

Safety in Welding in a Nutshell

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Like many other industrial processes, welding also has a high potential for personnel injuries and fires. To prevent hazards in welding, safe working practices must be maintained. Here is a brief description of hazards and precautions related mainly to arc welding.

HEALTH HAZARDS

- Illness from fumes and gases (welding smoke) : Welding fumes are complex mixture of metallic oxides, silicates and fluorides; other harmful gases are due to the procedure and process of welding, used materials, etc.

Exposure to fumes and gases may have short term and long term effects :

- Short term effects : Irritate the eyes, nose, chest and respiratory tract; cause coughing, wheezing, shortness of breath, bronchitis, pulmonary edema and pneumonitis.
- Long term effects : Increased risk of lung cancer, cancer of larynx and urinary tract, chronic respiratory problems.
- Electrical shock : This can happen due to wet work area, cramped work places, contact with live components; small shock can cause brain damage, whereas, death can occur from large shocks.

Radiation burn due to welding arc and body burn due to spatter or molten materials.

- Eye Damage : a considerable percentage of eye injuries in the construction industry is associated with welding, which includes, damage to retina and cornea; UV light can cause "arc eye".

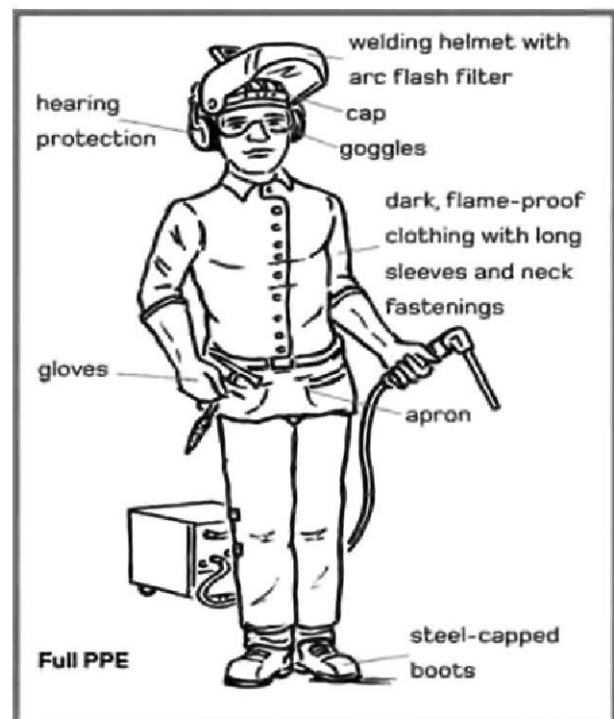
Exposure to heat and noise may also lead to health hazards.

GENERAL PRECAUTIONS :

- Ensure that the work is inspected properly before starting the weld, so that sparks or molten metal won't fall on

workers or combustible materials.

- Ensure that necessary work permit has been obtained.
- Ensure that fire extinguisher is available near the work place.
- Ensure that welding leads are off floors, walkways and stairways.
- Ensure that the frames of welding machines are grounded.
- Ensure that proper ventilation is there in the work place.
- Ensure that proper PPEs (Personal Protective Equipment) i.e., approved gloves, helmet, protective clothing, etc. are available.



PPE for Welding

(Courtesy : weldings-equipment.blogspot.com)



Application of PPE during welding

- Ensure that gas cylinders are stored at least 20 feet away from the flammable or combustible materials.
- Ensure that paints are removed from the surface to be welded.
- Ensure that no welding done on containers having flammable or combustible materials.
- Ensure that the welding equipment conforms to the specifications and rated as per the requirement.

WELDING IN CONFINED SPACE

- All the personnel working in and around confined space must be trained.

- Adequate ventilation is required to keep the work space within the safe breathing level.
- Welding and related works is not allowed where the oxygen level is less than 19.5% or more than 23.5%.
- Welding power source and gas cylinders must be kept outside the confined space.
- In case of the requirement of electricity inside the confined space, use of low voltage lamps are recommended.
- A trained watcher must be available outside the confined space for monitoring the work.

MAINTENANCE

- Welding machines to be checked periodically by licensed electrician.
- Repair of the welding machines to be carried out by licensed electrician.
- Visual inspection of the equipment is necessary every day prior to use.
- Verification of welding accessories is required every day to check the damages.

NOTE

- Always keep the work area clean.
- Keep the work space clear of equipment, hoses, cables, etc.
- Always make sure that scaffolds are properly assembled.
- Use and maintain safety lines, harnesses and lanyards.

ALWAYS REMEMBER THAT SOMEBODY IS WAITING FOR YOU AT HOME.