

## I. Purpose

To eliminate or control potential ignition sources resulting from welding, flame cutting, soldering or similar activities which may produce flames or sparks. Provide a safe work/learning environment in University buildings where temporary hot work may be performed. Potential health, safety and property hazards can result from the fumes, gases, sparks, hot metal, and radiant energy produced during hot work. These, and other hazards, can be reduced through the implementation of effective controls as outlined in this Policy.

## II. Scope

This policy applies to all Kansas State University employees involved in welding, cutting or braising of metals, in areas other than those designated specifically for that purpose.

This policy fixes responsibility for the supervision and enforcement of a hot work permit system which includes work site, methods and equipment inspections as well as worker training and the issuance and use of personal protective equipment.

The following standards are incorporated by reference into this Policy: The National Fire Protection Association (NFPA) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work (NFPA 51 B, 2009), the Occupational Safety and Health Administration (OSHA) Standard for Welding, Cutting, and Brazing, Subpart Q (29 CFR 1910.251), the OSHA Standard for the Handling, Storage, and Use of Compressed Gases, contained in Subpart H, Hazardous Materials (29 CFR 1910.101), and the American National Standards Institute (ANSI) Standard 7.87.1-2003.

## III. Definitions

- 1) **Hot Work-** Operations including cutting, welding, Thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar situation.
- 2) **Hot Work Area-** The area exposed to sparks, hot slag, radiant heat, or convective heat as a result of the hot work.
- 3) **Hot Work Equipment-** Electric or gas welding or cutting equipment used for hot work.
- 4) **Hot Work Permit-** A document issued by the supervisor to the employee performing the Hot Work that outlines the procedure(s) to be followed, dates, and times of the procedure(s).
- 5) **Responsible Person-** A person trained in the safety and fire safety considerations concerned with hot work. Responsible for reviewing the sites prior to issuing permits as part of the hot work permit program and following up as the job progresses.

- 6) **Qualified Individual-** Supervisory personnel, such as welding superintendents, maintenance foremen, plant engineers or master mechanics, who have specific training, knowledge, experience, or are certified as competent to carry out and oversee welding operations.

## IV. Responsibilities

### 1) Employee

It is the responsibility of each University employee engaged in hot work to implement controls that will eliminate or greatly reduce the hazards generated by their work, for the protection of other University employees, students and visitors

### 2) Supervisor

It is the responsibility of each supervisor, whose employee(s) engage in hot work, to ensure that the guidelines in this Policy are implemented and hazards are controlled so as not to present an exposure to University employees, students and visitors. It is also the responsibility of the supervisor to ensure the employee(s) they designate to perform hot work, utilizes the necessary procedures and equipment, so as to minimize that employee's own exposure to the hazards generated.

### 3) University

It is the responsibility of the University to provide the necessary equipment to control the hazards generated by hot work, when the work is performed by University employees.

## V. Program Description

- 1) General Cutting and Welding Controls. If possible, perform the hot work in designated shops, only. In the event this is not possible, then areas where hot work is to be performed should be properly prepared prior to work commencement. The following controls should be implemented:
  - a. Cutting and welding operations are restricted to properly trained and authorized individuals only.
  - b. Move combustible materials at least 35 feet from the work site. If this is not possible, then protect combustible items with metal guards or flame proof curtains or covers. (Ordinary tarpaulins or cloths are not acceptable protection).
  - c. Cover floor and wall openings located 35 feet or less to the work site, to prevent hot sparks from entering walls or falling beneath floors to a lower level.
  - d. Use fire resistant curtains and/or tinted shields to prevent fire, employee burns and ultra-violet light exposure.
- 2) Ventilation and Atmospheric Testing.

- a. Hot work should not be conducted in the presence of flammable gases, vapors, liquids, or dusts (where an explosive concentration can develop). Atmospheric testing prior to work commencement, and periodically there after, should be conducted if the atmosphere in the work area has the potential to become hazardous.
  - b. Ventilation of the work site, either through local or general exhaust ventilation, should be adequate for the work performed. The vent terminator of a local exhaust system must not be located near operational air intakes to any University building.
- 3) Fire Protection. A person, other than the operator, should perform fire watch duty. This duty includes remaining on the work site for at least 30 minutes after hot work operations have ended. In addition, the following steps should be taken:
  - a. Prior to issuing a Hot Work Permit, the authorized individual shall ascertain that a fire extinguisher of the appropriate type and size is readily available and accessible, and that a fire-watch attendant (a second person) will be present during the hot work activity to respond promptly should an incident occur.
  - b. If a building or area is equipped with a sprinkler system, then that system must be operational when the hot work is performed.
- 4) Personal Protective Equipment (PPE). PPE specifically designed for hot work should be provided to and utilized by employees performing the hot work. Supervisors should consult Environmental Health and Safety if they have a question regarding employee exposure and the PPE necessary to protect them.
- 5) Hot Work in Confined Spaces. Any hot work done in confined spaces, whether designated as Permit Entry or non-permit entry, will follow Permit Entry Required for confined spaces. The very nature of hot work in a confined space makes the atmospheric hazards of that space a danger to employee health. Consult Environmental Health and Safety before conducting hot work in any confined space (labeled or otherwise).
- 6) Compressed Gas Cylinder Storage and Handling. The safe storage and handling of compressed gas cylinders is an important part of cutting and welding operation. The following steps should be followed:
  - a. Oxygen and fuel gas cylinders should be stored separately with the protective valve caps in place. Except when in use, oxygen and fuel gas cylinders should be stored at least 20 feet apart or separated by a noncombustible wall at least 5 feet high.
  - b. Cylinder carts equipped with a cylinder restraint, such as a chain or strap, must be used for the transporting of all compressed gas cylinders.

- c. All cylinders must be secured, when stored or in use. Securing devices in storage should prevent the tipping over of the cylinder. When in use, cylinders should remain on a welding cart and be secured to that cart.
  - d. Regulators must be compatible with the cylinder and its contents. Regulators are gas specific, so make sure the correct regulator is used.
- 7) Hot Work Permits. No hot work can be done without the issuance and posting of a hot work permit, except in those shops that have areas dedicated to hot work and outdoors areas only in the event of hot work that does not impact combustible or flammable material; fire extinguishers must be readily available within 50 feet. An example of a Hot Work Permit is found in Appendix A.

There are two types of hot work permits that can be issued, In-house Hot Work Permit and the Outside Contractor Hot Work Permit. The Hot Work Permit procedure is as follows:

- a. In-House
  - i. The supervisor issues the Hot Work Permit to his/her own employee(s). Each permit is job specific. The supervisor is then responsible for submitting the permit to Environmental Health and Safety prior to commencing work. At the end of the job, the supervisor must keep this permit on file for a period of not less than one year.
  - ii. The employee(s) assigned to perform the hot work is to hang the Hot Work Permit at the job site.
- b. Outside Contractor
  - i. Access to the Kansas State University Hot Work Policy should be provided to all outside contractors that will engage in hot work on campus.
  - ii. Prior to beginning any hot work on University property, the contractor's representative should contact the University project manager and arrange for the issuance of a hot work permit. Once issued, the permit must be displayed on the job site. The contractor's personnel are expected to adhere to all the guide lines set forth in this Policy and make a reasonable effort to ensure the health and safety of University employees, students and visitors.

## **VI. Training**

- 1) It is expected that any University employee engaged in hot work has received training and developed the skills necessary to work in a safe and professional manner.
- 2) Environmental Health and Safety will train and consult with any employee, at the request of their supervisor, on the topic of personal and fire safety as it relates to hot work.

- 3) All supervisors with a need to issue hot work permits will be trained in their completion, and the guidelines of this Policy, with the assistance of Environmental Health and Safety.

## VII. Questions

Direct questions to EHS (Environmental Health and Safety) by phone: 785-532-5856 or email: [safety@ksu.edu](mailto:safety@ksu.edu)