

- Handle cadmium powders with care. They produce dust easily.
- Use the dust extraction system or respirators provided and follow the instructions provided for their use.
- If you are unsure, ask your supervisor or safety representative.
- If you have been given a respirator to protect you against cadmium, make sure:
  - it fits properly;
  - it is clean;
  - the filter is changed regularly;
  - you have been trained how to use it; and
  - you use it properly.
- Report defects in enclosures, extraction equipment and other control measures to your employer immediately.
- Do not eat, drink or smoke in cadmium work areas.
- Wash your hands if handling cadmium or its compounds.
- Wear any overalls provided by your employer.

#### **WHAT ABOUT HEALTH CHECKS?**

- People with significant exposure to cadmium and its compounds may need health checks.
- An initial check will make sure you do not have a medical condition that could get worse by working with cadmium.
- Regular checks, perhaps six months, will show what levels of cadmium there are in your blood and urine. The urine test can also check the functioning of your kidneys. If the doctor decides you are absorbing too much cadmium, you and your employer will be advised how to improve things.

#### **WHAT INFORMATION CAN YOU GET?**

Your employer should tell you about:

- the risks to health from the use of cadmium;
- the control measures adopted, the reasons for them, and how to use them properly;
- the reasons for personal protective equipment and clothing, the jobs where they are necessary, and how they should be used, stored and maintained;

- the results of any tests for cadmium 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 the COSHH Regulations.

If you have any worries or problems about working with cadmium or its compounds, ask your supervisor or safety representative to discuss them with your employer, or discuss them with the doctor.

*Cadmium: Health and safety precautions* Environmental Hygiene Guidance Note EH1 (Second edition) HSE Books 1995 ISBN 0 7176 0825 5

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](http://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](http://www.hse.gov.uk).)

For information about health and safety ring HSE's Infoline Tel: 08701 545500 Fax: 02920 859260 e-mail: [hseinformationservices@natbrit.com](mailto:hseinformationservices@natbrit.com) or write to HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG.

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 leaflet is available in priced packs of 20 from HSE Books, ISBN 0 7176 2797 7. Single free copies are also available from HSE Books.

© Crown copyright This publication may be freely reproduced, except for advertising, endorsement or commercial purposes. First published 3/95. Please acknowledge the source as HSE.

INDG391 Reprinted 1/04 C50

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

# **CADMIUM and YOU**



## **Working with cadmium and its compounds may affect your health.**

This leaflet tells you about the possible health hazards of different forms of cadmium; the preventative measures your employer needs to apply and the precautions you should take.

Bear in mind that not all forms of cadmium present the same dangers.

### **WHAT IS CADMIUM?**

Cadmium is a silver-white metal. It melts at 321°C. When heated above this temperature in air poisonous cadmium oxide fumes are emitted. However, cadmium is most frequently used in the form of compounds, such as cadmium oxide - brown crystals; cadmium selenide - brown or red powder; and cadmium sulphide - yellow/orange crystals.

### **WHERE IS IT FOUND?**

Cadmium and its compounds are used in many processes and products including:

- alloyed with copper and other metals in alloys for fire detection systems, electrical cables and in some solders;
- in pigments for plastics, ceramics and glasses;
- in stabilisers for polyvinylchloride;
- as a protective plating on steel;
- nickel-cadmium battery manufacture.

### **HOW CAN IT GET INTO YOUR BODY?**

- Mainly by breathing in dust or fumes containing cadmium.
- From contamination on your hands when eating, drinking or smoking.

### **WHAT ARE THE HEALTH HAZARDS?**

If you are exposed to cadmium for only a short time, cadmium oxide fume is the form of cadmium of main concern. The effects of such exposure can include:

- sore eyes, nose and throat;
- coughing, headache, dizziness and weakness;
- chill, fever, chest pains and breathlessness.

If swallowed the following symptoms may occur:

- nausea, vomiting, diarrhoea, muscular cramps and salivation.

Where exposure repeatedly happens over a long period of time, then all forms of cadmium cause some concern. There is the potential for harm to the kidneys and lungs.

Certain cadmium compounds, including chloride, sulphate and oxide compounds have been shown to cause cancer in animals. This has not been proved to occur in humans, but employers are required to handle cadmium oxide, cadmium chloride and cadmium sulphate as if they can cause cancer. In addition, for cadmium chloride it is considered that human exposure may result in impaired fertility or harm to the unborn child. Cadmium itself is likely to show a similar range of toxicological properties to cadmium chloride. However, there are some other cadmium compounds, including sulphide and cadmium pigments, for which the evidence in relation to cancer in humans is less strong.

### **WHAT DOES MY EMPLOYER HAVE TO DO?**

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

- assess the risks to your health and the precautions needed for your protection;
- prevent you being exposed to cadmium, or where this can not reasonably be done, adequately control your exposure;
- reduce your exposure to airborne cadmium so far as is reasonably practicable and in any case below the maximum exposure limits (MELs) assigned for cadmium and its compounds. The MELs, measured as cadmium, are:
  - *Cadmium and cadmium compounds (except cadmium*

- sulphide pigments*) - 0.025 milligrams per cubic metre of air averaged over an 8-hour period;
- *Cadmium sulphide pigments (respirable dust)* - 0.04 milligrams per cubic metre of air averaged over an 8-hour period;
- *Cadmium oxide fume* has also been assigned a short-term MEL. This MEL is measured over a 15 minute period and has been set at 0.05 milligrams per cubic metre of air;

Note: A new system of workplace exposure limits (WELs) is expected to replace the system of MELs sometime in 2004. The three MELs above are likely to be converted (possibly with changes) into WELs in the new system;

- maintain all fume and dust controls in efficient working order;
- find out how much cadmium you are exposed to, normally by means of a monitoring programme, and tell you the results;
- arrange any health checks that are necessary; and
- inform, instruct and train all employees who may be exposed to cadmium.

### **WHAT SHOULD YOU DO?**

#### **Prevent fumes**

- Avoid welding, brazing, or burning on cadmium-plated metals unless you have to.
- If provided, make sure you use the fume extraction system or respirators, and follow the instructions provided for their use.
- If in doubt, ask your supervisor if the metal is cadmium-plated.
- If you work with cadmium solders or brazing materials, always follow the suppliers' instructions and any additional instructions from your supervisor.
- Use cadmium-free brazes where available.
- When melting or casting cadmium alloys always wear the respirator supplied.

#### **Avoid dust**

- If possible, use cadmium compounds in the form of damp pastes.
- Do not let the pastes dry out. Dust will be released if you do.