GUIDANCE FOR TEXT ASSESSORS

Institute of Local Exhaust Ventilation Engineers

DICHLOROMETHANE

(aka methylene chloride (CAS number 75-09-2))

From January 2024, the HSE are undertaking inspections at alloy wheel stripping sites suspected of using Dichloromethane (DCM) also known as methylene chloride.

This means you may be asked by clients to go to site and look at potential control measures or to test existing extraction systems. If this is the case, you will need to carry out your own risk assessment of the situation, and implement the necessary controls to protect yourself. You need to be particularly careful as DCM is extremely harmful - small volumes rapidly evaporate and can lead to high airborne concentrations which can cause narcosis, impaired consciousness and death (Apprentice was overcome by fumes- SHP- Health and Safety News, Legislation, PPE, CPD and Resources (shponline.co.uk) , Alloy wheel refurbishment firm fined £80,000 for failing to protect its workers | HSE Media Centre , https://www.bbc.co.uk/news/uk-scotland-tayside-central-34682689)

You should:

1. Understand the hazards from the use of DCM and any other hazardous chemicals used in the stripping process.
2. Do a progressive risk assessment to determine whether it is safe to approach the stripping tank.
3. Minimise any risk to yourself if working near the tank.

WHAT IS DCM?

- It is colourless and odourless solvent.
- It is highly volatile and small volumes can give off large amounts of vapour.
- The vapour is heavier than air so will tend to accumulate at lower level.

HOW DOES IT AFFECT YOU?

- Breathing in DCM vapour can affect the central nervous system, causing symptoms such as headaches, lethargy, lack of coordination, nausea, and impaired consciousness (narcosis). At high concentrations DCM can cause death.
- DCM can burn the skin, or cause irritation leading to dermatitis. It is also absorbed via the skin.
- DCM breaks down to carbon monoxide within the body, which reduces the flow of oxygen. This may aggravate symptoms for those with heart and/or lung problems.
- DCM is suspected of causing cancer.
- DCM can irritate and burn the eyes.

Exposure can lead to impaired consciousness and death.

As DCM is usually used in combination with other hazardous substances within an alloy wheel stripping solution, you must consider the risks from all the hazardous substances present.

A typical alloy wheel stripping solution may contain around 80% DCM + 15% methanol + 5% hydrofluoric acid (HF).

HF is particularly hazardous and can cause serious and delayed skin burns – you should ensure gluconate gel is available if you come into skin contact with HF.

RISK ASSESSMENT FOR ALLOY WHEEL STRIPPING

A progressive risk assessment should be carried out before you approach the stripping tank. This should include, but not be limited to:

- whether the work area is an enclosed space where the build-up of DCM could lead to unconsciousness
- whether the tank is in good condition (no tank degradation or leakage, lid on it, and DCM unheated)
- whether there are any obvious spillages of DCM in the work area
- whether there is good general ventilation (don't rely on smelling DCM as some people cannot smell it, but if you can smell it then control may not be adequate)

TYPICAL PROCESSES

Often found in processes such as:

- Alloy wheel stripping.
- Brushing or spraying adhesives.
- Paint stripping.
- Floor laying adhesives.
- Bathtub refinishers.
- Metal cleaning and de-greasing.
- Pharmaceutical manufacturing.

If your progressive risk assessment suggests it is not safe to approach the tank, then consider informing your client that they should be controlling worker exposure to DCM better (COSHH Essentials DCM3 provides guidance) **before you can safely assess the LEV**. If LEV needs to be modified or installed, then one option would be to arrange/pre-arrange with the client for them to drain the tank before you undertake the work.

If your progressive risk assessment suggests that the client may be controlling exposure to DCM, then consider how to minimise your own risk when working close to the tank e.g.

- Ask for the extraction to be put on after the last stripping to clear any DCM vapour from above/around the lidded tank e.g. **for at least 5 minutes**.

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- **Consider the use of** gas/vapour **absorbent tubes** that give a colour stain proportionate to the DCM, to check the airborne concentration. Photo-ionisation detectors (**PIDs**) can also measure DCM levels, but their accuracy can vary over time, and they are cross-sensitive to VOCs. For more details see HSE RR982 (click here).
- **Use smoke tubes** to show whether the extraction appears effective (if not consider reassessing your own safety)
- Use a hot wire anemometer if measuring air flows (long-handled tools keep you further away from the tank and avoid you putting your head above the tank)
- RPE is **unlikely to be effective**, hence the importance of clearing DCM vapour from the area.
    - Constant flow airline breathing apparatus (CFABA) is unlikely to be practical for a TExT examiner.
    - Respirators with standard carbon type filters (e.g. AX filters) are not normally suitable to protect against the inhalation of DCM – they can fail to danger unpredictably so should not be relied upon.
- Use of other **PPE should include**:
    - Chemically-resistant coveralls – disposable ones would remove any need to consider how to air and wash them.
    - Gloves or gauntlets for splash protection. Most common glove materials are not suitable for use with DCM. Viton and PVA (polyvinyl acetate/alcohol) may be suitable for DCM, but could be unsuitable for other substances in the stripping solution – the client may be able to advise what gloves they use. However, you should always check glove selection with the supplier to confirm suitability for the stripping solution.
    - Face protection e.g. goggles or visors. Visors should always be used if the stripping solution contains HF.
    - Chemically resistant footwear.
- **Avoid lone working**- have a buddy (e.g. colleague or client) outside the work area keeping watch.

FURTHER READING

HSE Guidance sheets are available from here.
Government guidance can be found here.
Control of substances hazardous to health (Sixth edition)- L5 (hse.gov.uk)
Safe work in confined spaces. Confined Spaces Regulations 1997- L101 (hse.gov.uk)

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