

MW²

COSHH essentials for machining with metalworking fluids



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.

Metalworking fluids can cause skin diseases such as dermatitis.

This sheet describes good practice using engineering controls and personal protective equipment (PPE) to reduce fluid contact with skin.

It covers the points you need to follow to reduce exposure.

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

Main points

- Skin exposure to metalworking fluids can cause dermatitis.
- Keep exposure low using all the controls in this sheet.
- Make sure all the controls work.
- Health surveillance for dermatitis is usually needed. See sheet G403.

See www.hse.gov.uk/metalworking.

Fluid control: Skin risks

Control approach S

Harm via skin or eye contact

Access and premises

- ✓ Provide clean facilities for washing and taking refreshment, away from all machining activities.

Equipment

- ✓ Limit skin contact; use mixing valves instead of manual mixing.
- ✓ Provide chemical-resistant gloves.
- ✓ Reduce splash risks; provide properly designed splash-guards. Don't use rags or plastic sheeting.

Procedures

- ✓ Warn workers to avoid getting metalworking fluid on their skin, particularly hands.
- ✓ Can you adjust the fluid flow rate to avoid overheating while minimising mist and splashes?
- ✓ Stop fluid delivery when not machining.
- ✓ Remove tramp oil (hydraulic, lubricating or gearbox oil, which has leaked into metalworking fluid) regularly by mechanical skimmers, coalescers, or by manual skimming.

Neat oil

- ✓ Only use highly refined neat oils.

Water-mix fluids

- ✓ Mix fresh water-mix fluids to the supplier's recommended concentration. Make sure you use the right amount of concentrate.
- ✓ In use, water-mix fluids evaporate and become more concentrated. Top-up only with fluid below working strength.
- ✓ You may need to use biocides and corrosion inhibitors in sumps. Add the right amount.

Caution: Don't add concentrate or water direct to the sump.

Synthetic fluids

- ✓ Some synthetics may be topped up with water. Follow your suppliers' guidelines.

Maintenance examination and testing

- ✓ Keep all equipment in effective and efficient working order, in accordance with the manufacturer's instructions. Employ a competent engineer.
- ✓ Monitor fluid quality and change fluids as frequently as necessary.
- ✓ Minimise leaks of tramp oil into the sump.
- ✓ Check all filters regularly for blockages and slime formation.
- ✓ Regularly remove fines from the fluid. Paper-roller filters are effective and efficient.

Caution: Don't remove fines from the sump by hand (with or without protective gloves).

Fluid quality: Neat oil

- ✓ Daily, check the oil appearance and colour.
- ✓ Regularly measure the sump fluid temperature. It should not rise above the workroom temperature.
- ✓ Regularly check for accumulations of swarf and fines. Keep fines below 100 mg per litre of fluid (100 ppm).

Fluid quality: Water-mix fluids

- ✓ For full details on how to maintain water-mix fluid quality see sheet MW5. Make sure you cover the following points:
 - Check input water quality.
 - Every day, check the fluid appearance, colour and odour.
 - Regularly check tramp oil levels.
 - Check for bacteria.
 - Measure fluid concentration and pH at least once a week.
 - Measure the biocide concentration.

Records

- ✓ Keep records in a graph form. This makes it easier to spot gradual changes. See MW5.

Personal protective equipment (PPE)

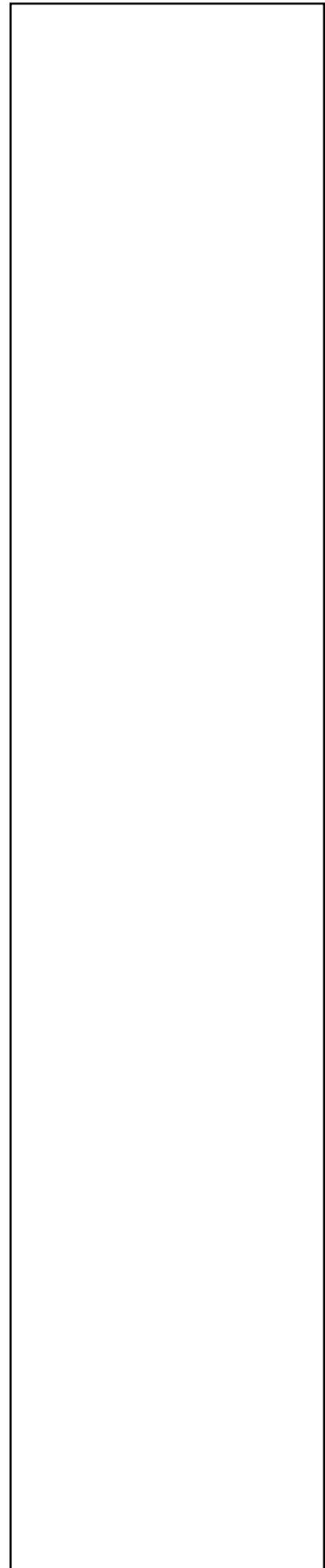
- ✓ Provide storage for PPE to prevent damage or contamination when not in use.

Respiratory protective equipment (RPE)

- ✓ RPE is not normally needed.

Protective gloves

- ✓ Provide 0.4 mm nitrile gloves to BS EN 374 standard. These protect for up to eight hours only. These gloves are normally thin enough to provide dexterity.
- ✓ Provide thicker gloves to BS EN 374 and BS EN 388 standards to protect against abrasions and sharp edges.
- ✓ Workers should change and discard damaged gloves immediately. Deal with used gloves in accordance with the supplier's recommendations.



Other PPE

- ✓ Provide eye protection to BS EN 166 standard where there is a risk of splashing.
- ✓ Provide overalls and make sure forearms are covered.

Skin care

- ✓ Keep hands clean and in good condition.
- ✓ Using pre-work creams helps make removing fluids easier. These do not provide a barrier, and are not a substitute for gloves.
- ✓ Provide after-work creams (moisturisers) to replace skin oils after washing hands.

Health surveillance

- ✓ There is a chance of dermatitis developing, even with good controls in place. Skin surveillance is needed. See sheet G403.
- ✓ Consult an occupational health professional - see 'Useful links'.

Cleaning and housekeeping

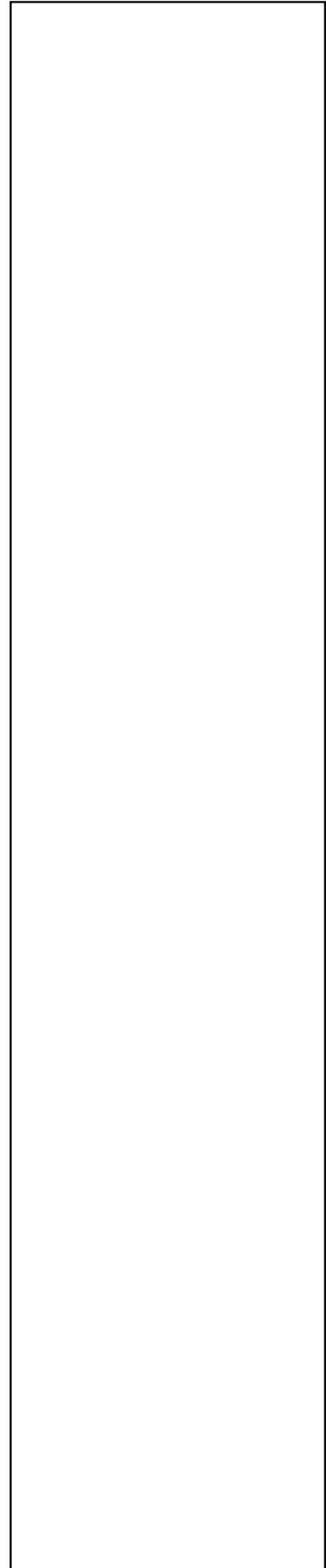
- ✓ Deal with spillages immediately. Contain them with a 'pig sock'. Use a vacuum system and soak up the residues with suitable absorbent materials. Your fluid supplier will advise you on this.
- ✓ Dispose of spilt fluid safely. Returning it to the machine contaminates the system and reduces the fluid's operational life.
- ✓ See sheet MW3 for cleaning water-mix sumps.
- ✓ See sheet MW4 for cleaning oil-based fluid sumps.
- ✓ Use a suction device to clean away excess fluid and swarf from machined parts. Never use compressed air.
- ✓ Ensure contaminated overalls are laundered before re-use.

Training and supervision

- ✓ Tell workers about the risks of dermatitis.
- ✓ Working in the right way and using the controls correctly is important for exposure control. Train and supervise workers. See sheet MW0.

Further information

- *Preventing dermatitis at work: Advice for employers and employees*
Leaflet INDG233 HSE Books 1996 (single copy free or priced packs of 15 ISBN 0 7176 1246 5)
- *Optimising the Use of Metalworking Fluids* GG199 Envirowise.
Register to get this publication on www.envirowise.gov.uk
- *Working safely with metalworking fluids: A guide for employees*
Leaflet INDG365 HSE 2006 Web only version available at hse.gov.uk/pubns/indg365.pdf



Useful links

- HSE priced and free publications are available from HSE Books
Tel: 01787 881165 Website: www.hsebooks.co.uk.
- See www.hse.gov.uk/metalworking.
- 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.

Employee checklist

- Always follow the standard operating procedure.
- Make sure you know what to do if there is a fluid spill.
- Use, maintain and store your PPE as instructed.
- 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.
- Check your skin regularly for dryness or soreness – tell your supervisor if these symptoms appear.
- Use skin creams provided as instructed.
- Remember that gloves increase the risk of entanglement at moving machinery.

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.