

WORKING WITH BENZENE MAY AFFECT YOUR HEALTH

Benzene can cause serious health problems. This leaflet tells you about the health hazards of benzene and what to do if you are exposed to it at work.

WHAT IS BENZENE?

Benzene is a highly flammable liquid which occurs naturally in crude oil, natural gas and in some groundwaters. It is also manufactured from crude oil and is present in crude oil vapours. The main use of benzene is as starting material for the manufacture of chemicals such as cyclohexane, ethyl benzene, phenol and maleic anhydride. It was formerly used as a solvent, but in most cases safer substances have now replaced this use.

In the United Kingdom petrol contains below 1% benzene. Small amounts of it are produced when some organic substances burn incompletely, for example, it is found in cigarette smoke and vehicle exhausts. It is produced as a by-product during the manufacture of coke from coal.

Benzene evaporates easily, and most people can just detect its distinctive smell at concentrations between 2.5 and 5 parts per million (ppm) in air.

Benzene is not the same as **benzine**, a petroleum distillate which also comes from oil. However, as either spelling may be mistakenly used for the other, it is always wise to check.

WHERE MIGHT YOU BE EXPOSED TO BENZENE?

You might be exposed to benzene at work during certain jobs in:

- oil refineries;
- chemical and petrochemical plants including some offshore installations;
- coke works; and

- the storage, distribution and use of petrol or benzene.

If you are in any doubt, ask your employer.

HOW CAN BENZENE AFFECT YOUR HEALTH?

Benzene can be absorbed into your body:

- if you breathe in air containing benzene vapour;
- through your skin; and
- if you swallow material containing benzene.

The effects on your health depend on how much benzene you are exposed to, and for how long.

Immediate effects of high exposure can include:

- headache;
- tiredness;
- nausea; and
- dizziness.

Unconsciousness may occur if exposure is very high.

Long-term exposure to benzene can result in serious blood disorders such as anaemia and leukaemia (a form of cancer).

WHAT PRECAUTIONS SHOULD YOU TAKE?

If you could be exposed to benzene at work, you should:

- ask your employer about the risks, what precautions to take and what to do in an emergency;
- follow the safe working procedures laid down by your employer;
- avoid breathing in vapours containing benzene;
- avoid getting liquids containing benzene on your skin;

- use the ventilation equipment and personal protective equipment provided, eg gloves, masks, goggles. Gloves should be made from materials which resist penetration by benzene. Natural rubber gloves should **not** be worn as rubber absorbs benzene;
- report to your employer or safety representative any damaged or defective ventilation plant or protective equipment; and
- where required, attend any health checks arranged at your workplace.

WHAT DOES THE LAW SAY ABOUT WORKING WITH BENZENE?

Work with benzene is subject to the **Control of Substances Hazardous to Health (COSHH) Regulations 2002**.

Your employer is required to:

- assess the risks to your health and provide control measures to protect you;
- prevent your exposure to benzene, eg by eliminating its use or substituting a safer material, or if this is not reasonably practicable, to adequately control your exposure;
- reduce so far as is reasonably practicable the amount of benzene you breathe in, and in any case to keep it below the maximum exposure limit* of 1 ppm averaged over an 8-hour working day;
- establish the extent of exposure, normally by means of a monitoring programme;
- arrange any appropriate health checks;
- give you information on the risks of exposure to benzene, and train you in the use of any equipment, including personal protective equipment, used to control your exposure; and
- make sure that any control measures and personal protective equipment are kept in good working order.

* Maximum exposure limits are to be replaced by workplace exposure limits.

You are required to:

- co-operate with your employer;
- make full use of any control measures and report any defects in equipment; and
- attend health checks arranged by your employer.

The Approved Codes of Practice made under the COSHH Regulations contain further detailed information.

Under the **Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995**, your employer is required to report to the Health and Safety Executive (HSE) if:

- you suffer acute illness needing medical treatment;
- there is an accidental release of benzene in a sufficient quantity to cause death or major injury;
- a doctor confirms benzene poisoning.

CONSULTING EMPLOYEES

Employers must consult safety representatives appointed by recognised trade unions under the Safety Representatives and Safety Committees Regulations 1977. Other employees not covered by such representatives must be consulted either directly, or indirectly through 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.

WHERE ELSE CAN I GET INFORMATION?

If you have any questions or worries that your health is being affected by exposure to benzene or that adequate precautions are not being taken, ask your supervisor, safety representative or union to discuss them with your employer, or discuss them with your doctor.

If you need further advice, contact HSE's Infoline
Tel: 08701 545500 Fax: 02920 859260

e-mail: hseinformationservices@natbrit.com or write to HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG. They may refer your enquiry to the appropriate HSE Inspector or Employment Medical Adviser, or to an Environmental Health Officer at your Local Authority.

FURTHER READING

Control of substances hazardous to health. The Control of Substances Hazardous to Health Regulations 2002. Approved Code of Practice and guidance L5 (Fourth edition) HSE Books 2002 ISBN 0 7176 2534 6

Occupational exposure limits: Containing the list of maximum exposure limits and occupational exposure standards for use with the Control of Substances Hazardous to Health Regulations 1999 Environmental Hygiene Guidance Note EH40 (revised annually) HSE Books 2002 ISBN 0 7176 2083 2

Occupational exposure limits: Supplement 2003 Environmental Hygiene Guidance Note EH40/2002 HSE Books 2003 ISBN 0 7176 2172 3

Working safely with solvents: A guide to safe working practices Leaflet INDG273 HSE Books 1998 (single copy free)

FURTHER INFORMATION

HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA Tel: 01787 881165 Fax: 01787 313995 Website: www.hsebooks.co.uk (HSE priced publications are also available from bookshops and free leaflets can be downloaded from HSE's website: www.hse.gov.uk.)

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

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

BENZENE and YOU

