

WL7

COSHH essentials for welding, hot work and allied processes



This information will help employers (including the self-employed) comply with the Control of Substances Hazardous to Health

Regulations 2002 (COSHH), as amended, to control exposure and protect workers' health. It is also useful for trade union safety representatives.

Welding fume can cause lung disease, with an increased risk of asthma and cancer.

Cutting fume is associated with an increased risk of lung disease and asthma.

Gouging fume and dust is associated with an increased risk of lung disease and cancer.

This sheet describes good practice using RPE and engineering controls.

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

It is important to follow all the points, or use equally effective measures.

Confined space work requires permit-to-work procedures.

Main points

- Dust and fume can cause serious lung diseases.
- Keep exposure as low as possible using all the controls in this sheet.
- Design, install, commission and maintain engineering controls. See sheet G406.
- Health monitoring is usually needed. See sheet G401.
- See manufacturers' safety data sheets - select safer consumables.

RPE used with engineering controls

Control approach R

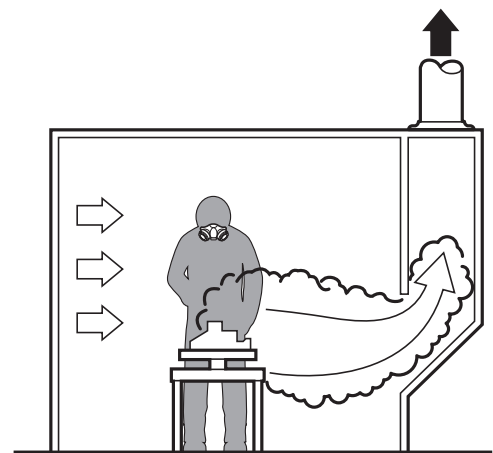
Respiratory protective equipment (RPE)

Access and premises

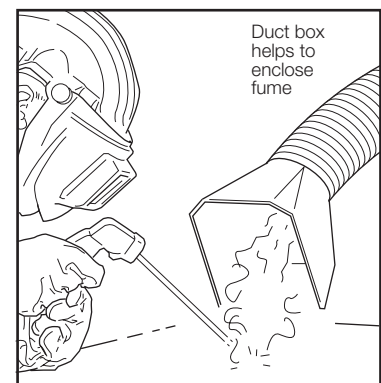
- ✓ Only allow access to authorised staff.
- ✓ Locate the work away from doors, windows and walkways. Stop draughts interfering with the extraction.

Equipment

- ✓ Provide RPE.
- ✓ Provide personal gas alarms for work in confined spaces.
- ✓ Provide an enclosed, extracted booth, or for confined space working, flexible extraction ducting with a welding hood. See illustrations.
- ✓ Wherever possible, do gouging in a fully enclosed booth.
- ✓ You need an inward air speed between 1 and 1.5 metres per second into the booth.
- ✓ You need an inward air speed between 2.5 and 10 metres per second at the booth extraction point.
- ✓ You need an air speed at least 1 metre per second to clear fume, and between 5 and 10 metres per second into a moveable hood duct.
- ✓ Fit a manometer, pressure gauge or tell-tale to show that the extraction is working.
- ✓ Discharge cleaned, extracted air to a safe place outside the building, away from doors and windows.
- ✓ Have a supply of clean air coming into the workroom to replace extracted air.
- ✓ Keep fume emissions as close as possible to the extraction point. Can you provide a turntable to help this?



Extracted booth



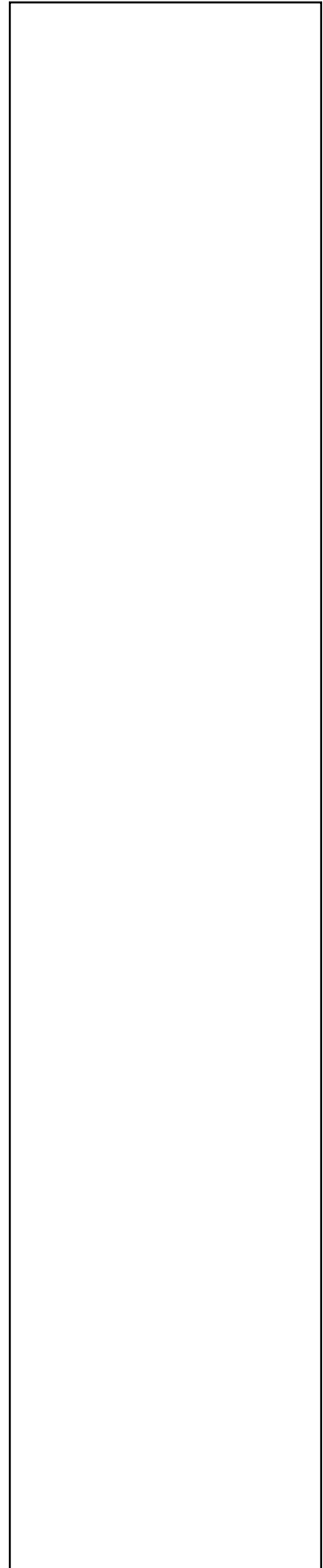
Flexible extraction

Procedures

- ✓ Make sure that workers check their RPE works properly every time they put it on.
- ✓ Visually check compressed gas and air lines for signs of damage before use.
- ✓ Remove grease and all surface coatings first, unless they are meant to be welded or cut through.
- ✓ Arrange work so that the worker's head is out of the fume.
- ✓ Confirm that extraction is turned on and working.
- ✓ Adjust a moveable welding hood so it collects hot fume rising. The hood should be within one duct diameter of the welding point.
- ✓ Check for gas leaks.

Maintenance, examination and testing

- ✓ It is vitally important to maintain RPE in effective and efficient working order.
- ✓ Follow the instructions in the manual.
- ✓ If any equipment is faulty, stop work until it is repaired.
- ✓ Daily, look for signs of damage. Noisy or vibrating fans can indicate a problem.
- ✓ Make sure that users examine their RPE and test it works properly before each use.
- ✓ Examine and test RPE thoroughly at least once every three months.
- ✓ Check the air flow and air quality to air-fed RPE at least once every three months or before use. Ensure that compressors take in only clean air.
- ✓ At least once a week, check that the extraction system and gauges work properly.
- ✓ You need to know the manufacturer's specifications to check the extraction's performance.
- ✓ If this information isn't available, hire a competent ventilation engineer to determine the performance needed for effective control.
- ✓ The engineer's report must show the target extraction rates.
- ✓ Keep this information in your testing log-book.
- ✓ Get a competent ventilation engineer to examine the extraction thoroughly and test its performance at least once every 14 months, or six months for non-ferrous metals. See the HSE publication HSG54 - see 'Further information'.
- ✓ Keep records of all examinations and tests for at least five years.
- ✓ Review records - failure patterns show where preventive maintenance is needed.
- ✓ If hot work involves cadmium, seek advice on biological monitoring - see 'Useful links'.



Personal protective equipment (PPE)

- ✓ Ask your safety equipment supplier to help you get the right PPE.
- ✓ Provide storage for clean and contaminated PPE.

Respiratory protective equipment (RPE)

- ✓ RPE is always needed.
- ✓ Provide a powered or air-fed welding helmet that suits the wearer, the job and the work environment.
- ✓ For more heavy duty work, use a compressed air-line helmet to BS EN 270 standard. See sheet R5.
- ✓ For normal work, use a type LDH2 air-line helmet to BS EN 1835 standard or type TH2 powered filtering helmet to BS EN146/EN12942. See sheet R3.
- ✓ Could there be a confined space? If so select air-line RPE.
- ✓ Make sure all RPE is properly fit-tested - get advice from your supplier.
- ✓ Make sure that workers check their RPE works properly before use.
- ✓ Replace RPE filters as recommended by your supplier.
- ✓ Keep RPE clean and store it away from dust.

Other protective equipment

- ✓ Provide and ensure that workers use flame-resistant overalls and protective gloves.
- ✓ Use a properly equipped contract laundry or a suitable equivalent to wash work clothing.
- ✓ Skin creams help in washing contamination from the skin. After-work creams help to replace skin oils.

Caution: Never allow use of compressed air for removing dust from clothing.

Health monitoring

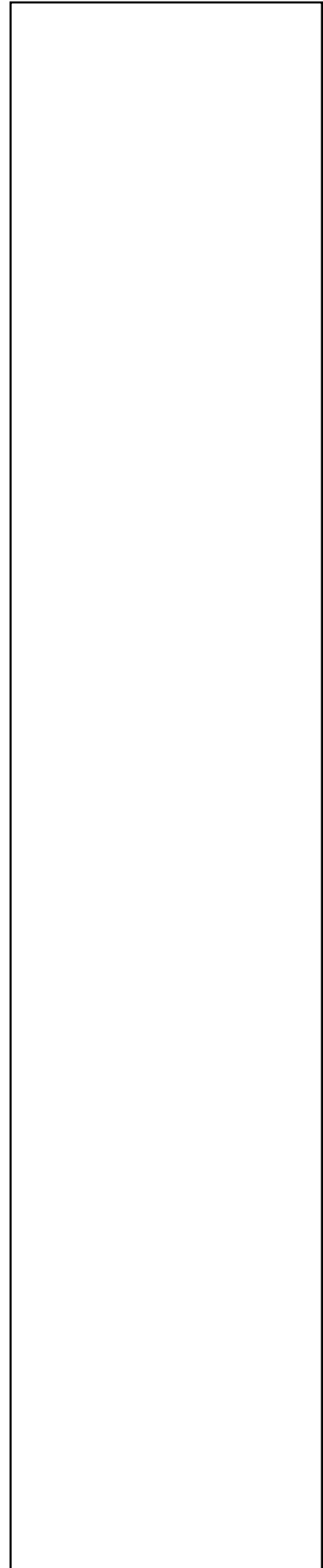
- ✓ You should consider health monitoring. See sheet G401.
- ✓ Consult an occupational health professional - see 'Useful links'.

Cleaning and housekeeping

- ✓ Keep the work area clean and free of combustible materials.
- ✓ Clean the general workroom once a week.
- ✓ Dispose of hazardous wastes safely.

Training and supervision

- ✓ Tell workers that fume from welding and cutting can cause serious lung diseases.
- ✓ Working in the right way and using the controls correctly is important for exposure control. Train and supervise workers. See sheet WL0.
- ✓ Provide training for any work in confined spaces.



Further information

- *Maintenance, examination and testing of local exhaust ventilation* HSG54 (Second edition) HSE Books 1998 ISBN 0 7176 1485 9
- *Respiratory protective equipment at work: A practical guide* HSG53 (Third edition) HSE Books 2005 ISBN 0 7176 2904 X
- *The safe use of compressed gases in welding, flame cutting and allied processes* HSG139 HSE Books 1997 ISBN 0 7176 0680 5
- *Health and safety in arc welding* HSG204 HSE Books 2000 ISBN 0 7176 1813 7
- *Thoriated tungsten electrodes* Information document OC 564/6(rev) HSE 1995 Web only version available at www.hse.gov.uk/foi/internalops/fod/oc/500-599/564_6r.pdf
- *Permit-to-work systems* Leaflet INDG98(rev3) HSE Books 1997 (single copy free or priced packs of 15 ISBN 0 7176 1331 3)
- *Safe work in confined spaces* Leaflet INDG258 HSE Books 1997 (single copy free or priced packs of 20 ISBN 0 7176 1442 5)
- For environmental guidelines see sheet WLO

Useful links

- Your trade association may advise on health and safety consultants and training providers.
- HSE priced and free publications are available from HSE Books Tel: 01787 881165 Website: www.hsebooks.co.uk.
- HSE free leaflets can be downloaded from HSE's website: www.hse.gov.uk/pubns.
- For information about health and safety ring HSE's Infoline Tel: 0845 345 0055 Textphone: 0845 408 9577 e-mail: hse.infoline@natbrit.com.
- Contact the British Occupational Hygiene Society (BOHS) on 01332 298101 or at www.bohs.org for lists of qualified hygienists who can help you.
- Look in the Yellow Pages under 'Health and safety consultants' and 'Health authorities and services' for 'occupational health'.
- Also see www.nhsplus.nhs.uk.
- Biological monitoring - contact the Health and Safety Laboratory (HSL) e-mail hslinfo@hsl.gov.uk, or other service laboratories.

Employee checklist

- Do you know how to use the controls properly?
- Is your RPE working properly?
- Check the RPE clean air supply.
- Is the extraction in the right position and working?
- Use, maintain and store your protective equipment 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 monitoring.
- Wash your hands before eating, drinking, or using the lavatory.
- Never clean your hands with solvents or concentrated cleaning products.
- Use skin creams provided as instructed.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory 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 as illustrating good practice.