

# Instructions For Completing a Risk Information Sign

This document presents instruction and information on the new “Risk Information Sign.” The Risk Information Sign shall replace the “Emergency Green Card” currently posted on the exterior of all lab entrances. The purpose of this change is to introduce enhanced hazard communication using color coded signs red, yellow and green for visual recognition of risk. The sign includes new categories for physical hazards and sensitive research. The color coded system will enhance or restrict access into labs. **It is the responsibility of the Principle Investigator (PI) to ensure that any hazard present in the space is communicated on the risk information sign and must update EHS if hazards change through submitting an updated risk information sign. EHS is responsible for assigning the color of the risk information card as well as printing and posting the signs. EHS may do this in consultation with the PI.**

## Contact information:

On the upper portion there is space available to enter the room’s responsible department(s), PI, and their office phone number. The Emergency contact either must be listed on the sign or provided to EHS. One can provide this information by emailing [EHS@uml.edu](mailto:EHS@uml.edu) be sure to include name, email, emergency contact number, building(s), and lab(s).

## Hazards:

### Chemical:

This section is designed for any space where hazardous materials are used or stored. If unsure of hazard classification of the material, check the chemical bottle label and/or the safety data sheet.

- **Corrosives (Acids/Bases)** Any solid or liquid material that has the ability to attack and potentially destroy exposed body tissue. They also have the ability to damage metals. Corrosive materials will cause damage upon skin contact, contact with the eyes, respiratory tract, and digestive tract.
- **Air/Water Sensitive:** Water-reactive substances are those that spontaneously undergo a chemical reaction with water, as they are highly reducing in nature. Notable examples include alkali metals, sodium through caesium, and alkaline earth metals, magnesium through barium. Some water-reactive substances are also pyrophoric, like organometallics and sulfuric acid, and should be kept away from moisture.
- **Carcinogens/Mutagens:** A carcinogen is a substance capable of causing cancer in living tissue. A mutagen is a substance or element that brings about a permanent genetic change to the DNA of a cell of a living organism
- **Teratogens:** Any agent that can disturb the development of an embryo or fetus. Teratogens may cause a birth defect in the child
- **Flammable Liquids:** A flammable liquid is a liquid that can burn. A liquid is classified as flammable if its flash point is below 100°F (37.8°C). The flash point

can be defined as the lowest temperature at which a liquid gives off sufficient vapor to ignite.

- 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.
- Gas Cylinders Flammable: Is a gas that burns in the presence of an oxidant when provided with a source of ignition. Flammable gasses may include methane, acetylene, ammonia, hydrogen, propane, and propylene.
- Gas Cylinders Non-Flammable: Any compressed gas that is not classified as a flammable or toxic. Examples of non-flammable gases may include argon, carbon dioxide, helium and nitrogen. Also known as inert gases.
- Gas Cylinders Toxic: Is one which is capable of causing damage to living tissues, impairment of the central nervous system, severe illness or, in extreme cases, death when it is inhaled, or absorbed by the skin or eyes. Toxic gases may include boron trichloride, chlorine and carbon monoxide. Flammable gas will burn. Toxic gas is poisonous. A gas can be toxic, but not flammable, flammable but not toxic, both, or neither.
- Oxidizers: Is a substance that yields oxygen readily to stimulate the combustion of organic matter. Examples include but are not limited to such as chlorate, permanganate, inorganic peroxide, or a nitrate.
- Toxic: is any liquid or solid substance which may be harmful to the environment or hazardous to your health if inhaled, ingested or absorbed through the skin. Examples include but are not limited to heavy metals, chloroform, and benzene.

The EHS website contains more information regarding the above classifications or one can provide this information by emailing [EHS@uml.edu](mailto:EHS@uml.edu).

### Biohazard:

This section is designed for any space/laboratory where biological agents are used and/or stored. Biological agents are live organism or products derived from live organisms. The containment level of your laboratory has been determined according a risk assessment performed by the Biosafety Officer and approved by the Institutional Biosafety Committee (IBC).

From the following list, select and check all biological agents that apply to your research.

- Human Materials: If you work with blood, body fluids, cells (primary culture or cell lines), tissue samples, human biopsies, cadaver parts or any derived product of those materials
- Infectious Agents: Any agent that can produce disease in humans or animals, such as pathogenic bacteria -usually from Risk Group 2; viruses and/or environmental samples containing/derivate from treated or untreated sewage.
- Bacteria: Pathogenic and non-pathogenic bacteria. E. coli-K12, etc.
- Virus: including those used as vectors such as lentivirus

- Animals: (organs, cells or any product derivate of animals such as fish, insects, spiders, rodents, etc.)
- Others: (If your laboratory works with: fermentation tanks with capacity larger than 10 liters, recombinant DNA, or synthetic nucleic acids, natural environmental samples such as soil, water-collected from rivers, lakes and sea water).

If you have any questions, concerns or need for some changes about the agents that you are using, contact the Biosafety Officer at the EHS office 978-934-2618.

### Radiation:

This section is designed for any space that has a radiation hazard, either ionizing or non-ionizing. This section is specifically handled by the Radiation Safety Office and can be reached at [Radiation\\_Safety@uml.edu](mailto:Radiation_Safety@uml.edu). All cases in this section will be reviewed by the Radiation Safety Office.

- Radioactive Material: are purchased sources that emit ionizing radiation. Said material could be licensable or non-licensable. Licensable material is when the radioactivity given off by the material is in excess of limits set forth by the regulating agencies and needs strict control. Non-licensable material is when the radioactivity is below said limits per nuclide. The Radiation Safety Office will determine what is applicable based on your material.
- X-ray Machine: is a device when energized emits a photon ionizing radiation known as an X-Ray. These devices can be found in spectrum analyzers such as X-ray Fluorescence (XRF) or X-Ray Diffraction (XRD), or in X-ray machines used to irradiate samples or humans.
- Laser: is a device that emits photons in the non-ionizing spectrum and can deliver focused power resulting in severe eye or skin injuries. Lasers are classified by the manufacturer as Class1, Class2, Class3R (formerly 3A), Class3B, and Class 4. Only this class 3B and Class 4 require control and approval as a laser lab, therefore need a check in this section. If using 3R lasers the Radiation Safety Office can be consulted but is not required. Any lasers below class 3B should be handled responsibly since injuries can occur if staring into the beam.
- Magnetic Fields: are emitted from devices with large magnets or electromagnets. Devices include but are not limited to Nuclear Magnetic Resonance (NMR), Magnetic Resonance Imaging (MRI), and static Magnets. The hazard here exists if the magnets can exceed the 5 Gauss (unit of field strength) where it can interfere with pacemaker operations. Higher fields can cause ferrous material to be attracted thus crushing injuries can occur. Radiation Safety can measure your magnetic field if unsure of the levels. Check here if over 5 Gauss to a person can exist.
- Radiofrequency: devices contain transmitters that emit in the RF. If the transmitter (cell, radio, weather monitoring) emits more than 20% of the FCC Specific Absorption Rate (SAR) then check here. If unsure, the Radiation Safety Office can measure the RF power density of the transmitter.

- Ultra-Violet (UV): radiation is a non-ionizing radiation that is used in curing or photosynthesis research. UV is light therefore it can be blocked. If the UV device is capable of emitting light in an open system (not light tight) then the radiation Safety Office will review.
- Uranium Compounds: include uranyl acetate and other uranium compounds commonly used in electron microscope research. Uranium compounds also include Depleted Uranium (DU) commonly used for its high density. The radiation safety office will review these items.

### Physical Hazards:

- High Voltage: Spaces with equipment requiring voltage in excess of 220V.
- Pressure/ Reaction Vessel: is a container designed to hold gases or liquids at a pressure substantially different from the ambient pressure.
- Mechanical: Any equipment or machines requiring guarding to protect people from moving parts, nip and pinch points, or crushing hazards.
- Thermal: Any extreme hot or cold surfaces or materials such as cryogenic liquids, ovens, extruders, etc. that could cause burns or frostbite. Hot plates are not required to be identified in this category.
- Explosive: Means any chemical compound, mixture, or device, with the primary or common purpose of which is to function by explosion, i.e., with substantially instantaneous release of gas and heat. The U.S. Department of Transportation defines explosive materials as Class 1 Division 1.1, 1.2, 1.3, 1.4, 1.5, and 1.6. Examples include, but is not limited to trinitrotoluene, dynamite, black powder, pellet powders, initiating explosives, blasting caps, electric blasting caps, safety fuse, fuse lighters, fuse igniters, squibs, igniter cords, igniters, small arms ammunition, small arms ammunition primers, smokeless propellant, cartridges for propellant-actuated power devices.

### Sensitive Research:

This section is specific for any space having research or equipment that may be harmed by unescorted/unauthorized entry. Examples may include labs with animals, research involving controlled substances or equipment sensitive to vibration or physical force.

### Colors:

The Risk Information Sign will be presented in any one of three colors. Red, Yellow, or Green. The colors are designed to provide visual awareness to the level of risk associated with the lab. This approach clarifies which labs can be entered with training vs. which labs can be entered with training and escort from a responsible person. Entry into any lab on campus regardless of color requires at a minimum "Lab Safety Awareness" training prior to entry into the space. Additional specific training may be required for spaces having hazards associated with bio, radiological and physical hazards. The training courses include but are not limited to Biosafety & Bloodborne Pathogens, Radiation Safety, Laser Safety, and Lock Out Tag Out training.

RED: Means restricted access. This color is designed to give notification that either due to risk, security, or research needs that the space cannot be entered without a responsible person escort. Examples requiring a red sign might include but are not limited to flammable and toxic gases, radiological materials above a certain activity, and sensitive research.

YELLOW: Means warning. This color represents moderate risk due to the material or equipment contained within the space. Access shall be granted to individuals after successful completion of the appropriate training. It is recommended to coordinate access with the responsible PI but not required. Occupants should be aware of the hazards of the space to gauge how they're work will impact such materials. If a safety concern is identified upon entry the individual should leave the lab and contact the EHS Office (X42618) to request an assessment.

GREEN: Means caution. This color represents low risk due to the material contained within. Access shall be granted to individuals after successful completion of the appropriate training. Occupants should be aware of the hazards of the space to gauge how their work will impact such materials. If a safety concern is identified upon entry the individual should leave the lab and contact the EHS Office (X42618) to request an assessment.

## Emergency:

This section is designed to inform you and the reader about the universities emergency contact system. Dialing the 24hr university police dispatch number (978-934-4911) in an emergency is the quickest way to receive support in an emergency (fire, police, EMS). For non-emergency police contact dial 978-934-2398

### UML EHS Use only:

Color ordering information WB Mason by JAMPaper and envelope inc.

RED	"Brite Hue Recycled Red" Item 101378
YELLOW:	"Vellum Bristol Recycled Yellow" Item 169838
GREEN	"Vellum Bristol Recycled Green" Item 169826