



CHROMIUM (III) and (VI)

What are CHROMIUM (III) and (VI)?

Chromium is present in the environment in several forms. Chromium (III) is a natural element found in nature in rocks, animals, plants, soil, volcanic dust and gases.

Where can chromium (III) and (VI) be found and how are they used?

Chromium (III), also called Cr (III), is an important nutrient that the body needs to process certain sugars, proteins and fats. Both forms of chromium are used in industry. Chromium (VI) and chromium (III) are used for chrome plating, dyes and pigments, leather tanning and wood preserving.

How can people be exposed to chromium (III) and (VI)?

People who work with chromium (III) or chromium (VI) in industry are the most likely to be exposed. People who live close to a hazardous waste site are also at risk for exposure.

You could be exposed to chromium (III) and chromium (VI) through:

Breathing chromium (III) or chromium (VI) dust particles in the air.

Drinking chromium (III) in well water near a waste site containing chromium.

Swallowing chromium (III) in foods. Children swallow chromium if they eat dirt near waste sites containing it.

How do chromium (III) and (VI) work and how can they affect my health?

Chromium (III): Breathing chromium (III) does not irritate the nose or mouth in most people. There is not enough data to know if chromium (III) causes cancer. Eating small amounts of chromium (III) is healthy but eating too much is harmful. The recommended daily dose of chromium (III) is 50 -200 µg. There is not enough data to know if eating large amounts of chromium (III) causes cancer.

Chromium (VI): Breathing chromium (VI) at high levels can irritate the nose and cause sneezing, itching, nosebleeds, ulcers and holes in the nasal septum. It can also cause asthma attacks in people who are allergic to chromium. Long term exposure to high levels is linked to lung cancer. Breathing low levels of chromium (VI) for a short period does not cause health problems for most people.

Eating small amounts of chromium (VI) is not harmful. However, eating or drinking large amounts in food or water can cause an upset stomach, ulcers, convulsions, and damage the kidneys and liver. This type of exposure can be fatal. There is not enough data to know if eating or drinking chromium (VI) causes cancer.

How are chromium (III) and (VI) poisoning treated?

Treatments for chromium poisoning vary depending on the route of exposure. For example, the treatment for inhaling dust with chromium differs from the treatment for eating food contaminated with chromium. If you suspect someone was exposed to high levels of chromium, seek medical help.

What should I do if exposed to chromium (III) or (VI)?

If exposure is to dust or air contaminated with chromium, move to fresh air and seek medical help. If chromium was ingested, seek medical help.



What factors limit use or exposure to chromium (III) or (VI)?

To avoid eating harmful levels of chromium III, follow all dosage recommendations on the food package. The usual recommended daily dose is 50-200µg. Keep packages away from children.

To limit exposure to chromium (VI), avoid working in soil near a hazardous waste site containing chromium. Do not allow children to play in dirt or to eat dirt. Wash their toys. Everyone should wash hands before eating.

Is there a medical test to show whether I've been exposed to chromium (III) or (VI)?

Chromium can be measured in hair, urine, serum, red blood cells and whole blood. The chromium can be detected for about 120 days from the time of the exposure.

Technical information for chromium

	<u>Cr (VI)</u>	<u>Cr (III)</u>
CAS Number:	18540-29-9	NA
Chemical Formula:	Cr ⁺⁶	Cr ⁺³
Carcinogenicity (EPA):	A – Known carcinogen.	D – Not classifiable.
MCL (Drinking Water):	0.1 mg/L (Total Cr)	0.1 mg/L (Total Cr)
OSHA Standards:	0.1 mg/m ³ – Ceiling	0.5 mg/m ³ 8-Hour TWA
NIOSH Standards:	0.001 mg/m ³ 8-Hour TWA	0.5 mg/m ³ 8-Hour TWA

References and Sources

Agency for Toxic Substances and Disease Registry (ATSDR), ToxFAQs for Chromium, www.atsdr.cdc.gov/tfacts7.html (Accessed 10/6/09)

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U.S. Environmental Protection Agency (EPA), Toxicological Review of Trivalent Chromium, <http://www.epa.gov/NCEA/iris/toxreviews/0028-tr.pdf> (Accessed 10/6/09)

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