

WL14

COSHH essentials for
welding, hot work and allied
processes

The Control of Substances Hazardous to Health Regulations 2002 (COSHH) require employers to ensure that exposure is prevented or, where this is not reasonably practicable, adequately controlled. This guidance gives practical advice on how this can be achieved by applying the principles of good practice for the control of exposure to substances hazardous to health, as required by COSHH.

It is aimed at people whose responsibilities include the management of substances hazardous to health at work (eg occupational health specialists, anyone undertaking COSHH assessments and supervisors). It is also useful for trade union and employee safety representatives). It will help you carry out COSHH assessments, review existing assessments, deliver training and supervise activities involving substances hazardous to health.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance, you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

See Essential information near the end of the sheet.

Manual gas and oxy-gas cutting

Control approach Respiratory protective equipment (RPE)

What this sheet covers

This sheet describes good control practice when using gas and oxy-gas cutting.

It covers the key points you should follow to reduce exposure to an adequate level.

Follow all the points, or use equally effective measures.

Hazards

- ✓ Cutting fume (which includes irritating gases such as oxides of nitrogen and ozone) may cause respiratory irritation and metal fume fever. It can also increase susceptibility to pneumonia. In the longer term, it can lead to serious lung diseases including chronic obstructive pulmonary disease (COPD), which used to be called chronic bronchitis, and emphysema, occupational asthma and cancer.
- ✓ Shielding gases (such as argon, helium and nitrogen, or argon-based mixtures containing carbon dioxide, oxygen or both) can cause asphyxiation (suffocation from lack of oxygen), usually resulting from accumulation of the gases in confined spaces.
- ✓ Fume and dust from allied processes, eg flame and arc cutting, blasting and post-weld dressing, can cause lung disease. Abrasive blasting produces a great deal of dust that includes metals and metal oxides.
- ✓ Each situation is different. The hazard varies and is dependent on the process, eg the metal thickness, surface coatings or contaminants, and where the task is done.

Access to work area

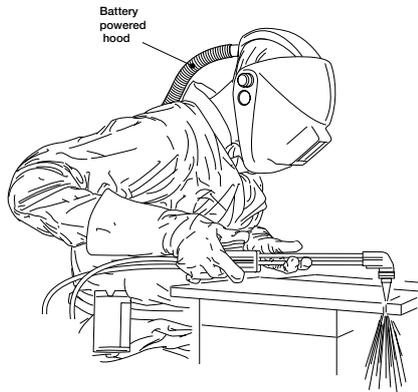
- ✓ Allow access to authorised and appropriately trained people only.

Equipment and procedures

- ✓ Consider an automated system for tasks of long duration.
- ✓ Provide a good standard of general ventilation.
- ✓ Arrange work to reduce the worker's exposure to the fume, eg welder's head is out of the fume.
- ✓ Remove grease and all surface coatings first.
- ✓ Purge the gas hoses to ensure no other gas is present before lighting the flame.
- ✓ Ensure to use a flashback arrestor on both cylinders for oxy-acetylene cutting.
- ✓ Check that gas cylinder regulators are connected correctly and are not leaking gas, where applicable.
- ✓ Where possible, site the work area away from doors, windows and walkways, to stop the spread of the airborne contaminant.

Respiratory protective equipment (RPE)

- ✓ Provide RPE with an assigned protection factor (APF) of at least 20. The type of welding to be undertaken will determine the APF required.
- ✓ Fit testing is required for RPE with a tight-fitting face seal.
- ✓ Workers wearing tight-fitting RPE must be clean shaven, trained how to fit it properly and how to look after it.
- ✓ Tell workers to discard disposable RPE at the end of the shift, or sooner if their RPE becomes blocked with dust.
- ✓ Change the filters on respirators in accordance with manufacturers' recommendations and if:
 - the shelf-life expiry date has passed;
 - they are damaged or visibly contaminated;
 - they become harder to breathe through.
- ✓ Examine and test non-disposable RPE thoroughly at least once every month and record this.
- ✓ Tell workers to check RPE is working properly before every use and record this.
- ✓ If a wearer cannot achieve the necessary fit in a test, then another type of RPE should be used.
- ✓ A powered respirator or supplied air breathing apparatus (BA) with a welding visor or helmet head-top is more comfortable to wear for longer periods of time.
- ✓ Keep RPE clean and store it in a clean place.
- ✓ Make suitable arrangements for maintenance, storage and replacement of RPE.



Caution: Respirators must not be used in oxygen-deficient atmospheres. You will require suitable supplied air breathing apparatus and should seek professional advice.

Personal protective equipment (PPE)

- ✓ Ask your supplier to advise on suitable PPE.
- ✓ Ensure compatibility with RPE and other PPE required.
- ✓ Provide and ensure that workers use a welding visor, flame-resistant overalls and protective gloves.
- ✓ Use a contract laundry or a suitable equivalent to wash work clothing. Don't allow workers to do this at home.
- ✓ Make suitable arrangements for maintenance, storage and replacement of PPE.

Personal decontamination

- ✓ Provide warm water, mild skin cleansers, and soft paper or fabric towels for drying. Avoid abrasive cleansers.
- ✓ Provide pre-work skin creams, which will make it easier to wash dirt from the skin.
- ✓ Provide after-work creams to replenish skin oils.

Caution: 'Barrier creams' are not 'liquid gloves' and do not provide a full barrier.

Cleaning and housekeeping

- ✓ Keep the work area clean and free of combustible materials.

Exposure monitoring

- ✓ Consider exposure monitoring as a check on the effectiveness of control measures in place when welding or cutting:
 - stainless steels;
 - non-ferrous alloys;
 - painted or coated metals.
- ✓ See sheet WL0 for further information.

Health surveillance

- ✓ Provide health surveillance for asthma where there is a reasonable likelihood that asthma may occur in your workplace. See sheet G402.

Training and supervision

- ✓ All people involved in the selection, use, storage and maintenance (if required) of RPE require training. An appropriate training programme could cover the following areas:
 - why RPE is needed;
 - the hazards, risks and effects of exposure;
 - what RPE is being provided;
 - how RPE works;
 - why fit testing is required (if relevant);
 - how to wear and check the RPE correctly;
 - fit checking before use;
 - what maintenance is required and when;
 - where and how it should be cleaned and stored;
 - how to report/tackle any problems;
 - employee and employer responsibilities;
 - use and misuse of RPE.
- ✓ Involve managers and supervisors in health and safety training.
- ✓ Consider keeping training records.

Essential information

WL0 – *Advice for managers*

G402 – *Health Surveillance for occupational asthma*

G409 – *Exposure measurement: Air sampling*

Further information

For further health and safety information for welding and allied processes, visit the HSE Welding website: www.hse.gov.uk/welding/

For further information on local exhaust ventilation (LEV): HSG258 *Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV)* www.hse.gov.uk/pubns/books/hsg258.htm

Employee checklist

- Do you know how to fit your RPE correctly?
- Use, maintain and store your RPE and PPE in accordance with instructions.
- Look for signs of leaks, wear and damage.
- If you find any problems, tell your supervisor. Don't just carry on working.
- Co-operate with health surveillance.
- Wash your hands before eating, drinking, smoking or using the lavatory.
- Never clean your hands with solvents or concentrated cleaning products.
- Use skin creams provided as instructed.

For further information on respiratory protective equipment, visit the guidance document HSG53 *Respiratory protective equipment at work - A practical guide*: <http://www.hse.gov.uk/pubns/books/hsg53.htm>

COSHH Essentials Respiratory Protective Equipment R Series:
<http://www.hse.gov.uk/pubns/guidance/rseries.htm>

G series: General Guidance COSHH Essentials sheets:
<http://www.hse.gov.uk/pubns/guidance/gseries.htm>

You can find the full COSHH essentials series at:
www.hse.gov.uk/coshh/index.htm

Occupational Safety and Health Consultants Register: www.oshcr.org/
Respiratory protective equipment at work: A practical guide, HSG53 (Third edition), HSE Books 2005, ISBN 0 7176 2904 X.

For information about health and safety, visit <https://books.hse.gov.uk> or <http://www.hse.gov.uk>

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