

# CHROMIUM

Also known as: Chrome, Chromate, Cr, Chrome III, Chrome VI, Hex Chrome, Tri Chrome  
Chemical reference number (CAS): 7440-47-3

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## WHAT IS CHROMIUM?

Chromium is an element existing in several different forms. Metallic chromium is mined for use in steel and other metal products. Many chromium-containing compounds are used for plating, manufacturing paints and dyes, tanning leather and preserving wood.

“Trivalent” chromium is naturally occurring and is essential for good health. The normal intake from eating foods that are high in natural chromium is 70-80 micrograms per day and is considered safe.

In the home or office the less-toxic forms of chromium are used to make flooring materials, video and audio recording tapes, stainless steel, chrome-plated items and copy machine toner.

“Hexavalent” chromium does not occur naturally, but is produced by certain industrial processes. It is the most toxic form of chromium, and is shown to cause lung cancer when workers are exposed to high air levels for long time periods.

## HOW ARE PEOPLE EXPOSED TO CHROMIUM?

**Breathing:** People can be exposed to chromium by breathing chromium dust or fumes. This is the route of exposure that is of greatest concern.

**Drinking/Eating:** Most human exposure to chromium occurs when people eat fresh vegetables, meats, fish, and poultry.

Drinking water is not normally a major source of exposure. Plants can absorb chromium and it can be passed to those who eat the plants.

**Touching:** Contact with contaminated soils can result in exposure to chromium. Exposure can be reduced by thorough washing of exposed skin and clothing to remove soil residues. Chromium can pass through the skin, but this is probably not a major route of exposure.

## DO STANDARDS EXIST FOR REGULATING CHROMIUM?

**Water:** The state and federal drinking water standards for the total amount of all forms of chromium found in drinking water are set at 100 parts per billion (ppb). We suggest you stop drinking water containing more than 100 ppb of chromium.

**Air:** No standards exist for the amount of chromium allowed in the air of homes. We use a formula to convert workplace limits to home limits. Based on the formula, we recommend levels of hexavalent chromium in air be no higher than 0.0002 milligrams per cubic meter of air ( $\text{mg}/\text{m}^3$ ). The lifetime cancer risk at this level is 1 in 8, or about 120,000 times higher than normal.

The Wisconsin Department of Natural Resources regulates the amount of chromium that can be released by industries.

## WILL EXPOSURE TO CHROMIUM RESULT IN HARMFUL HEALTH EFFECTS?

The following health effects may occur immediately or shortly after exposure to high levels of chromium:

- Irritation to mouth, throat, lungs, and nose following inhalation of hexavalent chromium particles
- Skin irritation and allergic reactions
- Digestive problems, kidney damage, and liver damage after eating food or drinking water contaminated with hexavalent chromium

The following health effects can occur after several years of exposure to chromium:

**Cancer:** Lung cancer can develop after exposure to hexavalent chromium vapors or fumes.

**Respiratory:** Lung irritation resulting in asthma can be caused by hexavalent chromium.

**Organ Systems:** Chromium exposure can cause liver and kidney damage.

**Immune System:** Animal studies show changes in immune system function.

**Reproductive Effects:** Animal studies show damage to developing fetuses and lowered sperm production in males.

In general, chemicals affect the same organ systems in all people who are exposed. However, the seriousness of the effects may vary from person to person. A person's reaction depends on several things, including individual health, heredity, previous exposure to chemicals including chromium and medicines, and personal habits such as smoking or drinking. It is also important to consider the length of exposure to the chemical; the amount of chemical exposure; and whether the chemical was inhaled, touched, or eaten.

## CAN A MEDICAL TEST DETERMINE EXPOSURE TO CHROMIUM?

When a person is regularly exposed to chromium, the chemical can be monitored by testing hair, urine, blood serum and red blood cells. Most of the chromium that enters the body is eliminated within 24 hours. Chromium does not build up in the body.

*Seek medical advice if you have any symptoms that you think may be related to chemical exposure.*

This fact sheet summarizes information about this chemical and is not a complete listing of all possible effects. It does not refer to occupational exposure or emergency situations.

## FOR MORE INFORMATION

- Poison Control Center, 800-815-8855
- Your local public health agency
- Division of Public Health, BEOH, 1 West Wilson Street, Rm. 150, Madison, WI 53701-2659, (608) 266-1120 or Internet: [www.dhs.state.wi.us/eh/index.htm](http://www.dhs.state.wi.us/eh/index.htm)



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