

WORKING WITH SOLVENTS

A solvent is a liquid that has the ability to dissolve, suspend or extract other materials, without chemical change to the material or the solvent. Solvents make it possible to process, apply, clean or separate materials.

The use of solvents at work should be avoided wherever possible, as they are hazardous. If there is no alternative, then you must carry out an assessment under the Control of Substances Hazardous to Health Regulations 1999 (COSHH) and implement controls to ensure employees are not exposed to levels that may be harmful to their health (*see Advice Sheet 4*).

What are solvent hazards?

- Solvents can be flammable, causing a fire risk.
- Many are volatile (evaporate readily to form vapours) and can thus be inhaled.
- Many are able to pass readily through the skin, causing dermatitis
- They are fat loving and may go to fat-rich tissues such as the brain or liver.
- Solvents can travel easily around the body in the nervous system

Short-term effects of exposure include:

Irritation of eyes, lungs and skin;
Headaches; nausea; dizziness;
Light-headedness; drowsiness;
Motor impairment.

Long-term exposure effects include:

Damage to the nervous system, liver and kidneys and are associated with certain cancers.

How do solvents get into the body?

- Breathing vapours and fumes
- Absorption on contact with the skin
- Swallowing liquid solvents

What do I need to do?

1. You must carry out a COSHH Assessment

To assist you the supplier of the solvents you use has a legal duty to provide essential safety information as Safety Data Sheets. If these are not provided, contact the supplier. The sheets should state:

- What the main hazards are,
- How to protect against them and

- What steps to take in an emergency
- Whether the substance has been assigned an Occupational Exposure Standard (OES), or a Maximum Exposure Limit (MEL).

Refer to Advice Sheet 4 for more information on what a COSHH Assessment involves.

Occupational Exposure Standards and Maximum Exposure Limits

Occupational Exposure Standard is the level of exposure that, based on current knowledge, will not cause harm. You should not exceed this standard.

Maximum Exposure Limit means exposure to the solvent must be reduced to at least this limit and as far below it as is reasonably practicable.

2. You must implement controls identified in your assessment

When considering your control measures you must follow general principles of prevention which include;

- Avoid the risks first, then
- Substitute with less hazardous or non hazardous substances
- Combat risks at source using technically up to date methods
- Use measures that give collective protection before considering individual protection
- Ensure employees receive appropriate information, instruction and training
- Finally provide personal protective equipment if a significant risk remains.

Where it is likely that disease could occur and valid techniques for monitoring exist, you should implement a health surveillance scheme. For example, if the solvent could cause dermatitis.

If workers are exposed to more than one solvent at the same time, it is very important that you consider the overall affect that might be produced. This may be additive or, in some cases, greater than the sum of the individual effects. If you are unsure, it may be necessary to seek specialist advice.

Records of tests carried out on any Controls you put in place must be kept for 5 years.

Vapour control

Local Exhaust Ventilation: Maintenance must be carried out in accordance with the manufacturers' instructions.

A competent person must inspect the equipment when it is installed and at suitable intervals if it is exposed to conditions which cause deterioration; and if an incident occurs which may effect its safety and ability to ventilate effectively (see Advice Sheet 7).

A thorough test and examination must be carried out at least once every 14 months.

Where appropriate, make the most of natural ventilation by opening windows and doors.

Prevent unnecessary evaporation of solvents by using the minimum amount for the job, keeping lids on containers and using sealed containers for solvent-contaminated waste not leave solvent contaminated rags lying around.

Respiratory protection, where provided, must be worn at all appropriate times, must fit the user, be kept clean, well maintained and kept in a clean place (see the Personal Protective Equipment at Work Regulations 1992)

Other Precautions

Smoking and eating should be prohibited in areas where there are solvents. Workers should wash thoroughly after working with solvents, especially before eating and smoking.

Avoid working in confined spaces where possible, for example in tanks, pits, small rooms or inside vehicles. Solvent vapours can build up to dangerous and even fatal concentrations very quickly. Beware of a build-up of vapours and gases that could be poisonous, explosive or flammable.

Do not smoke, weld, burn or use any naked lights in areas that may contain the vapour of chlorinated solvents as very toxic gases may be given off. If this is unavoidable, a safe system of work must be followed with adequate emergency arrangements in place. Skin contact must be avoided with solvents and any products containing solvents by wearing suitable protective clothing for example gloves, apron, goggles, face shield where necessary. Solvents must not be used to remove paint, grease etc from your skin.

Further Information

1 Occupational Exposure Standards and Maximum Exposure Limits can be found in HSE publication EH40/2000, ISBN 0-7176-1730-0

2 Occupational hygienist/safety consultants who can assist you with the assessment and control of exposure. If you use a consultant, ensure they are competent to carry out the work. The British Institute of Occupational Hygiene publishes a directory of consultants, available from BIOH, Suite 2, Georgian House, Great Northern Road, Derby, DE1 1LT, Tel 01332 298087.

Specialist advice and expertise can also be obtained from

- Trade associations – for example Solvents Industry Association (Tel 01206 252268)

- Safety Representatives

- HSE's Information Line Tel 0541 545500

- Your solvent supplier and/or PPE supplier

3 Health Surveillance at work, HS(G)61 HSE Books ISBN 0-7176-1705-x, Health Risks Management – A guide to working with solvents, INDG272