

## **M3-EN.13 METALWORKING FLUIDS**

M3-EN.13.1 What are metalworking fluids?

M3-EN.13.2 Health effects

M3-EN.13.3 Safe handling of metalworking fluids

### **Chapter Description**

In this chapter, these fluids are described and explained. Health effects and safe handling instructions are also presented.

This chapter aims at the familiarization of those who are engaged in Occupational Health and Safety with metalworking fluids in a workplace and especially in Metal Processing workshops, resulting in health and safety of the employees.

### **M3-EN.13.1 What are metalworking fluids?**

Metalworking fluids – sometimes referred to as suds, coolants, slurry or soap – are used during the machining of metals to provide lubrication and cooling and to help carry away debris such as swarf and fine metal particles. They can also help to improve machining performance and prolong the life of the cutting tool, as well as provide corrosion protection for the surfaces of work pieces.

The contact with the skin can occur during the preparation or draining of fluids, handling of work pieces, changing and setting of tools and during maintenance and cleaning operations. Fluids can also splash onto employees during machining, e.g. if there are no splashguards or if they are inadequate.

Inhalation of the mist, aerosol or vapour generated during machining operations. Exposure is highest near metalworking machine, in operations involving high-speed tools or deep cuts, at machines where the process is not enclosed and where there are inadequate ventilation arrangements.

### **M3-EN.13.2 Health effects**

Metalworking fluids affect employee's health and cause irritation of the skin and dermatitis. Bacteria and their toxic by-products when these are present in the sump can cause dermatitis. Workers exposed to metalworking fluid mist and vapour have an increased risk of developing work-related asthma, bronchitis, irritation of the respiratory tract and breathing difficulties, as well as extrinsic allergic alveolitis, which can cause increasingly severe breathing difficulties in recurrent episodes, following repeated exposure.

The use of highly refined oils and the substitution of cancer-causing chemicals in metalworking fluids have reduced the risk of cancer.

### **M3-EN.13.3 Safe handling of those fluids**

- Use splashguards to control splashing and misting.
- Minimise the production of mist and vapour by controlling the volume and rate of delivery of the fluid to the cutting edge of the tool.

- Use any enclosures or ventilation provided to remove or control any mist or vapour produced.
- Open workroom doors and windows to improve natural ventilation.
- Reduce the contact with wet work pieces and surfaces.
- Do not put bare hands into fluid sumps or use oily rags to wipe them clean.
- Cover any cuts and abrasions with waterproof dressing.
- Wash regularly with soap and water to remove metalworking fluids from skin. Avoid using abrasive or powerful solvents cleaners.
- Follow good working practices when mixing fluids, cleaning and topping up sumps.
- Avoid eating, drinking or smoking in areas where metalworking fluids are used.
- Change dirty overalls regularly and keep oily rags out of the pockets.
- Use a suitable pre-work barrier cream designed to provide a protective layer between the skin and the fluid being used and use after-work creams to replace the natural skin oils removed by washing and the corrosive action of metalworking fluids.
- Take care not to contaminate the inside of the gloves with metalworking fluids when putting them on or taking them off.