


Carnegie Mellon University Environmental Health & Safety FIRE LAB WORK 	Environmental Health and Safety Hot Work Program
Date of Issuance: 10/24/19	Revision Date:
Revision Number: Initial	Prepared by: EHS

1. Purpose

Carnegie Mellon University (CMU) has developed this program to address hot work activities performed on University property. The Occupational Safety and Health Administration (OSHA), along with the National Fire Protection Association (NFPA) and International Fire Code, requires implementation of effective controls to minimize and protect University employees and property from hazards associated with hot work. Such hazards include fires, flammable gases and vapors, toxic metal fumes, radiant energy, amongst others.

2. Scope

CMU recognizes its responsibility for the overall safe usage of cutting and welding equipment on its property and providing a workplace free of recognized hazards and unsafe conditions. This program provides:

- Guidance for all CMU employees¹ who manage, supervise, perform, or are otherwise involved with hot work activities at the University.
- Distinctions between hot work permits and fire alarm system impairment permits, but does not cover the necessary guidance for fire alarm system impairments. For fire alarm system impairments, reference the EHS Fire Alarm System Impairment Program Guideline.

The contents of this program abide by the following regulatory standards:

¹ Contractors are responsible for following their own company's hot work program while obtaining appropriate permitting from CMU EHS.

- OSHA General Industry (29 CFR 1910.251 and 1910.252) and Construction (29 CFR 1926.352) standards for Welding, Cutting and Brazing
- NFPA-51B, Standard for Fire Prevention During Welding, Cutting and other Hot Work
- International Fire Code, 2009, Chapter 26
- City of Pittsburgh Fire Bureau, Roof Torch Permit, IFC 105.6.23

3. Definitions

3.1 Combustible material. A solid or liquid that can be easily ignited and burned.

3.2 Designated area. A specific location designed or approved for hot work operations, such as a maintenance shop or a detached outside location that is of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas. Appropriate approval and permitting must be obtained from EHS.

3.3 Fire Alarm Impairment Program Guideline. An EHS program that provides instructions to authorized individuals for requesting modification to the normal operation of the fire alarm and fire protection systems of CMU buildings. This applies for system impairments during construction, demolition, outages, maintenance, system impairments, etc. of occupied buildings.

3.4 Fire alarm impairment/dust permit. A document issued by EHS, as part of the Fire Alarm Impairment Program Guideline, for the purpose of authorizing performance of hot work that impairs or has the potential to activate the fire alarm system. See the Fire Alarm Impairment Program Guideline for more information.

3.5 Fire watch. A competent person who is responsible for conducting physical inspections of the area, and any applicable surrounding areas, where hot work is being performed. The competent person must, at a minimum, be

trained to understand the inherent hazards of the work site and the hot work being performed.

This definition is not to be confused with fire watches associated with impairments to the fire alarm systems (i.e. “fire alarm panel watch” and “impairment fire watch”—for these definitions, please reference the Fire Alarm System Impairment Program Guideline).

3.6 Hot work. Work involving burning, welding, or similar operations that is capable of initiating fires or explosions. This includes welding and allied processes, heat treating, grinding, thawing pipe, powder-driven fasteners, hot riveting, and torch-applied roofing.

3.7 Hot work permit. A document issued by EHS for the purpose of authorizing performance of hot work in a non-designated area.

3.8 Welder. Any operator of electric or gas welding and/or cutting equipment.

3.9 Welding and allied processes. Processes such as arc welding, oxy-fuel gas welding, open-flame soldering, brazing, thermal spraying, oxygen cutting, arc cutting and torch-applied roofing.

4. Responsible Parties

4.1 Campus Design and Facility Development (CDFD), Facility Management and Campus Services (FMCS) Project Managers and Supervisors, Principal Investigators or Other Applicable Space Owners

- Establish designated areas for cutting and welding and receive appropriate approval and permitting from EHS for such spaces.
- Designate an individual responsible, i.e. the hot work supervisor, for authorizing hot work operations in areas that are not already designated.
- Ensure that cutters/welders and their supervisors are suitably trained in the safe operation of their equipment and processes.

- Ensure that contractors follow their own hot work program and obtain hot work permits, and any other applicable permits, from EHS.
- Ensure that closed hot work programs are provided to EHS upon their completion.
- Comply with the contents of this program and any other applicable state and federal regulations.

4.2 Hot Work Supervisors

Project managers and/or supervisors who directly oversee hot work activities are responsible for the following:

- Performing an assessment in the proposed hot work area to determine potential fire risks and approving the area prior to obtaining a hot work permit from EHS;
- Complying with the contents of this program and any other applicable state and federal regulations;
- Suitably trained in the safe operation of their equipment and the safe use of the process;
- Maintain and make available to employees involved in hot work safety data sheets (SDS) for all potentially hazardous materials utilized for hot work;
- Ensure safe handling of cutting or welding equipment and their associated processes;
- Determine the combustible materials and hazards present, or likely to be present, in the hot work area;
- Protect combustibles from ignition by moving the work to a location free of combustibles, moving combustibles to a safe distance from the work, shielding combustibles from the work and ensuring other work operations that might expose combustibles to ignition are not started during cutting or welding;

- Securing authorization to perform hot work in non-designated areas from EHS via a written Hot Work Permit;
- Determining that the conditions of the worksite are safe before hot work commences;
- Advise all personnel about flammable materials or hazardous conditions of which they may not be aware;
- Ensuring that the appropriate fire extinguishing equipment is properly located at the work site; and
- Ensuring that fire watches are properly located at the work site.

4.3 EHS Department

- Develop, implement and maintain a written Hot Work Program.
- Issue and maintain Hot Work Permits at the request of CDFD and FMCS project managers and hot work supervisors (where applicable, fire alarm impairment permits must also be made through EHS in accordance with the Fire Alarm Impairment Program Guideline).
- Establish procedures for cutting and welding in areas not already approved (as identified in this program).
- Perform health hazard assessments, such as personal air monitoring, to ensure acceptable exposure levels, PPE, etc.
- Provide guidance and technical expertise to those utilizing this program.
- Provide training to those involved in hot work on the contents of this program.
- Maintain closed Hot Work Permits.

4.4 Individuals Authorized to Perform Hot Work

- Comply with the requirements set forth in this Program.
- Complete appropriate training with regards to acceptable hot work operations and procedures as well as the contents of this Program.
- Ensure equipment used for hot work is in good repair and working condition.

- Ensure the hot work site is made fire-safe before and after working.
- Report deficiencies to your immediate supervisor and CMU project manager, where applicable. Escalate to EHS Department (safety@andrew.cmu.edu) if the issue is not resolved.

4.5 Fire Watch

- Be trained to understand the inherent hazards of the work site and of the hot work.
- Ensure that safe conditions are maintained during hot work operations.
- Report all fires, regardless if they were extinguished or not.
- Stop work if unsafe conditions arise.
- Have a portable fire extinguisher readily available and be trained in its use.
- Be familiar with the facility's procedure for sounding an alarm in the event of a fire.
- Watch for fires in all exposed areas, extinguishing them only when the fire is within the capacity of the available extinguisher. The nearest fire alarm must be activated immediately after discovery of a fire, then attempts to extinguish should follow.
- Monitor the area continuously for at least 1 hour after completion of hot work to detect and extinguish possible smoldering fires.
- Do not perform additional tasks that distract from fire watch responsibilities.
- More than one fire watch must be present if combustible materials that could be ignited by the hot work operation cannot be directly observed by a single fire watch, for example in rooms adjacent, above or below the hot work area.

4.6 Contractors

- Maintain and follow all aspects of contractors' own Hot Work Program that are, at minimum, in compliance with all applicable federal, state, and local regulations in addition to the requirements stated in section 4.6.
- With the knowledge and assistance from CMU project managers and supervisors, obtain hot work permits, and any other applicable permits such as a fire alarm impairment and/or dust permit, from CMU EHS prior to commencing hot work.
- Return all closed hot work permits to CMU EHS via safety@andrew.cmu.edu as soon as possible after project completion. Hard copies of permits may also be brought to the EHS office located in the FMCS Building, Suite 307.
- Follow all aspects of permits obtained from CMU EHS.

5. Fire Prevention

5.1 Basic Precautions

5.1.1 Fire hazards. If the object to be welded or cut cannot readily be moved, all moveable fire hazards in the vicinity of the work must be moved to a safe location away from sparks.

5.1.2 Guards. Only if the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards must be used to confine the heat, sparks and slag from hot work activities and to protect the immovable fire hazards. Such guards as heat-resistant blankets, shields, etc. may be utilized. *Guards should not be used as a substitution for removing fire hazards or moving the object to be welded.*

5.1.3 Restrictions. If the requirements in 5.1.1 and 5.1.2 cannot be attained, then hot work is prohibited.

5.2 Special Precautions

5.2.1 Combustible materials. Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions must be taken so that no readily combustible materials on the floor below will be exposed to

sparks which might drop through the floor. The same precautions must be followed regarding cracks or holes in walls, open doorways and open/broken windows.

5.2.2 Floors. Floors must be swept clean of combustible materials, such as paper clippings, wood shavings, etc., within a radius of 35 feet of the hot work. Combustible floors must be kept wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wetted, personnel operating arc-welding/cutting equipment must be protected from potential shock.

5.2.3 Relocation of combustibles. Where practicable, all combustible materials should be relocated at least 35 feet from the hot work. Where relocation is impractical, combustible materials should be protected with flameproof covers or otherwise shielded with metal/flame-resistant guards or curtains. See also, section 5.1.2.

5.2.4 Ducts. Ducts and conveyor systems that may carry sparks to distant combustibles, must be protected or shut down.

5.2.5 Combustible walls. Where cutting or welding is done near walls, partitions, ceilings, or roofs of combustible construction, fire-resistant shields or guards must be provided to prevent ignition.

5.2.6 Non-combustible walls. If welding is to be done on a metal wall, partition, ceiling, or roof, precautions must be taken to prevent ignition of combustibles on the other side due to conduction or radiation, preferably by relocating the combustibles. Where combustibles are not relocated, a fire watch must be provided on the opposite side.

5.2.7 Combustible cover. Hot work may not be attempted on a metal partition, wall, ceiling, or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel or construction.

5.2.8 Pipes. Hot work on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs, may not be done if the work is close enough to cause ignition by conduction.

5.2.9 Painted, coated, or insulated objects. When welding on painted, or coated objects, the coating should be stripped back to no less than four inches from where heat will be applied to prevent the release of flammable fumes or gases. Insulating material, such as fiberglass pipe insulation, should also be stripped back to no less than four inches from where heat will be applied.

5.2.10 Fire prevention precautions. Hot work is only permitted in areas that are, or have been made, fire safe. When work cannot be moved practically, the area must be made safe by removing combustibles or protecting combustibles from ignition sources.

5.2.11 Authorization. Before hot work is permitted, the work area must be inspected by the hot work supervisor. The hot work supervisor will identify any hazards and precautions. After inspection has been completed, a written hot work permit must be requested from, and executed by, EHS, granting authorization to perform the hot work including any applicable precautions.

5.2.12 Fire extinguishers. At least one fully-charged portable fire extinguisher (not to be less than 4A-60BC) must be kept at the worksite at all times. The fire extinguisher must be properly maintained, inspected and ready for instant use. Fire extinguishers located throughout CMU buildings are NOT approved for satisfying this requirement.

5.2.13 Fire watch. A fire watch must be present for all hot work activities, no exceptions.

After hot work is completed, a continuous fire watch must be maintained for at least one hour. After the one-hour watch is complete, the project

manager/supervisor must conduct a final check of the work area and applicable adjacent areas. Once the final check is complete, the project manager/supervisor must close out the hot work permit by providing the date of the final check and signing.

5.2.14 Prohibited areas. Hot work is prohibited in the following situations:

- Areas that are not authorized with a written permit from EHS;
- In sprinklered buildings where such protection is impaired. For such situations, prior approval and permitting from EHS must be obtained. For more information reference the EHS Fire Alarm Impairment Program Guideline;
- In the presence of explosive atmospheres, i.e. mixtures of flammable gases, vapors, liquids or dusts with air;
- In explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts; and
- In areas near the storage of large quantities of exposed, readily ignitable or combustible materials.

5.2.15 Designated areas. Hot work may be approved by EHS on an annual basis in areas where hot work is frequently conducted, such as in FMCS welding shops, student shop/maker spaces (as determined by EHS on a case-by-case basis), etc.—student spaces must have appropriate staff and/or faculty supervision. Annual hot work permits must be obtained and renewed by the space owner and approved by EHS. Failure to obtain, or annually renew the permit by its expiration date, will result in the loss of hot work privileges until an up-to-date permit has been obtained.

Approved permits must be maintained on site by the space manager; EHS will also maintain record of the permit in CMU Alert.

Those working in designated areas must follow all aspects of this Hot Work Program, including but not limited to removing or securing combustibles within the area at all times, maintaining a fire watch and maintaining a fire extinguisher within the area. Hazard identification signage on the outside of the entryway door to the space must indicate the performance of hot work. Appropriate signage will be supplied by EHS; an example is provided in **Appendix A**.

5.3 Welding or Cutting Containers

No hot work may be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present, including any other substances, such as greases, tars or acids that might produce flammable or toxic vapors.

Any piping or connections to drums or vessels should be disconnected or blanked. Any such hollow spaces must be continuously ventilated to permit the escape of air or gases before and during preheating, cutting, or welding—it is recommended that ventilation be completed using an inert gas. The ventilated air should be monitored to ensure the absence of an explosive atmosphere before and during hot work activities.

5.4 Torch-Applied Roofing

Torch-applied roofing system procedures must follow the contents of this program, in addition to the parameters outlined in the City of Pittsburgh Bureau of Fire's memo dated January 24, 2014. A copy of the memo can be found in **Appendix B**.

5.5 Confined Spaces

Prior to entering a confined space, always ensure that the appropriate entry, lifeline and rescue procedures are followed as identified in the CMU Confined Space Program. Additional precautions as follows must be abided by when hot work is to be performed in a confined space.

5.5.1 Outside helper. Where welding operations are performed in any permit-required or non-permit-required confined space, a worker must be stationed outside of the confined space to insure the safety of those working within.

5.5.2 Ventilation. Adequate mechanical or local exhaust ventilation must be provided when hot work is conducted inside a confined space in order to prevent oxygen deficiency or buildup of toxic and/or hazardous materials. Replacement air must be from a clean and respirable source and must not increase the hazards in the space—oxygen must never be used for this purpose. Where appropriate ventilation is impossible to provide, airline respirators, hose masks or self-contained breath apparatuses approved for this purpose by the National Institute for Occupational Safety and Health must be used.

5.5.3 Torch valve. When a torch is not to be used for a substantial period of time, such as during lunch break or overnight, the torch valves must be closed and the gas supply to the torch positively shut off outside the confined area in order to eliminate the possibility of gas escaping through leaks or improperly closed valves when gas welding or cutting. Where practicable, the torch and hose shall also be removed from the confined space.

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

5.5.5 Securing cylinders and machinery. Gas cylinders and welding machines must be left outside of any confined space. Before operations commence, heavy portable equipment mounted on wheels must be securely blocked to prevent accidental movement.

5.5.6 Warning sign. After welding operations are completed, the welder must mark the hot metal or provide some other means of warning to other workers.

6. Compressed Gas Cylinder Storage and Handling

Many hot work operations rely on usage of compressed gases, such as oxygen and acetylene. Given the physical and chemical hazards associated with compressed gases, it is imperative that they are stored and handled properly. All personnel involved with hot work using compressed gas must complete CMU Compressed Gas Safety training. In addition to the requirements outlined in 29 CFR 1910.253 for oxygen-fuel gas welding and cutting, the following highlights some of the most prevalent and/or hot-work-specific topics:

- Personnel in charge of oxygen or fuel-gas equipment and distribution systems must be instructed and judged competent by their supervisor for this work prior to being left in charge;
- Propane cylinders must not be stored on roofs;
- Except during use, oxygen and fuel-gas cylinders must be stored at least 20 feet apart or separated by a 5-foot tall 30-minute fire-rated wall;
- During and after use, cylinders must be individually secured, standing upright using appropriate restraint devices. After use is complete, cylinders must be stored with their protective valve caps in place;
- During use, cylinders must be kept far enough away from the actual welding or cutting operation so that sparks, hot slag or flame will not reach them; otherwise, fire-resistant shielding must be provided; and,
- Cylinders must not be placed where they might become part of an electric circuit, e.g. contacts with radiators, piping systems, etc. that may be used for grounding by personnel conducting arc welding. Tapping of an electrode against a cylinder to strike an arc is prohibited.

Additional information regarding safe handling and use of compressed gases can be found in the EHS Compressed Gas Safety Guideline and accompanying training.

7. Personnel Protection

7.1 General

7.1.1 Railing. A welder, along with any helpers, working on platforms, scaffolds or runways must be protected against falling. This may be accomplished by the use of railings, safety harness, life lines or other equally effective safeguard.

7.1.2 Welding cable. Welders must place welding cable and any other equipment so that it is clear of passageways, ladders and stairways.

7.2 Personal Protective Equipment and Clothing

Appropriate personal protective equipment (PPE) commensurate with the hot work task must be worn by the welder, and any personnel assisting the welder, during all hot work activities. This may include helmets, respirators, hand shields and goggles that meet, at a minimum, ANSI standards.

EHS and project managers/supervisors may assist with an assessment of the hot work to determine the types of PPE required or recommended. A health hazard assessment, including personal air monitoring, may be completed by EHS to ensure the appropriate PPE is selected.

7.3 Hazard Communication

In compliance with the OSHA Hazard Communication Standard (29 CFR 1910.1200), all employees must have training and access to labels and safety data sheets (SDS) of all potentially hazardous and hazardous materials that are used for hot work, such as fluxes, coatings, coverings and filler materials. This also includes health and safety information on materials that are potentially released to the atmosphere during hot work.

The following, among other, potentially hazardous materials may be worked on and/or released during hot work operations:

- Fluorine compounds
- Zinc

- Lead
- Beryllium
- Cadmium
- Mercury
- Cleaning compounds
- Stainless steel

Suppliers are required to label their welding, cutting and brazing materials in accordance with 29 CFR 1910.1200².

7.4 Ventilation

General and local exhaust ventilation should be primarily used to control hazardous concentrations of toxic fumes, gases or dusts. Such concentrations must be kept below their respective maximum allowable concentrations in accordance with 29 CFR 1910.1000. A health hazard assessment, which may include personal air monitoring, must be conducted by EHS to ensure compliance and identify where PPE is required.

Specific ventilation requirements for metals detailed in 1910.252(c)(5)-(12), including fluorine compounds, zinc, lead, beryllium, cadmium, and mercury, cleaning compounds, and stainless steel, must be followed. For metals not identified, mechanical ventilation must be provided when hot work is conducted in the following situations: spaces with less than 10,000 cubic feet per welder, rooms with ceiling heights of less than 16 feet and confined spaces where barriers significantly obstruct cross ventilation; otherwise, natural ventilation will suffice.

² Where brazing and gas welding fluxes contain chlorine compounds, labels must indicate the hazards associated with fluorine compounds, including eye and respiratory tract effects. Where filler metals contain significant amounts of cadmium, the labels of these materials must indicate the hazards associated with cadmium, including cancer, lung and kidney effects, and acute toxicity effects. In addition to requirements in 1910.1200, all filler materials and fusible granular materials must carry the following notice, as a minimum, on tags, boxes, or other containers: do not use in areas without adequate ventilation.

Where mechanical ventilation is required for metals not listed in (c)(5)-(c)(12), ventilation must be provided at a minimum rate of 2,000 cubic feet per minute per welder. An exception to this is where local exhaust hoods/booths or approved airline respirators are provided. Exhaust hoods and booths must meet requirements of 1910.252(c)(3).

7.5 Hot Work on Painted or Coated Objects

When welding on painted or otherwise coated objects, the coating should be stripped back to about four inches from where heat will be applied to prevent the release of potentially toxic fumes or gases.

8. First Aid and Incident Reporting

First-aid equipment must be available at all times and must be administered according to the injury and materials involved. Material-specific first-aid information can be found in Section 4 of each product's SDS. All injuries must be reported to the injured party's supervisor as soon as possible after the event. Supervisors must complete a Supervisor's Injury/Illness Report and submit it to Human Resources. Non-personal/non-confidential details of the incident should also be reported to EHS.

9. Training

All CMU personnel, including but not limited to supervisors, project managers and those directly engaged with hot work activities, must successfully complete EHS Hot Work Training and Fire Extinguisher Training prior to commencing any hot work activities. Additional training, such as Compressed Gas Safety, Confined Space and Respiratory Protection Training, may be required based on the specific hazards of the hot work activities.

10. Hot Work Permitting Process

Hot work permits are an integral part of performing hot work activities as they can assist in minimizing the risk of fire that can endanger University faculty, staff,

students, visitors and property. A sample hot work permit can be found in **Appendix C**.

10.1 Permits for Non-Designated Locations

Before hot work begins in a non-designated location, a written hot work permit must be obtained in-person from EHS by the project manager or hot work supervisor. Note that additional permits may be required, such as a fire alarm impairment permit or dust permit; please reference the EHS Fire Alarm Impairment Program Guideline for applicability.

Project managers and hot work supervisors are responsible for assessing the work site prior to engaging EHS for a hot work permit, including ensuring that all fire hazards have been eliminated at the site as outlined in this program. Specific responsibilities of the project managers and supervisors are outlined in section 4.1. EHS will ask for confirmation that the work site has been made fire safe. Once the permit has been issued by EHS, the project manager or hot work supervisor must ensure that the permit is publically posted at the jobsite in a location where personnel have access until the permit has been closed out—see next paragraph for permit closure instructions.

No sooner than one hour after hot work is completed, the project manager or hot work supervisor must conduct a final check of the work area and applicable adjacent areas where sparks and heat might have spread, including floors above and below and on opposite sides of walls. Once the final check is complete, the project manager or hot work supervisor must close out the hot work permit by providing the date of the final check and signing the permit. After the permit has been finalized, it must be returned to EHS via safety@andrew.cmu.edu as soon as possible.

For extended permits, i.e. permits that are issued for a duration greater than one day (a maximum of one month may be issued), a final check must be completed at the end of each work day, no sooner than one hour after hot work has been completed. The permit must remain publically posted at the worksite where

personnel have access until all hot work activities have been completed or until the permit has expired (a new permit must be obtained from EHS once the permit has expired). A signature and date on the hot work permit must be completed on the last day of hot work (after the final check for that day is finished)—this will effectively close out the permit. The closed permit must be returned to EHS for recordkeeping as soon as possible after permit close-out or project completion, whichever is first.

10.2 Permits for Designated Locations

For areas where hot work is routinely conducted, a hot work permit may be requested from EHS by the space owner for the duration of one year. This predominately applies to employee and student shop spaces. After the permit has expired, the space owner must request a renewal of the permit from EHS. If the permit is allowed to expire, no hot work may be conducted in the space until an approved permit is obtained from EHS. The physical permit must be publically posted in the space at all times and be accessible to all space occupants.

No sooner than one hour after hot work is completed each day, a final check must be completed by the hot work supervisor or project manager of the work area and applicable adjacent areas where sparks and heat might have spread, including floors above and below and on opposite sides of walls. All other aspects of this program must be followed as well, such as ensuring the space is free of combustible and maintaining a fire watch with an appropriate fire extinguisher.

10.3 Permits for Torch-Applied Roofing Projects

For roofing projects that involve the use of torches, the City of Pittsburgh Fire Bureau requires a Roof Torch Permit, which may be found in **Appendix D** (City of Pittsburgh hot or torch roofing system procedures may also be found in **Appendix B**). Prior to obtaining a hot work permit from EHS, the City's permit must be obtained—proof will be requested by EHS.

11. Program Evaluation

Periodic review of the effectiveness of the Hot Work Program is crucial to its usefulness and compliance with up-to-date federal, state and local regulations. EHS will conduct periodic surveys, which may include work-site inspections, interviews with employees and supervisors involved with hot work, health hazard assessments and record review, as needed. In the event that deficiencies are identified, the appropriate corrective action(s) will be made as soon as reasonably possible. Updates to the Hot Work Program will be documented no later than one month after the deficiency was identified and noted on the Hot Work Program Amendments form located in **Appendix E**.

Appendix A
Sample Door Signage

Building Name

Room Number



In Case Of Emergency Contact:

First Name	Last Name	Campus Phone	Cell Phone
Joe	Smith	412-268-2222	412-111-1111

Campus Police: 268-2323

**** Notify Campus Police if you need to reach a
Lab Contact after business hours.**

Contact EH&S at 412-268-8182 to make any changes to the information above.

Appendix B

City of Pittsburgh Fire Bureau Roof-Torch Procedures



CITY OF PITTSBURGH

Department of Public Safety ♦ Bureau of Fire

William Peduto, Mayor

Darryl E. Jones, Fire Chief

January 24, 2014

HOT OR TORCH ROOFING SYSTEM PROCEDURES

1. All roofing operations involving heat sources and hot processes shall be conducted by a certified agency.
2. No asphalt or tar kettles permitted on the roof.
3. Open flames shall not be left unattended.
4. A 20BC extinguisher is required within 30 feet of each tar kettle in use.
5. A 4A water extinguisher or hose connected to a water supply shall be required on the roof being covered.
6. Storage of LPG cylinders on the roof is prohibited.
7. Only enough cylinders for each day's use is permitted on the roof.
8. One person shall remain on the roof one hour after each day's use of a torch.

Darryl E. Jones
Fire Chief

DEJ/ma

Appendix C
Sample Hot Work Permit

HOT WORK or DUST/MIST PRODUCING WORK PERMIT

Company Name/Dept: _____ Phone: _____

Name(s) of Workers: _____

Project Coordinator: _____ Phone: _____

I hereby acknowledge and approve by my signature the work described herein:Project Coordinator's
Signature: _____**LOCATION OF WORK**

Building: _____ Room/Area(s): _____

OPERATIONS DESCRIBED HEREIN ARE ONLY TO BE PERFORMED ON:

Start Date: _____ End Date: _____

Between: _____ and _____

Description of work: _____

Type of Equipment to be used: _____

Permit Type: New HotWork

I, _____ hereby request a permit to be used only at the location, and on the date(s) and time(s) indicated above. I have read the precautionary safety rules that appear at the right side of this permit, and agree to comply with these rules. I also agree to return the permit upon completion of the work, and to reapply for another permit if work cannot be completed before the expiration date appearing above.

Signature: _____ Date: _____

Permit issued by: _____ Phone: _____

Campus Address: EHS Office

Signature of Issuing Agent: _____ Date: _____

Copy of completed permit faxed to University Police on:

(Date) at: _____ AM/PM

PERMIT IS TO BE DISPLAYED AT THE WORKSITE, AND PROMPTLY RETURNED TO THE ISSUING AGENT WITHIN 24 HOURS (WEEKENDS AND HOLIDAYS EXCLUDED) OF COMPLETION OF WORK. IF ALL WORK CANNOT BE COMPLETED WITHIN THE EFFECTIVE DATE(S) OF THE PERMIT, A NEW PERMIT MUST BE ACQUIRED BEFORE WORK CAN BE RESUMED. IF YOUR WORK MAY CAUSE ACTIVATION OF SMOKE DETECTION, YOUR PROJECT MANAGER MUST ARRANGE FOR UNIVERSITY ELECTRICIANS TO HANDLE ALL DISABLING AND RESTORATION OF ANY FIRE ALARM DEVICES NECESSARY BEFORE YOUR WORK PROCEEDS. FAILURE TO COMPLY WITH THESE RULES AND THE PRECAUTIONARY SAFETY RULES APPEARING BELOW CAN RESULT IN IMMEDIATE REVOCATION OF THIS PERMIT, AND/OR DENIAL OF ANY FUTURE APPLICATIONS.

PRECAUTIONARY SAFETY RULES FOR CUTTING AND WELDING

PRIOR TO THE START OF, DURING AND AFTER cutting/welding operations, compliance with items a through j (appearing below) and the following is MANDATORY:

OSHA Standards for Welding, Cutting and Brazing (29CFR 1910.251 and 1910.252)
NFPA-51B, Standard for Fire Prevention in Use of Cutting and Welding Processes
International Fire Code, 2009, Chapter 26

a) Cutting and welding equipment must be in good repair and working condition.

b) Ventilation sufficient to carry all fumes to the building exterior must be provided and kept operating throughout all cutting and welding operation.

c) The cutter/welder must wear eye protection while working, and adequate shielding must be provided to protect the eyes of others working in the same area or passing by.

d) All flammable/combustible liquids must be removed from the work area. If work is to be performed on tanks or containers, they must first be purged of all flammable/combustible liquids, gasses or vapors.

e) All combustible materials must be removed from the work area. Non-removeable combustibles, such as wooden doors, trim, flooring, shelves, etc., are to be protected by metal shielding or fire resistant covers or curtains. All wall, ceiling, and floor openings, vents etc., must be covered.

f) A clear or protected space of 35 feet (10m) must be maintained around work area, with floors kept swept clean of debris and combustible material. If work is in a smaller, enclosed space, adequate shielding must be applied.

g) All stationary fire protection (sprinklers, dry chemical, Halon 1301, carbon dioxide extinguishment systems, etc.) is to be kept in operating condition unless work is directly on their lines. If work may affect fire alarm systems, automatic smoke or heat detectors, or fire protection systems, the CMU Electrical foreman must be contacted on campus phone extension 8-2910, and steps must be taken to handle any potential problems before any welding or cutting is preformed.

h) At least one fully charged portable fire extinguisher having a ratio of not less than 4A-60BC must be kept at the worksite for extinguishment of fires. EXTINGUISHERS PROVIDED IN BUILDINGS ARE NOT TO BE USED FOR THIS PURPOSE, BUT ARE TO BE KEPT AVAILABLE AT ORIGINAL LOCATIONS FOR USE IN CASE OF EMERGENCY.

i) A Fire Watcher, trained in the use of portable extinguishers, is to remain at the work site during, and for one hour after completion of all work. A complete check of the work area and adjacent areas must be begun no sooner than 30 minutes after all torch work has ended each day, to assure that no fires exist.

j) If a fire occurs that cannot be quickly extinguished, the Fire Watcher is to immediately activate the nearest fire alarm station.

FINAL CHECKUP: Work area and adjacent areas, to which sparks and heat might have spread (including floors above and below, and on opposite sides of walls) were inspected no sooner than 30 minutes after daily work was completed and were found to be fire safe.

Signature: _____ Date: _____
Permit Signed and Returned - To be signed and dated by Fire Watcher after completing final safety check

Appendix D

City of Pittsburgh Fire Bureau Hot-Torch Roof Permit Application



CITY OF PITTSBURGH

Department of Public Safety ♦ Bureau of Fire

William Peduto, Mayor

Darryl E. Jones, Fire Chief

ROOF TORCH PERMIT APPLICATION

DATE _____

LOCATION OF STRUCTURE (NAME & ADDRESS) _____

SQUARE FOOTAGE: _____

DATE OF COMMENCEMENT _____ DATE OF COMPLETION _____

BILLING NAME & ADDRESS: _____

APPLICANT'S NAME _____ COMPANY NAME _____

ADDRESS _____ TELE # _____

FAX NUMBER _____

OWNER OF PROPERTY _____

ADDRESS _____ TELE # _____

SIGNATURE OF APPLICANT _____

NAME OF COMPANY _____

SECTION OF FIRE CODE: 105.6.23

FEE: \$21.00

PLEASE MAKE CHECK PAYABLE TO "TREASURER, CITY OF PITTSBURGH"

PAID _____

CHECK # _____

AMOUNT \$ _____

APPROVED BY _____

DATE APPROVED _____

Appendix E
Hot Work Program Amendments Log

Appendix E. Hot Work Program Amendment Form

Date of Amendment	Reason for Amendment	Description of Amendment Made (Include page number and section that amendment was made)	Amendment Made By