HSE
Health and Safety Executive

MW5

COSHH essentials for machining with metalworking fluids

Managing sumps and bacterial contamination

Control approach 4 Special

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.

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

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

Fluid systems that contain water or water-mixes can become highly contaminated with harmful bacteria. Mists from these are more likely to lead to asthma and other lung diseases.

See www.hse.gov.uk/metalworking.

Equipment

✓ Cover sumps - keep them free from:

- accumulations of swarf or fines; and
- food, tea-bags and urine etc.

✓ Minimise leaks of tramp oil (hydraulic, lubricant, gearbox oil) into the sump. Remove tramp oil by skimming, by coalescers, or manually.

✓ Maintain and clean the system in accordance with the machine tool supplier's instructions. You may also need fluid specific advice from your supplier.

✓ Measure the sump fluid temperature regularly and record your findings. Consider cooling the fluid if its temperature rises significantly above the workroom temperature.

✓ Eliminate any dead end lines in the fluid system.

Maintenance examination and testing

Fluid quality of water-mix fluids

✓ Check input water quality.

✓ Check for bacteria. One way of doing this is dip slide testing.

✓ Every day check the fluid appearance. Are there any reports of an unusual odour?

✓ Regularly check that tramp oil is less than 2%. Get advice from your fluid supplier on a suitable measurement method.

✓ 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.

✓ Measure the fluid concentration (refractometer) and pH every week.

✓ Follow your suppliers' recommended levels of fluid concentration and pH.

✓ Ask your supplier for advice regarding measurement of biocide concentration.

✓ If you need to add biocide, choose a point of high turbulence - ensure complete mixing.

✓ Decide what precautions you need to take before approaching machinery and for handling biocides

Caution: Never overdose with biocide for routine use.

Dip slides

✓ Take dip slides once a week.

✓ If you want to reduce the frequency you need to demonstrate that your controls are effective. This includes:

- dip slide test records; and
- concentration and pH test records.

✓ Only a ‘competent person’ can advise on changes and recommend new testing intervals, eg priority being given to more vulnerable systems.

✓ Stir the sump before testing, to avoid tramp oil coating the slide.

✓ Use a slide incubator to keep the temperature for developing slides the same all year round.

✓ Incubate the slide at 25ºC for 48 hours, or follow the slide supplier’s instructions.

Results from dip slides

✓ If you find only reasonable or poor control, investigate and take action. Control is defined as:

- Good control - less than 10^3 CFU/ml (1 000 colony-forming units per millilitre of fluid). No further action is required now.
- Reasonable control - between 10^3 and 10^6 CFU/ml. You may need to clean the system, or change your biocide regime. Get advice.
- Poor control - more than 10^6 CFU/ml. Act immediately. This normally means draining and cleaning.

✓ Or take any other measures which are equally effective.

Records

✓ Keep records of all tests for at least five years.

✓ Keep dip slide records in graph form. This makes it easy to spot gradual changes and to put in place systems to help you dose when necessary - see example on page three.

Useful links

- Your fluid supplier, as a member of the United Kingdom Lubricants Association (UKLA), can advise you on safe application of metalworking fluids. The UKLA can be found at www.ukla.org.uk.
- 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.

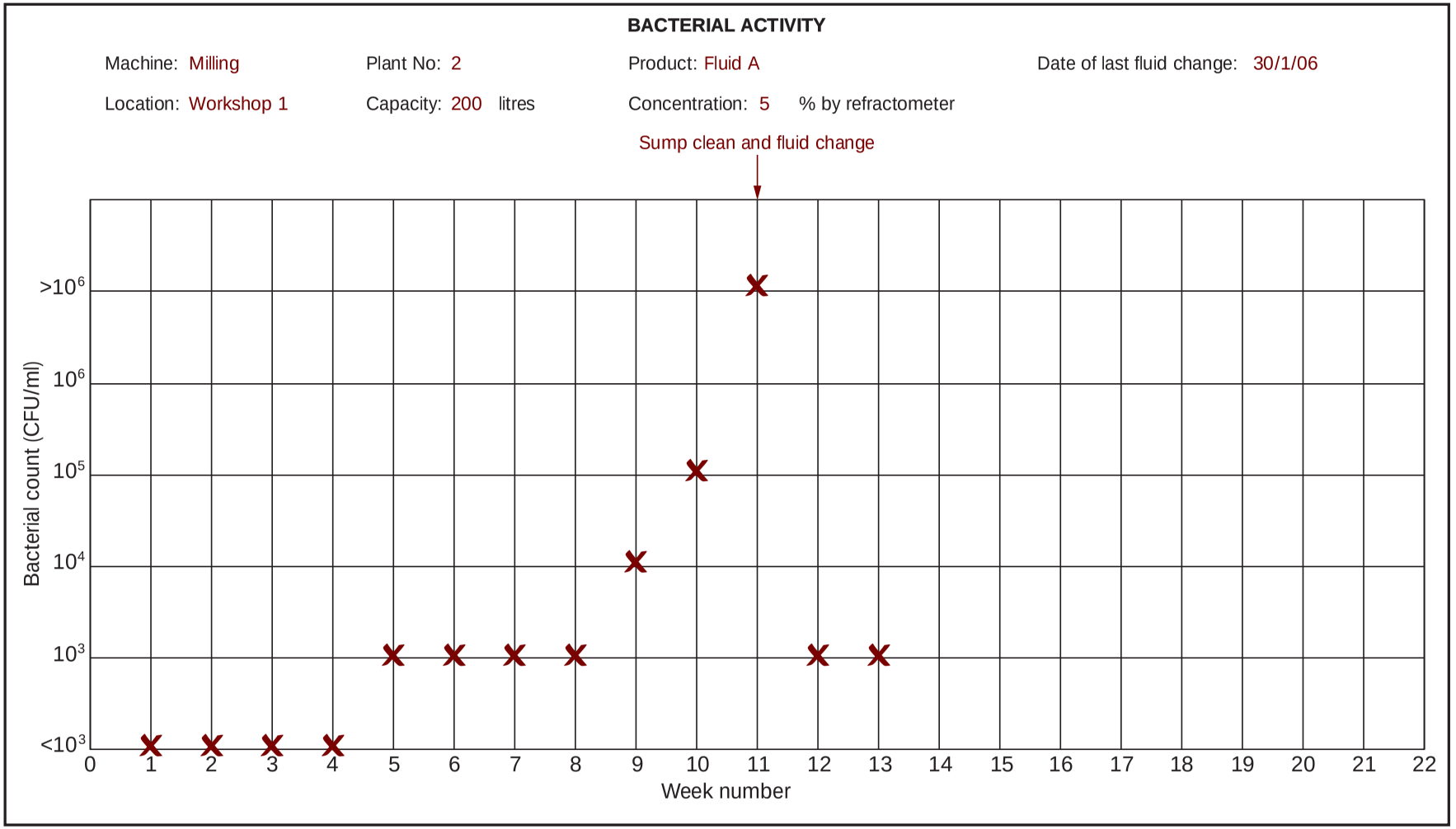
This document is available at: www.hse.gov.uk/pubns/guidance/ and www.hse.gov.uk/coshh/essentials/

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

Published by the Health and Safety Executive 08/11

Dip slide records

Keep your dip slide records in graph form to help you spot gradual changes and dose when necessary - see example below.



Published by the Health and Safety Executive 08/10