

School of Engineering
General Safety Rules and Operational Policies for
Manufacturing & Prototyping Areas
(Rev. 1/8/08)

Emergencies

1. Report all emergencies to your instructor or RPI staff member. If an injury needs prompt medical attention, call **Public Safety at extension 6611**.
2. Do not attempt to move an injured person.
3. First-aid kits are available throughout the shop areas for minor injuries
4. Do not attempt to clean up any bodily fluids under any circumstances.
5. In case of fire or hazardous chemical spill evacuate the premises immediately.

General Operational Policies

1. Only current RPI faculty, staff, and students who have been properly trained and authorized are allowed to directly operate equipment (machine tools, welding equipment, robots, assembly systems, and electronic equipment) or any other type of power equipment in the manufacturing and prototyping areas within the School of Engineering.
2. Students are not permitted to work alone in the shop areas without the supervision of an instructor, staff member, or teaching assistant (TA).
3. Use the buddy system and watch out for other people. If you are aware of an unsafe situation, please report it to your instructor or staff member.
4. Do not tamper with projects, experiments, machine set-ups, or prototypes that are not under your jurisdiction.
5. Use of tobacco products, alcohol, and illegal substances is prohibited in the shop area. **DO NOT OPERATE ANY MACHINES** if your abilities are impaired for any reason (examples: personal illness, lack of sleep, drugs or alcohol).
6. Everyone is responsible for housekeeping and cleaning up after themselves. Project work is to be done in the designated workbench areas only and properly stored for safe keeping after use. Aisles, doorways, and stairways are to be kept clear for purposes of safe passage.
7. Do not run in the shop area or distract the work of others with unnecessary yelling, loud music, etc.
8. Report any cases of vandalism or theft to your instructor, staff member, or TA.
9. Students should not perform any type of maintenance on equipment in the shop areas.
10. Eating is only allowed in designated areas.

General Safety

1. Safety glasses with side shields are mandatory in all areas at all times. A limited number of visitor glasses are available in the shops. Please return the glasses when you are leaving the shops. You can purchase glasses at the campus bookstore or on line at www.msccindustrial.com. Persons not wearing safety glasses will be asked to leave.
2. Wear appropriate clothing for the task you are working on (example long pants or proper personal protective gear). Ask an instructor, or staff member if you are not sure if you are dressed correctly for the task at hand.
3. Loose clothing, neckties, long hair, personal stereo wires, and jewelry can become entangled in rotating equipment leading to serious injury or death! Make certain that such articles are removed or securely fastened to avoid entanglement.
4. Machine and fabrication shops are noted for the hazard of dropped objects; because of this, work boots are the preferred footwear. Persons wearing open toe shoes, open-back, ripped sneakers, or high-heeled shoes will be asked to leave the area.
5. Use appropriate safety equipment (i.e., gloves, ear protection, aprons) while working in the area. See your instructor or a staff member for guidance.
6. Report all spilled fluids immediately (since they are an extreme slip hazard).
7. Personal music systems (MP3 players etc.) are not allowed when operating manufacturing equipment and power hand tools.
8. Do not use open flames in the area (e.g. Soldering or brazing torches).

Mechanical Systems, Machinery, and Power Tools

1. Do not use machinery and or power hand tools without the proper training. If you do not know how to operate a power tool or machine, or do not fully understand the instructions you have been given, ask an instructor or staff member for help.
2. Do not use gloves while operating machinery, since they can become entangled in rotating tools.
3. Do not touch any rotating component of a machine until it is completely stopped.
4. Use care when handling tools. Cutting tools are very sharp! Wrap tools in a rag when removing or installing cutting tools.
5. Do not distract people operating machines; which includes speaking to them. Do not allow yourself to be distracted. If you must talk, bring machinery to a complete stop first. If you are asked to stop the operation of a machine, then do so immediately! Do not leave machines running while unattended.
6. Personal power and hand tools may be used only with the permission and supervision of your instructor or staff member.
7. Many hazards exist in a machine shop. Before you move a heavy object, swing a hammer, or engage any machine power, think about the consequences of your actions. How and where are you going to put the heavy object down? Are your fingers going to get caught? Are somebody else's fingers going to get hurt? When the power comes on, will tools fly? Will cutting tools run into things they aren't supposed to hit? PLEASE THINK BEFORE YOU ACT!
8. Fabrication and modification of pressure vessels by student, staff, or faculty is not allowed.

Electrical

1. Working with line voltage or voltages greater than 24 must be done under the direct supervision of an instructor or staff member.
2. Do not work on electronic circuit when power is on, unless it is absolutely necessary and under the supervision of an instructor or supervisor.
3. All instruments and extension cords must be grounded.
4. Use the one handed rule in working on active circuits. A small amount of electric current as small as 100 milliamps can cause death.
5. Electrolytic caps and other large capacitors can hold voltages for several hours. Be sure they are discharged with an insulated clip lead before working on the circuit. Certain components such as power resistor and semi-conductors get very hot. Give them a chance to cool.
6. When soldering, wear safety glasses and do not flick the soldering iron to remove excess solder. You may burn your colleague.
7. Only Commercially available sealed lead acid batteries are allowed in the work area.
8. All extension cords should be visually inspected for damages prior to use. Any cords suspected of having a defect should be turned into faculty or staff.

Chemical

1. Do not drain dispose any chemical without first consulting an instructor or staff person.
2. All painting is to be done in the paint booth (with the ventilation system turned on) regardless of application method. The paint booth is located in the MDL Fabrication and Prototyping Area, JEC 2220.
3. All chemical containers must be labeled as to their contents
4. Material Safety Data Sheets (MSDS) are available on line at www.msds.rpi.edu .
5. Oil soaked rags or rags with any type of solvent are to be disposed of in proper containers. Do not dispose of these items in regular trash containers.
6. Hazardous or regulated materials such as batteries, computer components, and chemical reagents must be disposed of in accordance with Rensselaer's Hazardous Materials Disposal Program. An online version of the Hazardous Materials Disposal Program is located at <http://www.rpi.edu/dept/hr/ehas/safety/hazwaste.html>.

Laser Safety

1. Do not attempt to modify or disassemble the laser system at any time.
2. Wear appropriate safety goggles especially when engraving with mirrors or coated metals such as enameled brass and anodized aluminum.
3. Invisible intensive laser radiation may cause physical burns or severe eye damage.
4. Always read the manual and caution labels carefully before operation.

5. Do not work with materials that may produce toxic substances such as PVC and Teflon. If material is questionable DO NOT cut it.

In reviewing this sheet and signing the class safety sheet list, I acknowledge that I have carefully read and fully understand the general safety rules and operational policies of the School of Engineering's Manufacturing & Prototyping Areas, and I will comply with them. I also realize that other, undefined hazards will exist in the fabrication & prototyping areas and therefore, my safety, and that of others, is ultimately my own responsibility. Please contact Sam Chiappone, Manager of Fabrication & Prototyping, if you have any questions relative to this information.

NOTE: Persons violating safety rules or operational policies are subject to appropriate disciplinary action and/or immediate dismissal from the area.