



Stony Brook University Hospital
 Environmental Health & Safety
 Policy & Procedure Manual



Title: **Welding, Cutting and Brazing**

Number EH&S -1-13

Revision: 6/10/08

Date 9/93

Pages 6

PURPOSE: To establish safe working practices during welding, cutting and brazing operations.

SCOPE: Hospital, Ambulatory Surgery Center, and Ambulatory Care Pavilion

DEFINITIONS:

Designated Area: A safe area where welding, cutting or brazing is authorized.

Fire Watch: Trained personnel in attendance during the entire cutting and welding operation and immediately available to extinguish a fire or take other effective action if needed.

Hot Work Permit: A special permit issued by Environmental Health and Safety (EH&S) which authorizes specific cutting or welding work at a specific location and time. (See Appendix A.)

Welder: Any operator of electric or gas welding or cutting equipment.

PROCEDURES:

I. Responsibilities:

A. Departments: To ensure that the provisions of this policy are understood and practiced by their employees.

1. Determine if the work will be done in an area which contains or has the potential to contain combustibles or other hazardous materials.
2. Protect the combustibles in the area of operation using one of the following measures:
 - a. moving the work area to an area free of combustibles

- b. moving or shielding the combustibles
 - c. scheduling the work during a time when the combustibles are not likely to be in the area.
3. Obtain a Hot Work Permit from EH&S for any work that is to be performed outside of a designated area.

4. Ensure that workers are provided with and using proper safety equipment, including personal protective equipment and fire extinguishing equipment.
5. Designate a fire watch when required.
6. Ensure that the work area is given a final inspection one-half hour after job completion to locate and extinguish possible hot spots or fires.

B. Environmental Health and Safety

1. Review and approve, in coordination with a departmental representative, locations approved for welding, cutting and brazing activities (designated areas).
2. Designated areas shall be approved by EH&S.
3. Periodically inspect designated areas to be sure that conditions have not become unsafe for welding, cutting, or brazing.
4. Issue Hot Work Permits for work being done outside of the designated areas, after the area has been inspected and approved by EH&S.
5. Provide instruction for fire watches, and ensure that the proper fire fighting equipment is in working condition, and is available to standby personnel.
6. Suspend hot work if conditions become unsafe for the work being performed.

C. Fire Watch

1. Be trained in the use of appropriate fire fighting equipment and how to notify appropriate personnel in the event of a fire.
2. Correct or stop any conditions which may lead to a fire and report conditions to their department immediately.
3. Monitor the welding and cutting work on both sides of the wall or floor and be on the alert for signs of a fire.
4. Attempt to extinguish fires appropriate to the available equipment and level of training.
5. Remain at the work site to monitor for smoldering fires while work is in progress and for at least thirty minutes following job completion. If the fire

watch must leave the work site, all hot work must stop.

D. Welders

1. Comply with this policy. Obtain a Hot Work Permit for any non-designated areas.
2. Prior to performing welding, check their equipment to ensure that it is in good working order.
3. Use appropriate safety equipment, including eye and face protection, hand protection, body protection, head protection, hearing protection and respiratory protection, as needed.
4. Welding, cutting or brazing operations where conditions are not safe is prohibited.
5. Stop work when conditions change from those set when work was approved.
6. If fire watch must leave work site, operations must cease and the welder must remain at work site for one-half hour following job completion to monitor for fires.
8. Attend training, as needed.

II. Hot Work Procedures:

A. Work Areas

1. Designated Areas

Cutting and welding are permitted at any time in designated areas if conditions are appropriate and proper safety precautions are taken.

2. Permit Required Areas

When welding or cutting work is to be done outside of a designated area, it is necessary to obtain a Hot Work Permit from EH&S before work can be started. Notification of job intent should be given at least 48 hours in advance.

3. Special Procedures for Permit Required Areas:

- a. Hot Work Permit: Area must be reviewed and inspected by EH&S and precautions on permit must be complied with.

- b. Combustible materials: Combustible materials within 35 feet of the work must be removed from the area or shielded with a fire resistant material. Edges of cover must be tight to floor and overlaps properly secured.
- c. Floors: Combustible materials on the floor (paper, wood shavings, etc.) must be swept clean for a radius of 35 feet. Combustible floors may be kept wet or protected with fire resistant shields. Operators of electric arc welding equipment must be protected from the possibility of shock due to wet floors.
- d. Ducts: Ducts or systems that might carry sparks to distant combustibles shall be suitably protected or shut down.
- e. Combustible Walls: If walls, partitions, ceiling or roof are comprised of combustible material, fire-resistant shields shall be used.
- f. Noncombustible Walls: If cutting or welding is done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of nearby combustibles. Where combustibles cannot be relocated, a fire watch shall be positioned.
- g. Ventilation: Temporary local exhaust ventilation or other arrangements may be necessary to minimize or eliminate airborne contaminants.

III. Special Conditions

- A. Work Stoppage - When work is stopped for an extended period of time, such as lunch breaks or overnight, the equipment must be shut down and secured to prevent accidental sparking.
- B. Confined Space Policy 1-5 - Any welding or cutting that is to be done in a confined space shall be in compliance with this policy.
- C. Welding or Cutting Containers - No cutting, welding, or other hot work is to be performed on unapproved surfaces such as used drums, barrels, tanks, or other containers that may have contained flammable materials, greases, tars, acids, or other materials which may produce flammable or toxic vapors when heated. Any pipe lines or connections to the vessel must be disconnected or blanked.
- D. Venting and Purging - Notify EH&S if hollow spaces, cavities, or containers are to be vented to permit the escape of air or gases before preheating, cutting, or welding.

Purging with inert gas is recommended.

- E. Outside Contractors - Contractors shall perform all cutting and welding procedures in accordance with the policies and procedures set forth in this policy.

IV. Personal Protective Equipment

Personal protective equipment for eyes, face, head, and extremities; protective clothing; respiratory devices, and protective shields and barriers, shall be used and maintained in a sanitary and reliable condition. Selection of appropriate devices should be made in conjunction with EH&S.

1. Eye and Face Protection - Safety glasses or goggles and face shields shall be worn by Welders. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing or for inspection. Helpers and fire watch personnel shall wear eye and face protection as appropriate.
2. Head Protection - Helmets which protect the face, neck, and ears from direct radiant energy shall be worn during all welding and cutting operations.
3. Protective Clothing - The size, nature, and location of the welding or cutting operation will determine the extent of the leather protective clothing required. Except when engaged in light work, flame-proof gauntlet gloves shall be worn.
4. Other - Hearing and respiratory protection may be required when performing hot work.
5. Protective Barrier - In production work, a sheet metal screen should be provided in front of the welder's legs to provide protection against sparks and molten metal. Where work permits, the welder should be enclosed in an individual booth painted with a low reflectivity finish or enclosed with noncombustible screens.

INQUIRIES/REQUESTS: Environmental Health and Safety
L1-059 HSC
Zip 8017
Main Office: 444-6783
FAX: 444-6845

RELATED FORMS: Hot Work Permit (Appendix A)

RELATED DOCUMENTS: Confined Space Operations, Policy 1-5
29 CFR 1910.252 *Welding, Cutting and Brazing*
ANSI Z49.1-1994 *Safety in Welding, Cutting and Allied Processes*
ANSI/NFPA 51B-1994 *Fire Prevention in Use of Cutting and Welding Processes*
ANSI/AWS F4.1-94 *Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping*

EMERGENCIES: University Police – 911
 From a cell phone (631) 632-3333.
 Contact EH&S (2-6410) to report a safety problem.



HOT WORK PERMIT

Work Being Performed by: **Stony Brook University**
 Start Date: _____ End Date: _____

Work Being Performed by: **Contractor**
 Start Date: _____ End Date: _____

University Department: _____
 Department Contact: _____
 Phone: (____) _____
 Person in Charge of Crew: _____
 Name of Welder(s)/Qualified Fire Watch: _____

Company Name: _____ Phone: (____) _____
 Company Address: _____
 Person in Charge of Crew: _____
 University Contact: _____ Phone: (____) _____
 Name of Welder(s)/Qualified Fire Watch: _____

Describe possible sources of ignition (e.g., acetylene torch, soldering, electric arc, etc.): _____
 Type of gases and other materials being used: _____
 Job Location: _____ Description of Work: _____

FIRE SAFETY

- | YES | NO | N/A | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | | Are there fire alarm devices in area that could be impacted by work fumes or smoke? If YES , you must notify the Department of Environmental Health and Safety to establish Fire Detection/Suppression System Impairment. (i.e., Cover fire alarm devices, temporarily shut down detection system, etc.) |
| <input type="checkbox"/> | <input type="checkbox"/> | | Is the appropriate type (i.e., Carbon Dioxide or Dry Chemical) fire extinguisher located in work area? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is there methods to control heat, sparks, or slag from traveling to other areas? (i.e., Immediate area, opposite side of wall, inside ducts or pipes being worked on, etc.) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are combustibles/flammables within 35 feet of work (including floors, walls and areas adjacent to the walls being worked on) removed or protected with appropriate fire resistant guards or shields? (i.e., Fire resistant material tight to the floor and secured.) |
| <input type="checkbox"/> | <input type="checkbox"/> | | Has the following been reviewed with the qualified Fire Watch? (If NO , review at this time) |
| | | | <ul style="list-style-type: none"> • Location of appropriate fire fighting equipment. • How to correct or stop any conditions which may lead to fire. • How to notify the appropriate personnel in the event of an emergency and how to sound the alarm. • How to use a fire extinguisher. • How to monitor the work on both sides of a wall/floor. • How to monitor worksite for smoldering fires for at least 30 minutes following job completion. |

CONFINED SPACE ENTRY WORK

- | YES | NO | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Is this space large enough that a person can bodily enter, has limited means of entry/exit, AND space is not designated for continuous occupancy? If YES , complete the Confined Space Entry Permit. |

GENERAL SAFETY

- | YES | NO | N/A | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | | Is mechanical ventilation needed to keep the toxic gases, vapors, fumes or dusts below the maximum allowable concentrations? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is Lockout/Tagout required? If YES , follow Lockout/Tagout procedures. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are pipelines or connections disconnected or blanked? |
| <input type="checkbox"/> | <input type="checkbox"/> | | Have all welding and cutting equipment been inspected to ensure it is in good working condition? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Do ALL workers have appropriate personal protective equipment (PPE)? |
| <input type="checkbox"/> | <input type="checkbox"/> | | Any other special conditions and /or safety precautions? If YES , explain: _____ |

< APPROVAL AND AUTHORIZATION >

All hot work shall be performed by personnel who are trained in the safe operation of equipment and are familiar with the University's Welding and Cutting Policy. The Department of Environmental Health and Safety must inspect work area before issuance of Hot Work Permit. This permit expires at the end of the job or if conditions change that adversely affect safety in the work area. Return permit to EH&S upon expiration.

Applicant's Signature: _____ Phone Number: (____) _____

EH&S Authorization Signature: _____ Date of Authorization: ____/____/____