

Hot Work Safety Plan



Thomas D. Barnes, CHMM, CET
Compliance Specialists Inc.
For Jay Industries, Inc

Outline

- Written Program
- Fire Prevention & Protection
- Protection of Personnel
- Health Protection & Ventilation



Written Program



- What
- Who
- Where
- Based on OSHA 29 CFR 1910.251-252
NFPA - Standard 51B, 1962

Fire Prevention and Protection

- Basic Safety Precautions
 - Fire hazards removed
 - Guards
 - Restrictions
- Special Precautions
 - Combustible material
 - Fire extinguishers
 - Fire watch



HOT WORK

Definitions

- Hot Work - Use of equipment which produces any flame or sparks i.e. cutting, welding, grinding. Also electrical work in hazardous areas
- Controlled Work Area - Area adjacent to and extending 35 feet from work area.
- Fire Watch - Designated person to monitor the area during the hot work

Definitions

- Hot Work Permit - A procedure for securing an area prior to starting hot work activities
- Lower Explosion Limit (LEL) - Minimum amount of vapor required to cause vapor to ignite.
- Ordinary Combustibles - Solid materials which will burn such as wood, paper or fabrics

Hot Work Assessment



- Areas which are listed as not requiring permits to be issued must be kept clear of any flammable and combustible liquids and/or ordinary combustibles.
- Areas listed as requiring a permit must have a permit issued prior to beginning any hot work in the area.

Hot Work Permit



- Hot Work Permit must be issued by area supervisor
- Valid for only a specific time, date and job
- Valid for a certain time period
- Must be posted in the area
- Returned to Maintenance and retained in files for a minimum of one year

Hot Work Permit



- Fire Watch - Assigned whenever:
 - Hot work could cause a fire from uncontrolled sparks or flames
 - Appreciable combustible materials are within 35 feet
- Must be present for entire work time plus 30 minutes after work is completed

Hot Work Permit



- Fire watch shall cease operations if any additional hazard is introduced or an emergency occurs.
- Fire Watch must:
 - Have extinguisher immediately available
 - Keep unauthorized personnel and materials away from area
 - Know the alarm system and other emergency procedures
 - Check for vapors if vapors could be present

Prohibited Areas

- The following areas/situations will not have hot work activities allowed:
 - In Flammable Storage Building
 - In area of VPI Tank, Dip Tank, or Chiller Tank.
 - Any gas or flammable liquid/gas line or equipment.
 - Confined spaces
 - Any area not authorized by management
 - Any area when sprinkler system is impaired

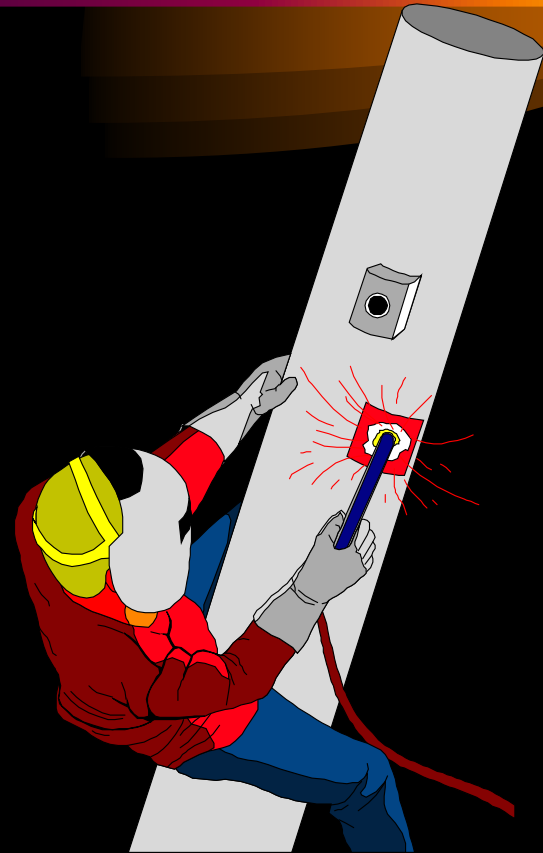
General Rules



- Always evaluate area before beginning work
- Have permit issued if required
- Protect all flammable and combustibles from sparks and/or flames
- Use fire watch if necessary
- Assure contractors use hot work procedures

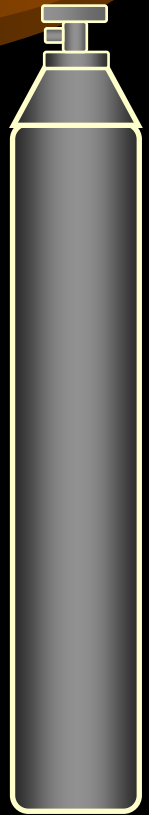
Protection of Personnel

- General
 - Proper use of cylinders
 - Fall protection
 - Eye protection
 - Protective Clothing



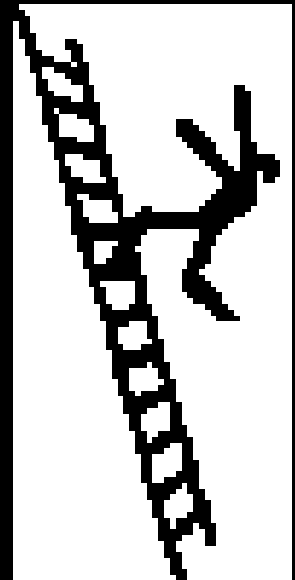
Protection of Personnel

- Proper Use of Cylinders/Regulators
 - Blow out valves
 - Assure proper regulators are used
 - Stand to side of regulator
 - Open slowly
 - No more than 15 psi
 - Always light acetylene first
 - Always turn oxygen off first
 - Always bleed lines after use



Protection of Personnel

- Fall Protection
 - Assure fall restraint or fall arrest is utilized at all times that a fall could occur
 - Limited/restricted sight
 - Numerous trip hazards



Protection of Personnel

- Eye Protection
 - Mandatory use
 - Three different light hazards
 - Visible
 - Infrared
 - Ultra Violet
 - Assure all personnel are protected
 - Direct
 - Reflection
 - Selection
 - Helmets or hand shields - arc welding & cutting
 - Goggles - gas welding & Oxygen cutting & brazing





Protection of Personnel

- Eye Protection

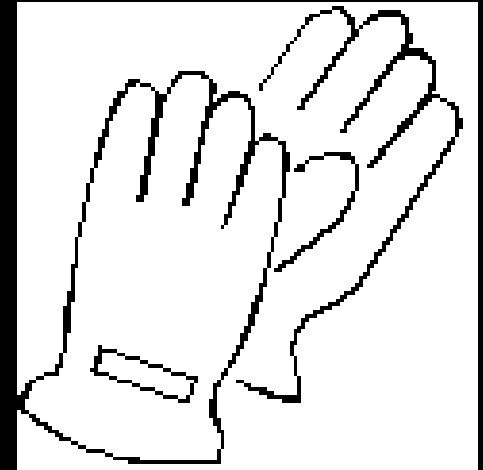
- Specifications for protectors

- Use guide for the selection of the proper shade of lens for each welding operation meeting ANSI Z87.1 –1968

– Shielded Arc	10 – 14 (depends on electrode size and material)
– Carbon Arc	14
– Cutting and Brazing	3 – 6 (depends on work)
– Gas Welding	5 – 8 (depends on work)

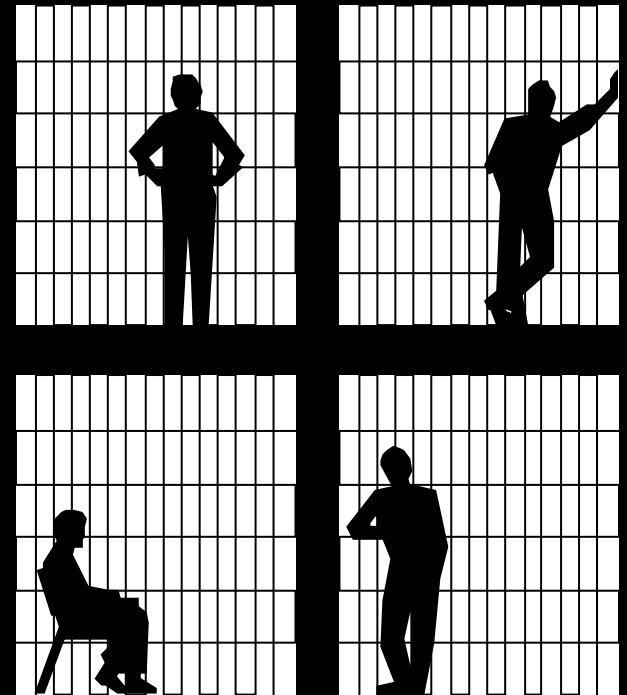
Protection of Personnel

- Protective Clothing
 - Selection
 - Conform to requirements of 29 CFR 1910.132 Personal Protective Equipment
 - Appropriate for the welding operation with respect to type, size, nature and location of the work to be performed
 - Avoid pockets and cuffs
 - Avoid items in pockets (lighters)



Protection of Personnel

- ✓ You may need a C.S. Permit
- ✓ A Confined Space-like area may be created by ventilation issues
 - Health hazards
 - Physical hazards



Health Protection & Ventilation



- General
 - Dimensions of welding space
 - Number of welders
 - Screens
 - Possible hazardous fumes - 29 CFR 1910.1000
toxic and hazardous substances
 - MSDS's

Health Protection & Ventilation



- Mechanical Ventilation for Welding & Cutting
 - Space less than 10,000 cubic feet per welder
 - Ceiling height less than 16 feet
 - In confined spaces or obstructions to ventilation
 - Minimum rate of 2000 cubic ft/min/welder
 - Always use mechanical ventilation wherever possible

Health Protection & Ventilation



- Screens
 - Arrange so that no restriction of ventilation exists
 - Keep bottoms of screens about 2 feet above floor

Health Protection & Ventilation

Local Exhaust Hoods

Maintain air-flow of 100 linear feet per minute at the zone of welding

600 cubic ft./min. - 5 1/2 inch duct - 12 inches from the zone of welding

150 cubic ft./min. - 3 inch duct - 6 inches from the zone of welding

Health Protection & Ventilation



Booths

Fixed enclosure with a top and not less than two sides
Maintain air-flow of 100 linear feet per minute away from
the welder

Health Protection & Ventilation



Toxic and Hazardous Substances in Welding

- ✓ Fluorine compounds
- ✓ Zinc
- ✓ Lead
- ✓ Beryllium
- ✓ Cadmium
- ✓ Mercury
- ✓ Chlorinated solvents – Phosgene gas

HOT WORK

THINK SAFETY

YOUR

LIFE

HEALTH

AND

INCOME

DEPENDS ON IT

Questions?

- Contact your Supervisor, the Maintenance Supervisor in your plant, or the EHS Department.
- Thank you and stay safe out there!