HOT WORK PROGRAM

Title 8
California Code of Regulations
§4848

CALIFORNIA STATE UNIVERSITY
Dominguez *Hills*

August 26, 2004

Risk Management /
Environmental Health & Occupational Safety

California State University Dominguez Hills

HOT WORK PROGRAM

Table of Contents

HOT WORK PROGRAM

Purpose

The hot work permit process is established to prevent ignition of combustible and flammable materials from occurring. Hot work permit procedures are utilized in any activity that results in the release of sparks, fire, molten slag, or hot material, which has the potential to cause fires or explosions. This program defines responsibilities and requires the use of a hot work permit in non-approved areas. This applies but is not limited to open flame, welding, burning, grinding; use of non-intrinsically safe electrical tools and instruments; work in electrical circuits; or use of spark producing devices. This also applies to work on portable and mobile containers, which contain or have contained flammable or combustible materials, and impedance thawing. The hot work program applies to all CSUDH departments and vendors/contractors who perform welding and cutting on campus. However, approved welding/cutting areas are exempt from the hot work permit process. Hot work permits can be obtained from the Office of Risk Management/Environmental Health & Occupational Safety, or Physical Plant Manger or Supervisor.

HOT WORK PROGRAM

Objectives

- Ensure the work area is inspected and combustibles and flammables are isolated from the hot work.
- Establish fire watches when applicable.
- Provide communication with all departments concerned.
- Control how open flame or spark-producing equipment is used.
- Formally document all hazardous conditions and special requirements of the work area.

Precautions

The following are general safety precautions, which shall be satisfied prior to performing hot work activities regardless of location:

- Valves, regulators, hoses, fittings, gages, electric leads, voltage setting, tips, torches, etc. should be checked regularly;
- Secure gas cutting and welding equipment to avoid damage and disturbance;
- Floors swept and cleared of combustibles within a 35 feet radius of the work area;
- Prohibit welding or cutting on vessels that contain combustible or flammable material unless completely purged and residue removed;
- Ensure that the atmosphere is free of flammable or combustible vapor, should doubt arise, consult RM/EHOS to determine if work should continue;
- Flammable and combustible liquids shall not be found within 35 feet radius of work area;
- Combustibles shall be protected with flameproof covers, shielded with metal guards, curtains or wet down to help prevent ignition of materials;
- At least one CO_2 or dry chemical fire extinguisher on site.

Inspection of non-approved welding areas

The individual issuing the permit must personally examine the location where the work is to be done and insure that all safety precautions have been met. The permit will be issued to one person responsible for the work to be accomplished. The Hot Work Permit must be displayed at the job site, preferably attached to or near the welding or cutting equipment. Precautions for non-approved areas include, but are not limited to:

- Ensuring adequate ventilation is provided;
- Removing combustibles from common surfaces when welding on metal walls, partitions, or ceilings is to be completed or providing fire-resistant shields or guards;
- Pay attention to welding or cutting pipes in contact with walls made with combustible materials;
- Ducts, conveyor systems, and piping that might carry sparks to distant combustibles shall be protected, shut down or closed off;
- Portable welding curtains or shields installed to protect other workers in the area by containing sparks and slag;
- Don the required PPE on site:
    - Respirator – must be worn at all times, inspected before and after use, and in good condition (replace any parts as necessary).
    - Gloves – worn on both hands.
    - Face shield or welding helmet with required tint protection
    - Safety glasses with side shields

Precautions Cont.

    - Work boots
    - Earplugs – worn especially during plasma cutting and grinding
    - Leather apron
- Post a fire watch in areas where combustibles cannot be safely segregated from work or where sparks may impact lower levels in cases of elevated work. A second fire watch may be required on the back side of wall were welding is taking place. **Refer to the "Responsibilities" section for the responsibilities of fire watch personnel.**

HOT WORK PROGRAM

Responsibilities

Person Doing the Work:

1. Read, understand and follow the conditions listed on the Hot Work Permit.
2. Advise other workers of any special precautions or conditions pertaining to the job.
3. Survey the work area to confirm safe work conditions. Know the location of the nearest telephone, fire alarm, emergency communication system, fire extinguisher, safety shower, first aid kit, etc., before starting work, and know how to use them.
4. Confine all sparks and slag as close to the work area as possible.
5. Be constantly aware of conditions in the immediate work area, and be ready to stop work if conditions change. Do not resume work until safe conditions are restored.
6. Inspect the work area and adjacent area for a distance at least 35' around the hot work site, including the other side of any wall or barrier, to which sparks or heat might spread.
7. Ensure the equipment and area have been properly prepared and are ready for the safe performance of the work.
8. Ensure that the line to be demolished or removed are properly identified and marked.
9. Inform fire watch of potential fire hazards (if needed).
10. List special precautions as necessary.
11. Prevent an operation from being performed, which has the potential to cause the area or equipment to become unsafe while the permit is in effect.
12. Inspect and gas check the work area periodically.
13. Ensure that facility operations, construction or maintenance will not be adversely affected by the proposed work activities.
14. Ensure that the proper personnel are notified of work to be done, and approval received.
15. Hold hard copies of the permits until the work is ready to start.
16. Be satisfied that the proper precautions for hot work have been taken.
17. Review Hot Work Permit checklist prior to performing work.
18. Individual issuing the permit must sign the permit after the above conditions have been met.
19. Ensure that the hard copy of the permit has been posted at the work location.
20. Notify proper personnel when the permit is closed out.
21. Close out permit by signing the permit
22. Clean up and secure the work area after completion of work each shift. At the end of the shift or upon completion of the work, whichever comes first, a copy of the completed permit must be sent to the RM/EHOS office. If the job is incomplete and the person or crew temporarily leaves the unit, the worker(s) must display the Hot Work Permit in the area so that all employees will be able to see it.
23. Ensure all participants in the Hot Work Permit process have fulfilled their duties and responsibilities.
24. Immediately after the work is completed, inspect the work area and adjacent areas to determine that they are in a safe place.
25. Welding or Cutting is NOT permitted when:
    a. Performed in areas not authorized by management.

b. Potentially explosive atmospheres (i.e. flammable atmospheres) exists.
c. In storage areas of exposed, readily ignitable materials.
d. Where dust accumulation is 1/16 of an inch within 35 feet of the area. *All dust accumulation shall be removed before welding/hot work is started.*

When any alarm or Emergency Announcement is made, stop all work, disconnect all electrical equipment, and secure all gas cylinders. Do not resume any work until safe conditions are restored.

Fire Watch (not necessary in approved welding areas):

1. Observe an area of at least 35' around the hot work site, including the other side of any wall or barrier, and maintain the area free of combustibles and tripping hazards.
2. Have no other duties assigned while on watch.
3. Understand and follow the conditions listed on the Hot Work Permit.
4. Be trained in the use of fire extinguishing equipment provided.
5. Understand the alarms and where and how to activate them.
6. Notify the Person Doing the Work if any sparks are not contained at the work area.
7. Sound the alarm for assistance and extinguish any small fires started by sparks or slag.
8. Remain on the scene from the start until 30 minutes after the completion of all hot work.

RM/EHOS:

At the department's request RM/EHOS can provide an independent assessment of the work area and sign the permit for and permits involving welding, burning and grinding on any in-service piping and during hot work inside a confined space.

Special Considerations

In-service piping requirements
Welding on in-service piping or equipment will require a written procedure from engineering. This procedure shall include location, piping or equipment specifications, non-destructive examination, stress-relieving information, and any other procedure that is deemed necessary to insure the job can be performed safely. The procedure will be approved by the Manger and Safety Representative.

Welding on in-service equipment refers to any welding t be done on equipment or pipelines which are to remain in service and which have not been depressured, blinded or purged.

When welding on rotating equipment, be sure to ground strap is a s close to the area being welded as possible.

Blinding Requirements
Hot work on depressurized, shut-in, or temporarily out-of-service process handling equipment, piping, and vessels requires a full-rated blind as close to the work as possible.
A double block and bleed does not meet the blinding requirements for hot work. To allow a double block and bleed, a variance is required.

Neoprene Module Interconnects
Neoprene module interconnects (weather boots) are combustible. Additional precautions, such as covering with fireproof material, must be taken when cutting, welding or grinding is to be done in close proximity to these module interconnects.

Duration of Permits/Permit Close Out
Permits will be in effect until job completion but will not extend beyond the end of the shift in which the permits were issued.

HOT WORK PROGRAM

Standard Operating Procedures

Welding Standard Operating Procedures

1. Valves, regulators, hoses, fittings, gages, electric leads, voltage setting, tips, torches, etc. should be checked.
2. Ensure fittings are tight.
3. Inspect hoses for cuts and frayed areas.
4. Repair or replace any defective equipment before using.
5. Set gauges to desired PSI.
6. Ensure that the following PPE is available and are in good condition:
    a. Respirator – must be worn at all times, inspected before and after use, and in good condition (replace any parts as necessary).
    b. Gloves – worn on both hands.
    c. Face shield or welding helmet with required tint protection.
    d. Safety glasses with side shields
    e. Work boots
    f. Earplugs – worn especially during plasma cutting and grinding.
    g. Leather apron
7. Fire extinguisher charged and ready.
8. Locate and set up welding screens to protect employees, but DO NOT block your EXIT.
9. Ensure that adequate ventilation and lighting are in place.
10. No eating, drinking, or storage of food in the welding area.
11. Follow the user's manual carefully.
12. Use a spark lighter to obtain a flame. DO NOT use matches since the first puff of flame can burn your hand.
13. Be aware of possible backfire (torch sputters or goes out with a loud pop, this can be caused by a clogged tip) and flashback (torch begins making a loud squealing noise and becomes very hot or emits dense smoke caused by the flame receding into the torch body or the hoses, this is a very dangerous condition), and the procedures to follow if this occurs (i.e. shut down the entire rig an allow to clean, inspect all parts, clean or repair parts as necessary, etc.).
14. Weld on firebrick only, but not directly on the firebrick. Suspend the work between firebricks.
15. Do not weld or cut galvanized steel or steel plated with zinc, cadmium, or lead since they emit toxic gases.
16. Never use oil, grease or solvents near the welding rig since they react explosively with oxygen.
17. DO NOT use the acetylene gas at pressures greater than 15 PSI since higher pressures can spontaneously explode this gas.
18. Open the oxygen cylinder valve slowly because a rush of high-pressure gas can damage the rest of the rig.

19. Open the acetylene cylinder valve ½ turn and leave the valve wrench in place so the cylinder can be shut off fast in an emergency.
20. If you sense a distinctive nauseating odor of acetylene, shut down the rig.

Electrical Welding Standard Operating Procedures:

1. Adhere to the Gas Welding Standard Operating Procedures in addition to the following:
   a. Ensure electrical cord, electrode holder and cables are free from defects – **no cable splices within 10 feet of electrode holder.**
   b. Ensure welding unit is properly grounded. *This helps to avoid over heating.*
   c. Set Voltage Regulator to Manufacturers specifications.
   d. To avoid electrical shock DO NOT wrap cables around any body part.

HOT WORK PROGRAM

Hot Work Permits

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS
Welding, Cutting, or Hot Work Permit

BEFORE STARTING HOT WORK, REVIEW AND COMPLETE ALL CHECKLIST ITEMS.

THIS PERMIT IS REQUIRED FOR TEMPORARY OPERATIONS INVOLVING OPEN FLAME OR PRODUCING HEAT AND/OR SPARKS; WELDING, CUTTING, BRAZING, GRINDING, SOLDERING, OR USING A TORCH TO THAW PIPING OR TO HEAT MATERIAL. THE PERMIT APPLIES ONLY TO THIS JOB, IN THE AREA SPECIFIED, DURING THE TIME AND DATE NOTED.

INSTRUCTIONS

SUPERVISOR SHALL:

1. Complete PRECAUTION & SAFEGUARD →
2. Complete this permit form and issue to person performing hot work procedure.
3. Verify FIRE WATCH.

HOT WORK PERFORMED BY:

University Employee
Contractor: _____

WORK ORDER NO.:

LOCATION/BLDG./FLOOR/ROOM:

WORK TO BE PERFORMED:

PERSON PERFORMING WORK/DEPT.

PRECAUTION & SAFEGUARD CHECKLIST

Fire extinguisher available.
Hot work equipment in good repair.
Hazardous energy locked out and tagged out.

REQUIREMENTS WITHIN 35 FT. OF WORK

Flammable liquids and combustible material removed from area.
Floors swept and overhead structure cleaned of dust, lint, and debris.
Fire resistant covers and/or metal shields provided as needed.
All floor and wall openings covered and or protected.
WALLS/CEILINGS: removed combustibles away from opposite side or adjacent structure.

WORKS ON ENCLOSED/CONFINED EQUIP.

Adequate ventilation is provided.
Atmosphere checked with gas detector.
Purge any flammable vapors.
Confined space permit obtained, if required.

FIRE WATCH:

Trained and equipped Fire Watch provided during operations and at least 30 minutes after.

SPECIAL INSTRUCTIONS: _____

FINAL CHECK	DATE:	TIME:
SUPERVISOR SIGNATURE:		

SUPERVISOR SIGNATURE: (Obtain prior to job)

_____

I have verified that the above location has been inspected and the required PRECAUTIONS & SAFEGUARDS have been taken. Authorization only for work described ABOVE.

PERMIT EXPIRES	DATE:	TIME:
WORK COMPLETE	DATE:	TIME:

EMPLOYEE SIGNATURE: