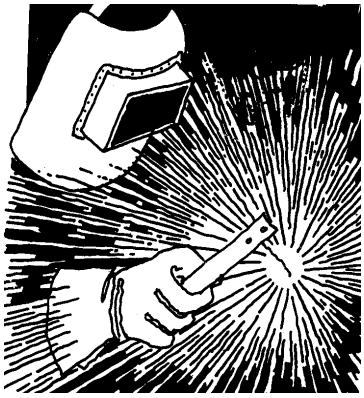
Work environment **– Rural safety**

15.04.11

Welding >

This bulletin outlines some simple safety guidelines for those working in the rural industry and is one of a series on Rural Industry safety.

Use protective clothing and equipment



Welders should consider using appropriate protective clothing which should include: a shield or helmet with a filtered lens; fire resistant gloves; a leather apron; boots; leather spats; a felt skull-cap or beret and preferably overalls.

To ensure its longevity and protection, all protective clothing and equipment should be kept clean and in working order.

Ensure adequate training

The dangers involved in welding should never be underestimated. All persons who weld should be properly trained.

Dangers

The dangers associated with welding include:

- **The arc itself** - the temperature can reach 6000 degrees celsius. The intense ultraviolet and infra-red rays can be harmful to both the welder and anyone else nearby. It is not unusual for welders who are not wearing overalls to suffer symptoms similar to extreme sunburn.
- **The fumes** - depending on the item being welded, in the open air, fumes may be adequately dissipated. However, in confined spaces fumes may be hazardous to health and precautions should be taken. Where it is not possible to ensure good ventilation, a suitable respirator should be worn.
- **The volatile combination of heat and gas** - fatalities have resulted where drums and other containers have exploded as a result of some welding or cutting work. The nature of the previous contents should be established to ensure that any heating does not liberate toxic fumes or cause an explosion.
- **The finished work will be very hot.**
- **The electrical circuit** - the electrical circuit is perhaps the greatest hazard to the welder. The risk of electrical shock is high and welders should note the following points:
  - never attempt to connect or change welding cables before switching off the power at the mains first.

- always install the welding machine as near as possible to the power point
- always keep the welding machine terminals and cable connections clean and tight - only use welding cables that are fully insulated throughout their entire length.
- work on a well insulated floor wherever possible.
- wear rubber insulated shoes.
- always wear dry gloves when handling equipment that is live, eg when placing an electrode in a holder.
- always get a qualified electrician to do any electrical repairs.

- do not attempt to use gas pipes or water pipes as part of the welding circuit as explosions or shocks to other workmates may result.

Gas welding

Perhaps one of the greatest risks involved with gas welding is that of gas leakage. Leaking fuel gas is usually recognised by odour. Oxygen leaks are potentially more dangerous as they are usually not recognised easily.

Leaking oxygen leads to an oxygen enriched atmosphere where normal events such as naked flames, cigarettes, sparks and electrical faults become more dangerous situations. Oils and greases may spontaneously ignite in the presence of pure oxygen.

Under no circumstances should any fittings of oxy-acetylene equipment be allowed to be contaminated with grease or oil.

Regulators can fail in two ways - by the controlled forward flow of gas which is known as regulator creep or by the reverse flow of another gas in the gas lines. Regular maintenance should avoid these situations.

Either of these failures can be recognised by a higher that expected reading on the operational or low pressure gauge. The gauge needle creeps beyond the pressure set for actual welding or cutting.

Excess pressure or the presence of a different gas in a regulator can cause fire and explosion in varying degrees of severity, resulting in damaged equipment and operator injury.

Operators should never use equipment fitted with a regulator in which a creep condition is known to exist.

Use the correct colour and type of hoses and fittings recommended by the manufacturers. Copper must never be used on acetylene lines as substances which may spontaneously detonate are formed.

Flashback arresters should be fitted to all oxy-acetylene equipment to overcome the danger of flashback.

Oxy-acetylene equipment should not be left near hot equipment or metals which could burn the leads. Gas leaks can be tested by using soap and water.

Proper attention to maintenance of equipment is necessary to prevent accidents.

Don't smoke when welding or near welding and don't keep your lighter in your pocket - it could explode. Simple prevention may save your life.

WELDING can be extremely dangerous. Follow appropriate practices and ensure the health and safety of yourself and others.

Are you:

- properly trained in the use of welding equipment and in welding practices?
- equipped with the appropriate protective equipment?
- aware of the danger signs such as creep and other gas regulator failures?

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