

# Benzene and you

## Working with benzene – are you at risk?

### Introduction

This leaflet is aimed at people who work with benzene. Working with benzene may affect your health. The leaflet tells you about the possible health effects, the preventative measures your employer needs to apply and the precautions you should take.

### What is benzene?

Benzene is a highly flammable liquid, which occurs naturally in crude oil, natural gas and some ground waters. It is also present in crude oil vapours.

The main use of benzene is as starting material for manufacturing chemicals such as cyclohexane, ethyl benzene (styrene), phenol and maleic anhydride. It was formerly used as a solvent, but in most cases, safer substances have now replaced this use.

In the UK, petrol contains below 1% benzene. Small amounts of benzene are produced when some organic substances burn incompletely, eg 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 is it found?

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

- oil refineries;
- chemical and petrochemical plants, including some offshore installations;
- coke works;
- foundries, during casting (where benzene sulphonic catalysts are used);
- the storage, distribution and use of petrol or benzene itself.

If you are in any doubt, ask your employer.

## How can it get into your body?

Benzene can be absorbed into your body if you:

- breathe in air containing benzene vapour;
- absorb it through your skin;
- swallow material containing it.

## What are the health hazards?

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

As with other organic solvents, immediate effects of a single exposure to a high concentration (hundreds of ppm and more) can include:

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

Benzene can also cause unconsciousness if exposure is very high (thousands of ppm).

Long-term exposure to lower concentrations of benzene can result in:

- bone marrow suppression leading to serious blood disorders such as anaemia;
- cancer – forms of leukaemia and other white-blood-cell cancers.

## What does your employer have to do?

The Control of Substances Hazardous to Health Regulations 2002 (COSHH) require your employer to:

- assess the risks to your health and identify the precautions needed for your protection;
- prevent you being exposed to benzene, or where this cannot reasonably be done, adequately control your exposure;
- reduce your exposure to benzene so far as is reasonably practicable, and in any case, below the workplace exposure limit (WEL) assigned for benzene of 1 part per million (ppm) of air averaged over an 8-hour period;
- maintain all fume and dust controls in efficient working order;
- find out how much benzene you are exposed to, normally through a monitoring programme, and tell you the results;
- arrange any health checks that are needed;
- inform, instruct and train all employees who may be exposed to benzene.

## What does 'reasonably practicable' mean?

An explanation of what 'reasonably practicable' means is provided at [www.hse.gov.uk/risk/faqs/htm](http://www.hse.gov.uk/risk/faqs/htm).

## **What should you do?**

- Use the extraction equipment or other control measures correctly.
- Use the protective clothing and equipment provided.
- Always use the washing facilities provided, which should be adequate and suitable for your needs.
- If you have to wear a respirator, make sure:
  - it fits properly;
  - if it is a tight-fitting mask, that you have been fit tested and are clean shaven;
  - it is clean and in good working order;
  - the filter is changed regularly;
  - it is stored in a clean/dry place, preferably a locker.
- Report defects in enclosures, extraction equipment or other control measures to your employers.
- Don't eat or drink in work areas where benzene may be present.

## **What about health checks?**

The health of people exposed to benzene and its compounds should be monitored by an occupational health professional:

- they will normally carry out an examination after an offer of employment and will see you at regular intervals during your employment. You will be asked to provide a urine sample so its benzene content can be measured;
- if more examination or tests are needed, the occupational health professional will explain.

## **What information can you get?**

Your employer should tell you about:

- the risks to health from the use of benzene;
- the safe way of working, the reasons for it, and how to use equipment properly, eg extraction systems;
- the reasons for personal protective equipment and clothing, the jobs where they are needed, and how they should be used, stored and maintained;
- the results of any tests for benzene levels in the air of your workplace;
- the role of any health surveillance and arrangements for you to know the results;
- any further requirements of COSHH.

Poisoning by benzene is a prescribed disease in the UK and may entitle you to Industrial Injuries Disablement Benefit.

If you have any worries or problems about working with benzene, ask your supervisor or safety representative to discuss them with your employer, or discuss them with your occupational health professional.

## **Need to know more?**

*Hazardous substances at work: A brief guide to COSHH* Leaflet INDG136(rev5)  
HSE Books 2012 [www.hse.gov.uk/pubns/indg136.htm](http://www.hse.gov.uk/pubns/indg136.htm)

## **Further information**

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit [www.hse.gov.uk/](http://www.hse.gov.uk/). You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

This leaflet is available at: [www.hse.gov.uk/pubns/indg329.htm](http://www.hse.gov.uk/pubns/indg329.htm).

© *Crown copyright* If you wish to reuse this information visit [www.hse.gov.uk/copyright.htm](http://www.hse.gov.uk/copyright.htm) for details. First published 10/13.