



EAST TENNESSEE STATE UNIVERSITY

Facilities Management

Policy Number: 700.5

Title: Permit Policy

Implementation Date: December 1st, 2014

Last Revised:

Purpose

This is a management policy/program for controlling hazards associated with various types of work. The Permit Policy has been established to identify certain types of work activities that require prior authorization before work can proceed. It also identifies controls (i.e. personal protective equipment) required to perform the work safely.

Scope

This policy requires that ETSU Facilities Management employees complete the applicable permits and follow all requirements identified in the permit system. Failure to comply with this policy is grounds for disciplinary action in accordance with ETSU's Disciplinary Policy.

Definitions

Hot work permit – a permit issued by the Office of Environmental Health & Safety to conduct hot work operations which include cutting, welding, Thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar activity.

Responsibilities

This policy applies to all ETSU Facilities Management maintenance workers.

- a. Supervisor Responsibilities: Supervisors are responsible for
 - i. Authorizing permits and verifying all requirements are met before work can proceed.
 - ii. Verifying trained individuals will be performing work.

- iii. Submitting completed permits to Health & Safety upon completion of the work.
- b. Employee Responsibilities:
- i. Responsible for stopping work and notifying supervision of the required permit(s).
 - ii. Responsible for following all requirements specified on the permit(s).
- c. Health & Safety Responsibilities:
- i. Implement Permit Policy and support affected supervisors and employees.
 - ii. Train employees in both the proper identification of work requiring the permit system and permit compliance.
 - iii. Provide safety related data associated with the identified work.

Procedures

Work Activities Requiring Permits:

1) HOT OR LIVE ELECTRICAL WORK: **Any activities that require work to be performed on equipment that is in an electrically energized state will require this permit system.** Diagnostics or troubleshooting live equipment < 480 volts (i.e. verifying equipment is isolated with a properly rated volt meter) does not require the permit system, but will only be performed by trained electricians and trained HVAC personnel with the appropriate PPE. **All 480 volts and greater, whether diagnostic or live work, will require this permit system.**

Only the Electrical Shop Supervisor or Director level has the authority to approve the permit. When a permit is required, check the box for *Live*

Electrical Work and verify by checking all boxes in this section. Finally the Electrical Shop Supervisor or Director level must sign before work can proceed.

EVERY EFFORT MUST BE MADE TO ISOLATE THE ELECTRICAL ENERGY SOURCE BY

MEANS OF LOCKOUT/TAGOUT FOLLOWING ETSU's LOCKOUT/TAGOUT POLICY.

No live electrical work will be authorized unless deemed absolutely necessary.

- 2) WORK ON CHEMICAL, RADIOLOGICAL AND BIOLOGICAL HOODS, REFRIGERATORS, AND DRAINS: Any work on chemical, radiological or biological hoods that require work to be performed inside the hood or on the hood ducting where there is an exposure potential will require this permit system. Complete this section for work on refrigerator/freezers containing chemical, radiological, or biological materials. Also complete this section for drain/plumbing work where you suspect harmful chemical or biological materials could be present. When a permit is required, check the box for *Chemical, Radiological, and Biological Hoods, Refrigerators, or Drains* and verify by checking all boxes in this section. You must call the Health & Safety Specialist (9-7743 or 483-3862) to complete this section. The Health & Safety Specialist will give guidance on the required personal protective equipment and any other applicable safety information.

- 3) HOT WORK: Any activity that could produce flames, sparks, slag, or other hot fragments that might act as an ignition source to flammable materials in the area will require this permit system. Hot Work also includes any activity that could generate sufficient smoke or heat to activate a fire alarm detection system. It includes, but is not limited to: welding, cutting, torch soldering, brazing, heat treating, pipe thawing, and grinding. Too often, persons who use, hire, or supervise these processes do not fully appreciate that improper use and lack of fire safeguards can result in loss of life and property by fire and explosion. Cutting and certain arc welding processes produce thousands of ignition sources in the form of sparks and hot slag. These globules of molten metal have scattered horizontally as far as 35 feet, setting fire to all kinds of combustible materials.

This section of the permit policy is a management system for controlling the fire hazards of hot work operations. The Hot Work Permit has been established to prevent unintended ignition of combustible and flammable materials. The use of portable hot work equipment must be controlled to prevent fires. Outside contractors performing repair and alteration work are of particular concern since they are not familiar with our university buildings or processes, and may not be supervised closely. Hot work done outside of a fixed facility should comply with

NFPA 51B, Standard for Fire Prevention During Welding, Cutting and Other Hot Work, and requires the use of a Hot Work Permit. When a permit is required,

check  the box for *Hot Work* and proceed to the back of the form and verify

by checking  all boxes in this section. Finally, sign as the person authorizing the permit as well as identify the person performing the fire watch.

Hot Work Organizational Assignments/Responsibilities: This section applies to all ETSU Facilities Management shops and vendors/contractors who perform welding, cutting and other hot work on ETSU properties.

The Supervisor of the Facilities Management shop performing welding, cutting and other hot work tasks shall review hot work procedures for each Hot Work Permit form submitted and sign the Hot Work Permit as applicable. *Approval of the Hot Work Permit by the Health and Safety Specialist, Fire Protection Manager or their designee is required prior to the start of the hot work.*

ETSU Project Managers shall review welding, cutting and other hot work and locations proposed by vendors and contractors for applicability of this policy. Project Managers are responsible for advising contractors/vendors about the Hot Work Permit procedures for the purpose of recognizing, evaluating and controlling hot work hazards on campus. A representative of the contractor or vendor must complete the Hot Work Permit and submit as described above.

Each individual performing welding or cutting and any hot work activity defined below shall ensure precautions have been taken as prescribed in the *Hot Work Permit form* prior to commencing any work. *The Hot Work Permit form shall be completed and submitted to the Facilities Management office for any hot work in areas not approved for hot work.* The Health & Safety Office must be notified in advance to evaluate the need for any fire alarm impairment, including the Public Safety emergency response status of the facility. The Fire Protection Manager will record any impairment in the Fire Protection Impairment Log. Additionally, the Health & Safety Office must be notified when the work is complete.

Permissible Hot Work Areas

Cutting, welding and other hot work shall be permitted only in areas that are or have been made fire safe. Assuming hot work is necessary (See *Alternatives to Hot Work*), the first step is to determine if the work can be done in a designated or approved hot work area. A designated area is a specific area designed or approved for hot work.

Areas Not Requiring Hot Work Permits - Areas that are not subject to a Hot Work Permit include:

- Welding and Cutting Shops; and
- Detached outdoor areas that are free of flammable and combustible materials (i.e., dry brush, grass, leaves) and is suitably separated from adjacent areas.

Prohibited Hot Work Areas

If hot work cannot be accomplished in an approved hot work area, there is a need to determine whether hot work is prohibited altogether. Sometimes an area simply cannot be made safe for cutting, welding or any other hot work and shall not be permitted. Some examples of prohibited hot work situations are as follows:

- Where processes involving flammable liquids, gases and dusts cannot be shut down and made safe;
- Where lint conditions are severe beyond correction;
- On partitions, walls, ceilings, or roofs with combustible coverings (e.g., expanded plastic insulation);
- On pipe or other metals that can conduct enough heat to ignite nearby combustibles;
- In the presence of explosive atmospheres (e.g., mixtures of flammable gases, vapors, liquids, or dusts with air);
- In sprinklered buildings while such protection is impaired;
- In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, rolled paper, or cotton; and
- In areas not authorized by management.

Hot Work Fire Watch Requirements

A fire watchers job is to monitor the area and watch for fires from the hot work operation and to make sure that persons not involved in the hot work operation do not come into or move combustible or flammable materials into the work zone during the hot work operation.

Fire watchers shall be required by the individual responsible for authorizing the hot work wherever hot work is performed in locations that a minor fire might develop, or where:

- Appreciable combustible materials in building construction or contents are closer than 35 ft. (11 m) to the point of operation;
- Appreciable combustibles are more than 35 ft. (11 m) away but are easily ignited by sparks;
- Wall or floor openings within a 35 ft. (11 m) radius expose combustible material in adjacent areas, including concealed spaces in walls or floors;
- Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by heat conduction or radiation.

Fire watchers shall have a fully charged and operable fire extinguisher (minimum 2-A:20-B:C) available within 30 feet of the location where the hot work is performed. In either case, the fire watcher will be trained to use the fire extinguishing equipment.

Fire watchers shall be familiar with facilities and procedures for sounding an alarm in the event of a fire.

Fire watchers shall watch for fires in all exposed areas, and try to extinguish them first only when obviously within the capacity of the equipment available, or otherwise sound the alarm immediately.

A fire watch shall be maintained for at least 30 minutes after completion of cutting, welding and other hot work operations to detect and extinguish smoldering fires.

If the individual conducting the fire watch must leave the area momentarily (to use the restroom, retrieve parts or tools from a service vehicle, etc.), they must arrange to have someone else take over the fire watch responsibility during the time they are away.

Alternatives to Hot Work

- Manual sawing versus cutting;
- Manual filing, versus mechanical grinding; and
- Using a threaded, bolted, or clamped connection versus a soldered or welded connection.

Hot Work Precautions

Precautions required include but are not limited to:

- Valves, regulators, hoses, and torches shall be checked regularly;

- Welding or cutting on vessels that contain combustible or flammable material is prohibited unless completely purged and residue removed;
- Gas cutting and welding equipment shall be secured to avoid damage and disturbance;
- Welding curtains should be used to prevent hot slag from scattering and to protect the vision of persons in close proximity to the hot work.
- Personnel performing hot work shall ensure that the atmosphere is free of flammable or combustible vapors. Should doubt arise, consult the Environmental Health & Safety Department to determine if the work should continue;
- Ensure adequate ventilation is provided;
- Segregate combustible material at least 35 feet from work area;
- Provide guarding in the form of shielding and covering if combustibles cannot be removed or segregated;
- Remove combustibles from common surfaces when welding on metal walls, partitions, or ceilings is to be completed;
- Special attention to welding or cutting pipes in contact with walls made with combustible materials; and
- Post a fire watch in areas where combustibles cannot be safely segregated from work, where sparks may impact lower levels in cases of elevated work, or where a fire alarm has been partly or completely disabled in order to perform the work.

Notification

Project Managers are responsible for advising contractors/vendors about the Hot Work Permit procedures for the purpose of recognizing, evaluating and controlling hot work hazards on campus. ETSU Project Managers shall evaluate hot work activities to be conducted by contractors or vendors for adherence to the Hot Work Permit policy prior to the start of work. ETSU employees, contractors and vendors are required to complete the Hot Work Permit form prior to the start of work unless precluded by an emergency situation. The Health & Safety Office must be notified in advance to evaluate the need for any fire alarm impairment, including the Public Safety emergency response status of the facility. Additionally, the Health & Safety Office must be notified when the hot work is complete.

Contact Persons

Dan O'Brien: Director of Environmental, Health & Safety- 439-7743 (Office)
 Mark Jee: Fire Protection Manager- 439-7785 (Office)

Chris Hurley: Health & Safety Specialist- 439-7784 (Office)
Mike Barrett: Environmental Manager- 439-6029 (Office)
Mike Grim: Fire and Safety Technician-439-7773 (Office)

References

International Fire Code (2006ed.): Chapter 26
NFPA 51B: Standard for Fire Prevention During Welding, Cutting, and Other Hot Work

Forms

The ETSU Safety Work Permit Form is attached as Appendix A.

Approved by: _____
William Brady Rasnick, Jr., Associate Vice President, Facilities Management

Date approved: _____

ETSU SAFETY WORK PERMIT FORM

This form is to be filled out in its entirety by the responsible individual who has personally inspected the worksite.

PLEASE TELL US WHO WILL DO THE WORK

Name of responsible person: _____ Performing shop or company: _____

Telephone: _____ Date & Time work to be performed: _____

Building: _____ Room, area, or equipment: _____

Describe the work to be performed: _____

Live Electrical Work (Any activities that require work to be performed on equipment that is in an electrically energized state will require this permit system. Diagnostics or troubleshooting live equipment < 480 volts (i.e. verifying equipment is isolated with a properly rated volt meter) does not require the permit system, but will only be performed by trained electricians and trained HVAC personnel with the appropriate PPE. **All 480 volts and greater, whether diagnostic or live work, will require this permit system.** Only the Electrical Shop Supervisor or Director level has the authority to approve the permit.

- All personal protective equipment has been provided and is being worn in accordance with ETSU's PPE Policy.
- Gloves have been tested for holes prior to work start.
- Boundaries around the equipment have been controlled keeping untrained employees or other personnel a safe distance from the energized equipment.

Electrical Supervisor or Director Level Signature _____

Chemical, Radiological, and Biological Hoods, Refrigerators, or Drains: Any work on chemical, radiological, or biological hoods that requires work to be performed inside the hood or on the hood ducting, or work on refrigerator/freezers or drains containing chemical, radiological, or biological materials.

- All energized equipment isolated by means of Lockout/Tagout.
- All personal protective equipment has been identified by the Health & Safety Specialist (97743 or 483-3862) as follows:
 - Gloves Required – Type: _____
 - Tyvek Suit Required
 - Respiratory Protection Required – Type: _____

Supervisor Signature _____

Hot Work: Activity that could produce flames, sparks, slag, or other hot fragments that might act as an ignition source to flammable materials in the area. Hot Work also includes any activity that could generate sufficient smoke or heat to activate a fire alarm detection system. It includes, but is not limited to: welding, Thermite welding, cutting, torch soldering, brazing, heat treating, thermal spraying, pipe thawing, and grinding.

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- Hot work equipment will be inspected and determined to be in good repair prior to the start of work.
- This work cannot reasonably be done in a shop or other area designated for this purpose and equipped to minimize hazards.
- No sprinklers will be taken out of service while this work is being done.
- The potential for smoke, heat, airborne dust, etc. to trigger a fire alarm has been evaluated and appropriate measures will be taken to prevent false alarms (including local horns, strobes and the automatic Public Safety Office notification). Advance arrangements may be necessary for Electricians to deactivate and restore systems or components. Ensure that systems are restored as soon as possible after the completion of work so that fire watches can be minimized.
- Surrounding floors will be swept clean and, if combustible, wet down or covered by a welding blanket.
- There are no combustible fibers, dusts, vapors, gases or liquids in the area. There are no tanks or equipment that previously contained flammable liquids in this area. Containers have been purged and the absence of explosive gases or vapors verified with a combustible gas detection instrument prior to the work. If there is a possibility of a leak developing in nearby piping, equipment, or tanks containing flammable liquids or gases, the area's air will be continuously monitored for explosive conditions. Call the Health & Safety Office (439-6030) if assistance is needed to test the area.
- All combustibles will be relocated 35 feet from the operation and the remainder protected with metal guards or flame-proofed curtains or covers (not ordinary tarpaulins).
- Fire alarms will not be taken out of service or a suitable fire watch will be arranged. **The Health & Safety Office will be notified in advance if it is necessary to disable the alarm system for an entire building.**
- Ample portable fire extinguishers and trained personnel to use them will be available at the job site. At a minimum, a 2-A:20-B:C rated extinguisher must be present in addition to the normal compliment of building extinguishers.
- All floor and wall openings, including cracks, within 35 feet of the operations will be tightly covered.
- The need for a fire watch during work, work breaks, and for 30 minutes after completion has been evaluated and an appropriate number of responsible personnel will be assigned to this duty.
- I have contacted the Health & Safety Office (439-6030) and received a verbal approval to proceed with the work.**
- Workers will not be exposed to toxic fumes and the work will not create an indoor air quality issue or else adequate ventilation will be provided to prevent these problems.
- Prior to starting work, workers will determine the location of the nearest: alarm pull station, building fire extinguisher and telephone (accessible) and verify a clear escape route from the work area.
- The person performing the hot work will verify the conditions specified in this permit prior to starting work each day that the permit is in effect. In addition they will document that verification or re-verification for each day after the start date by adding their initials, with the date, to the permit kept at the work site (directly below the signature line).

Person Responsible for Authorizing Hot Work -- *I verify that the above location has been examined; the precautions checked above have been implemented to prevent fire and unintended fire alarms. Permission is authorized for this hot work.*

Permit Authorizing Individual's Signature

It has been determined that a **Fire Watch** is necessary before hot work can proceed? Yes No

A copy of this completed form must be posted in the area of the hot work and submitted to the Office of Environmental Health & Safety. (Fax #439-7670)