WL16

COSHH essentials for welding, hot work and allied processes

Arc-air gouging (air-carbon arc gouging)

Control approach 2 Engineering control + Respiratory protective equipment (RPE)

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.

What this sheet covers

This sheet describes good control practice when using arc-air gouging (air-carbon arc gouging).

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

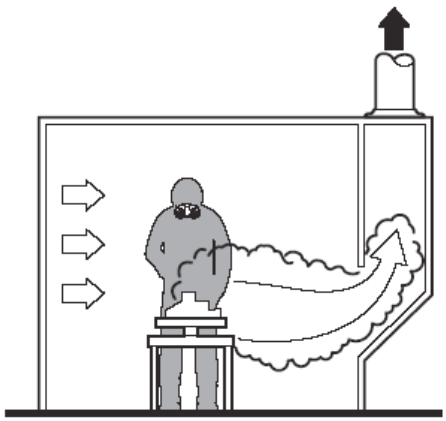
- ✓ Welding fume (which includes irritating gases such as oxides of nitrogen and ozone) may cause respiratory irritation and metal fume fever. It can also increase susceptibility to pneumonia. In the longer term, it can lead to serious lung diseases including chronic obstructive pulmonary disease (COPD), 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

- ✓ Isolate this task from the workforce by carrying out the work in a booth or segregated area with local exhaust ventilation (LEV).
- ✓ Provide an enclosed extracted booth and RPE.
- ✓ Provide an easy way of checking the booth extraction is working, eg airflow indicator or equivalent.
- ✓ Always confirm that the extraction is turned on and working at the start of work.



Extracted booth

- ✓ Discharge extracted air to a safe place away from doors, windows and air inlets.
- ✓ Arrange work to reduce the worker's exposure to the fume, eg welder's head is out of the fume.

Respiratory protective equipment (RPE)

- ✓ Provide a powered respirator with welding helmet, with a protection factor of 40 for tasks lasting less than 30 minutes per shift.
- ✓ Provide airline breathing apparatus (BA) for tasks lasting more than 30 minutes per shift.
- ✓ Wearers must be medically fit to wear BA.
- ✓ Air supplied to BA should meet minimum quality requirements, in line with the latest British Standard.
- ✓ Examine and test non-disposable RPE thoroughly at least once every three months and record this.
- ✓ Tell workers to check RPE is working properly before every use and record this.
- ✓ Keep RPE clean and store it in a clean place.
- ✓ Make suitable arrangements for maintenance, storage and replacement of RPE.

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.

Maintenance, examination and testing

- ✓ Keep all equipment used for the task in effective working order. Maintain it as advised by the supplier or installer.
- ✓ Check for signs of damage to control equipment before starting work.
- ✓ Have equipment thoroughly examined and tested against its performance standard, at suitable intervals.
- ✓ For LEV, a user manual or log book is helpful in setting out the frequency of checking, maintenance or parts replacement.

- ✓ For LEV with no user manual or log book, you may need the help of a competent person. They can determine the performance needed for adequate control.
- ✓ LEV systems require a statutory 'thorough examination and test' (TExT).
- ✓ Get a competent person to perform the TExT at least once every 14 months.
- ✓ Carry out all actions arising from the TExT.
- ✓ Keep an employer record for at least 5 years of TExT information such as target extraction rates which show the LEV is performing as originally intended.
- ✓ Several measures are available to check effectiveness of controls. These range from simple qualitative (eg. use of a dust lamp) to complex quantitative techniques (eg. air sampling) usually for higher-risk scenarios.
- ✓ HSG258 provides more detailed information on LEV systems and legal and competence requirements.

Exposure monitoring

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

Cleaning and housekeeping

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

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

- ✓ Provide supervision – ensure that safe work procedures are followed.
- ✓ Tell workers about the health hazards from welding fume.
- ✓ Provide workers with training on:
  - Following safe working procedures.
  - When and how to use controls.
  - How to check they are working.
  - How the LEV system works.
  - How to use LEV to get the best out of it.
  - How to check the LEV is working.
  - What to do if something goes wrong.
- ✓ Provide them with training on handling chemicals safely, when and how to use controls, and how to check they are working.
- ✓ Involve managers and supervisors in health and safety training.
- ✓ Training records are helpful to demonstrate training has taken place.

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

For further information on respiratory protective equipment: HSG53 *Respiratory protective equipment at work - A practical guide* www.hse.gov.uk/pubns/books/hsg53.htm

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

G series: General Guidance COSHH Essentials sheets: 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/

HSE local exhaust ventilation (LEV) webpages: www.hse.gov.uk/lev/

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

You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

To report inconsistencies or inaccuracies in this guidance, email: commissioning@wlt.com

Employee checklist

- ☐ Are you sure about safe work procedures?
- ☐ Is equipment in good condition and working properly?
- ☐ Do you know how to use the equipment properly?
- ☐ Use, maintain and store your RPE and PPE in accordance with instructions.
- ☐ Do you know how to operate the extraction system correctly?
- ☐ Look for signs of wear and damage for both your RPE and extraction system.
- ☐ 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, using the lavatory and after work.
- ☐ Never clean your hands with solvents or concentrated cleaning products.
- ☐ Use skin creams provided as instructed.