

# **Dare County Schools**

## **Hot Work Safety Program**

**February 2006**

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## **Hot Work Safety Procedures**

### **Purpose**

Dare County Schools Welding and Hot Work, such as brazing or grinding present a significant opportunity for fire and injury. All precautions of this program must be applied prior to commencing any welding or hot work by Dare County Schools employees or contractors. Reference: OSHA 29 CFR 1910.252

### **Responsibilities**

#### **Management**

- Provide training for all Dare County Schools employees whose tasks include heat, spark or flame producing operations such as welding, brazing, or grinding.
- Develop and monitor effective hot work procedures
- Provide safe equipment for hot work
- Provide proper and effective PPE for all hot work

#### **Supervisors**

- Monitor all hot work operations
- Ensure all hot work equipment and PPE are in safe working order
- Allow only trained and authorized employees to conduct hot work
- Ensure permits are used for all hot work outside authorized areas

#### **Employees**

- Follow all hot work procedures
- Properly use appropriate hot work PPE
- Inspect all hot work equipment before use
- Report any equipment problems
- Not use damaged hot work equipment

### **Definitions**

**Welding/Hot Works Procedures:** any activity that results in sparks, fire, molten slag, or hot material which has the potential to cause fires or explosions.

**Examples of Hot Works:** Cutting, Brazing, Soldering, Thawing Pipes, Torch Applied Roofing, Grinding and Welding.

**Special Hazard Occupancies:** Any area containing Flammable Liquids, Dust Accumulation, Gases, Plastics, Rubber and Paper Products.

### **Hazards**

- Fires & Explosions
- Skin burns
- Welding "blindness"
- Respiratory hazards from fumes & smoke

## **Training**

### ***Training shall include:***

- Review of requirements listed in OSHA 1910.252
- Use of Hot Works Permit System
- Supervisor Responsibilities
- Fire Watch Responsibilities - specifically, the fire watch must know:
  1. That their ONLY duty is Fire Watch
  2. When they can terminate the watch
  3. How to use the provided fire extinguisher
  4. How to activate fire alarm if fire is beyond the incipient stage
- Operator Responsibilities
- Contractors Responsibilities
- Documentation requirements
- Respirator Usage requirements
- Fire Extinguisher training

## **Hot Works Procedures**

### ***OSHA 29 CFR 1910.252 required fire prevention actions for welding/hot works.***

Where practicable all combustibles shall be relocated at least 35 feet from the work site. **Where relocation is impractical, combustibles shall be protected with flame proof covers, shielded with metal, guards, curtains, or wet down material to help prevent ignition of material.**

Ducts, conveyor systems, and augers that might carry sparks to distant combustibles **shall be protected or shut down.**

Where cutting or welding is done near walls, partitions, ceilings, or a roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.

If welding is to be done on a metal wall, partition, ceiling, or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation of heat. **Where combustibles cannot**

**be relocated on the opposite side of the work, a fire watch person shall be provided on the opposite side of the work.**

Welding shall not be attempted on a metal partition, wall, ceiling or roof having a covering, or on walls having combustible sandwich panel construction.

Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by combustion.

Cutting or welding shall not be permitted in the following situations:

- In areas not authorized by management.
- In sprinkled buildings while such protection is impaired.
- In the presence of potentially explosive atmospheres, e.g., a flammable
- In areas near the storage of large quantities of exposed, readily ignitable materials.
- In areas where there is dust accumulation of greater than 1/16 inch within 35 feet of the area where welding/hot works will be conducted. *All dust accumulation should be cleaned up following the housekeeping program of the facility before welding/hot works are permitted.*

Suitable extinguishers shall be provided and maintained ready for instant use.

A fire watch person shall be provided during and for 2 hours past the completion of the welding project.

A cutting/welding permit will be issued on all welding or cutting outside of the designated welding area.

### ***Welding & Hot Work fire prevention measures***

A Dare County Schools designated welding area should be established to meet the following requirements:.

- a. Floors swept and clean of combustibles within 35 ft. of work area.
- b. Flammable and combustible liquids and material will be kept 35 ft. from work area.
- c. Adequate ventilation providing 20 air changes per hour, such as a suction hood system should be provided to the work area.
- d. At least one 10 lb. dry chemical fire extinguisher should be within access of the 35 ft. of work area.
- e. Protective dividers such as welding curtains or non-combustible walls will be provided to contain sparks and slag to the combustible free area.

Requirements for welding conducted outside the designated welding area.

- a. Portable welding curtains or shields must be used to protect other workers in the welding area.
- b. A hot works permit must be completed and complied with prior to welding operation.
- c. Respiratory protection is mandatory unless an adequate monitored air flow away from the welder and others present can be established and maintained.
- d. Plastic materials be covered with welding tarps during welding procedures
- e. Dare County Schools Fire Watch must be provided for all hot work operations.

### ***Welding Standard Operating Procedures***

The following pages list the *Welding Standard Operating Procedures* (SOP) and are applicable for all electric and gas welding. These SOPs are to be posted at each Dare County Schools Designated Welding & Hot Work Area for quick reference and review.

# **SOP - Electric Welding**

## **Perform Safety Check on all equipment**

Ensure fire extinguisher is charged and available

Ensure electrical cord, electrode holder and cables are free from defects (no cable splices are allowed within 10 feet of the electrode holder).

Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) are available and have no defects.

Ensure the welding unit is properly grounded.

All defective equipment must be repaired or replaced before use.

## **Remove flammables and combustibles**

No welding is permitted on or near containers of flammable material, combustible material or unprotected flammable structures.

Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passersby (Do not block emergency exits or restrict ventilation)

## **Ensure Adequate Ventilation and Lighting**

### **Execute Hot Work Permit procedures**

### **Set Voltage Regulator**

No higher than the following for:

Manual Alternating Current Welders - 80 volts

Automatic Alternating Current Welders - 100 volts

Manual or automatic Direct Current Welders -100 volts

### **Uncoil and spread out welding cable**

To avoid overheating, ensure proper contact of work leads and connections, remove any metal fragments from magnetic work clamps (to avoid electric shock do not wrap welding cables around a body part and avoid welding in wet conditions)

### **Fire watch for one hour after welding & until all welds have cooled**

### **Perform final fire watch and terminate permit.**



# **SOP: Gas Welding**

## **Perform Safety Check on all equipment**

Ensure tanks have gas and fittings are tight

Ensure fire extinguisher is charged and available

Ensure hoses have no defects

Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) are available and have no defects.

All defective equipment must be repaired or replace before uses.

## **Remove flammables and combustibles**

No welding is permitted on or near containers of flammable material, combustible material or unprotected flammable structures.

Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passersby (Do not block emergency exits or restrict ventilation)

## **Ensure Adequate Ventilation and Lighting**

### **Execute Hot Work Permit procedures**

### **Open Valves on Oxygen and Gas tanks to desired flow**

### **Shut Tank Valves & relieve hose pressure. Store hoses**

### **Fire watch for one hour after welding & until all welds have cooled**

### **Perform final fire watch and terminate permit.**