

University of Rochester Fire Prevention Plan

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Fire Prevention Plan

[OSHA 1910.39, .157 thru .165 and NYS Fire Code 404.2.2]

Section 1: Purpose

The purpose of the University of Rochester Fire Prevention Plan is to establish the procedures for University personnel to protect life and minimize the risk of injury and property damage from fire.

Section 2: Major Fire Hazards in the Workplace [F404.2.2(5)]

It is the responsibility of all employees to prevent any type of fire in the building.

Smoking is prohibited in all buildings. The University campuses are smoke free campuses. There are designated smoking shelters on our campuses. Extinguish all cigarettes in their proper place.

Make sure all hand held torches are extinguished when not in use.

Make sure all lasers and cauterizers are turn off when not in use.

Do not put any type of hot object in trashcans or discard smoking materials in mulch; i.e. cigarette, cigar butts, matches.

1. Listing of some workplace fire hazards

1. Building Material

- a. Although most of the buildings contain large amounts of concrete and steel, many buildings contain finish materials that are wood or combustible products. Doors, flooring, paneling, trim and moldings, and similar building materials are predominantly wood. Furniture, bookcases, cabinets, shelves, and similar fixtures may also contain significant amounts of wood.
- b. The use of curtains, drapes and other decorative materials are regulated by the New York State Fire Code and the Life Safety Code. Use of such decorations should not be excessive or be comprised of materials considered extremely combustible by their size, type or arrangement. Refer to the University Flammability Guidelines for Furnishing at <http://www.safety.rochester.edu/fire/pdf/flammabilityguideline.pdf>
- c. The materials used in furniture upholstery and mattresses can be extremely combustible. Various standards have evolved to reduce the potential fire hazards in our buildings. Refer to the University Flammability Guidelines for Furnishing at <http://www.safety.rochester.edu/fire/pdf/flammabilityguideline.pdf> prior to purchasing any upholstered furniture or mattresses. The predominant hazard from this use is the toxic gases and smoke produced from smoldering fires.

- d. Standards for flammability of carpeting materials used on floors and walls of buildings are designed to reduce the generation of smoke, heat, flames and toxic gases. Refer to the New York State Fire Code for restriction on purchasing new carpeting.
2. Flammable and Combustible Substances
- a. Flammable liquids and combustible liquids are classified using a system that considers flash point, vapor pressure, boiling point, and anticipated ambient temperature conditions. The major groups are: Class I flammable liquids, flash point <math><100\text{ }^\circ\text{F}</math>; Class II combustible liquids, flash point greater than or equal to - 1. Kitchen Cooking Grease
 - 2. Certain Chemicals
 - 3. Paint and Paint Solvents
 - 4. Alcohol Based Hand Sanitizers
 - 5. Hydraulic Oil
 - 6. Grease
 - 7. Gasoline
- b. Flammable and combustible gases have both a fire hazards and a rupture hazard. Under fire conditions the container pressure may increase and rupture a container.
 - 1. Propane Tanks for Fork Trucks
 - 2. Oxygen and Acetylene Tanks
 - 3. Hydrogen Tanks and Generators for Experiments
- c. Water reactive materials are materials which explode, violently react, produce flammable or toxic gases, or evolve enough heat to cause self-ignition or ignition of nearby flammables or combustibles upon exposure to water or moisture. Water reactive materials include sodium metal, calcium carbide and concentrated sulfuric acid or oleum.
- d. Aerosol sprays such as disinfectants, WD-40, spray paint, etc. usually contain flammable propellants.
- e. Oxidizers promote burning of other flammable and combustible materials. Oxidizers may promote burning sufficiently as to cause explosions or fires without the introduction of ignition sources. Some oxidizers are:
 - 1. Ammonium nitrate fertilizers
 - 2. Oxygen
 - 3. Nitric acid
 - 4. Chromic acid
 - 5. Perchloric acid.
- f. Pyrophoric materials spontaneously ignite in air below

3. Wood Working Operations

 - a. The physical form of wood or wood products directly relates to the severity of the fire hazard of the material. For example, sawdust or wood shavings would be more susceptible to fire spread than a solid block of wood.

Section 3: Proper Handling and Storage for Hazardous Material

1. Per the NYS Fire Code, all facilities that may involve the use of flammable or combustible liquids are allowed to store only a specified amount of a given material based upon the size, location and type of building use involved. The purpose of these limitations is to reduce the development of excess quantities that if involved in a fire or explosion could contribute to the loss of life and property.
 1. All flammable and combustible liquids must be stored in proper containers.
 2. Use or transfer of flammable or combustible liquids is the time when the liberation of vapors is the greatest, increasing the risk of fire. No dispensing should occur unless it has been determined that all sources of ignition are eliminated and adequate ventilation is present. Gravity dispensing of flammable liquids is not permitted.
 3. Flammable and combustible gas cylinders must be secured at TWO points; at 1/3 and 2/3 the cylinder height. Cylinders should be stored in the upright position with the valve protection caps in place when not in use. Gas cylinders can also be nested where the cylinder has contiguous three points of contact with other cylinders, walls or bracing. Cylinders that contain fuel gases (i.e., hydrogen, acetylene or propane) whether full or empty, must be stored away from oxidizer cylinders (i.e., oxygen, fluorine, nitrogen oxide or nitrogen dioxide) at a minimum of 20 feet. If the cylinders are stored inside, the area must be fully sprinklered or they must be stored in a 1 hour rated room or cabinet. Flammable compressed gas cylinders stored inside of buildings must be stored at least 20 feet from flammable and combustible liquids and easily ignited materials such as wood, paper, oil, and grease.
 4. Water reactive material must be stored separately from flammables, and where possible, in unbreakable containers. When stored in breakable containers the materials must have secondary containment in water-tight, unbreakable containers.
 5. Most aerosol sprays (disinfectants, WD-40, spray paint, etc.) now contain flammable propellants. These sprays should be used only in well ventilated areas and stored where they will not be exposed to temperatures greater than 120°F. Before using, the area should be checked to assure that there are no ignition sources present.
 6. Oxidizers should be stored in proper containers, avoiding locations under sinks, hoods or cabinets where plumbing, conduit or piping may become corroded. These materials must be stored separately from flammable materials.
 7. Pyrophorics should be stored in locations away from traffic areas or other places where they may be knocked over or be subject to container breakage. Secondary containment is recommended.
 8. All hoses, connections, manifolds, regulators, etc. should be checked initially and at regular intervals to assure that no leaks are present. Only equipment designed for use with the particular gas and for the particular application should be used.
 9. Contact Environmental Health & Safety (EH&S) for an evaluation prior to increasing the quantity of flammable and combustible liquids or aerosols normally used. (275-3241)

Section 4: Potential Ignition Sources and Control

1. Welding Operations
Welding operations are required to have a hot work permit from EH&S except those shop areas approved by EH&S.

- a. Control measure
 1. Hot work permit required from EH&S.
 2. A fire extinguisher must be immediately available.
 3. Ensure no combustibles are within 35' of operation.
2. Metal Grinding, and Cutting

Potential fire hazards arise when sparks, arcs and hot metal from metal grinding and cutting operations occur.

 - a. Control measures
 1. Use guards and exhaust systems on grinding and cutting equipment.
 2. Use a permit system except those in shop areas approved by EH&S.
 3. Ensure the area is clear of combustibles before beginning work.
3. Cooking

Cooking activities are a leading cause of fires and fire alarms in residential housing.

 - a. Control measure
 1. **Never leave cooking activities unattended.**
 2. Turn exhaust fan on and/or open windows when cooking.
 3. Commercial cooking equipment is inspected and has an operational fixed extinguishing system.
 4. Keep combustibles away from the stove or cooking appliances.
 5. Keep cooking areas clean and free of grease and oil splatter.
 6. Make sure the fire extinguisher in the area is appropriate for kitchen fires. Never use a water fire extinguisher on a grease fire.
4. Electrical

Most electrical fires start in wiring and motors.

 - a. Control measures
 1. Ensure the electrical load does not exceed the circuit capacity.
 2. Do not use extension cords as permanent wiring.
 3. Ensure proper maintenance of cords, plugs, outlets and switches.
 4. Give special attention to equipment in hazardous locations.
 5. Do not "daisy chain" surge protectors.
5. Smoking

Smoking is a leading cause of fires in the United States.

 - a. Control measures
 1. Smoking is strictly prohibited in University buildings and vehicles.
 2. Smoking is prohibited outdoors except in designated areas.
6. Chemical Reaction

Fires may be caused when chemical processes get out of control, chemicals react with other materials, or unstable chemicals decompose.

 - a. Control measures
 1. In accordance with the Chemical Hygiene Plan, never increase the scale of an experiment without proper authorization.
 2. Carefully supervise and ensure personnel understand safe procedures.
 3. Ensure instrumentation and controls for the chemicals involved are used.
 4. Properly store and ensure adequate separation of incompatible materials.

5. For demonstrations, make sure shields (based on demonstration risk: i.e., blast or splash) are in place and written protocols are used.

7. Hot Surfaces

Examples of hot surfaces include heat from boilers, electrical cauterize devices, furnaces, steam lines, hot ducts and pipes, electric lamps, hot plates, and space heaters, all of which have the potential to ignite flammable and combustible material.

a. Control measures

1. Design and maintain ample clearances.
2. Space heaters are prohibited in laboratories and patient care areas or student rooms.
3. Insulate hot surfaces.
4. Allow air circulation between hot surfaces and combustibles.
5. Remove batteries from battery operated cauterize devices before disposal.
6. Always store cauterizing devices in holsters.

8. Burner Flames

Burner flames could provide an ignition source for flammable and combustible materials. Examples include sternos, portable torches, water heaters, dryers, ovens, furnaces, portable heating units and Bunsen burner flames.

a. Control measures

1. Use tools and equipment with burner flames only for tasks which the tools or equipment is designed and operate in accordance with manufacturer's instructions.
2. Carefully supervise and ensure personnel understand safe procedures.
3. Ensure regular maintenance and adequate ventilation.
4. Keep open flames away from flammable and combustible material.
5. Boilers are tested and inspected by insurance carrier.

9. Molten Substances

Fires may be caused by molten metal escaping from kiln operations or spilled during handling.

a. Control measures

1. Use equipment only for tasks for which the equipment is designed and operate in accordance with manufacturer's instructions.
2. Carefully supervise and ensure personnel understand safe procedures
3. Ensure regular maintenance.

10. Friction

Friction may produce large amounts of heat from hot bearings, misaligned or broken machine parts, choking or jamming of material, and poor adjustment of power drives and conveyors.

1. Control measures

1. Ensure regularly scheduled inspections, maintenance and lubrication.
2. Ensure prompt correction of problems noted during inspections or use.

11. Static Sparks

Static sparks may ignite flammable vapors, dusts and fibers by a discharge of accumulated static electricity on equipment, materials, or on the human body.

- a. Control measures
 1. Insure proper grounding and bonding.
 2. For extreme static hazards, ionization or humidification may be used.
 3. Ensure flammable preps dry before tenting patients.

12. Overheated Materials

Abnormal process temperatures, especially resulting from heating flammable liquids or combustible materials in ovens, autoclaves, heated baths and reaction vessels, have the potential to cause fires.

- a. Control measures
 1. In accordance with the Chemical Hygiene Plan, special safeguards should be developed for unattended heating operations.
 2. Carefully supervise and ensure operators understand safe procedures.
 3. Temperature controls should be checked regularly and well maintained.

13. Spontaneous Ignition

Oily waste and rubbish, deposits in dryers, ducts and flues, and some wastes may ignite spontaneously.

- a. Control measures
 1. Insure good housekeeping and proper process operation.
 2. Store oily rags in approved containers only with self-closing lids.
 3. Remove waste daily, frequently clean ducts, flues and isolated storages subject to spontaneous heating.

14. Fireplaces

Fireplaces can cause fires if not properly used and maintained.

- a. Control measures
 1. Annual inspections of chimneys
 2. Glass front or screens over opening
 3. Spark arresters over chimney

Section 5 Control of Workplace Hazards [F404.2.2(7)]

1. All flammable materials will be stored in control areas or designated hazard areas.
2. Hazardous wastes are picked up upon request by the Hazardous Waste Unit in accordance with federal, state and local waste regulations. (275-2056)
3. Good housekeeping will be the responsibility of ALL employees, and students. Storage or miscellaneous items in egress corridors/aisles is the leading problem at the University.
 1. Waste materials are to be discarded in their proper places.
 2. All aisles and exits will be kept clear.
 3. All fire extinguishers will be kept clear for access.
 4. All students and employees will know evacuation routes and exits to proceed to when an emergency situation develops.
 5. All students and employees should know Public Safety's emergency phone number (x-13 from a University phone or #413 [Verizon or AT&T] for cell phones)
 6. Each supervisor will be responsible for his or her employees to understand this or their departmental fire plan.

Section 6: Fire Protection Equipment Necessary to Control Fire Hazards

Fire alarms and detection

All major buildings on the campus are provided with a fire alarm system designed to alert the building occupants of emergency conditions that includes manual fire alarm pull stations located near all major exits. Selected areas on campus have automatic fire detection systems (i.e., smoke detectors, heat detectors, beam detectors) that are intended to provide early warning of smoke or fire conditions. Upon sensing smoke or heat conditions or the activation of a manual pull station by building occupants, the alarm systems will sound voice evacuation or horns and/or horn/strobe devices. Upon hearing or seeing any of these devices all flight building occupants should evacuate the building from the nearest exit and report to their designated assembly area (See your evacuation plan for your assembly area). At the assembly area, details of the incident and the "all-clear" notice will be provided to evacuees by Public Safety or firefighting personnel.

Fight buildings are those where evacuation is not feasible or where, without immediate intervention a fire could rapidly expand. Therefore, some staff is expected to be trained on the proper operation of fire extinguishers and would use a fire extinguisher on a fire.

In many buildings the alarm systems may only sound for 5 to 10 minutes and then the audible alarm may stop but the strobe lights will continue to flash. This does not mean you should remain in the building, nor does it mean the problem is resolved. Re-entry is only permitted once approved by Public Safety, or the fire department.

Automatic sprinkler systems

Recently constructed buildings and portions of existing buildings are provided with automatic fire sprinkler systems, in addition to alarm systems. A fire sprinkler system is designed to automatically apply water to a fire within a space/area. The sprinkler heads respond to heat in immediate proximity of the ceiling above a fire. Only the sprinkler heads over the fire will open and spray water to extinguish or reduce the spread of the fire. Some causes for fire sprinkler systems not controlling fires: the control valve was closed; the use of the room or space has changed resulting in an increase in the relative fire hazards within the space.

Specialized Fire Suppression Systems

Special hazard areas are protected with fixed fire suppression systems that are inspected semi-annually or annually depending on the system. Typical hazards with fire suppression systems are cooking equipment in kitchens, gas island dispensers, critical telecom rooms, and large chemical storage areas.

Standpipes/Fire Hose Stations

Many of the buildings on our Campus are provided with fire hose stations for fire department use only. They are generally located near or in the exit stairways on each floor of buildings where they are provided. Some buildings also have piping systems used to replace extensive hose lays by the fire department out in the corridor area. The fire department connects their hose to these piping systems to expedite suppression of a fire, and thereby avoiding the need for excessive hose lines throughout a building. They are connected to the buildings fire water supply and typically consist of a valve with 2-1/2" outlet for the fire department to connect their hose to. It is important to not block these cabinets or valves with equipment, storage or other obstructions.

Fire Extinguishers

Classification of Fires

Class A Fires- Ordinary combustible materials such as wood, cloth, paper, rubber and plastics

Class B Fires- Flammable liquids and combustible liquids

Class C Fires- Energized electrical equipment

Class D Fires- Combustible metals (magnesium, titanium)

Class K Fires- Combustible cooking media (vegetable or animal oils and fats)

Extinguisher Use (P.A.S.S.)

1. Fire extinguishers are for controlling small fires before they have a chance to spread.
2. Before using a fire extinguisher be sure that you have a clear escape route, are familiar with the operation of a fire extinguisher and the fire extinguisher you have is suitable for the fire you are dealing with.
3. The extinguisher classification is indicated on the front label of the extinguisher.
4. If you pick up an extinguisher and the seal that holds the pin in place is missing, the gauge is reading empty, or the extinguisher appears to be damaged, corroded or rusted, do not use it. Unless there is another extinguisher right there, immediately leave the area/building.
5. Once you have determined the extinguisher is the correct type for the hazard, proceed to operate the extinguisher using the **P.A.S.S.** technique to control and extinguish the fire.
6. **P** – Pull the pin.
A – Aim at the base of the fire.
S – Squeeze the levers together.
S – Sweep back and forth until all contents of the extinguisher are expelled.
7. Once you have expelled the contents of your extinguisher, immediately exit the area/building. **Do not use more than one fire extinguisher on a fire.**
8. Wait for Public Safety and the fire department to show up.

The most prevalent and common fire protection devices found throughout the campus are portable fire extinguishers. Only those individuals who have received annual training within the last year should attempt to use a portable extinguisher to put out a fire. All buildings are provided with sufficient portable fire extinguishers so that the travel distance from any room or space to the nearest extinguisher does not exceed 75 feet or the code required minimum travel distance requirements. One should be aware of the location of the nearest two fire extinguishers within their work space. Extinguishers should be visually checked monthly to assure that it has not been tampered with and is

readily available for use. If you wish to have fire extinguisher training, please contact Environmental Health & Safety at 275-3241.

Maintenance of Systems and Equipment to Prevent or Control Fires [F404.2.2(6)]

The University's Environmental Health & Safety Fire Safety Unit oversees the maintenance of fire protection systems and equipment. Facilities is mainly responsible for maintaining fire detection and suppression systems and passive fire systems and they are supplemented by outside vendors based on the complexity of the equipment or system. The Fire Safety Unit in Environment Health and Safety is responsible for inspecting and testing fire detection and suppression systems and can be supplemented by the appropriate vendor based on the complexity of the system. For example, fixed kitchen suppression systems or gaseous suppression system are inspected, tested and maintained by a fire suppression system contractor. A fire extinguisher vendor would perform fire extinguisher hydrostatic testing or maintenance.

Section 7 Preferred means of reporting emergencies.

Any condition involving a fire alarm or an investigation of a report of a fire. If you are in an area where there is a fire alarm activated:

R - Relocate or rescue anyone in immediate danger.

A - Activate fire alarm. If time allows, call Public Safety (X13) from a safe location and report additional information.

C - Confine the fire by closing all doors in the area and clear corridors.

E - Extinguish (P.A.S.S.) if fire is small and if user is trained, otherwise prepare for evacuation.

Notification

1. Activate fire alarm system.
2. CALL PUBLIC SAFETY (X13) giving location and nature

Employees in the Medical Center, River Campus, mid-Campus, South Campus, Memorial Art Gallery, Strong West and Eastman Campus shall call University Public Safety to report emergencies. All other locations shall call 911 to report their emergencies.

Section 8 Training

Any employee exposed to major fire hazards, or using hazardous materials or potential ignition sources will be trained by their department of their specific risk to these hazards upon initial assessment or with new hazards are introduced into their work area. Employees who perform hot work activities is required to attend EH&S hot work training before performing any hot work activity. Nothing in this plan shall be construed in a manner that limits the use of good judgment and common sense in matters not foreseen or covered by the elements of the plan. This plan sets forth the operational fundamentals that will be used to minimize the risk of unwanted fires.

Section 9 Contact Information

For further information regarding this plan or emergency procedures, please contact the University Fire Marshal at (585) 275-3241.