

WHERE ELSE CAN I GET INFORMATION?

If you have any concerns or problems about working with solvents, ask your supervisor, safety representative or union to discuss them with your employer. If you need more advice or help, ring HSE's InfoLine Tel: 0541 545500, or write to HSE's Information Centre, Broad Lane, Sheffield S3 7HQ

HSE priced and free publications are available by mail order from:

HSE Books, PO Box 1999, Sudbury, Suffolk CO10 6FS
Tel: 01787 881165 Fax: 01787 313995

HSE priced publications are also available from good booksellers.

HSE home page on the World Wide Web:
<http://www.open.gov.uk/hse/hsehome.htm>

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

This publication may be freely reproduced, except for advertising, endorsement or commercial purposes. The information is current at 6/97. Please acknowledge the source as HSE.

IND(G)252(L) 6/97 C500
Printed and published by the Health and Safety Executive

**WORKING WITH SOLVENTS
ARE YOU AT RISK?**

SOLVENTS and YOU



Documentation Centre
ETUI

Boulevard du Roi Albert II, 5
B-1210 Bruxelles
Tél. : +32 2 224 04 70

947

WHAT ARE SOLVENTS USED FOR?

The term 'solvent' is used for a large number of chemical substances which dissolve or dilute other substances or materials. Solvents are one of the most commonly used chemical substances in the workplace. They are used in engineering, construction, chemicals/pharmaceuticals, printing, rubber, plastics, footwear, textiles, foodstuffs, woodworking, dry cleaning etc.

They can be used to dissolve dirt from surfaces as in metal degreasing and in the production of other chemicals. Solvents are often mixtures of several substances and can be found in many products, eg industrial coatings, decorative paints, inks, paint/ink removers and adhesives. They can be sold under a variety of trade names.

Some of the more common solvents and their uses are listed in the table below.

However, the use of solvents is constantly changing, with new ones regularly being introduced. If you come across a chemical which you think may be a solvent or something you think might contain a solvent, which you are not familiar with, ask your employer for information on how to use it safely. You should also do this whenever you are working with a chemical that you haven't heard of before.

HOW LIKELY AM I TO WORK WITH SOLVENTS?

Over two and a half million people regularly work with solvents in the UK, so there is a good chance that you will come across them in your work. Some solvents have a distinctive odour - though this will vary from solvent to solvent - some smell like petrol, some smell like fruit or even flowers, others hardly smell at all.

HOW DO THEY GET INTO THE BODY?

Most commonly through the lungs by breathing in solvent vapours but in some cases through the skin by direct contact. Solvents can also be inadvertently swallowed through hand to mouth contact, for instance if food or drink become contaminated.

HOW CAN THEY AFFECT MY HEALTH?

It will depend on the particular solvent and:

- how you are exposed (whether you have breathed it in or got it on your skin);
- how much of it you are exposed to; and
- how long you are exposed for.

SUBSTANCE	EXAMPLES OF USE
acetone	chemical manufacture, industrial coatings
butanol	industrial coatings
ethyl acetate	industrial coatings, rubber manufacture
isopropyl acetate	printing inks, leather and fabrics
methanol	pharmaceuticals, rubber manufacture
methylene chloride (dichloromethane)	paint removers, pharmaceuticals
methyl ethyl ketone (MEK)	industrial coatings, printing inks
trichloroethylene	degreasing, rubber manufacture
perchloroethylene	dry cleaning
toluene	industrial coatings, pesticides, pharmaceuticals, rubber manufacture
xylenes	industrial coatings, rubber manufacture
white spirit	decorative paints, printing inks

Symptoms that you might experience include:

- headache;
- nausea;
- dizziness;
- light-headedness;
- irritation to your eyes, lungs or skin.

These sorts of effects will usually take place quickly. In extreme cases unconsciousness and death can result from exposure to very high concentrations of solvent vapours. For instance, there have been several fatalities when people have climbed into degreasing tanks to clean them without taking the proper precautions and when adhesives have been used in unventilated confined spaces.

As well as these immediate effects, repeated exposure to solvents can also cause more long-term health effects, including damage to the:

- kidney;
- liver;
- skin.

Be aware that solvents which cause these long-term effects do not necessarily produce the obvious symptoms of headaches and nausea etc which are mentioned earlier.

It is important to remember that not every solvent will cause all the effects listed above. A particular solvent may cause one or more of these effects and whether it does cause an ill-health effect will depend on how much of the solvent you have been exposed to.

WHAT PRECAUTIONS SHOULD I TAKE?

Always read the information provided by your employer, read the label on the container and follow the advice on them. Make sure that you also know what to do if a solvent or a product containing a solvent is spilt and make sure you know where the

materials to handle spillages are stored. If you're not sure, ask your employer to explain what the instructions mean.

How to reduce the amount you breathe in

- Don't use products containing solvents, eg cleaning agents, paints or adhesives, if you can avoid it. If you have to use them make sure the work area is well ventilated.
- Use the local exhaust ventilation equipment provided by your employer to remove vapours from your working area.
- Report to your employer immediately any breakdown of the ventilation equipment.
- Where your employer's assessment has shown that natural ventilation is adequate make sure that windows and doors are kept open.
- Keep the evaporation of solvents to a minimum, eg keep lids on containers; use sealed containers for solvent waste (don't leave solvent-soaked rags lying around) and use the minimum amount you need for the job.
- Wear the respiratory protective equipment your employer provides.

How to reduce the amount you get on your skin

- Avoid skin contact with solvents and products containing them.
- If solvent gets onto your skin wash it off as soon as possible.
- Where necessary, wear the protective clothing (gloves, aprons, face shields etc) provided by your employer.
- Do not use industrial solvents to remove paint, grease etc from your skin.
- Do not keep solvent-soaked rags in your pocket.
- Where necessary, use an after-work cream to help replace natural skin oils removed by solvents.
- Keep your workplace, machinery and tools clean.

Other precautions

- Wash your hands thoroughly before eating, drinking, smoking and going to the toilet.
- Don't eat or smoke in areas where solvents are present.
- Don't smoke, weld or burn or use other naked flames in areas which may contain the vapour of chlorinated solvents such as dichloromethane, perchloroethylene, 1,1,1-trichloroethane and trichloroethylene because very toxic gases may be given off.

Many solvents are flammable so take the precautions to avoid fire and explosion given in the information your employer gives to you.

Work in confined spaces

Work in confined spaces, such as tanks, pits, pipes, small rooms, vehicles or other similar spaces which are substantially enclosed, where solvent vapours could collect, can be particularly dangerous.

Only work in confined spaces when absolutely necessary and when there is no other way of doing the job.

Before entering a confined space your employer must make sure that there is a safe system of work which sets out the work to be done and the precautions to be taken, and that adequate emergency arrangements are in place.

The precautions needed may include:

- provision of adequate information on the dangers, and training in the precautions and rescue procedures;
- wearing suitable personal protective equipment and breathing apparatus, where appropriate;
- proper maintenance and regular examination of all breathing apparatus, safety harnesses, lifelines and resuscitation equipment;
- posting someone outside the confined space to communicate with those inside and raise the alarm in an emergency.

WHAT DOES THE LAW SAY ABOUT

WORKING WITH SOLVENTS?

Work with solvents is subject to the Control of Substances Hazardous to Health Regulations 1994. These regulations require your employer to:

- assess the risks to your health from exposure to solvents;
- prevent or adequately control your exposure;
- train you in the use of measures and any protective equipment used to control your exposure;
- make sure that control measures and personal protective equipment are kept in good working order.

CONSULTING EMPLOYEES

Employers must consult safety representatives appointed by recognised trade unions under the Safety Representatives and Safety Committee Regulations 1977. Other employees not covered by such representatives must be consulted, either directly or indirectly, via elected representatives of employee safety, according to the Health and Safety (Consultation with Employees) Regulations 1996. Such consultations allow employees or their representatives to help employers develop control measures.