

MSA FACILITIES SAFETY AND HEALTH INSPECTION PROGRAM

Welding, Cutting, and Brazing



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Welding, Cutting, and Brazing

At the completion of this unit you shall be able to:

1. Utilize section Y of the Safety and Health Hazard Inspection Program Checklist to identify compliant and non-compliant safety behaviors.
2. Identify areas of concern requiring immediate action to mitigate or prevent a possible injury.

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Welding, Cutting, and Brazing

One of the greatest dangers we have at our site is the possibility of a fire destroying a facility or injuring workers.



Welding, Cutting, and Brazing

Besides the control of flammables as a part of our compressed gas, housekeeping, and flammable materials control programs we also try to control the potential ignition sources specifically those flame, spark, and heat producing operations such as Welding, Cutting, and Brazing.



Welding, Cutting, and Brazing

- ▣ Section Y of the inspection checklist deals with Welding, Cutting, and Brazing.
- ▣ Let's take a closer look at this section.

MSA GENERAL INDUSTRY-BASED SAFETY AND HEALTH
HAZARD INSPECTION CHECKLIST

No.	Inspection Observations	Compliant? Y•N•NA	See Comments (indicate with X)
X	PORTABLE POWER TOOLS		
1	Protective guards are in place and operable.		
2	Portable electrical appliances, tools, devices and other equipment are Listed/Labelled by an OSHA-recognized nationally recognized testing laboratory (NRTL) or are marked with a label indicating acceptance by the Hanford Site authority having jurisdiction (AHJ).		
3	Attachment plugs and cords are in good condition with no loose or broken prongs and no frayed or cracked insulation.		
4	Portable electrical tools are either the grounded type with an intact ground prong on the attachment plug or are marked on the nameplate as being double-insulated.		
5	Where applicable, users of portable electrical tools are protected by Assured Equipment Grounding or GFCI.		
6	Hand held portable power tools are equipped with a constant pressure switch or similar means for automatic shut-off control.		
7	Pneumatic powered tools, which may snag the work piece, are equipped with a tool retainer.		
8	Air hoses are equipped with devices to prevent whipping.		
9	Compressed air is used for cleaning only when regulated to 30 psi or less.		
10	Air hoses and connections are in good condition.		
11	Other.		
Y	WELDING, CUTTING, and BRAZING		
1	Fire hazards are removed or protected at the work location.		
2	Fire watches and fire extinguishing equipment are readily available.		
4	The type(s) of ventilation being employed are appropriate for the work area and activities performed.		
5	Arc welding power and welding lead terminals are enclosed and protected.		
6	Arc welding machine has a legible manufacturer's nameplate in place. ⁶		
7	Arc welding unit equipped with disconnect, over-current protection, and properly grounded.		
8	Employees in areas adjacent to welding operations are protected from UV radiation and flying sparks.		
9	Fuel gas supply is positively shut off ahead of the torch when work is suspended for a substantial period of time.		
10	Other.		
Z	ELECTRICAL - WIRING METHODS, COMPONENTS and EQUIPMENT FOR GENERAL USE		
1	Junction, switch, and outlet boxes have all openings covered.		
2	Extension cords are not used as a substitute for permanent, fixed wiring.		

Welding, Cutting, and Brazing

1. Fire hazards are removed or protected at the work location.
2. Fire watches and fire extinguishing equipment are readily available.
3. The type(s) of ventilation being employed are appropriate for the work area and activities performed.
4. Arc welding power and welding lead terminals are enclosed and protected.
5. Arc welding machine has a legible manufacturer's nameplate in place.*
6. Arc welding unit equipped with disconnect, over-current protection, and properly grounded.
7. Employees in areas adjacent to welding operations are protected from UV radiation and flying sparks.
8. Fuel gas supply is positively shut off ahead of the torch when work is suspended for a substantial period of time.
9. Other.

Welding, Cutting, and Brazing

1. Fire hazards are removed or protected at the work location.

- Prior to hot work beginning, among the issues addressed in the Permit is the requirement to either move flammable or combustible material at least 35 feet from the hot work site or to protect the material from heat or sparks.
- This is to ensure that the possibility of a fire starting will be remote.



Welding, Cutting, and Brazing

1. Fire hazards are removed or protected at the work location.

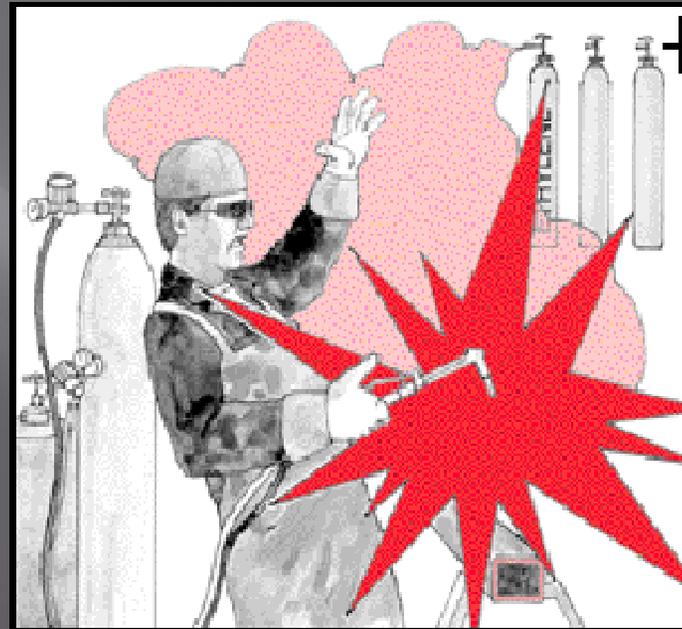
- A compliant rating would indicate this had been done.



Welding, Cutting, and Brazing

1. Fire hazards are removed or protected at the work location.

- A compliant rating would indicate this had been done.
- A non compliant rating would indicate that flammables or combustibles were nearby and exposed to sparks, flames, or heat.



Welding, Cutting, and Brazing

2. Fire watches and fire extinguishing equipment are readily available.
 - When performing work outside of Designated Hot Work Areas a Fire Watch is required.
 - The fire watch must have completed fire watch training and be designated on the Hot Work Permit.
 - The fire watch must have a fire extinguisher on hand.



Welding, Cutting, and Brazing

2. Fire watches and fire extinguishing equipment are readily available.
- A compliant rating would indicate that both the fire watch and a means of extinguishing any fires are present.



Welding, Cutting, and Brazing

2. Fire watches and fire extinguishing equipment are readily available.
- A compliant rating would indicate that both the fire watch and a means of extinguishing any fires are present.
 - A non compliant rating would indicate otherwise.



Welding, Cutting, and Brazing

3. The type(s) of ventilation being employed are appropriate for the work area and activities performed.
- Dependent upon the location, the material having hot work performed and the type of hot work, the worker may need to have mechanical ventilation, filter respirators, air line respirators or a combination. The work package and hazards analysis should outline these.



Welding, Cutting, and Brazing

3. The type(s) of ventilation being employed are appropriate for the work area and activities performed.
- A compliant rating would indicate that these safeguards were in place and being used.



Welding, Cutting, and Brazing

3. The type(s) of ventilation being employed are appropriate for the work area and activities performed.
- A compliant rating would indicate that these safeguards were in place and being used.
 - A non compliant rating would indicate that the issue of welding fumes and the protection of the employee was not being addressed.



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4. Arc welding power and welding lead terminals are enclosed and protected.
- Welding cables can present an electrical hazard. Two types of voltages are of concern. The first is the supply voltage of the welding machine and the second the voltage for the “stinger” or welding rod that is set by the craftsman.
 - People have been injured when they have been exposed to both of these voltage sources.



Welding, Cutting, and Brazing

4. Arc welding power and welding lead terminals are enclosed and protected.
- A compliant rating would indicate that the cables were in good order (not exposed wires or poor splices) and the ungrounded terminals of the machine were guarded.



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4. Arc welding power and welding lead terminals are enclosed and protected.
- A compliant rating would indicate that the cables were in good order (not exposed wires or poor splices) and the ungrounded terminals of the machine were guarded.
 - A non compliant rating would indicate that electrical hazards were present.



Welding, Cutting, and Brazing

5. Arc welding machine has a legible manufacturer's nameplate in place.
- The purpose of this item is to ensure that the welding machine has the information necessary to ensure safe operation of the machine. This would include ratings/settings of the machine.



Welding, Cutting, and Brazing

5. Arc welding machine has a legible manufacturer's nameplate in place.
- A compliant rating would indicate that the manufacturer's nameplate and associated data was on the machine and legible.



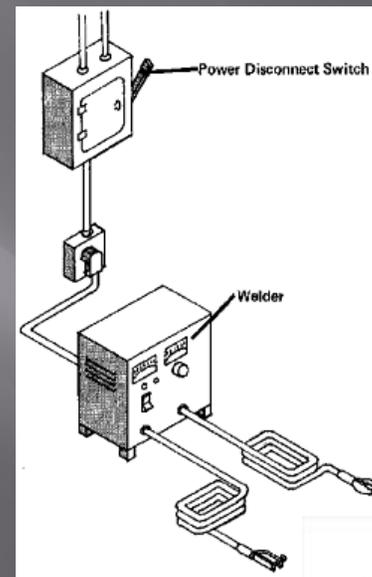
Welding, Cutting, and Brazing

5. Arc welding machine has a legible manufacturer's nameplate in place.
- A compliant rating would indicate that the manufacturer's nameplate and associated data was on the machine and legible.
 - A non compliant rating would indicate it wasn't.



Welding, Cutting, and Brazing

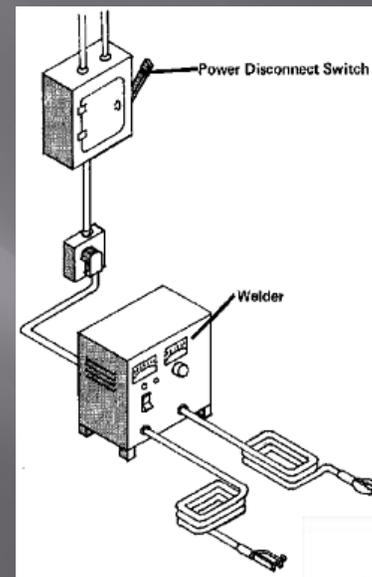
6. Arc welding unit equipped with disconnect, over-current protection, and properly grounded.
- This item is to ensure that the welding equipment is connected to the power supply in a safe manner in accordance with the NEC and the machine is properly grounded both for production and safety purposes.



Welding, Cutting, and Brazing

6. Arc welding unit equipped with disconnect, over-current protection, and properly grounded.

- A compliant rating would indicate that a power disconnect was in place, being used, was accessible to operators of the welder, and that grounds for both the welding machine and the welder cables were in place and intact.
- A non compliant rating would mean a violation and would have to be addressed prior to machine usage.



Welding, Cutting, and Brazing

7. Employees in areas adjacent to welding operations are protected from UV radiation and flying sparks.
- One of the issues in welding we must address is the safety of collocated workers. If we are unable to restrict access to an area we must have a means of protecting workers from the sparks and UV radiation that is generated during welding and cutting operations.



Welding, Cutting, and Brazing

7. Employees in areas adjacent to welding operations are protected from UV radiation and flying sparks.
- Typically a welding curtain such as this which is designed to filter out 90% of the UV radiation or a solid curtain can be used. Please note that it is necessary to ensure that eye protection is still used to protect from dusts and particulate that may be present at these sites.



Welding, Cutting, and Brazing

7. Employees in areas adjacent to welding operations are protected from UV radiation and flying sparks.
- A compliant rating would indicate that there were precautions (barriers or curtains) to protect other employees.



Welding, Cutting, and Brazing

7. Employees in areas adjacent to welding operations are protected from UV radiation and flying sparks.
- A compliant rating would indicate that there were precautions (barriers or curtains) to protect other employees.
 - A non compliant rating would indicate a problem.



Welding, Cutting, and Brazing

8. Fuel gas supply is positively shut off ahead of the torch when work is suspended for a substantial period of time.
- The fuel gas supply valve on the bottles must be shut off and the lines vented at the completion of work for that shift, or in the case of confined spaces when extended breaks (such as lunch or end of the shift).
 - The purpose behind this rule is to prevent a build up of combustible or inert gases should there be a leak in fittings or the hose of the hot work equipment.



Welding, Cutting, and Brazing

8. Fuel gas supply is positively shut off ahead of the torch when work is suspended for a substantial period of time.
- A compliant rating would indicate that this practice is followed.



Welding, Cutting, and Brazing

8. Fuel gas supply is positively shut off ahead of the torch when work is suspended for a substantial period of time.
- A compliant rating would indicate that this practice is followed.
 - A non compliant rating would indicate that this requirement was not met.



Welding, Cutting, and Brazing

- If at any time you have any questions about how to fill out the form or about the items on the form please contact your project OS&H group.

**MSA GENERAL INDUSTRY-BASED SAFETY AND HEALTH
HAZARD INSPECTION CHECKLIST**

Facility: _____	Facility Representative: _____
Date: _____	Team Member: _____
Total Items Reviewed: _____	Team Member: _____
Total Non-Compliant Items: _____	Team Member: _____

No.	Inspection Observations	Compliant? Y•N•NA	See Comments (indicate with X)
A	FIRE PROTECTION INSPECTION <i>(All issues must be observed as applicable see note 2)</i>		
1	Emergency Lights - Each unit must be operable when tested.		
2	Portable Fire Extinguishers (PFE) - Each unit is properly mounted, an inspection tag is in place and reflects through previous month, the pressure gauge is in the "green" zone (where applicable).		
3	PFE is not obstructed, is visible, and the seal is not broken.		
4	Sprinkler Clearance - Clearance between the sprinkler deflector and the top of any storage is 18 inches or greater.		
5	Fire Riser Pressure Gauge Inspection - Inspect gauges to verify pressure to the building and pressure held in the fire system. Typically both gauges will have similar pressure readings.		
6	Fire Risers - Access to fire system sprinkler risers and other system components must be unobstructed.		
7	Fire Riser Valve Inspection - Check all seals, position and supervision for broken seals or possible tampering.		
8	Post Indicating Valve Inspection - This valve will be located outside of the facility. It must be verified that the window on the side of the valve reads "OPEN".		
9	Exit Signs - Exit signs with an internal lighting source must be checked to ensure all lamps are functional. - Exit signs that use Tritium must be observed that they have not been damaged, all applicable labels are present, the sign has not expired, and it is not covered with another sign.		
10	Fire Doors - Identify that fire doors operate freely and latch securely upon closure. Fire doors must not be propped open.		
11	Ceiling Tiles - Where automatic sprinklers are installed drop ceiling tiles are in place. Missing tiles slow response of fire suppression sprinklers.		
12	Manual alarm stations are easily identified and readily accessible.		
13	Other.		
B	GENERAL SAFE BEHAVIORS		
1	Employees are taking the necessary safety precautions for the work being performed.		
2	Work is being performed such that collocated employees in the area are not exposed to occupational hazards or unsafe conditions.		

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Thank you for your time
and desire to help us have
a safer workplace