



## **WELDING AND OTHER HOT WORK**

### **SCOPE**

This publication outlines the requirements and limitations for welding, cutting, open torch use, and other hot work operations conducted within the City of Winchester.

### **DEFINITIONS**

**Hot Work** - Operations including cutting, welding, thermite welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar activity.

**Hot Work Area** - The area exposed to sparks, hot slag, radiant heat, or convective heat as a result of the hot work.

**Hot Work Program** - A permitted program, carried out by approved facilities-designated personnel, allowing them to oversee and issue permits for hot work conducted by their personnel or at their facility. The intent is to have trained; on-site, responsible personnel ensure that required hot work safety measures are taken to prevent fires and fire spread.

**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.

### **FIRE SAFETY REQUIREMENTS**

All of the following conditions must be met prior to commencing hot work operations.

1. Management shall designate a facility employee to be the “responsible person” who shall be responsible for overseeing the onsite hot workers to ensure that required hot work safety measures are taken to prevent fires and fire spread.
2. The “responsible person” shall be trained in the safety and fire safety consideration concerned with hot work.
3. The “responsible person” shall survey hot work areas and conduct a pre-hot-work check prior to the commencement of hot work.
4. The required pre-hot-work check shall determine compliance with, all of the following:
  - Hot work equipment to be used shall be in satisfactory operating condition and in good repair.
  - Hot work site is clear of combustibles or combustibles are protected.
  - Exposed construction is of noncombustible materials or, if combustible, then protected.
  - Openings are protected.
  - Floors are kept clean.

- No exposed combustibles are located on the opposite side of partition, walls, ceilings or floors.
  - Fire watches, where required, are assigned.
  - Approved actions have been taken to prevent accidental activation of suppression and detection equipment.
  - Fire extinguishers and fire hoses (where provided) are operable and available.
5. The hot work area shall be inspected by the “responsible person” at least once a day to ensure that the area remains fire-safe.
  6. A fire watch shall be provided during hot work activities and shall continue for a minimum of 30 minutes after the conclusion of the work. The fire code official or the “responsible person” is authorized to extend the fire watch based on the hazards or work being performed.
  7. The fire watch shall be positioned so that the extinguishment of a spot fire is not delayed. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single individual shall have additional personnel assigned to fire watches to ensure that exposed areas are monitored.
  8. Individuals designated to fire watch shall have no other duties except to watch for fire, extinguish spot fires, and communicate an alarm.
  9. The individuals responsible for performing the hot work and individuals responsible for providing the fire watch shall have fire-extinguishing equipment readily available and shall be trained in the use of such equipment.
  10. A minimum of one portable fire extinguisher having a minimum 2-A: 40-B:C rating and where required by the fire code official, a charged water hose equipped with a nozzle, shall be readily accessible within 30 feet of the location where hot work is performed.
  11. Hot work shall not be performed on containers or equipment that contains or has contained flammable liquids, gases or solids until the containers and equipment have been thoroughly cleaned, inerted or purged and certified safe for hot work by a marine chemist.
  12. Areas where hot work are conducted shall not contain combustibles or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.
  13. Openings or cracks in walls, floors, ducts or shafts within the area where cutting and welding is to be performed shall be tightly covered to prevent the passage of sparks to adjacent combustible areas, or shielding by metal or fire-resistant guards or curtains shall be provided.
  14. Floors shall be kept clean within the hot-work area.
  15. Oxygen and fuel gas used for hot work shall be limited inside Factory and Storage occupancies in accordance with the following:

**Type of Gas Maximum Aggregate Quantity**

| Gas  | Un-sprinklered Buildings                  | Sprinklered Buildings |
|--|---|-----------------------|
| Acetylene and other non-liquefied fuel gases | 1,000 cu. feet                            | 2,000 cu. feet        |
| Compressed oxygen                            | 1,500 cu. feet                            | 3,000 cu. feet        |
| Liquid oxygen (LOX)                          | 45 gallons                                | 90 gallons            |
| LPG and other liquefied fuel gases           | 735 lbs. water capacity<br>(300 lbs. LPG) |                       |

16. Flammable and combustible liquid storage and dispensing shall be separated from hot work operations by a minimum of 50 feet.
17. Cylinders, valves, regulator, hose and other apparatus and fittings for oxygen shall be kept free from oil or grease. Oxygen cylinders, apparatus and fittings shall not be handled with oily hands, oily gloves, or greasy tools or equipment.
18. Fuel gas cylinders shall be separated from compressed oxygen cylinders and liquid oxygen containers by a minimum of 20 feet or by a barrier of noncombustible construction extending 18 inches above and beyond to the sides of the storage. The barrier shall interrupt all lines of sight between oxygen and fuel gas cylinders within 20 feet of each other.
19. When the hot-work area is accessible to persons other than the operator of the equipment, conspicuous signs shall be posted to warn others before they enter the hot-work area.

Such signs shall display the following warning: **CAUTION - HOT WORK IN PROGRESS - STAY CLEAR**

Requirements for Electric Arc Hot Work equipment:

1. The frame or case of electric hot work machines, except internal-combustion-engine-driven machines, shall be adequately grounded.
2. Welding return currents from the work to the machine shall have proper electrical contact at joints. The electric contact shall be periodically inspected.
3. Electrodes (i.e. welding rods) shall be removed from the holders when electric arc hot work is discontinued for any period or 1 hour or more. The holders shall be located to prevent accidental contact and the machines shall be disconnected from the power source.
4. A switch or circuit breaker shall be provided so that fixed electric welders and control equipment can be disconnected from the supply circuit. The switch or circuit breaker shall be marked EMERGENCY DISCONNECT.
5. Damaged cables shall be removed from service until it has been properly repaired or replaced.