FCC HW PG Hot Work Program

University Fire Marshal’s Office

6/12/2018

Subject Matter Experts
Office of University Fire Marshal
## CONTENTS

1.0 INTRODUCTION .......................................................................................................................... 2  
2.0 OBJECTIVES AND METRICS ..................................................................................................... 2  
3.0 SCOPE ............................................................................................................................................ 2  
4.0 ROLES AND RESPONSIBILITIES .............................................................................................. 3  
5.0 PROCEDURES............................................................................................................................... 6  
6.0 EQUIPMENT ................................................................................................................................. 8  
7.0 TRAINING ................................................................................................................................... 10  
8.0 RECORDS AND DOCUMENT CONTROL ............................................................................... 11  
9.0 DEFINITIONS .............................................................................................................................. 11  
10.0 DOCUMENT HISTORY ............................................................................................................. 13
1.0 INTRODUCTION

1.1 The Occupational Safety and Health Administration and the International Fire Code (IFC) require facilities to develop procedures to protect both human health and the facility itself from the hazards posed by hot work in the workplace. This program is intended to provide the Cornell University community with the guidance necessary to comply with these regulations.

1.2 This written program will require the issuance of a Hot Work Permit.

2.0 OBJECTIVES AND METRICS

2.1 This program will ensure compliance with applicable federal, state, and local regulations, including:

- 29 CFR 1910 Subpart Q — Welding, Cutting, and Brazing (especially 1910.252 (a))
- 29 CFR 1926.352 — Welding and Cutting Fire Prevention
- NFPA 51B Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
- IFC Chapter 35
- City of Ithaca Fire Department section 181-9(23)(a)
- Factory Mutual Global

2.2 The Hot Work program is intended to:

- Preserve the safety of the worker performing the hot work
- Ensure safety to all building occupants during hot work operations
- Prevent accidental activation of the building fire detection system
- Limit losses from accidental ignition of property

3.0 SCOPE

3.1 This program has been developed for Cornell University personnel, students, contractors (as specified in Section 5.5) and campus facilities. Includes Remote Facilities (except those at Weill Medical College).

3.2 This program shall be used and consulted when there is hot work; includes but not limited to any work that involves operations including cutting, welding, Thermite welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar activity. (IFC Chapter 35)

3.3 Operations not covered in this Hot Work Program

3.3.1 The following operations do not require a Hot Work Permit.

- Fixed Grinding Wheels
- Electric Soldering Irons
- Heat Guns
- Matches / Lighters
- Process Equipment (e.g. furnaces, ovens, hot water tanks, boilers, etc.)
- Lab related activities including:
  - Bunsen Burners
  - Hot Plates
  - Propane/Butane Torches (equal to or less than 15oz)
3.3.2 Other University Covered Policies
   a. Candle and Open Flame Devices
   b. Open Burning and Outdoor Fires

3.3.3 While these activities are not covered in this program, every effort should be made to maintain safe distances between combustible materials and flame producing devices.

4.0 ROLES AND RESPONSIBILITIES

4.1 Environmental, Health and Safety (EHS)
   4.1.1 Establish the Hot Work Program and safe hot work procedures.
   4.1.2 Apply for City of Ithaca Hot Work Permit for Cornell University City Buildings annually.
   4.1.3 Apply for Contract College Facilities Annual Hot Work Permit
   4.1.4 Issue Designated Area Hot Work Permits annually to those areas approved as such.
   4.1.5 Maintain list of Designated Hot Work Areas (HS8_HW_REC_001_DesignatedAreas).
   4.1.6 Review hazards and incidents associated with Hot Work.
   4.1.7 Develop Training Programs.
   4.1.8 Work with Departments/Building Coordinators to ensure that local exhaust or general ventilating systems are provided and arranged to keep the amount of toxic fumes, gases, or dusts below the maximum allowable concentration as specified in Table Z-1 Limits for Air Contaminants and/or the ACGIH Guide to Occupational Exposure Values.

4.2 Department/Building Coordinator Responsibilities
   4.2.1 Recognize its responsibility for the safe use of Hot Work equipment in their area.
   4.2.2 Implement the program in their areas of responsibility.
   4.2.3 Establish areas where cutting/welding/brazing may be performed safely (see Designated Areas), if applicable.
   4.2.4 For Designated Areas, work with EHS to ensure that local exhaust or general ventilating systems are provided and arranged to keep the amount of toxic fumes, gases, or dusts below maximum allowable concentrations.
   4.2.5 Advise all contractors about flammable materials and/or hazardous conditions of which they may not be aware.
   4.2.6 Ensure that EHS Hot Work Training and Departmental training is completed for all required personnel.

4.3 Supervisors
   4.3.1 Ensure that all employees and contractors are following hot work procedures.
   4.3.2 Ensure that Hot Work executed in areas under their supervision is in conformance with these procedures.
   4.3.3 Ensure employees/personnel involved in performing cutting/welding/brazing activities are adequately trained.
   4.3.4 Shall complete Hot Work Training.
   4.3.5 Provide appropriate PPE.
   4.3.6 Ensure FM Global Permits are made available. Contact either Kate VanLoke (kev33@cornell.edu) in EHS or request permits from FM Global directly from Linda Beaton. Phone (781) 440-8233 or at Linda Beaton@fmglobal.com.
   4.3.7 Maintain completed FM Global Hot Work Permits for a period of 1 Year.
4.3.8 The Supervisor is responsible for designating the following, if applicable;

a. **Hot Work Operator:** Someone who is qualified and authorized to perform hot work.

b. **Fire Watch:** An employee who is trained in hot work safety and monitors the hot work area for changing conditions and watches for fires and extinguishes fire if possible. The fire watch is someone other than Hot Work Operator.

c. **Responsible Person:** The Responsible Person is someone who ensures compliance with the terms and conditions of the Annual *Designated Area* Hot Work Permit issued by EHS.

### 4.4 Hot Work Operators

4.4.1 Responsible for the safe operation of hot work activities.

4.4.2 Perform hot work activities only where conditions are safe to do so.

4.4.3 Shall complete Hot Work Training.

4.4.4 Inspect all welding equipment prior to use. All equipment shall be in proper working order and the Operator shall handle the equipment safely.

4.4.5 Complete the FM Global Hot Work Permit if outside a Designated Area.

4.4.6 Inspect hot work sites prior to the start of hot work operations.

4.4.7 Ensures combustibles are protected from ignition by the following means:

   a. Move the work to a location free from combustibles.
   
   b. If work cannot be moved, all combustibles shall be relocated at least 35 ft in all directions from the work site.
   
   c. If relocation is impractical, combustibles shall be protected by a listed or approved welding curtain, welding blanket, welding pad, or equivalent (ANSI/FM 4950).
   
   d. As sparks can travel long distances, there should be no gaps in the barriers or blankets. Welding screens should extend all the way to the floor to prevent sparks from leaving the work area and welding blankets should completely cover combustibles and leave no gaps.
   
   e. If hot work is done near walls, partitions, ceilings or roofs of combustible construction, they shall be protected by a listed or approved welding curtain, welding blanket, welding pad, or equivalent (ANSI/FM 4950).
   
   f. Ensure hot work is scheduled such that operations that could expose flammables or combustibles to ignition do not occur during hot work operations.
   
   g. If any of these conditions cannot be met, then hot work must not be performed, or a fire watch is required.

4.4.8 When fire watch is required, the Hot Work Operator will inform their supervisor and request a Fire Watch (see Fire Watch for conditions that warrant a Fire Watch).

4.4.9 Wear appropriate personal protective equipment, such as face shield, leather welder's vest, and gauntlet gloves. Use cotton or denim clothing.

4.4.10 Determine that fire protection and extinguishing equipment are properly located and readily available.

4.4.11 Operator should take measures to protect air quality for her/himself and workers nearby by adjusting local exhaust, general ventilating system, or wearing appropriate PPE.

4.4.12 Stop all work if unsafe conditions develop.
4.5 Fire Watch

4.5.1 A fire watch is required whenever protective measures are necessary for the following conditions:

a. Combustible materials are closer than 35ft to the point of operation and unprotected.
b. Combustible materials are more than 35ft away from the point of operation but are easily ignited by sparks.
c. Wall or floor openings within a 35ft radius expose combustible materials in adjacent areas, including concealed spaces in walls or floors.
d. Combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited.

4.5.2 The fire watch is an individual, other than the hot work operator, posted in specific circumstances, as described above. The function of the fire watch is to observe the hot work and monitor conditions to ensure that a fire or explosion does not occur as a result of the work performed. The fire watch is authorized to stop any unsafe operation or activity.

4.5.3 Specific duties and responsibilities include:

a. Watch for fires, smoldering material or other signs of combustion.
b. Be trained to understand the inherent hazards of the work site and hot work.
c. Ensure that safe conditions are maintained during hot work operations and stop the hot work operations if unsafe conditions develop.
d. Have fire-extinguishing equipment readily available and be trained in its use.
e. Extinguish fires when the fires are obviously within the capacity of the equipment available. If the fire is beyond the capacity of the equipment, sound the alarm immediately.
f. Be familiar with the facilities and procedures for sounding an alarm in the event of a fire.
g. A fire watch shall be maintained for at least 1 hour after completion of hot work operations in order to detect and extinguish smoldering fires.
h. More than one fire watch shall be required if combustible materials that could be ignited by the hot work operation cannot be directly observed by a single fire watch (e.g. in adjacent rooms where hot work is done on a common wall).

4.6 Designated Area Responsible Person

4.6.1 A Responsible Person, or their designee, for the Designated Hot Work Area must conduct the Pre-Hot Work Check prior to the start of Hot Work in a Designated Area to ensure that all equipment is safe and hazards are recognized and protected.

4.6.2 The Pre-Hot Work Check must be conducted at least once per day that Hot Work is done.

4.6.3 The check reports must be kept at the work site during the work, made available for inspection, and maintained on premises for a minimum of 48 hours after work is complete.

4.6.4 The Responsible Person is responsible for maintaining the Pre-Hot Work Check Form (HS8F_003) at the work site during the work and making it available for inspection.
5.0 PROCEDURES

5.1 The University Hot Work Procedures are divided into three categories; Designated (Fixed) Area Procedures, Controlled (Temporary) Area Procedures, Contractor Procedures.

5.2 Hot work shall be allowed only in areas that are or have been made fire safe. Hot work shall be performed in either designated areas or controlled areas.

5.3 Designated (Fixed) Area Procedure

5.3.1 A Designated Hot Work Area is a permanent location designed or approved for hot work operations to be performed regularly.

5.3.2 For a space to be classified as a designated hot work area, it must meet the following requirements:
   a. It must be of noncombustible fire-resistive construction, essentially free of combustible and flammable contents
   b. It must be suitably segregated from adjacent areas
   c. It must be equipped with an appropriate fire extinguisher
   d. It must be inspected and approved by EHS.

5.3.3 These areas do not require the issuance of an FM Global Hot Work Permit prior to completing hot work.

5.3.4 EHS will issue Designated Areas an Annual Designated Area Hot Work Permit (HS8F_001), confirming it has been inspected and approved as such. Remote facilities are included.

5.3.5 Pre-Hot Work Check. Prior to performing Hot Work in a Designated Area, a Responsible Person must perform a Pre-Hot Work Safety Check. This includes checking for unnecessary combustible materials, locating nearest fire extinguisher, ensuring curtains and tarps are in place, and ventilation is being used.

5.3.6 Campus Designated Areas Are listed in HS8_HW_REC_001_Designated Areas.

5.4 Controlled (Temporary) Area Procedure

5.4.1 A Controlled Area is a work area in which safe conditions for hot work exist or where safe conditions can be created by moving or protecting combustibles or by having a trained fire watch observe the work to ensure that safe conditions are maintained during hot work operations.

5.4.2 After confirming that the job site has been properly prepared and following all applicable fire safety rules, the Hot Work Operator will complete the FM Global Hot Work Permit (HS8F_002) at the job site and post until completion of the job or the duration of the permit (not to exceed one work shift).

5.4.3 The Hot Work Operator will return the FM Global Hot Work Permit to the Supervisor after the task is complete or at the end of the work shift.

5.4.4 The Supervisor will retain the Hot Work Permit for a period of 1 Year.

5.5 Contractors

5.5.1 Outside contractors working on Cornell University Campus are required to have Hot Work Safety Procedures as a part of their Project Safety Programs.
5.5.2 Every contractor should submit their Hot Work Procedure prior to the start of work, and if any metal cutting, welding, soldering or grinding occurs they shall follow their procedure.

5.5.3 Contractors are responsible for completing their own Hot Work Permit and must have their own fire watch person. In addition, Ithaca City and State Owned Buildings have additional requirements;

5.5.4 Contractors (Buildings within City Limits);
   a. Contractors are required to get a City of Ithaca Welding and Cutting Permit prior to starting any Hot Work on Cornell University City Buildings.
   b. Contractors are required to maintain a record of all locations where welding or cutting operations are performed and have it available for inspection.

5.5.5 Contractors (State Owned Buildings);
   a. Cornell University Contract College Contractors are required to get a Hot Work Permit through the Statutory Code Enforcement Officer. The permit includes a log to maintain a record of all locations where welding or cutting operations are performed.

5.6 Signage

5.6.1 Visible hazard identification signs shall be provided where required. Where the hot work area is accessible to persons other than the operator of the hot work equipment, conspicuous signs shall be posted to warn others before they enter the hot work area.

5.6.2 Such signs shall display the following warning:

   CAUTION
   HOT WORK IN PROGRESS
   STAY CLEAR.

5.7 Prohibited Conditions

5.7.1 A Hot Work Permit will not be issued if any of the following conditions exist:
   a. Sprinkler protection is impaired.
   b. An entire building fire detection system is shut down.
   c. In the presence of explosive atmospheres, where mixtures of flammable gases, vapors, liquids, or dusts may exist.
   d. Appropriate firefighting equipment is not readily available.
   e. Combustible or flammable materials are within 35 feet and cannot be moved or protected, and a Fire Watch is not available.
   f. Floor and wall openings cannot be covered.
   g. Cutting or welding on pipes or other metals can conduct enough heat to ignite nearby combustible materials.
   h. In tanks, drums or other containers and equipment that contain or previously contained materials that could create explosive atmospheres.
   i. Any condition that could result in undue hazards by performing the work.

5.8 General Rules For Hot Work

5.8.1 Explore other methods of performing work to minimize or eliminate hot work.
5.8.2 If possible, move the work to a Designated Hot Work Area.
5.8.3 Maintain the 35 Foot-Rule (as specified in Hot Work Operator and Fire Watch section)
5.8.4 A fire extinguisher must be readily available and accessible (2A: 20-B.C. Rating within 20 Feet of Hot Work Area).

5.9 Pre-Use Inspections of Hot Work Equipment

5.9.1 Inspect all portable and shop welders for wear and damage before use i.e., leads and a/c power cables, ground clamp, electrode holder, hitch, frame, tires, gas cylinder safety chain, hoses, gauges and coolant. Replace damaged components. If repairs cannot be made, tag equipment “out of service” and report it to your supervisor.

5.9.2 Inspect condition of torch set before use. I.e., gauges, hoses, crimped fittings, back flow devices, mixing chamber, cutting head, cart and ensure cylinders are secured. Replace damaged components. If repairs cannot be made, tag equipment “out of service” and report it to your supervisor.

6.0 EQUIPMENT

6.1 Cylinders

6.1.1 Oily or greasy substances shall be kept away from cylinders, cylinder valves, couplings, regulators, hose and other equipment. Any equipment that has been subject to oil and grease shall be thoroughly cleaned before being placed back into service.

6.1.2 Fittings shall never be lubricated. Only approved materials shall be used on oxygen equipment.

6.1.3 Contents of cylinders shall be identified by commonly accepted names legibly marked on the cylinder.

6.1.4 All cylinders shall be provided with approved pressure relief devices. No repairs of any kind are to be attempted on any cylinder or valve. Safety devices on cylinders or apparatus shall not be tampered with or removed.

6.1.5 Oxygen cylinders shall not be stored in the same compartment with cylinders of acetylene or other fuel gas. Unless well separated (minimum of twenty (20) feet), there shall be a partition (at least 5 feet high) having a fire-resistant rating of at least 1 half-hour between oxygen cylinders and acetylene or fuel gas cylinders.

6.1.6 During storage and transportation on powered vehicles, cylinders shall always be stored in an upright position and properly secured. Provisions should be made to prevent their falling over or being struck by other objects.

6.1.7 A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use.

6.1.8 During transport on hand-trucks (dollies), cylinders shall be securely supported.

6.1.9 Cylinders shall not be stored in or near exits or in egress paths.

6.1.10 Cylinders shall not be stored in locations where they might be exposed to excessive heat.

6.1.11 All empty cylinders shall be marked ('MT') and returned to their proper storage compartments with valves tightly closed and caps replaced.

6.1.12 When oxygen and acetylene cylinders are mounted together on a cart, a partition of steel or other non-combustible material shall be installed between the cylinders.

6.1.13 Do not place cylinders where they might become part of an electric circuit. When cylinders are used in proximity to electric welding, precautions must be taken to protect the cylinders against accidental grounding.
6.1.14 A cap shall protect cylinder valves when the cylinders are not in use or are being transported. If the valve cannot be opened by hand, the cylinder shall be tagged and exchanged for a new one.

6.1.15 When cylinders are not ‘in use’ they shall be stored appropriately. ‘In use’ means used within 24 hours – otherwise it falls under storage.

6.1.16 Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them, or fire-resistant shields shall be provided.

6.2 Pressure Reducing Equipment and Torches

6.2.1 Oxygen, acetylene and other compressed gases shall never be used from a cylinder without reducing the pressure through a pressure-reducing regulator bearing an Underwriter Laboratory (UL) or Factory Mutual (FM) approval.

6.2.2 Oxygen regulators shall be used only on oxygen cylinders and fuel gas regulators on fuel gas cylinders. Oxygen regulators are provided with national standard right hand threads and fuel gas regulators with left hand threads.

6.2.3 Handle all pressure regulating equipment with care to avoid damage to the mechanism.

6.2.4 Never use oil or grease on cutting or welding equipment for any purpose.

6.2.5 Regulators in need of repair shall be returned to the supplier or a person authorized to do such work shall make repairs.

6.2.6 Inspect regulating equipment and torch prior to every use. Remove unsafe equipment from service.

6.2.7 Always stand to the side of regulators when opening or closing valves and making adjustments.

6.2.8 When a regulator is not in use, the pressure adjusting screw shall be released and the cylinder valve closed. A cylinder valve shall never be opened until the pressure adjustment screw on the regulator is fully released.

6.2.9 When burning or welding overhead, the regulators on the cylinders shall be properly protected to prevent sparks and objects from falling on them.

6.2.10 Regulators shall be removed from cylinders before cylinders are moved from one location to another unless they are in a carrier specifically designed for transporting.

6.3 Hose

6.3.1 All units should be equipped with back-flow prevention and flash back arrestors.

6.3.2 Examine all hoses for defects before use. Defective hose shall not be used. New hose should be tested for leaks before use.

6.3.3 Care must be exercised to prevent hose from being damaged.

6.3.4 Hose shall be fastened to the regulators and torches by approved fittings only. It is important that all connections be kept tight.

6.3.5 Use hose and connections made especially for gas welding and cutting. Red colored hose shall be used for acetylene or other fuel gas and green colored hose for oxygen.

6.3.6 Care shall be taken that the hose does not become kinked or tangled. Place the hose so that it will not be trampled on, run over or present a tripping hazard.

6.4 Use of Cylinder Valves, Regulators and Torch Valves

6.4.1 Oxygen cylinder valve shall be opened slowly so that the needle on the high pressure gauge rises slowly. The valve shall then be opened as far as possible. Regulate desired oxygen pressure. Wrenches shall not be used on oxygen valves.
6.4.2 Acetylene cylinder valve shall be opened one and one quarter turns with the "T" handle wrench, which is supplied for the cylinder. This wrench shall be kept on the valve while equipment is in use. Regulate desired gas pressure, which shall never exceed 15 psi.
   a. Purge each hose before lighting the torch.
   b. Use only a friction lighter to ignite torch. Matches or other flames are prohibited.
   c. Always stand to the side of regulators when opening valves.
   d. Light acetylene, adjust flame, and then adjust oxygen.

6.4.3 When finished with the torch, the fuel gas shall be turned off at the torch and then the oxygen. Gas shall not be kept burning on the end of the tip as a pilot. This practice will carbon up the torch and render it dangerous. Keep torch tips clear of all foreign material.

6.4.4 When through using or moving the equipment, employees must insure that cylinders valves are closed and the pressure on regulators relieved.

6.4.5 The regulator thumbscrews shall be backed off and the pressure released from the low pressure gauges, unless the operator will be using the outfit again within a few minutes.

6.4.6 Do not shut off cylinder valves and leave outfit with regulator thumb screws turned in. If creeping is noted on the working pressure gauge hands, this is an indication that the regulator is faulty and must be repaired.

6.4.7 The valves on the torch and all connections shall be examined daily for leaks before lighting the torch. If leakage is noted around the valve stems, tighten the packing nuts and if this does not correct the situation, have proper repairs made by an authorized person.

6.4.8 Use great care not to allow the oxygen pressure to fall below the working pressure of the acetylene regulator. Fuel gas may flow back into the oxygen cylinder, forming an explosive mixture, which is highly dangerous.

7.0 TRAINING

7.1 EHS Training

7.1.1 Individuals involved in hot work are required to complete hot work training including Supervisors, Hot Work Operators and Fire Watch Personnel. The following EHS Courses must be completed:

   a. Hot Work, Welding and Cutting Safety – CU Learn Course 2398
      Required upon initial assignment and refresher training required every 5 years, or more frequently if deficiencies are noted.
   b. Fire Extinguisher Training – CU Learn Course 5300
      Required once a year.

7.2 Departmental Training

7.2.1 Supervisors shall train employees on departmental Hot Work Procedures and specific safety procedures for the type of hot work equipment used. This training shall be completed upon initial assignment and cover the following subjects;

   a. Safety procedures specific to equipment used
   b. Required Personal Protective Equipment for job tasks
   c. Where to file copies of completed Hot Work Permits
   d. Locations of Designated Hot Work Areas, if applicable
   e. Locations of Prohibited Areas, if applicable
8.0 RECORDS AND DOCUMENT CONTROL

<table>
<thead>
<tr>
<th>Form Name / Number</th>
<th>Retention Policy</th>
<th>Maintain Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS8F_001_DesignatedHotWorkPermit</td>
<td>1 Year</td>
<td>Post in Designated Area</td>
</tr>
<tr>
<td>HS8F_002_FMGlobalHotWorkPermit</td>
<td>1 Year</td>
<td>Maintain in Unit/Supervisor</td>
</tr>
<tr>
<td>HS8F_003_PreHotWorkCheck</td>
<td>Minimum of 48 hours after work is complete.</td>
<td>Maintained on the premises</td>
</tr>
<tr>
<td>HS8_HW_REC_001_DesignatedAreas</td>
<td>Unlimited</td>
<td>EHS</td>
</tr>
</tbody>
</table>

9.0 DEFINITIONS

9.1 **Combustible Materials.** Are anything that is combustible or flammable and is susceptible to ignition by cutting and welding. The most common materials likely to become involved in fire are those of combustible building construction such as the following:

9.1.1 Floors, partitions, and roofs
9.1.2 Wood, paper, textiles, plastics, chemicals, and flammable liquids and gases, and dusts.
9.1.3 Ground cover such as grass and brush.

9.2 **Controlled (Temporary) Area.** Is a work area in which safe conditions for hot work exist or where safe conditions can be created by moving or protecting combustibles. A hot work permit is required in a controlled area.

An example of a controlled area is in a campus building construction area where welding must take place and the work area has been made safe by removing all combustibles and implementing the requirements of the FM Global Hot Work Permit in order to make it safe.

9.3 **Designated (Fixed) Area.** A Designated Hot Work Area is a permanent location designed or approved for hot work operations to be performed regularly.

For a space to be classified as a designated hot work area, it must meet the following requirements:

9.3.1 It must be of noncombustible fire-resistive construction, essentially free of combustible and flammable contents.
9.3.2 It must be suitably segregated from adjacent areas.
9.3.3 It must be equipped with an appropriate fire extinguisher.
9.3.4 It must be inspected and approved by EHS.

9.4 **Explosion Hazard.** Welding and cutting can cause explosions in spaces containing flammable gases, vapors, liquids, or combustible dusts, and tanks and vessels that contain or have held flammable substances.

9.5 **Fire Hazard.** Molten metal, sparks, slag, and hot work surfaces can cause fire or explosion if precautionary measures are not followed.

9.6 **Fire Watch.** An employee who is trained in hot work safety and monitors the hot work area for changing conditions and watches for fires and extinguishes them if possible.
9.7 **Flying sparks** are the main cause of fires and explosions in welding and cutting. Sparks can travel up to 35 feet from the work area. Sparks and molten metal can travel greater distances when falling. Sparks can pass through or become lodged in cracks, clothing, pipe holes, and other small openings in floors, walls, or partitions which can cause fires to start.

9.8 **FM Global Permit.** A document issued by the permit authorizing individual for the purpose of authorizing performance of Hot Work Activity in a Controlled Area.

9.9 **Hot work.** Any work that involves operations including cutting, welding, Thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar activity. (NYS Fire Code 2602.1) EXAMPLES OF HOT WORK, regardless of location, include: Welding, Cutting with an open flame, Soldering with an open flame, Lancing, Air arcing.

9.10 **Hot Work Operator.** Someone who is qualified and authorized to perform hot work such as welding, brazing, soldering, and other associated hot work tasks.

9.11 **Prohibited Area.** A location which hot work is prohibited.

9.12 **Responsible Person.** The Responsible Person is someone who ensures compliance with the terms and conditions of the Annual Designated Hot Work Permit issued by EHS. They are responsible for reviewing Designated Hot Work areas prior to the start of hot work to ensure that all equipment is safe and hazards are recognized and protected.

9.13 **Welding/Soldering.** Includes processes such as are welding, oxy-fuel gas welding, open-flame soldering, brazing, thermal spraying, oxygen cutting, and arc cutting.

9.14 **Welding Blanket.** A heat-resistant fabric designed to be placed in the vicinity of a hot work operation. Intended for use in horizontal applications with light to moderate exposures such as that resulting from chipping, grinding, heat treating, sand blasting, and light horizontal welding. Designed to protect machinery and prevent ignition of combustibles such as wood that are located adjacent to the underside of the blanket. They are made from different materials such as fiberglass, Silica, and other fire resistant materials.

9.15 **Welding Curtain.** A heat-resistant fabric designed to be placed in the vicinity of a hot work operation. Intended for use in vertical application with light to moderate exposures such as that resulting from chipping, grinding, heat treating, and light horizontal welding. Designed to prevent sparks from escaping a welding area.

9.16 **Welding Pads.** Are heat-resistant fabric designed to be placed directly under a hot work operation such as welding or cutting. Welding pads are intended for use horizontal applications with severe exposures such as that resulting from molten substances of heavy horizontal welding. Welding pads are designed to prevent the ignition of combustibles that are located adjacent to the underside of the pad.
## 10.0 DOCUMENT HISTORY

<table>
<thead>
<tr>
<th>Date</th>
<th>Change</th>
<th>Made by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 June 2015</td>
<td>Initial Document</td>
<td>Lyndsey Beaudin</td>
</tr>
<tr>
<td>24 June 2015</td>
<td>Removed the requirement of the Permit Authorizing Individual (PAI). Preparing a fire safe job site is the Hot Work Operator’s responsibility. If it is observed that Hot Work Operators are not properly preparing job sites (i.e. removing combustibles), then a PAI will be required.</td>
<td>Lyndsey Beaudin</td>
</tr>
<tr>
<td>13 July 2015</td>
<td>Added section 6.0 on Equipment to address cylinder storage, flashback arrestors, proper use of cylinder valves, etc.</td>
<td>Lyndsey Beaudin</td>
</tr>
<tr>
<td>25 July 2015</td>
<td>Changed Hot Work Definition to align with NYS Fire Code Definition.</td>
<td>Lyndsey Beaudin</td>
</tr>
<tr>
<td>6 October 2015</td>
<td>Added Heat Guns, Hot Plates, Propane/Butane Torches and Matches / Lighters to exempt activities. Included Other University Covered Policies (Candle Policy and Open Burning and Outdoor Fires) in exempt activities.</td>
<td>Lyndsey Beaudin</td>
</tr>
<tr>
<td>27 October 2015</td>
<td>Added responsibility to EHS and Departments/Building Coordinators to ‘ensure that local exhaust or general ventilating systems are provided and arranged to keep the amount of toxic fumes, gases, or dusts below the maximum allowable concentration as specified in Table Z-1 Limits For Air Contaminants and/or the ACGIH Guide to Occupational Exposure Values’. Moved responsibility from Department to Supervisor ‘Ensure FM Global Permits are made available…’</td>
<td>Lyndsey Beaudin</td>
</tr>
<tr>
<td>3 November 2015</td>
<td>Added 2.1.6 Factory Mutual Global Added 3.3.1.e Process Equipment in excluded operations 5.8.4 to include 2A: 20-B.C. Rating within 30 Feet of Hot Work Area Added 6.1.7 Cylinders shall not be stored in or near exits or in egress paths.</td>
<td>Lyndsey Beaudin</td>
</tr>
<tr>
<td>16 February 2016</td>
<td>Added ANSI/FM 4950 standard for what is meant by approved welding curtain, welding blanket, welding pad, or equivalent. 4.4.11 added or proper PPE to keep the amount of toxic fumes, gases, or dusts below maximum allowable concentrations. 4.4.4 Changed optimal to proper</td>
<td>Lyndsey Beaudin</td>
</tr>
<tr>
<td>18 March 2016</td>
<td>6.1.6 added during storage and transportation on powered vehicles. Added 6.1.7 and 6.1.8 to clear up storage and transportation requirements. 6.1.7 A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use. 6.1.8 During transport on hand-trucks (dollies), cylinders shall be securely supported.</td>
<td>L. Beaudin / Brian Heltsley</td>
</tr>
<tr>
<td>Date</td>
<td>Section</td>
<td>Change Description</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6May2016</td>
<td>5.8.4</td>
<td>Changed Fire Extinguisher from within 30 feet to within 20 feet to remain consistent with Electrical Safe Work Practice Program and Aerial Work Platform Program.</td>
</tr>
<tr>
<td>13Mar2018</td>
<td>4.3.6</td>
<td>Contact information updated to identify Kate VanLoke as SME and Fire Marshall Group as Point of Contact.</td>
</tr>
<tr>
<td>12June2018</td>
<td></td>
<td>All Code References updated to IFC Codes</td>
</tr>
</tbody>
</table>