



2024

10th & 11th
September
2024

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BOHS

British Occupational
Hygiene Society

BOHS Guidance on Controlling Metal Working Fluids

Carol Stearne (BAE Systems)

LEV
LOCAL EXHAUST VENTILATION
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Metalworking Fluids Expert Group

Guidance for Occupational Hygienists





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Members of the MWF Expert Group

- Adrian Hirst
- Gareth Evans
- Samantha Lord
- Rachel Powis
- Stephen Larson
- Carol Stearne
- Roz Phillips (BOHS Head Office)

The panel was drawn mostly from experienced occupational hygienists and other experts in management of metalworking fluid (MWF) and the health risks.



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Scope of the MWF Expert Group

To provide guidance to Occupational Hygienists to enable them to:

- Understand the hazards associated with metalworking fluids.
- Be aware of the range of control measures available to reduce exposure to MWFs.
- Assess the health risks associated with exposure to MWFs.
- Assess the efficacy of control measures.

The BOHS guidance supports the existing HSE guidance and more recently the UKLA Good Practice Guide for Managing MWFs.

- The target group for the BOHS guidance are Occupational Hygienists.
- The UKLA Good Practice Guide is for duty holders and shopfloor supervisors.

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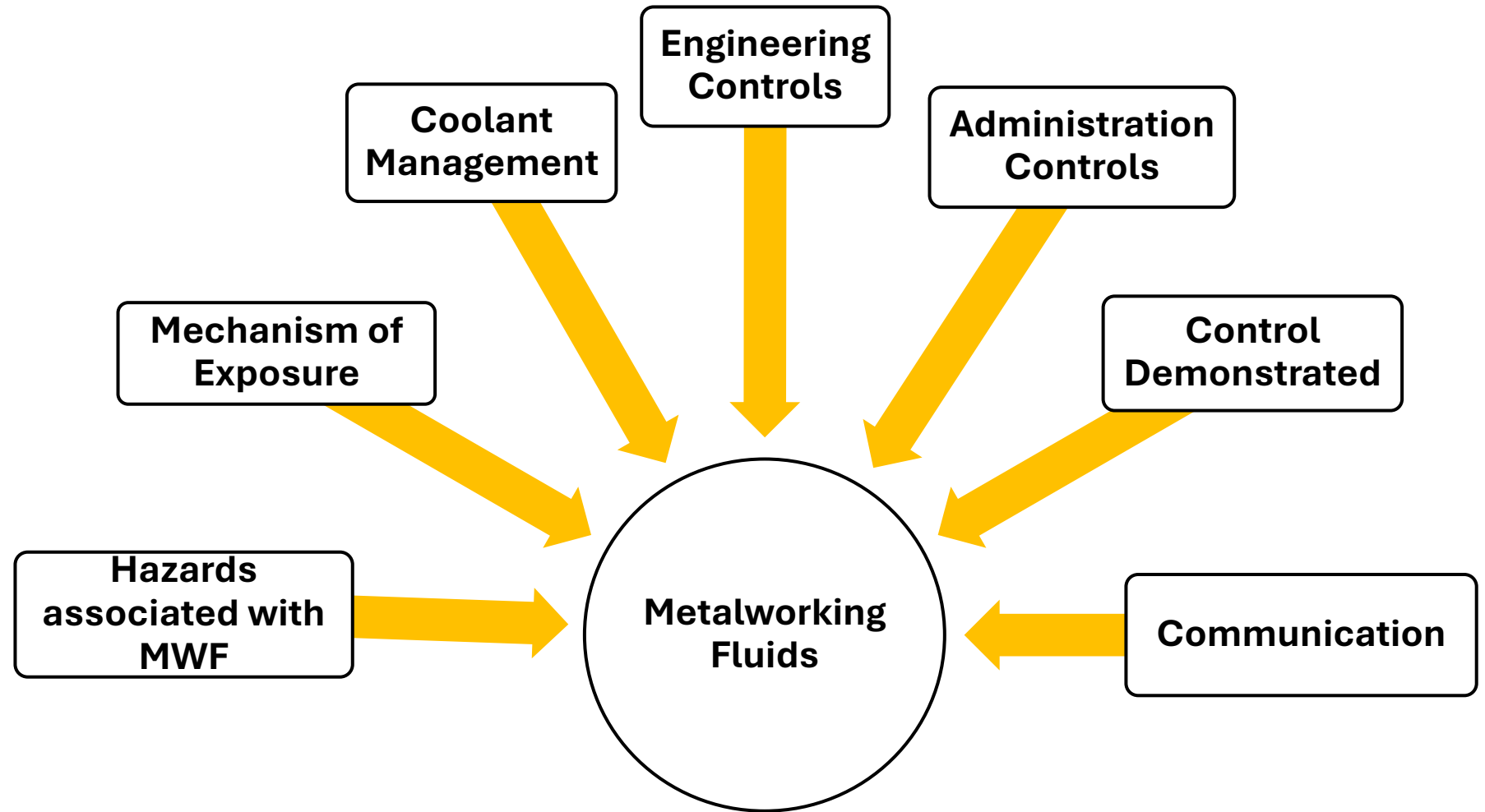
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Scope





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Consultation

- The outline and content of the draft guide were sent to HSE and UKLA.
- The guidance has been reviewed by a BOHS working group and is approved by the Faculty of Occupational Hygiene (FOH).
- Consultation and feedback from BOHS members has informed the development of this guidance.

Appendix 2 – Assessment/Audit Tools

A2.1 Auditing tool for assessment and control of exposure.

This tool aims to provide a framework for assessing the risk of exposure by inhalation, or skin contact, with MWF to inform a suitable and sufficient risk assessment. The list considers process risk factors, routes of exposure and existing control systems. It does not address the maintenance of fluid quality, which is covered by a checklist presented in A2.2.

Section A1: Risk Factors – Inhalation	
Type of Operations	High Risk: High-speed CNC machining and grinding processes.
Fluid quantity	High Risk: Continuous high-pressure delivery of the MWF at the cutting head.
Machining temperature	High Risk: Elevated MWF temperature (>30°C) which increases the evaporation of volatile constituents in MWF and promote microbial growth.
Cleaning methods	High Risk: Using compressed air at pressures >2.1 bar (30 psi) and/or compressed air outside of the enclosure without an additional source of air extraction to control mist. These risks can be reduced by using vacuum suction equipment for cleaning the CNC machines and by reducing the pressure of compressed air (<2.1 bar (30psi)) for cleaning work



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Next Steps

- A series of communications to promote the guidance, including regional BOHS meetings and webinars.
- BOHS encourages users of the guide to feedback suggestions on improving the content and advice in the guide following publication by BOHS.
- Information about where to send these comments will be provided at the time of publication.

A2.3 Audit tool for MWF quality management

This checklist aims to help audit the management of MWF quality and should be used in conjunction with the UKLA Good Practice Guide for Safe Handling and Disposal of Metalworking Fluids (UKLA, 2023).

Item	Question	Yes/No	
Storage and preparation of MWF			
Temperature	Is the MWF concentrate stored above 5°C?		
Dilution	Is water supplied from mains?		
	Does the water used for dilution of the MWF concentrate meet the manufacturer's recommendations for pH and hardness?		
Monitoring the MWF			
Concentration	Is the concentration of the MWF checked weekly in each machine?		
	Is the concentration of MWF recorded to track changes?		
	Is the concentration within the range advised by the supplier?		
pH	Is the pH of the MWF tested each week?		
	Is the method used for testing pH appropriate with any equipment used being serviced and calibrated <u>where required</u> ?		
	Is the pH of MWF recorded to track changes?		
Appearance	Is there a daily visual check of the appearance of the MWF?		
	Is the MWF free from unusual odour?		



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Sources of Guidance and Advice

In addition to the BOHS guidance there are other sources of regulatory, professional body and industry guides on managing health risks from exposure to MWFs.

- The HSE MWF hub web page¹ which includes link to MWF e-COSHH sheets, and other relevant guidance such as “Working safely with metalworking fluids: A guide for employees” and “Ill health from metalworking and water-mix wash fluids and what to do about it” and links to guidance on Local Exhaust Ventilation (e.g. HSG 258).
- UKLA Good Practice Guide², the UKLA YouTube training videos³, and the UKLA-PERA guide on safe disposal of MWF ³

1. <https://www.hse.gov.uk/metalworking/hse.htm>

2. <https://www.ukla.org.uk/wp-content/uploads/UKLA-HSE-Good-Practice-Guide-for-Safe-Handling-and-Disposal-of-Metalworking-Fluids.pdf>

3. <https://www.youtube.com/@UKLAMetalworkingFluidGroup/videos>

4. <https://www.ukla.org.uk/wp-content/uploads/UKLA-PERA-Best-Practice-Guide-for-the-Disposal-of-Water-mix-Metalworking-Fluids.pdf>