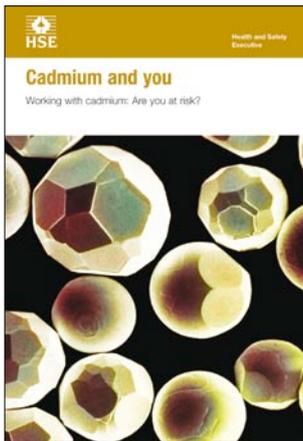


# Cadmium and you

## Working with cadmium: Are you at risk?



This is a web-friendly version of leaflet INDG391(rev1), revised 03/10

### Introduction

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 proven 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, it is considered that human exposure to cadmium chloride 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 weaker.

### **What does your employer have to do?**

The Control of Substances Hazardous to Health (COSHH) Regulations 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 cannot 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 workplace exposure limits (WELs) assigned for cadmium and its compounds. The WELs, measured as cadmium, are as follows:
  - 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) – 0.03 milligrams per cubic metre of air averaged over an 8-hour period;
  - cadmium oxide fume has also been assigned a short-term exposure limit. This exposure limit is measured over a 15-minute period and has been set at 0.05 milligrams per cubic metre of air;
- 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.
- 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 or drink 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 every 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 on 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.

## Need to know more?

*Working with substances hazardous to health* Leaflet INDG136(rev4) HSE Books 2009 (single copy free or priced packs of 10 ISBN 978 0 7176 6363 7)  
[www.hse.gov.uk/pubns/indg.136.pdf](http://www.hse.gov.uk/pubns/indg.136.pdf)

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**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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