

Cadmium

Cadmium is a metal that is produced during the smelting of other metals, such as zinc and copper. Cadmium is most frequently used in the manufacture of nickel-cadmium batteries and in metal plating. It is also found in cigarette smoke and is found naturally (in low levels) in some foods.

Inhaling (breathing in) high levels of cadmium can lead to lung damage. Ingesting (swallowing) large amounts of cadmium can cause kidney disease. Occupations that involve handling of cadmium or its compounds carry a higher risk of exposure. Low-level exposure over a long period of time may also cause health problems because cadmium lingers in the body.

A range of health risks

The health risks of cadmium depend on the degree and length of time of exposure, and whether it was inhaled or swallowed. Ingested cadmium is not absorbed as well by the body as inhaled cadmium.

Symptoms of exposure may include:

- **Acute exposure (ingested)** – affects the kidneys, liver and intestinal tract. Symptoms include vomiting, diarrhoea, abdominal pain or a choking sensation.
- **Acute exposure (inhaled)** – affects the lungs. High levels may cause pneumonitis (lung inflammation) and pulmonary oedema (fluid in the lungs). Symptoms include breathlessness and coughing. 'Metal fume fever' can be life threatening.
- **Chronic exposure** – symptoms from long-term exposure include kidney dysfunction, anaemia and lung conditions. Some studies suggest that occupational inhalation may be associated with some types of cancer, such as those of the prostate and lung.

High-risk occupations

Some of the occupations that directly involve cadmium and carry a higher risk of exposure include:

- Battery manufacture
- Jobs involving welding, soldering or oxy-cutting
- Smelting
- Textile work
- Cadmium alloy manufacture or use
- Manufacture of materials that contain cadmium, such as certain paints and plastics.

Sources of exposure outside the workplace

Other ways people may be exposed to cadmium include:

- **Cigarette smoking** – both inhaled cigarette smoke and 'sidestream' smoke (smoke released from a smouldering cigarette tip) contain high levels of cadmium.
- **Diet** – certain foods contain low levels of cadmium, particularly raw potatoes, shellfish and offal. However, absorption of ingested cadmium through food is very low.
- **Location** – some industrial processes, such as burning coal, release cadmium into the air. Strict controls are placed on industry to limit emission levels to ensure protection of public health.
- **Fertilised soils** – in agricultural areas, fertilised soils may contain between two to six times the average amount of cadmium found in unfertilised soils.

Safe levels of cadmium

Currently, it is suggested that 7mcg (micrograms, or millionths of a gram) per kilogram of bodyweight per week is the maximum safe level of cadmium intake. A 2002 survey by Food Standards Australia New Zealand found that the average Australian swallows less than this amount.

Testing for cadmium

Urine or blood tests can measure cadmium levels in the body. Tests are also available to check the health of the kidneys and liver. The accuracy of hair and nail tests in determining the extent of cadmium exposure has not been determined.

Reducing the risk of exposure

Suggestions to reduce the risk of exposure to cadmium include:

- Don't smoke cigarettes.
- Avoid other people's cigarette smoke.
- Eat only moderate amounts of shellfish and offal.
- If your job involves handling cadmium, always use appropriate personal protective equipment and consider having your cadmium levels checked regularly by your doctor.

Where to get help

- Your doctor
- **For occupational health issues** – your Occupational Health and Safety officer; the WorkCover Advisory Service Tel. (03) 9641 1444 or 1800 136 089; (in Victoria) the Victorian WorkCover Authority Tel. (03) 9641 1555
- **For non-occupational health issues** – the Victorian Department of Human Services Environmental Health Unit Tel. 1300 761 874
- **For environmental issues** – the Environment Protection Authority Tel. (03) 9695 2722

Things to remember

- Cadmium is a metal with many uses, including the manufacture of batteries.
- High exposure to cadmium, particularly if it is inhaled, has been linked to a range of health problems, including certain lung diseases.
- Cigarette smoke contains high levels of cadmium.
- Blood and urine tests can show a person's cadmium levels.

Want to know more?

For references, related links and support group information, go to More information.

This page has been produced in consultation with, and approved by:

DHS - Environmental Health Unit

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