**Working safely with chromium**

Working with some forms of chromium (Cr) may affect health. This leaflet tells you about the possible health effects, the preventative measures your employer must apply and the precautions you should take to protect your health.

**What is chromium (Cr)?**

Cr is a relatively common chemical element. It is found naturally in rocks, soil, plants, animals and volcanic dust and gases. Cr compounds form a large and varied group of chemicals. They can be solid, liquid or gas and have no taste and no odor. The most significant forms of Cr are metallic chromium (Cr(0)), trivalent chromium (Cr(III)) and hexavalent chromium (Cr(VI)). Under some conditions, Cr forms can change from one to another.

* Cr metal is steely-grey and shiny. It has high corrosion resistance and hardness and is used mostly in the production of stainless steel and chrome plating. Cr metal is not harmful to human health.
* Cr(III) occurs naturally in living organisms. It is an essential nutrient in trace amounts. It is found in some industrial processes and has a low toxicity.
* Cr(VI) is very toxic. It is classified as a carcinogen, which means that it can cause cancer.

**In which industrial processes and products can Cr(VI) be found?**

* Production and use of stainless steel and other chromium alloys (and during the welding and cutting of these).
* Electroplating.
* Production of dyes, paints, inks, pottery and plastics using Cr pigments.
* Leather tanning.
* Wood treatment.
* Chromate-containing primers and other surface coatings.
* Smelting of ferrochromium ore.
* Impurities in portland cement, etc.

**How can Cr(VI) get into your body?**

* By inhaling airborne Cr(VI) in contaminated dust, fumes or mist.
* Skin contact through handling solutions, coatings or cements containing Cr(VI).
* Swallowing it, through handling food contaminated with dust on your hands.

**How can Cr(VI) harm you?**

As with all chemical exposures, the risk related to Cr(VI) exposure depends on your personal traits and habits, how much of the chemical you were exposed to, how you were exposed, how long and how often the exposure occurred, and whether other chemicals were present.

Single exposures to Cr(VI) compounds may cause:

* Irritation and inflammation of the nose and upper respiratory tract.
* Irritation, burns or ulcers of the skin, if your exposure is through the skin.
* Eye damage from splashes.

Repeated or prolonged exposure to Cr(VI) compounds may cause:

* Cancer of the lung.
* Damage to the nose, inc. ulcers and holes in tissue flap separating the nostrils.
* Inflammation of the lungs.
* Allergic reactions in the skin (dermatitis) and respiratory tract (e.g. wheezing).
* Kidney damage.
* Potential effects on reproduction (e.g. male fertility, fetal development).

**What must employers do to protect their workers?**

The [*refer to EU/national*] law requires employers to:

* Assess the risks to your health and the precautions needed for your protection
* Prevent you from getting exposed to Cr(VI), or where this cannot reasonably be done, adequately control your exposure
* Reduce your exposure to airborne Cr and its compounds so far as reasonably practicable, and in any case to below the following workplace exposure limits:
  + for Cr (VI) compounds, XX milligrams per cubic metre (mg.m3) of air, averaged over an 8-hour period
  + for other chromium compounds, XX mg.m3 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 Cr 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

**What must you do, if you work with processes involving Cr(VI)?**

* 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, drink or smoke in work areas where chromium may be present.

**How can you get more information?**

[*Adopt at national level, as you find appropriate. May refer to the national competent authority for occupational health and safety or other appropriate official body*].