

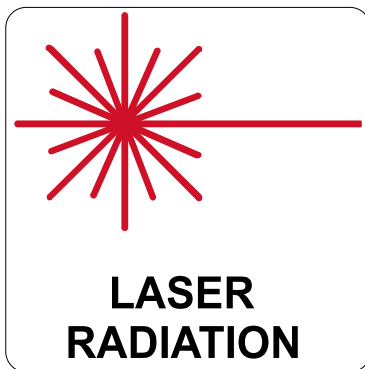
# Radiation



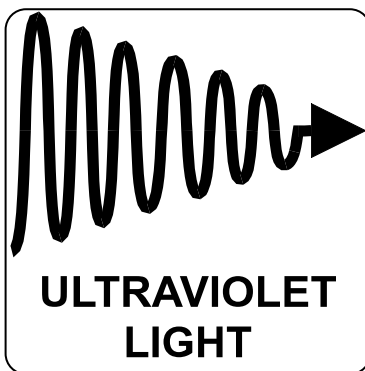
The “**CAUTION RADIOACTIVE MATERIALS**” sign will be posted at access points to laboratories where radioactive materials are used or stored, or where radioactive wastes are accumulated. These locations will not be posted until authorization to use radioactive material has been granted by the Radiation Safety Officer.



The “**CAUTION X-RAY EQUIPMENT**” sign is used to indicate those rooms where electrically-produced x-ray equipment is located.



This “**LASER RADIATION**” label will be posted at access points to laboratories where Class IIIB or IV lasers are used or stored. This label **must be supplemented** by posting an 11” X 8.5” DANGER placard (supplied through the Radiation Safety Office).



This “**ULTRAVIOLET LIGHT**” label will be posted at access points to laboratories using non-laser equipment capable of producing UV wavelengths between 180 and 400 nm at or above the following intensities:

Wavelength (nm)	180	200	250	300	350	400
mJ/cm <sup>2</sup>	250	100	7	10	1.5x10 <sup>4</sup>	1.5c10 <sup>5</sup>

e.g. Biological Safety Cabinets with UV lamps if work requires the lamp be activated when the cabinet is in use; transilluminators.

## Biosafety



This “**BIOHAZARD**” label will be posted at access points to BSL2 and BSL3 laboratories.



This “**BIOSAFETY LEVEL 2**” label will be posted at access points to research laboratories where BSL2 containment is used.



This “**BIOSAFETY LEVEL 3**” label will be posted at access points to laboratories where research is conducted with microorganisms requiring BSL3 containment. These agents have a potential for respiratory transmission, and may cause serious infection.

Entry into this laboratory requires special personal protective equipment and approval of the Principal Investigator.

## Health Hazards



This "**CANCER HAZARD**" label will be posted at access points to laboratories or storage rooms where chemicals that are specifically regulated by OSHA as carcinogens are routinely used in pure form, such as acrylamide powder or diaminobenzidine (DAB), or there is use of several liters per week of carcinogenic solvents, such as phenol/chloroform extraction procedures.



This "**CORROSIVE MATERIALS**" label will be posted at access points to laboratories or shops where there is storage or routine use of a variety of strong acids and bases in concentrated form as in a typical chemistry laboratory. In addition, areas 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 are to be posted.



This "**HIGHLY TOXIC**" label will be posted at access points to laboratories or storage rooms containing chemical substances defined by the Department of Transportation as poisonous, or by the Environmental Protection Agency as acutely toxic ( $LD_{50} < 50 \text{ mg/kg}$ ).



This "**REPRODUCTIVE TOXIN**" label will be posted at entrances to laboratories or storage rooms containing substances that are listed as developmental toxins, or male/female reproductive toxins. These substances are listed in Appendix 7-B to the Laboratory Safety Manual, and in the State of California Proposition 65 List.

## Physical Hazards



This “**NON-FLAMMABLE GAS**” label will be posted at access points to laboratories and shops where containers of compressed, liquefied, or solidified gases which pose a risk of asphyxiation, and/or the risk of rapid freezing of tissue are stored or used. Examples: Compressed oxygen, liquid nitrogen, and dry ice (solid carbon dioxide).



This “**FLAMMABLE GAS**” label will be posted at the entrances to laboratories and shops where containers of gases that ignite easily and burn rapidly are used or stored. Common flammable gases are hydrogen, carbon monoxide, and acetylene.



This “**FLAMMABLE MATERIALS**” label will be posted at access points to laboratories, shops or storage areas regularly using or storing highly volatile solvents in moderate quantities. Examples: solvent extractions, refluxing or solvent distillation.

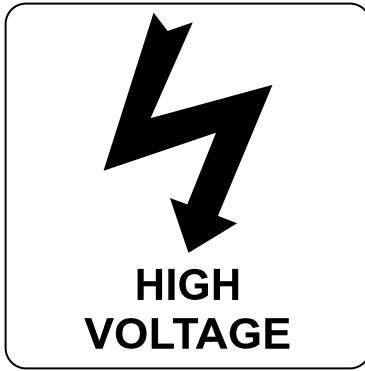


This “**OXIDIZING MATERIALS**” label will be posted at entrances to laboratories, shops with routine use or storage of at least moderate quantities of oxidizers. Oxidizers are compounds that readily provide oxygen to support combustion and can initiate a fire as well as cause other materials to burn much more intensely than normal. Examples: peroxides, chlorates, perchlorates, nitrates, and permanganates



A “**WATER REACTIVE**” label will be posted at entrances when the amount of chemical 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.

## Physical Hazards



This “**HIGH VOLTAGE**” label will be posted at access points to laboratories containing electrical equipment or cables operating at 600 volts or greater.

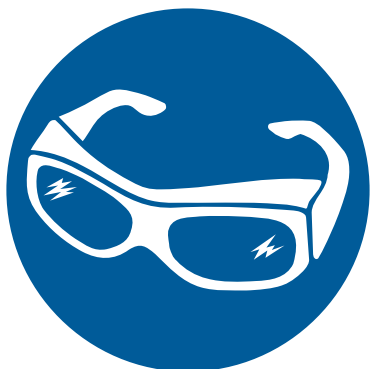


This “**ELECTRICAL HAZARD**” label will be posted at access points to laboratories or shops containing accessible equipment with exposed and unguarded electrical components operating at less than 600 volts.

## Mandatory Actions



This “**AUTHORIZED PERSONNEL ONLY**” label is posted at entrances to all laboratories or shops. Only persons approved by the University and with the occupant’s permission may enter.



This “**EYE PROTECTION REQUIRED**” label will be posted at access points to all laboratories and shops when the Principal Investigator, Shop Supervisor, or University Policy requires eye protection to be worn before entering. For example, where there is a reasonable probability of exposure to hazardous chemicals, potentially infectious agents or physical hazards, which could result in injury if eye protection is not used.



This “**GLOVES REQUIRED**” label will be posted at the entrances to laboratories when the Principal Investigator or University Policy requires laboratory type gloves to be worn before entering.

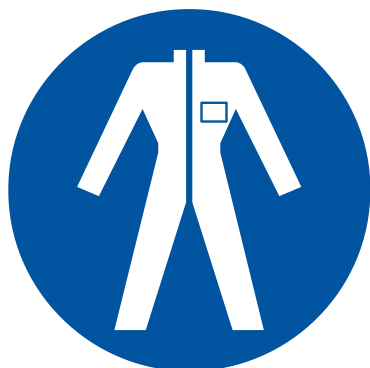


This “**LAB COAT REQUIRED**” label will be posted at the entrances to laboratories when the Principal Investigator or University Policy requires a lab coat be worn before entering.



This “**DUST MASK**” label will be posted at access points to locations in which contamination of processes must be kept to a minimum. This is not personnel protective equipment and offers no health protection to the wearer.

## Mandatory Actions



This “**PROTECTIVE CLOTHING REQUIRED**” label will be posted at access points to analytical and research laboratories where the laboratory manager has specified protective clothing beyond the standard lab coat.



This “**HEARING PROTECTION REQUIRED**” label will be posted at access points to laboratories or shops where hearing protection must be worn before entering.

## Prohibited Actions



This “**NO BICYCLES**” label will be posted at the entrances to all laboratories and shops at UNC. UNC policy does not allow bicycles in University buildings at any time.



This “**NO SMOKING**” label will be posted at the entrances to all laboratories and shops at UNC. UNC policy does not allow smoking in University buildings at any time.



This “**NO SANDALS/OPEN-TOED SHOES**” label will be posted at the entrances to all laboratories and shops at UNC. Proper footwear is to be worn at all times in the workplace.



This “**NO ENTRANCE**” label will be posted at doorways that may be blocked or the occupants do not want pedestrian traffic entering. Read the safety statement to learn where to enter this room.



This “**NO FOOD OR DRINK**” label will be posted at access points to all laboratories and shops where the Principal Investigator, Shop Supervisor, or University Policy does not permit the consumption of food (or application of cosmetics/hand lotions) within the room.



## Safety Equipment



This “**EYEWASH**” label will be posted at the entrances to all laboratories and shops at UNC that have a functioning, ANSI compliant eyewash. Drench hoses do not, and older eyewashes may not, meet ANSI requirements.



This “**SAFETY SHOWER**” label will be posted at the entrances to all laboratories and shops at UNC that have a functioning, ANSI compliant safety shower. Drench hoses do not, and older safety showers may not, meet ANSI requirements.



This “**SAFETY SHOWER/EYEWASH**” label will be posted at the entrances to all laboratories and shops at UNC that have a functioning, ANSI compliant eyewash and safety shower. Drench hoses do not, and older eyewashes or safety showers may not, meet ANSI requirements.