

Arsenic and you

Working with arsenic – are you at risk?

Introduction

This leaflet is aimed at people who work with arsenic. Working with arsenic and its compounds 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.

The leaflet does not deal with the inhalation of arsine gas, which has a different effect on the body.

What is arsenic?

Arsenic and its compounds exist in a variety of chemical forms. The most common form is arsenic trioxide, a white solid. Other forms are arsenic trichloride (an oily liquid), arsenic sulphide, sodium arsenate, arsenite salts and gallium arsenide.

Where is it found?

Industrial sources of dust and fumes containing arsenic may be found:

- in the chemical industry, eg in the manufacture of pesticides and fireworks;
- in dust and fumes arising from the refining and smelting of metals and ores such as copper, lead and tin;
- in the production and use of alloys, eg some lead, copper and bronze alloys;
- in the manufacture of coatings for photocopier drums;
- in the microelectronics industry, often as a waste residue, and in the production of gallium arsenide.

How can it get into your body?

Arsenic can get into your body by:

- breathing in dust or fumes;
- absorbing it through the skin;
- swallowing it, after handling food when you have arsenic dust or arsenic compounds on your hands.

What are the health hazards?

Short-term effects can include:

- irritation of the eyes and nose;

- skin damage and inflammation;
- stomach upsets;
- in more severe instances, internal bleeding from the stomach and intestines (in extreme cases, this can lead to death).

Longer-term effects can include:

- damage to the inside of the nose;
- skin colour changes and prolonged skin inflammation problems;
- inflammation of the lungs;
- damage to peripheral nerves, with numbness and loss of vibration sense in particular;
- problems with the heart and heart rate/rhythm.

It is important to note that repeated exposure to arsenic and arsenic compounds over a long time can cause cancer, particularly in the lungs, skin and liver.

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;
- protect you from being exposed to arsenic and its compounds, or where this cannot reasonably be done, adequately control your exposure;
- reduce your exposure to arsenic and its compounds so far as reasonably practicable, and ensure exposure is always below 0.1 milligrams per cubic metre of air averaged over an 8-hour period, in accordance with the workplace exposure limit (WEL) assigned for arsenic and its compounds;
- maintain all fume and dust extraction controls in efficient working order;
- find out how much arsenic 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 arsenic and its compounds.

An explanation of what 'reasonably practicable' means is provided at 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 arsenic or arsenic compounds may be present.

What about health checks?

People exposed to dust or fumes from arsenic and its compounds should have their health 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 may be asked to provide a urine sample, so its arsenic content can be measured;
- you should examine your skin regularly, looking for colour changes, rashes and skin damage. The occupational health professional can give you further advice;
- if more examinations or tests (eg a urine test for arsenic) 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 arsenic and its compounds;
- 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 arsenic 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 arsenic is a prescribed disease in the UK and may entitle you to Industrial Injuries Disablement Benefit.

If you have any concerns about working with arsenic or its compounds, ask your supervisor or safety representative to discuss them with your employer, or discuss them with the 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

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit 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/indg441.htm.

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