Special Events

General Safety Guidelines

217/265-9828 www.fs.uiuc.edu/sandc

General Safety Topics

Special Safety Topics

facilities & SERVICES
DIVISION OF SAFETY & COMPLIANCE

Special Events are those activities defined by the Special Events Work Group which may require some risk reduction measures to enhance the safety of the participants.

Those activities may include but may not be limited to the following categories:

- Events with estimated attendance of 200 or more people.
- Events with VIP's/controversial programs
- Events with food, or alcoholic beverages, or cash transactions.
- Events that involve 'potentially hazardous' activities or conditions.
- Events that involve fireworks or pyrotechnic evaluations.
- Events that involve combustible/flammable liquids evaluations.
- Events that use heat producing devices or open flames.
- Events with tents.

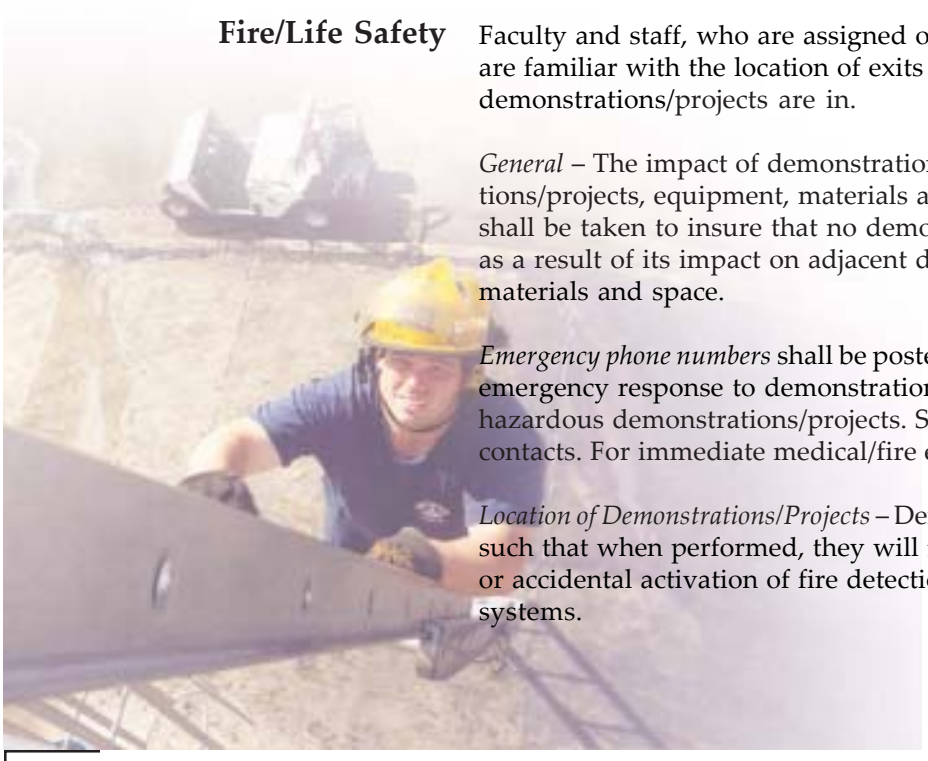
These are general guidelines to reduce/eliminate potential safety and health hazards which may cause injury, illness, or property loss. There may be situations or potential hazards that are not addressed here for example, biological or radiation hazards. Faculty/staff, who are assigned oversight, shall review these guidelines with exhibitors. Only trained/qualified exhibitor/demonstrators who are capable of running projects and demonstrations safely shall be permitted to run projects and demonstrations.

Information concerning the Division of Safety & Compliance programs of the University of Illinois at Urbana-Champaign is intended as guidance for University of Illinois at Urbana-Champaign students, staff, and faculty engaged in activities related to their education, research, special events, and/or employment. The information is subject to change and updating at any time.

Unless otherwise noted in the topic areas, please contact Division of Safety & Compliance (S&C) at 217/265-9828 or www.fs.uiuc.edu/sandc for technical assistance, additional information, questions, or concerns.

General Safety Topics

These safety topics are general and apply to most projects.



Fire/Life Safety

Faculty and staff, who are assigned oversight, shall insure that exhibitors are familiar with the location of exits from the buildings that their demonstrations/projects are in.

General – The impact of demonstrations/projects on adjacent demonstrations/projects, equipment, materials and space shall be considered. Steps shall be taken to insure that no demonstrations/projects creates a hazard as a result of its impact on adjacent demonstrations/projects, equipment, materials and space.

Emergency phone numbers shall be posted near all phones that may be used for emergency response to demonstrations/ projects and near all potentially hazardous demonstrations/projects. See Exhibitor Guide for emergency contacts. For immediate medical/fire emergency, call 911.

Location of Demonstrations/Projects – Demonstrations/projects shall be located such that when performed, they will *not* cause or contribute to unnecessary or accidental activation of fire detection and alarm or fire suppression systems.

Potentially hazardous demonstrations/projects shall be located in areas where danger to life will be minimized. Where practical for instance, such demonstrations/projects shall be located only in areas equipped with fully operational/functional fire detection and alarm systems and/or automatic fire suppression systems.

Demonstrations/projects shall be located in classrooms where possible. In any case, demonstrations/projects shall be located in areas or spaces that allow for safe entrances and exits. If projects/demonstrations are located in hallways, then projects/demonstrations should be limited to one *(1) side* of an aisle or passageway. A minimum aisle width of *44 inches* shall be maintained.

Audience Limitations – The number of persons permitted to view a demonstration/project shall be limited to no more than can safely exit the demonstration/project space in case of emergency. For example, in case of a demonstration/project held in an area with a fixed number of seats, the number of persons permitted to view a single demonstration/project shall *not* exceed the number of fixed seats in the area. Do not bring in any additional furniture. In case of a demonstration/project held in other areas, attendees shall be limited to that number that can be contained in the area while maintaining unobstructed access to exits.

Exits – Demonstrations/projects shall *not* disable or obstruct exits, exit signs or emergency lighting. Maintain required aisles. Make sure safety routes are clear at all times. ***No exceptions!***

Exhibitors must know the location of all exits from the demonstration/project area. Where the exits are not readily visible or apparent, the location of exits from the demonstration/project area shall be announced prior to each demonstration.

All designated exits shall be clearly visible and accessible at all times. Exits shall *not* be locked in such a manner as to restrict or hinder emergency egress. If locked, call EOH Central first.

Pyrotechnics/Fire Hazards – If flame producing or pyrotechnic devices are used the audience shall be kept at least *15 feet* from the flame producing or pyrotechnic device and there shall be no glowing or flaming particles within *10 feet* of the audience. This is not intended to apply to the use of such things as candles, matches, Bunsen burners, etc.; however these heat sources should be provided barriers, shielding or a minimum *3 foot* clearance to prevent accidental contact by the public.

Pyrotechnic devices/ Fire hazards (such as flares, sparklers, etc.) designed for outside use shall not be used on the interior or within close proximity of audiences.

If flame producing fuels or pyrotechnic devices are to be used, these shall be stored in an approved container. Such storage container shall be separated from sources of ignition. In addition, the maximum quantity of flame producing fuels or pyrotechnic devices shall not exceed the maximum quantity to be used in one day. If an appropriate permanent storage is not available, excessive flammables/combustibles shall be immediately removed from the premises.

If flame producing or pyrotechnic devices are to be used, adequate ventilation shall be provided.

If flame producing or pyrotechnic devices are to be used, interior hangings and decorations in proximity to the demonstration shall be noncombustible.

Demonstrations/projects involving heating equipment/open flames shall not be performed in hallways.

Any project that requires the disabling of fire detection or alarm equipment of any type is not permitted.

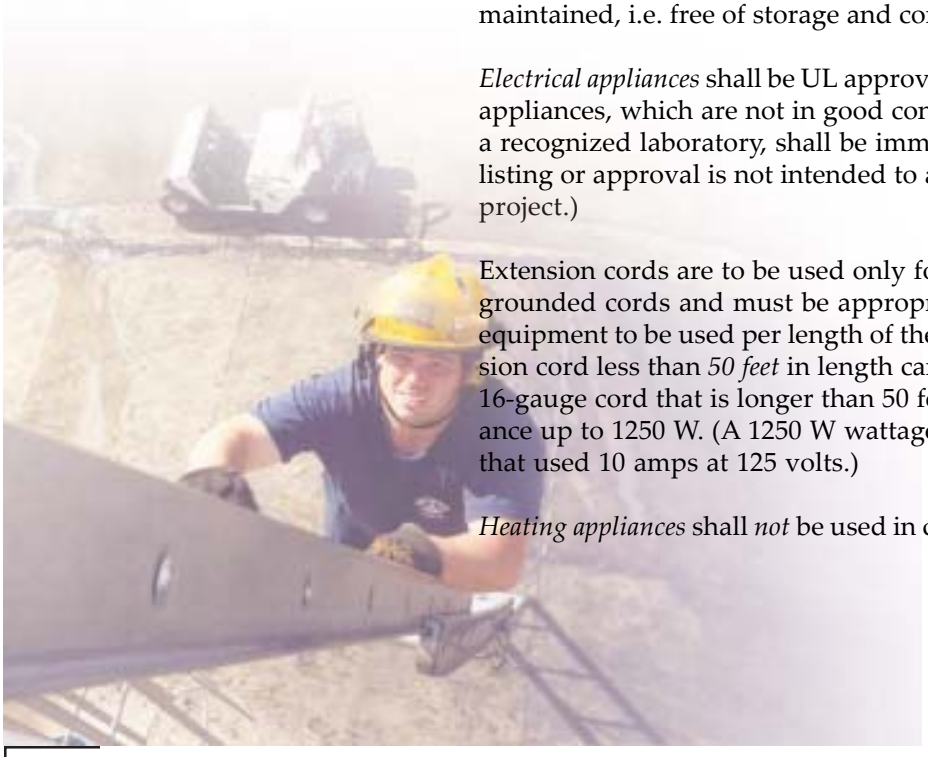
At least one multipurpose dry chemical fire extinguisher with a rating of at least 2A:10B:C is recommended for all demonstrations involving flame producing or pyrotechnic devices except those demonstrations involving combustible metals. If a demonstration involves combustible metals, a class D dry powder fire extinguisher is recommended. Personnel trained in the use of fire extinguishers shall be located such that they can readily use the extinguisher if needed.

Access to fire protection equipment including fire alarm pull stations, fire extinguishers, and automatic sprinkler equipment shall not be obstructed. Also, demonstrations/projects shall not interfere with the functioning of such equipment. For example, projects, storage or equipment shall be placed no closer than *18 inches* away from a sprinkler head.

Electrical

Safety related work practices shall be employed to prevent electrical shock or other injuries from direct or indirect electrical contact which may or may not be energized.

A minimum *3 foot* clearance in front of electrical panels boxes, etc. shall be maintained, i.e. free of storage and combustibles.



Electrical appliances shall be UL approved and in good condition. Electrical appliances, which are not in good condition or not listed or approved by a recognized laboratory, shall be immediately removed from service. (This listing or approval is not intended to apply to equipment developed for the project.)

Extension cords are to be used only for temporary service, must be 3-wire grounded cords and must be appropriate current carrying capacity for the equipment to be used per length of the cord. For example, a 16-gauge extension cord less than *50 feet* in length can power 1625 watt (W) appliance. A 16-gauge cord that is longer than 50 feet in length can only power an appliance up to 1250 W. (A 1250 W wattage rating is equivalent to an appliance that used 10 amps at 125 volts.)

Heating appliances shall *not* be used in close proximity of combustibles.

Electrical cords and connectors shall be in good condition free from cracks, frays, patches, splices, indications of internal damage, etc. Damaged equipment shall be removed from service.

Cords shall also be properly secured and grounded. Grounding adapters are prohibited. All cords shall be placed or shielded so they will not be walked on or become a tripping hazard.

Electrical equipment (110 V) shall be double insulated or appropriately grounded.

Ground Fault Circuit Interrupter (GFCI) protection is required in damp and wet locations including close proximity of water sources.

Electrical equipment shall be appropriately approved for the intended location.

Don't plug in or unplug equipment with wet hands as you become a better conductor and it is possible to be electrocuted (killed) with 110 V.

An *energy control program (Lockout/Tagout)* shall be utilized to prevent injury from unintended energization of equipment.

Energized equipment shall be deenergized and appropriately safe guarded to prevent accidental activation or injury when not supervised/attended.

At least one multipurpose dry chemical fire extinguisher with a rating of at least 2A:10B:C is recommended for all demonstrations involving energized electrical equipment. Personnel trained in the use of fire extinguishers shall be located such that they can readily use the extinguisher if needed.

Safety Signs – safety symbols or accident prevention tags shall be used to warn about potentially endangering electrical hazards. A safe distance of *10 feet* shall be maintained; barricades and/or attendants maybe used in conjunction with signs.

Electrical protective equipment shall be worn in areas where there are potential electrical hazards. This equipment shall be in good condition, rated for the voltage involved and appropriate for the specific parts of the body requiring protection and for the task being performed. shall be worn. For potential Arc Blast, face and eye protection shall be worn.

For additional information please see:

1. OSHA, 1910.137, Electrical protective devices.
   http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9787
2. OSHA, 1910.303, Electrical General Requirements
   http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9880
3. OSHA, 1910.333, Electrical Selection and use of work practices
   http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9910
4. OSHA, 1910.335, Safeguards for Personnel
   http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9912

Portable ladders shall be nonconductive. No conductive apparel (watches, rings, jewelry, key chains, etc.) shall be worn. No steel wool or conductive liquid cleaning solutions shall be in close proximity.

Energized equipment shall be attended at all times especially for EOH. (This requirement does not always apply.)

Housekeeping

The project areas and passageways shall be maintained in a neat and orderly condition so as not to create tripping/fall hazards, fire hazards from waste/storage of combustibles, etc.

Waste containers shall be provided and used.

Adequate lighting shall be provided to prevent falls. Report areas of inadequate lighting.

Walking/Working Surfaces

Floors shall be kept clean, orderly, dry and free of tripping/fall hazards.

Covers and/or guardrails shall be provided to protect from hazards of open pits, tanks, vats, rotating or moving parts, etc.

Floors and roofs shall not be overloaded.

Aisles and passageways shall be kept clear, in good repair, free of obstructions. Sufficient safe clearances shall be maintained where mechanical equipment is used.

Floor holes including drains shall be covered to prevent falls. Report potential tripping hazards.

Platforms more than *4 feet* above the floor shall be protected by standard railing. Toe boards shall also be provided where there is a potential exposure to falling objects.

Personal Protective Equipment (General)

Personal Protective Equipment (PPE) shall be provided by the unit, used, and maintained wherever it is necessary due to hazards capable of causing injury or impairment. The protective equipment shall meet the specific requirements of the related ANSI standards. (The protective equipment is usually marked or labeled with the related ANSI standard that it meets.)

Defective or damaged equipment shall not be used.

Visitors shall be protected by PPE, distance (minimum of *5 feet*) or enclosure (Plexiglas or Lucite of sufficient strength) as appropriate for the hazard. Visitor arenas shall be clearly roped/blocked off.

Eye or Face Protection – appropriate for the hazard, shall be available and used when there are potential hazard exposures to the eye or face from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors or potentially injurious light radiation. For additional information, please see ANSI Z87.1 1968.

Head Protection – a protective helmet (hardhat) shall be worn to prevent injury to the head from falling objects and when near exposed electrical conductors which could contact the head. For additional information, please see ANSI Z89.1 1986.

Foot Protection – protective footwear shall be worn in areas where there is a danger of foot injuries due to fall or rolling objects or object piercing the sole, and where the feet may be exposed to electrical hazards. (This type of hazard should not be present at an project.) For additional information, please see ANSI Z41 1991.

Electrical Protective Equipment (insulating blankets, matting, covers, line hose, gloves and sleeves made of rubber) shall meet the OSHA requirements, including storage, use, maintenance, testing and inspection. Defective equipment shall be removed from service. See page 5.

Hand Protection – shall be used when the hands are exposed to hazards such as those from skin absorption or harmful substances; sever cuts, or lacerations; severe abrasions; punctures, chemical burns, thermal burns; a harmful temperature extremes. The selection of the appropriate hand protection is on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use and the hazards and potential hazards identified.

This is the end of the General Safety Topic Section. You need only to review those special safety topics that apply to your project.

Special Safety Topics

The topics presented in this section relate to specialty areas which may be specific to a project. They do not apply to all projects; you need only to review those specialty areas that pertain to your project.

Fall Protection

Each person on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is *6 feet* or more above a lower level shall be protected from falling by the use of guardrail systems, safety net system or personal fall arrest system.

This includes the prohibition of exhibitors on window ledges or other unprotected areas more than *6 feet* above the ground level without suitable fall protection.

Noise

Shall be less than 90 dB. (Rule of thumb: No difficulty hearing conversation a thumb's distance, arm length away)

Biological Hazards

These include human materials, plant, animal or human pathogens; transgenic plants or animals; non human primate materials, biotoxins; wild mammal materials; and recombinant DNA.

For technical assistance, contact Division of Research Safety (DRS), 333-2755.

Food Sanitation

Selling or giving away food products - For food safety advice and approval for the food item, contact Division Safety & Compliance, Patricia Kerst at 333-1106 or e-mail to p-kerst@uiuc.edu

Additional food safety information is available on line at the S&C website, under Occupational Safety, Health Guide on Food Sanitation: http://www.fs.uiuc.edu/sc/oshs/foodsan.htm

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Handouts/Samples (non-food products)

Shall not be sharp, swallowable by small children, toxic or otherwise potentially harmful.

Chemical Hazards

The material safety data sheets for chemicals (including dusts, mists, vapors, gases and solids that are in the form of dusts or fumes) shall be followed and readily available.

Safety controls shall be implemented to prevent injury to the general public and the exhibitors. There must be ventilation, i.e. fume hoods used, for projects with the potential to produce harmful gases. Safety equipment shall be provided and used for manipulation of any potentially dangerous chemicals.

All demonstrators of chemical reactions shall wear safety glasses or goggles.

Visitors shall be protected from, spills, reactions, leaks, etc.

Chemical reactions shall be contained in case of accident.

A spill kit shall be readily available and used in the event of spill.

For technical assistance, contact DRS at 333-2755.

Specifically for the Engineering Open House, the Chemical Exhibit Application Questionnaire is to be completed *prior* to the exhibit application for those projects involving chemicals. Chemicals, for this purpose, are defined as all liquids, solids (powders or granular), gases, and any dusts, mists or vapors generated by the exhibit. The information contained in this questionnaire is to be included in the exhibit application and will be reviewed as part of the safety review. Both the Chemical Exhibit Application Questionnaire and the exhibit application are to be submitted to EOH Safety Director, Christopher Bestian. This safety questionnaire is available along with other safety informaton on EOH website.

Cryogenic Liquids

Limitations – For use of any cryogenic liquids other than liquid nitrogen, helium or argon, contact DRS at 333-2755 for specific safety direction. Use requires direct supervision and instruction of someone experienced in the use of cryogenic liquids.

Potential hazards and steps to be taken to address potential problems:

Explosion from Pressure Build Up – Store, ship and handle the cryogenic liquid only in containers that are designed for the temperatures and pressures to which they may be subjected. Pressurized containers should have multiple pressure relief devices. Containers such as Dewar flasks for use of small amounts of material should have a dust cap over the outlet to prevent atmospheric moisture from condensing and plugging the outlet.

Embrittlement of Structural Materials – Awareness of potential hazard; only use containers designed for the temperatures to which they may be subjected.

Frostbite – Proper personal protective equipment is required. See PPE section. Transferring the liquid between containers requires direct supervision of someone with experience in the operation. Tongs or potholder should be used in handling objects in contact with cryogenic liquids.

Asphyxiation – Suffocation/death with little warning due to displacement of oxygen in the air. Use only in a well ventilated space. If questions, contact DRS at 3-2755.

Personal Protective Equipment (PPE) to be used by those working with cryogenic liquids:

Eye Protection – a face shield to protect the eyes and face from splash.

Hand Protection – gloves that are impervious to the fluid being handled and loose enough to be easily thrown off if cryogenic liquids become trapped in gloves; potholders may be alternatives.

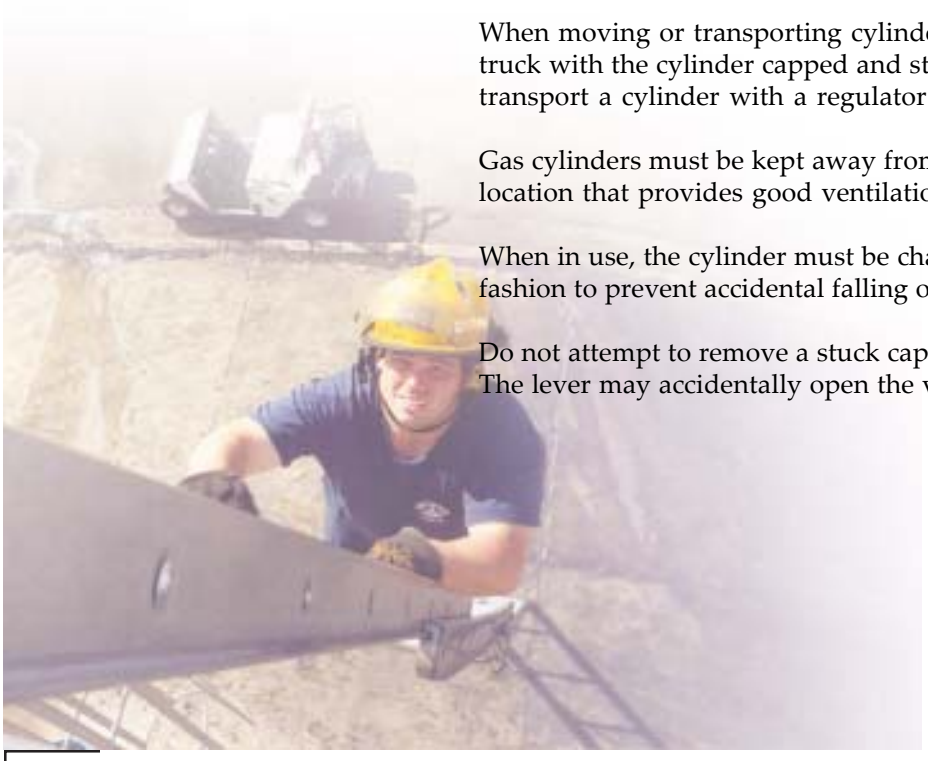
Skin Protection – wear slacks and long sleeved tops/shirts without pockets or cuffs that would easily retain cryogenic liquids; preferably slacks would go over shoes to minimize chance of trapping cryogenic liquid in the shoe; shoes impervious to the cryogenic liquid.

For further information contact DRS at 333-2755 or Prudent Practices in Laboratory, (http://books.nap.edu/catalog/4911.html, National Research Council).

Compressed Gas Cylinders

For gas cylinder storage and special considerations for flammable, oxidizing or toxic gases, consult the Compressed Gas Safety Guide (http://www.drs.uiuc.edu/css/factsheets/compgas.htm) Prudent Practices in Laboratory (http://books.nap.edu/catalog/4911.html) or the DRS at 333-2755.

All gas cylinders must be clearly marked with contents of the cylinder. For the chemical hazards associated with the gas, consult the material safety data sheet (MSDS) for the gas.



When moving or transporting cylinders, always use an appropriate hand truck with the cylinder capped and strapped or chained in place. Never transport a cylinder with a regulator attached.

Gas cylinders must be kept away from sources of heat or ignition and in a location that provides good ventilation.

When in use, the cylinder must be chained or strapped upright in such a fashion to prevent accidental falling over of the gas cylinder.

Do not attempt to remove a stuck cap by using a lever in the cap ports. The lever may accidentally open the valve when the cap turns.

Utilizing Compressed Gases

1. Before using the gas, read all label information and the data sheets associated with the use of that particular gas.
2. Before attaching cylinders to a connection, be sure that the threads on the cylinder and the connection mate, and are of a type intended for gas service.
3. The threads and mating surfaces of the regulator and hose connections should be cleaned before the regulator is attached. Wipe the outlet with a clean, dry, lint-free cloth. Particulate can clog the regulator filter (if so equipped) or cause the regulator to malfunction.
4. Always use the proper regulator for the gas in the cylinder. Always check the regulator before attaching it to a cylinder. If the connections do not fit together readily, the wrong regulator is being used.
5. Attach the regulator securely with the secondary valve closed and preferably with the regulator flow backed off (counterclockwise) before opening the cylinder valve wide.
6. Do not permit oil or grease to come in contact with cylinders or their valves, especially cylinders containing oxidizing gases.
7. Always use a cylinder wrench or other tightly fitting wrench to tighten the regulator nut and tube connections. Use "backup" wrenches to minimize stress on tubing and fittings where appropriate.
8. Teflon tape should never be used on cylinder connections or tube-fitting connections. Use Teflon tape only on pipe threads where the seal is made at the threads. All other connections have metal to metal face seals or gasket seals.
9. Open cylinder valves SLOWLY. Point the valve opening away from yourself and other persons. Never use a wrench or hammer to open or close a hand wheel type cylinder valve. If the valve is frozen and cannot be operated by hand, return the cylinder to the vendor.
10. Before a regulator is removed from a cylinder, close the cylinder valve and release all pressure from the regulator.
11. Never completely empty a rented gas cylinder, rather discontinue use of the cylinder when it has at least 25 psi remaining. Mark the cylinder so that others know that it is nearly empty, e.g., write MT on a piece of tape and stick it on the cylinder. Close the valve and secure the cylinder valve protective cap and outlet cap or plug, if used.

Acetylene cylinders should remain upright at all times and the cylinder valve not opened more than *1½ turns* when in use. If an acetylene cylinder has been stored in a non-upright position, it should be stored upright for *30 minutes* prior to use.

See the Personal Protective Equipment section above for general recommendations on PPE and the MSDS for the gas for specific recommendations.

Machine Guarding

One or more methods of machine guarding shall be provided for protection against the machine hazards such as those created by the point of operation, ingoing nip points, rotating parts/shafts, pulleys, gears, flying chips and sparks. Examples of guarding methods are: barrier guards, two hand tripping devices, electronic safety devices etc.

Guards shall be affixed to the machine where possible and secured elsewhere if for any reason attachment to the machine is not possible. The guard shall be such that it does not offer an accident hazard in itself.

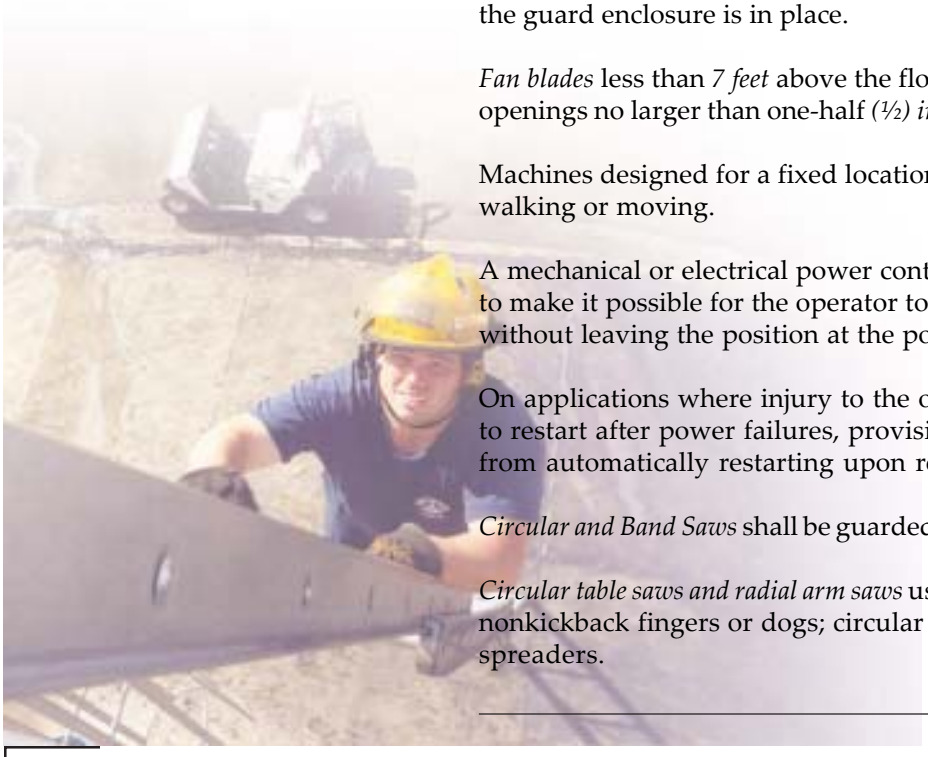
Point of Operation – (the point where the work s performed on the material, such as cutting shaping, boring or forming of stock) of a machine whose operation creates a potential for injury shall be guarded. The guard shall be so designed and constructed so the operator is prevented from having any body part in the danger zone during the operating cycle.

The operator shall not place any body part in the danger zone without the full implementation of an energy control system. Hand tools for placing and removing material in the point of operation shall not be used in lieu of guarding.

Mechanical Power Transmission – (all components of the mechanical system which transmit energy to the part of the machine performing the work, i.e. flywheels, pulleys, belts, connecting rods, couplings, chains, cranks and gears) less than *7 feet* from the floor shall be guarded.

Other Moving Parts – (all parts of the machine which move while the machine is working, ie. reciprocating, rotating, and transverse moving parts as well as feed mechanisms and auxiliary parts of the machine) less than *7 feet* from the floor shall be guarded.

Revolving barrels, containers and drums shall be guarded by an enclosure, which is interlocked with the drive mechanism so that they cannot revolve unless the guard enclosure is in place.



Fan blades less than *7 feet* above the floor level shall be provided a guard with openings no larger than one-half *(½) inch*.

Machines designed for a fixed location must be securely anchored to prevent walking or moving.

A mechanical or electrical power control must be provided on each machine to make it possible for the operator to shut off the power from each machine without leaving the position at the point of operation.

On applications where injury to the operator might result if motors were to restart after power failures, provision shall be made to prevent machines from automatically restarting upon restoration of power.

Circular and Band Saws shall be guarded.

Circular table saws and radial arm saws used for ripping shall be provided nonkickback fingers or dogs; circular table saws shall also be provided spreaders.

Hand and Portable Powered Tools

Portable circular saws must be quipped with guards above and below the base plate or shoe. The lower guard shall cover the saw to the depth of the teeth.

All hand held powered circular saws must be equipped with a constant pressure switch or control that will shut off the power when the pressure is released.

All hand-held gasoline powered chain saws shall be equipped with a constant pressure throttle control that will shut off the power to the saw chain when the pressure is released.

Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs onto a pulley.

A tool retainer shall be installed on each piece of utilization equipment which without such a retainer may eject the tool.

Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

Portable abrasive wheels shall be used on machine provided with safety guards as defined in the OSHA standards.

Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum angle of 180 degrees.

Immediately before mounting all wheels shall be closely inspected and sounded by the user (ring tested). The spindle speed of the machine shall be checked before mounting of the wheel.

> Ring Test: Wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screwdriver for light wheels, or a wooden mallet for heavier wheels. If they sound cracked (dead), they shall not be used.

Explosive actuated fastening tools shall not be used.

Radiation Sources

For use of any radiation source, contact DRS Radiation Safety at 333-2755 for specific safety direction, technical assistance, or further information.

Requires direct supervision and instruction of someone authorized to use radiation sources on a Radiation Permit.

Potential hazards and steps to be taken to address potential problems:

External Radiation Exposure – Radiation emitted by radiation sources may cause chemical changes in persons exposed. Sources with significant external exposure rates should be designed and used in a way to minimize exposure. Radiation dose can be controlled by minimizing the time one is exposed, maximizing the distance from the source, or interposing shielding between the source personnel.

Contamination and Internal Exposure – Open radioactive materials may be inhaled, ingested, or absorbed through the skin resulting in internal exposure. Contamination on facilities or equipment may also lead to internal or external exposure as well. Persons using open sources should use personal protective equipment (gloves, lab coats, eye protection) and proper containment devices (absorbent paper, secondary confinement, etc.)

Lasers – For use of high power (Class IIIB or IV) lasers, contact DRS at 333-2755 for specific safety direction.

Requires direct supervision and instruction of someone experienced in the use of lasers.

Lasers shall not be pointed at any persons.

Projects involving radiation must have warning signs posted around them.

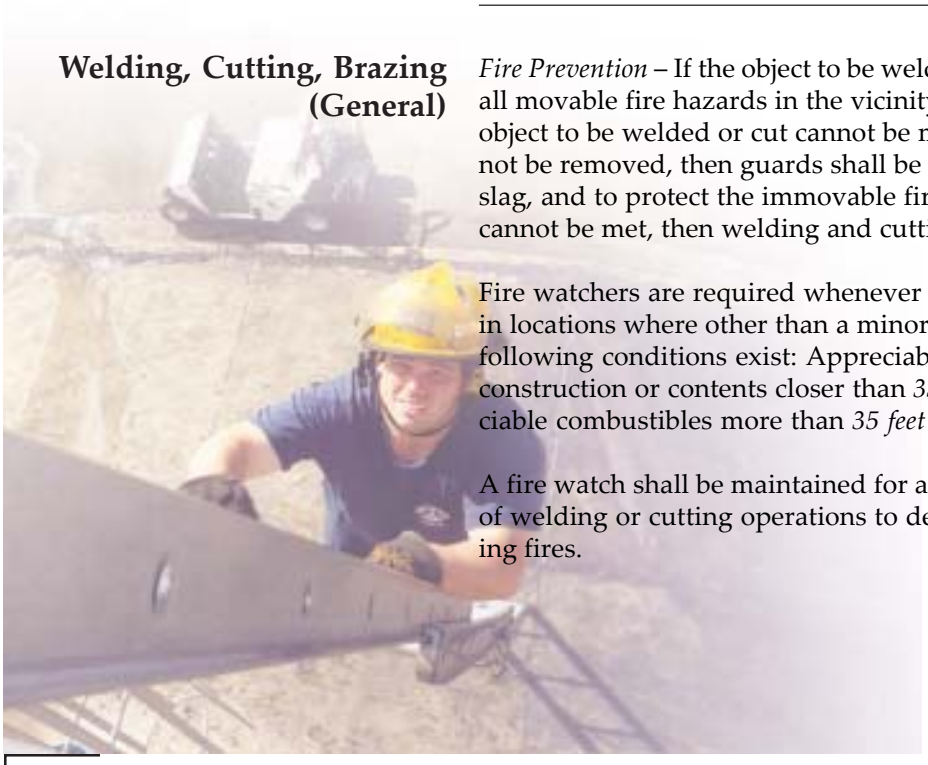
Potential hazards and steps to be taken to address potential problems:

Visual Hazards – Class IIIB and Class IV lasers may cause injury to the eye. Anyone who has access to the laser beam or reflected laser light should use proper safety goggles designed to absorb the wavelengths produced by the laser.

Skin Hazards – Class IV lasers may cause skin injury. Experiments and demonstrations should avoid exposing persons to laser light.

Chemical Hazards – Lasers may require the use hazardous chemicals for their operation (e.g., organic solvents and dyes in the laser medium). Substances exposed to lasers may undergo chemical reactions that may produce fires, explosions, or hazardous fumes. Persons using lasers should follow proper precautions for these hazards as well.

Welding, Cutting, Brazing (General)



Fire Prevention – If the object to be welded or cut cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards. If the above requirements cannot be met, then welding and cutting shall not be performed.

Fire watchers are required whenever welding or cutting is performed in locations where other than a minor fire might develop or any of the following conditions exist: Appreciable combustible material, in building construction or contents closer than *35 feet* to the point of operation; appreciable combustibles more than *35 feet* away but easily ignited by sparks.

A fire watch shall be maintained for at least a half *(½) hour* after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine be disconnected from the power source.

Protective eyewear, safety shoes, fire resistive clothing and fire resistive gauntlet gloves are recommended.

Suitable fire extinguishers shall be immediately available for instant use. See page 4 for additional information.

Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations. He shall designate precautions to be followed in granting authorization to proceed preferable in the form of a written permit.

Prohibited areas include: areas not authorized by management; sprinklered building while such protection is impaired; in the presence of explosive atmospheres, or explosive atmospheres that may develop or in area with an accumulation of combustible dusts; and in areas nor the storage of large quantities of exposed, readily ignitable materials.

No welding, cutting or other hot work shall be performed on used drums, barrels, tanks or other container until they have been cleaned thoroughly as to make absolutely certain that there are not flammable materials present.

Oxyacetylene Welding:

Blow out the cylinder valve before you connect the regulator.

Release the adjusting screw on the regulator before opening the cylinder valve.

Stand to one side of the regulator before you open the cylinder valve.

Open the cylinder valve slowly.

Do not use or compress acetylene in a free state a pressure more than 15 spig.

Purge your acetylene and oxygen passages individual before lighting the torch.

Never use oil or grease on regulators, tips, etc. in contact with oxygen.

Do not use oxygen as a substitute for air.

Keep the work area clear of anything that will burn.

Welding shields/screens may be needed to protect the general public.

Use mechanical ventilation dependent upon the materials**.**