

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 significantly above the workroom temperature.
- ✓ Keep fines and dissolved metals within control limits. Well managed sumps typically have fines below 100 mg per litre of fluid – 100ppm. Get advice on condition monitoring from your fluid supplier.

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. Are there any reports of an unusual odour?
 - Regularly check tramp oil levels. Ask your fluid supplier for advice on a suitable method.
 - Check for bacteria.
 - Measure fluid concentration and pH at least once a week.
 - You may need to measure biocide concentration. Ask your fluid supplier for advice.

Records

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

Personal protective equipment (PPE)

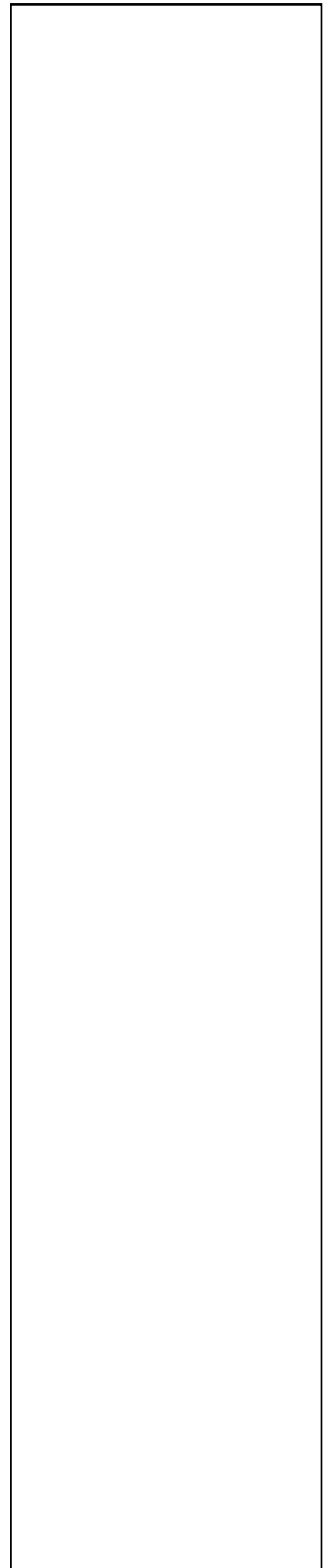
- ✓ Provide storage for PPE to prevent damage or contamination when not in use.

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.



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- ✓ 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

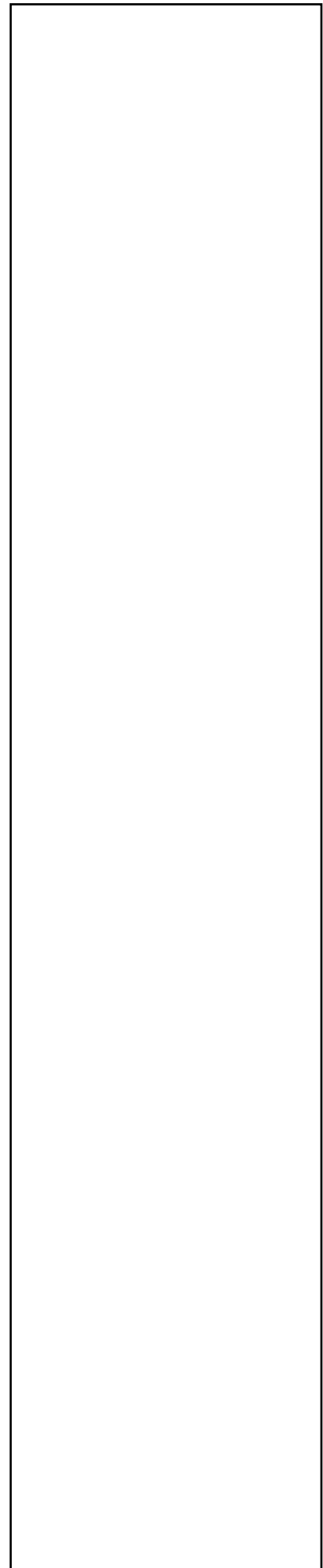
- ✓ Deal with spillages immediately. Contain them with a 'pig sock'. Use a vacuum system and soak up the residues with suitable absorbent materials. Your fluid supplier will advise you on this.
- ✓ Dispose of spilt fluid safely. Returning it to the machine contaminates the system and reduces the fluid's 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 contact dermatitis at work* Leaflet INDG233(rev1) HSE Books 2007 (single copy free or priced packs of 15 ISBN 978 0 7176 6183 1) www.hse.gov.uk/pubns/indg233.pdf
- *Working safely with metalworking fluids: A guide for employees* Leaflet INDG365 HSE 2010 Web only version available at hse.gov.uk/pubns/indg365.pdf



Useful links

- For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit 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.
- See www.hse.gov.uk/metalworking.
- Contact the British Occupational Hygiene Society (BOHS) on 01332 298101 or at www.bohs.org for lists of qualified hygienists who can help you.
- Envirowise at <http://envirowise.wrap.org.uk>.
- 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 document is available at: www.hse.gov.uk/pubns/guidance/ and www.hse.gov.uk/coshh/essentials/

This document contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

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