

Chromium and you

Working with chromium – are you at risk?

Introduction

Working with chromium and its inorganic compounds may affect your health. This leaflet tells you about the possible health effects, the preventative measures your employer needs to apply, and the precautions you should take to protect your health.

Not all forms of chromium present the same dangers. This leaflet focuses on chromium (VI) compounds.

What is chromium?

Chromium and its compounds form a large and varied group of chemicals – the hazards depend on the chemical forms encountered. These are referred to as:

- chromium metal (0);
- chromium (II);
- chromium (III);
- chromium (IV);
- chromium (VI).

Of these, chromium (VI) compounds have the most significant effects on health.

Where is it found?

Chromium (VI) and its compounds are used or found in many processes and products, such as:

- the production and use of stainless steel and other chromium alloys (and during the welding and cutting of these);
- pigments for paint and pottery;
- catalysts in the chemical manufacturing industry;
- the production of dyestuffs;
- leather tanning agents;
- electroplating/anodising.

How can it get into your body?

Chromium (VI) can enter the body by:

- breathing in dust, fumes or mist;
- skin contact with solutions or solids;

- swallowing it, through handling food when you have chromium dust on your hands.

What are the health hazards?

Chromium (VI) compounds (the hexavalent forms of chromium – chromates, dichromates and chromic acid) pose the most significant health hazards. Their toxicity varies with how soluble (how easily they dissolve) in water.

The least-soluble compounds, such as lead chromates or barium chromate, are relatively less toxic because less hexavalent chromium is likely to be released into the body.

Single exposures to hexavalent chromium compounds can cause:

- irritation and inflammation of the nose and upper respiratory tract if such compounds are in the air;
- irritation of the skin with skin contact – and for chromic acid, burns to the skin, possibly leading to ulcers;
- eye damage from splashes.

Repeated exposure to hexavalent chromium compounds can cause:

- damage to the nose, including ulcers and holes in the flap of tissue separating the nostrils (the nasal septum);
- inflammation of the lungs;
- allergic reactions in the skin and respiratory tract;
- kidney damage;
- cancer of the lung;
- based on experimental data, concerns about potential effects on reproduction, in both male fertility and the development of unborn babies.

What does your employer have to do?

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

- assess the risks to your health and the precautions needed for your protection;
- prevent you being exposed to chromium, or where this cannot reasonably be done, adequately control your exposure;
- reduce your exposure to airborne chromium and its compounds so far as reasonably practicable, and in any case to below the workplace exposure limits (WELs) assigned for chromium and its compounds. These are as follows:
 - for chromium (VI) compounds, 0.05 milligrams per cubic metre of air averaged over an 8-hour period;
 - for other chromium compounds, 0.5 milligrams per cubic metre of air averaged over an 8-hour period;
- maintain all fume and dust controls in efficient working order;
- provide fit testing of any tight-fitting respirators;
- find out how much chromium you are exposed to, normally through a monitoring programme, and tell you the results;
- arrange any health checks that are necessary;
- inform, instruct and train all employees who may be exposed to chromium.

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;
 - 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 chromium may be present.

What about health checks?

The health of people exposed to chromium or 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 may be asked to provide a urine sample so its chromium 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 additional 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 chromium;
- 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 necessary, and how they should be used, stored and maintained;
- the results of any tests for chromium 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.

Poisoning by chromium 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 chromium 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/indg.136.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/indg346.htm.

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