



## Solvents

### Construction Information Sheet No 27 (Revision 1)

#### Introduction

Solvents are chemical substances. In construction products they act as carriers for surface coatings such as paints, varnishes, adhesives and pesticides. The most common solvents encountered in construction are:

- white spirit - found in paints, varnishes and cleaning products;
- xylene - found in paints, adhesives and pesticides;
- 1-butanol - found in natural and synthetic resins, paints and lacquers.

Many construction products contain mixtures of solvents.

Exposure to solvents can have serious effects on workers' health. Anyone who uses solvents, or is responsible for managing or supervising their use, should be aware that they may be a hazard to health and that safe working practices must be used to minimise the risk. This sheet advises on how to use solvents safely.

#### Health effects

Solvents can make you ill by:

- *breathing in vapours* - paints, paint strippers and glues give off solvent vapours as they dry or cure and these vapours may be harmful. Deliberate inhalation of solvent vapours (glue sniffing) can kill.
- *skin contact* - some solvent vapours can be absorbed through the skin. Repeated or prolonged skin contact with liquid solvents may cause dermatitis.
- *eye contact* - contact with solvent liquid and vapour can cause irritation and inflammation.
- *ingestion* - solvents can be taken into the body on contaminated food, drink and cigarettes.

People have unwittingly drunk solvents which have been kept in old, unlabelled drinks containers.

The main effects of solvents are irritation to the skin, eyes and lungs, headache, nausea, dizziness and light-headedness. Exposure can impair co-ordination and this can make people more prone to accidents such as falling off ladders. People may lose concentration on important or difficult tasks and they may react more slowly to dangerous situations. The effect can vary from person to person and may be made worse by drinking alcohol. Very high exposures may cause unconsciousness and

even death, for instance, where adhesives are used in unventilated confined spaces. Other possible effects on health vary according to which solvent people are exposed to. Anyone who has been exposed to solvents and feels that their health has been affected should seek medical advice.

#### Legal provisions

Work with solvent-based construction products is subject to the Control of Substances Hazardous to Health Regulations 1994 (COSHH) which require the health risk to be assessed and then prevented or controlled. Users should get information on the hazards from manufacturers and suppliers who have a legal duty to supply it.

#### Precautions

##### *Preventing exposure*

First of all, consider whether the solvent-based products need to be used at all. Can they be replaced by an alternative, less hazardous material? For instance, can a water-based formulation be used: these are widely available. Those who specify construction materials have a duty under the Construction (Design and Management) Regulations 1994 (CDM), to get rid of hazardous materials from their design. Where this is not possible they should specify the least hazardous products which perform to an acceptable standard. Remember that COSHH requirements should be applied to any substituted product.

##### *Controlling exposure*

- 1 If solvent-based products are used, make sure the work area is well ventilated. Open doors, windows, roof lights, etc, to increase ventilation and make sure that they are kept open. Local exhaust ventilation may be necessary in some cases.
- 2 If possible avoid spraying solvent-based products, as this causes greater contamination of the air than brush application.
- 3 Store solvents in properly labelled, suitable containers. Use dispensers where possible to keep evaporation to a minimum and reduce spillage. Keep lids on containers unless contents are being poured or dipped, etc. Use sealed containers for solvent waste.
- 4 Dispose of solvent-soaked rags in closed containers.
- 5 Train workers in how to deal with spillages.

## Fire

Many solvents are flammable. Take precautions to avoid fire and explosion risks: in particular, do not smoke in areas where solvents are used. Store products containing solvents in a secure and well ventilated area.

## Personal protective equipment (PPE)

If exposure cannot be adequately controlled in any other way, workers should wear PPE. They may need to wear one or more of the following:

- protective overalls;
- appropriate gloves which have been specially selected for use with solvents;
- face shields;
- respiratory protective equipment, where ventilation does not provide adequate control.

Half-mask respirators fitted with the appropriate filter will often be sufficient in this instance, but compressed airline breathing apparatus may be necessary where spraying takes place, or where work is in a confined space.

Those who need to wear PPE should be trained in its proper use and in its limitations. Store the equipment in clean, dry conditions away from chemicals - a locker would be suitable. PPE should be maintained and kept clean and fit for wear.

## Hygiene

Good personal hygiene is very important. Facilities for washing and changing should be provided and workers should wash their hands before eating, drinking, smoking and before going to the toilet. Eating, drinking and smoking should take place away from the work area. You should not smoke in areas where solvents are used - solvents passing through a cigarette can break down into even more harmful substances.

Articles heavily contaminated with solvent should be removed immediately when contamination occurs. Overalls and contaminated personal clothing should be laundered before being reworn. It may be necessary to air them first. Laundering should only be done by professional cleaners who have been told of the nature of the contamination.

Thinners should not be used to remove paint or grease from the skin, as this can cause the skin to become dry and inflamed. Proper cleaning materials, eg soap, should be provided and their use encouraged.

## First aid

Anyone who appears to have been affected by solvents should be taken into the fresh air immediately and given appropriate first-aid treatment. Heavily contaminated

clothing should be removed as soon as possible. Wash solvent splashes off the skin with plenty of water and cover any wounds with a suitable dressing. Splashes of solvent in the eye should be treated by washing the eye with water for at least 10 minutes before the injured person is transferred to hospital.

## References and further information

*COSHH: The new brief guide for employers* IN DG 136 HSE Books 1997

*The selection, use and maintenance of respiratory protective equipment: A practical guide* HSG53 HSE Books 1998 ISBN 0 7176 1537 5

*Safe work in confined spaces* Confined spaces Regulations 1997 Approved Code of Practice L101 HSE Books 1997 ISBN 0 7176 1405 0

*Safe work in confined spaces* INDG258 HSE Books 1997 (also available in packs of 10, ISBN 0 7176 1442 5)

*Provision of welfare facilities at fixed construction sites* CIS18 HSE Books 1996

*Provision of welfare facilities at transient construction sites* CIS46 HSE Books 1997

*Safe working with flammable substances* INDG227 HSE Books 1996 ISBN 0 7176 1154 X

*The safe use and handling of flammable liquids* HSG 140 HSE Books 1996 ISBN 0 7176 0967 7

*So/vents and you* INDG252 HSE Books 1997 ISBN 0 7176 1391 7

*Health Risks Management: A guide to working with so/vents* INDG272 HSE Books 1998

*Working safely with so/vents* INDG273 HSE Books 1998

The future availability and accuracy of the references listed in this publication cannot be guaranteed.

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