1. Purpose

This safety program is intended to evaluate and identify the specific hazards where hot work is performed, communicating information concerning these hazards, and establishing appropriate procedures and protective measures for Kennesaw State University (KSU) employees and students.

2. Scope

This-heated soldering
pecific local procedures
tected, and arranged to
been adequately assessed
fic operations in laboratories,

3. Definitions

Approved – Listed or approved by a nationally recognized testing laboratory. Refer to 29 CFR 1910.155(c)(3) – Scope, Application, and Definitions applicable to Subpart L – Fire Protection and 29 CFR 1910.7 – Definition and Requirements for a Nationally Recognized Testing Laboratory.

Confined space – For the purposes of this program, a confined space is intended to mean a relatively small or restricted space such as a tank, boiler, pressure vessel, or small compartment of a ship.

Hot work – Work involving operations capable of initiating fires or explosions. This includes, but is not limited to, welding, burning, grinding, flame cutting, flame heating, brazing, soldering, and plasma cutting.

Hot work permit ("permit") – A document issued by KSU for the purpose of authorizing performance of a specified hot work activity.

Permit Authorizing Individual (PAI)

4. Responsibilities

A. Management and Supervisors

Management and supervisor responsibilities are as follows:

- Recognize the responsibility for the safe usage of cutting and welding equipment on KS property.
- Establish areas for cutting and welding based on fire potentials of KS

E. Fire Watch

Fire Watches must be used when any of the following take place or any of the following conditions exist:

- Work activities that involve torching, welding, cutting, brazing, and soldering.
- Work activities that could create an ignition source.
- Situations where larger than minor fires may develop.
- Areas where appreciable combustible materials in building construction or contents are closer than 35 feet to the point of operation.
- Areas where appreciable combustible materials are more than 35 feet away but could be easily ignited by sparks.
- Instances where wall or floor openings within a 35-foot radius are exposed to combustible material, including concealed spaces in walls, floors, and ceilings.
- When combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.
- Any time or situation as deemed necessary by the Fire and Life Safety Team.

Fire Watch responsibilities include the following:

- Be familiar with facilities for sounding an alarm in the event of a fire.
- Watch for fires in all exposed areas and try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm.
- Stay onsite for at least a half hour after the completion of hot work to assess hot spots, smoldering material, and fires.
- Attend fire extinguisher use training, or training in equivalent fire protection methods.
- Have fire extinguishing equipment [illegible]

designate precautions to be followed in granting authorization to proceed preferably in the form of a written permit.

The basic precautions for fire prevention during hot work are as follows:

- If the object to be welded or cut cannot readily be moved, the area must be made safe by removing combustibles or protecting combustibles from ignition sources.
  - All combustibles must be relocated at least 35 feet (10.7 m) from the work site. Where relocation is impracticable, combustibles must be protected with flameproof covers or otherwise shielded with metal or welding curtains.
- 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, and to protect the immovable fire hazards, or equivalent precautions taken.
  - 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 that may drop through the floor. The same precautions must be observed with regard to cracks or holes in walls, open doorways and open or broken windows. If the above requirements cannot be followed, then welding and cutting will not be performed.

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- In areas not authorized by management.
- In sprinkler-protected buildings while such protection is impaired.
- In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside unclean or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.
- In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper, or cotton.

B. Welding and Cutting Containers

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

Any pipelines or connections to the drum or vessel must be disconnected or blanked.

All hollow spaces, cavities or containers must be vented to permit the escape of air or gases before preheating, cutting or welding.

Purging with inert gas is recommended.

C. Confined Spaces

Ventilation is a prerequisite to work in confined st80.5833 - t350c 0 Tw 1(80.5833 - t350c 0 Tw 1(80.58

CAUTION	Used for all filler metals and fusible granular materials.	Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. Use adequate ventilation. See ANSI Z49.1 Safety in Welding and Cutting published by the American Welding Society.

WARNING: CONTAINS
CADMIUM – POISONOUS
FUMES MAY BE FOUS
FUMES (( )]TJl]TJ 0 Tc 0)-15 (S)-7 ( )]TJ 0.005 Tc -05 Tfe H5 TD 0.5 TAT4 (M)-7 (((GS)-7 ( )]TJ 0

Welding zone	Minimum air flow *(1) cubic feet/minute	Duct Diameter
4 to 6 inches from arc or torch	150	3
6 to 8 inches from arc or torch	275	3 ½
8 to 10 inches from arc ortorch	425	4 ½
10 to 12 inches from arc ortorch	600	5 ½

*(1) When brazing with cadmium bearing materials or when cutting on such materials increased rates of ventilation may be required.

*(2) Nearesthalf-inch duct diameter based on 4,000 feet per minute velocity in pipe.

A fixed enclosure with a top and not less than two sides which surround the welding or cutting operations and with a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 linear feet (30 m) per minute.

2. Ventilation in Confined Spaces

All welding and cutting operations carried on in confined spaces must be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency.

- This applies not only to the welder but also to helpers and other personnel in the immediate vicinity.
- All air replacing that withdrawn must be clean and respirable.

In circumstances for which it is impossible to provide such ventilation, NIOSH approved airline respirators or hose masks must be used.

In areas immediately hazardous to life, a full-facepiece, pressure-demand, self-contained breathing apparatus (SCBA) or a combination full-facepiece, pressure-demand supplied-air respirator with an auxiliary, self-contained air supply approved by NIOSH must be used.

Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers or SCBA apparatus

has shown such protection to be desirable for fixed location production welding and for all production welding on stainless steels.

Where air samples taken at the welding location indicate that the fluorides liberated are

Welding (brazing) involving cadmium-bearing filler metals must be done using adequate ventilation.

8. Mercury

In confined spaces or indoors, welding or cutting operations involving metals coated with mercury-bearing materials, including paint, must be done using local exhaust ventilation or airline respirators.

Local exhaust ventilation and airline respirators are not required when atmospheric tests under the most adverse conditions show that employee exposure is within acceptable concentrations.

Such operations, when done outdoors, must be done using NIOSH approved respirators.

9. Cleaning Compounds

In the use of cleaning materials, because of their possible toxicity or flammability, appropriate precautions such as manufacturer's instructions must be followed.

Degreasing and other cleaning operations involving chlorinated hydrocarbons must be so located that no vapors from these operations will reach or be drawn into the atmosphere surrounding any welding operation.

In addition, trichloroethylene and perchloroethylene should be kept out of atmospheres penetrated by the ultraviolet radiation of gas-shielded welding operations.

10. Stainless Steel

Oxygen cutting, using either a chemical flux or iron powder or gas-shielded arc cutting of stainless steel, must be done using mechanical ventilation adequate to remove the fumes generated.

C. Industrial Applications – Mechanical Piping Systems

The requirements in this program for fire prevention and protection, protection of personnel, health protection and ventilation, oxygen-fuel gas welding and cutting, and arc welding and cutting must be observed.

The use of X-rays [illegible]

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need to be disabled, contact the Fire and Life Safety Supervisor at 470 578-3321 or visit 601 Chamblee Way SE Marietta, GA.

- The Fire and Life Safety Team will close out the hot work permit by conducting a final inspection, which shall be a minimum of one hour following the Fire Watch period, to ensure all conditions are safe and then have the fire alarm system and/or device(s) re-instated back into full operational status by contacting the Facilities Operations Department.

The following procedures provide the requirements needed to obtain a hot work permit during off business hours. This hot work p

Workers or other persons adjacent to the welding areas must be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.

3. Protective Clothing

Appropriate protective clothing required for any welding operation will vary with the size, nature, and location of the work to be performed.

7. Training

All personnel performing hot work must be trained in proper equipment operation; handling and storage of welding materials; compressed gas safety; chemical hazards; and the Hot Work Program. Additional training may also be necessary in permit required confined space entry, control of hazardous energy, and the proper selection of use and PPE. PKESU does not accept responsibility for the training of contractors. Contractors must be made aware of the hazards related to the tasks being performed.

Appendix A – Hot

Appendix B – Hot Work Permit Request Form