Health & Safety Guidance

Health & Safety

Welding Fume is Bad for You!

Welding of all types presents a range of problems. Of particular concern to Unite are the problems created by breathing in welding fumes.

The Health and Safety Executive (HSE) estimates that exposure to welding fume causes more than 150 deaths due to cancer every year. Exposure to the fume and gases can also cause other illnesses, including:

- metal fume fever
- chronic obstructive pulmonary disease (COPD), which includes bronchitis and emphysema
- asthma
- increased susceptibility to pneumonia

Main welding hazards

- Using the wrong equipment for the job.
- Fire caused by heat, sparks, molten metal or direct contact with the flame.
- Explosion when carrying out hot work on or near containers or pipework that contain or may have contained flammable materials.
- Fire and explosion caused by gas leaks, backfires and flashbacks.
- Fires caused by the ignition of flammable materials
- Burns from contact with the flame or hot metal.
- The storage of gas bottles – especially in the event of a fire.
- Crushing or impact injuries when handling or transporting cylinders.
- Noise – harmful levels are generated by electric arc welding (except TIG).
- Vibration white finger.
- Fumes and gases created during hot work including those from primer and paint layers and other substances such as underseal and galvanised coatings.

Many of these hazards may be difficult to avoid or prevent when working in enclosed places, so it is essential that safety reps are involved in discussions on welding safety to assist in prevention. Encouraging good housekeeping, for example clearing up discarded rags etc, and cleaning off oil contaminants are essential before welding can start.

Welding fume – reduce the risk

Welders can become ill from breathing in welding fume. It is essential, therefore, that employers put in place measures to prevent or control the risk of injury from welding.

Control measures

Many welders are exposed unnecessarily to welding fume. Control measures are available – but it's important to make sure the right controls are used – there is not one solution that will be effective in all cases. For example, local

extraction systems with moveable arms are frequently used, but to be effective they need to be positioned close to and directly over the source of the fume. Other types of extraction, such as welding benches and on-gun extraction for MIG welding are also readily available and, depending on the type of job, these are better options for many types of work.

Respiratory protection should always be the last resort, but it will be the most appropriate control measure for some types of work - particularly very large fabrications where the use of local extraction is impracticable. Powered devices which are built into the welding visor are likely to be most effective.

In order to identify appropriate measures to control the health risks involved, each specific welding activity will need a risk assessment under the Control of Substances Hazardous to Health (COSHH) regulations.

Masks

Where it is not possible to provide Local Exhaust Ventilation, masks designed to protect against welding fume may be appropriate, but should be regarded as second best.

All work clothing for welders must be appropriate and cover arms and legs. Suitable gloves must be provided and used. Eye protection must be provided to the EN standard 175:1997 (which covers PPE for eyes and face during welding and allied processes). Exposure to direct and reflected ultraviolet light and infrared rays must be prevented by wearing protective clothing and using welding screens.

Control of Substances Hazardous to Health Regulations (COSHH Regs)

The COSHH Regs set out the law on how to control hazardous substances at work, so they do not cause ill health. COSHH requires employers to control substances that are hazardous to health. Employers can prevent or reduce workers exposure to hazardous substances by:

- finding out what the health hazards are;
- deciding how to prevent harm to health (risk assessment);
- providing control measures to reduce harm to health;
- making sure they are used;
- keeping all control measures in good working order;
- providing information, instruction and training for employees and others;
- providing monitoring and health surveillance in appropriate cases;
- planning for emergencies.

All of these things apply to welders and welding. Employers who fail to meet the COSHH Regs are breaking the law.

Further Information

HSE website - http://www.hse.gov.uk/welding/

HSE COSHH Essentials - http://www.hse.gov.uk/coshh/essentials/direct-advice/welding.htm

BOHS - http://www.breathefreely.org.uk/breathefreelymanufacturing.html

Welding Fume – Safety Alert

In February 2019, the Health and Safety Executive issued a Safety Alert on welding. It covers all forms of welding. In ensuring good controls it stresses that the emphasis should be on the use of engineering controls such as local exhaust ventilation (LEV) rather than respiratory protection (masks).

Reference should also be made to guidance on welding from the British Occupational Hygiene Society (BOHS) – the Chartered Society for Worker Health Protection. http://www.breathefreely.org.uk/. This includes a Welding Selector Tool designed to complement the information on the Breathe Freely in Manufacturing webpages. It provides guidance on welding fume control for common welding tasks. A panel of experts from industry, consultancies, academia and the HSE created this web-tool to inform managers, welders, and supervisors of welders, about the best welding fume controls available to protect their health.
http://www.breathefreely.org.uk/breathefreelymanufacturing.html

HSE Welding Alert

Change in Enforcement Expectations for Mild Steel Welding Fume

Health and Safety Executive - Safety alert	
Department Name:	All HSE
Bulletin No:	STSU1 – 2019
Issue Date:	February 2019
Target Audience:	All workers, employers, self-employed, contractors' and any others who undertake welding activities, including mild steel, in any industry.
Key Issues:	• There is new scientific evidence that exposure to all welding fume, including mild steel welding fume, can cause lung cancer. • There is also limited evidence linked to kidney cancer. • There is a change in HSE enforcement expectations in relation to the control of exposure of welding fume, including that from mild steel welding. • All businesses undertaking welding activities should ensure effective engineering controls are provided and correctly used to control fume arising from those welding activities. • Where engineering controls are not adequate to control all fume exposure, adequate and suitable respiratory protective equipment (RPE) is also required to control risk from the residual fume.

Introduction:

There is new scientific evidence from the International Agency for Research on Cancer that exposure to mild steel welding fume can cause lung cancer and possibly kidney cancer in humans. The Workplace Health Expert Committee has endorsed the reclassification of mild steel welding fume as a human carcinogen.

Consequences:

With immediate effect, there is a strengthening of HSE's enforcement expectation for all welding fume, including mild steel welding; because general ventilation does not achieve the necessary control.

Outcome:

Control of the cancer risk will require suitable engineering controls for all welding activities indoors e.g. Local Exhaust Ventilation (LEV). Extraction will also control exposure to manganese, which is present in mild steel welding fume, which can cause neurological effects similar to Parkinson's disease.
Where LEV alone does not adequately control exposure, it should be supplemented by adequate and suitable respiratory protective equipment (RPE) to protect against the residual fume. Appropriate RPE should be provided for welding outdoors. You should ensure welders are suitably instructed and trained in the use of these controls.

Regardless of duration, HSE will no longer accept any welding undertaken without any suitable exposure control measures in place, as there is no known level of safe exposure.

Risk assessments should reflect the change in the expected control measures.

Action required

1. Make sure exposure to any welding fume released is adequately controlled using engineering controls (typically LEV).
2. Make sure suitable controls are provided for all welding activities, irrelevant of duration. This includes welding outdoors.
3. Where engineering controls alone cannot control exposure, then adequate and suitable RPE should be provided to control risk from any residual fume.
4. Make sure all engineering controls are correctly used, suitably maintained and are subject to thorough examination and test where required.
5. Make sure any RPE is subject to an RPE programme. An RPE programme encapsulates all the elements of RPE use you need to ensure that your RPE is effective in protecting the wearer.

Relevant legal documents:

- Health and Safety at Work etc. Act 1974
- Control of Substances Hazardous to Health Regulations 2002

References:

- Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV) HSG258
- HSE Local Exhaust Ventilation webpages
- Respiratory Protective Equipment: A practical guide HSG53
- HSE Respiratory Protective Equipment webpages
- IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Volume 118
- The Lancet article on IARC Monograph