromide, etretinate, hexachlorophene, lithium, methimazole, organic mercury, penicillamine, tetracyclines, thalidomide, trimethadione, uranium, methoxyethyl ethers and valproic acid. (Classified under the “Health Hazard” Pictogram)

**Mutagenic Agents** – an agent, such as a chemical, ultraviolet light, or a radioactive element, that can induce or increase the frequency of mutation in an organism. Some examples include base analogs, which can substitute for DNA bases and cause copying errors, deaminating agents such as nitrous acid; intercalating agents such as ethidium bromide; alkylating agents such as ethylnitrosourea; transposons, sections of DNA that undergo autonomous fragment relocation/multiplication; some natural plant alkaloids, such as those from vinca species; bromine and some of its compounds; sodium azide; psoralen combined with ultraviolet radiation causes DNA crosslinking and hence chromosome breakage. (Classified under the “Health Hazard” Pictogram)
**Flammables** – substances that exist in a solid, liquid or gaseous state and meet the definition of flammable by one of the following:

**Flammable liquids:** Any liquid having a flash point less than 140 degrees F.

Examples include acetone, ethanol, methanol, xylene, acetaldehyde, acetonitrile, benzene, cyclohexane, diethylamine, dioxane, ethyl ether, hexane, tetrahydrofuran, and toluene.

**Flammable solids:**

Flammable solids are any materials in the solid phase of matter that can readily undergo combustion in the presence of a source of ignition under standard circumstances, i.e. without artificially changing variables such as pressure or density, or adding accelerants. Examples include camphor, cellulose nitrate, naphthalene, decaborane, lithium amide, phosphorous heptasulfide, phosphorous sesquisulfide, potassium sulfide, anhydrous sodium sulfide, sulfur, cesium, magnesium and zirconium, aluminum powder, calcium/magnesium/sodium metals.

**Flammable gases:**

A flammable gas is a material which is a gas at 68 °F (20 °C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a boiling point of 68 °F (20 °C) or less at 14.7 psia (101 kPa)] which:

1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit.

Examples include acetylene, 1,3-butadiene, n-butane, carbon monoxide, diborane, ethylamine, ethylene oxide, isobutane, and trimethylamine.
Recordkeeping

The posted sign is the record as long as the conditions indicated are present in the lab.

Training Requirements

All laboratory personnel should be introduced to the elements of the completed and posted door placard during lab-specific training for the labs in which they are expected to work upon employment. Visitors, students, and guests should be made aware upon their first visit. Both groups should be made aware when changes are made to the posting.

Standard

None

Forms

The form or online dialog to complete this form may be found in the Laboratory Safety Section of the EHS website: http://ehs.utk.edu/ or by contacting EHS at 974-5084