FACT SHEET

Hexavalent Chromium
(Particulate Compounds)

CAS Number: Hexavalent chromium 18540-29-9
(Please see the hexavalent chromium development support document for a list of applicable hexavalent chromium compounds)

This fact sheet provides a summary of the Development Support Document (DSD) created by the TCEQ Toxicology Division (TD) for the development of Regulatory Guidelines (ESLs, AMCVs and ReVs) for ambient air exposure to this chemical. For more detailed information, please see the DSD or contact the TD by phone (1-877-992-8370) or e-mail (tox@tceq.texas.gov).

What is hexavalent chromium?

Chromium can occur naturally in the environment and is found in rocks, soil, animals, and plants. The most common forms of chromium are: chromium (0) or the metal chromium, chromium III or trivalent chromium, and chromium VI or hexavalent chromium.

While the metal form of chromium is used for making steel, the hexavalent and trivalent forms of chromium are used for chrome plating, dyes and pigments, leather tanning, and wood preservation.

How are hexavalent chromium compounds released into ambient air?

Chromium is released into the atmosphere primarily by man-made processes such as industrial, commercial, and residential fuel combustion, and via the combustion of natural gas, oil, and coal. Metal industries, such as chrome plating and steel production, are also important man-made stationary point sources of chromium emissions to air. Other potentially small sources of chromium air emissions include cement-producing plants, the incineration of municipal refuse and sewage sludge, and emissions from chromium-based automotive catalytic converters. Emissions from cooling towers that previously used chromate chemicals as rust inhibitors may also be atmospheric sources of chromium. This fact sheet and the associated hexavalent chromium DSD is applicable to hexavalent chromium, ammonium dichromate, calcium chromate, sodium chromate, chromium trioxide, sodium dichromate, sodium dichromate dehydrate, lead chromate potassium chromate, potassium dichromate, strontium chromate, and zinc chromate together as hexavalent chromium particulate compounds. Note that the hexavalent chromium compound list for this DSD excludes chromic acid mist, which is the subject of another DSD.

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How can hexavalent chromium affect my health?

Permitted levels of hexavalent chromium should not cause short- or long-term adverse health or welfare effects. Some occupational workers exposed to much higher levels of hexavalent chromium for a sufficiently long duration have experienced respiratory tract effects such as irritation of the lining of the nose resulting in nose ulcers and respiratory symptoms (e.g., shortness of breath, wheezing, occupational asthma).

An increase in lung cancer risk has been reported in workers exposed long term to high levels of hexavalent chromium in the workplace. Animal studies have also indicated that hexavalent chromium can increase the risk of lung cancer.

The International Agency for Research on Cancer, the United States Environmental Protection Agency, and the TCEQ consider hexavalent chromium compounds as a group to be carcinogenic to humans.

Are hexavalent chromium compounds odorous to humans or harmful to plants?

Hexavalent chromium compounds are odorless and adverse effects to plants from hexavalent chromium compounds in the ambient air have not been documented.

Why does the TCEQ set Regulatory Guidelines for hexavalent chromium particulate compounds?

The TCEQ has set various air quality guideline levels (ESLs, AMCVs and ReVs) to protect human health and welfare. Please see Definitions of ESLs, ReVs, and AMCVs located on the TCEQ DSD webpage for more information. The air quality guideline levels for hexavalent chromium particulate compounds have been designed to protect the general public from short-term and long-term adverse health and welfare effects. The general public includes sensitive populations such as children, the elderly, pregnant women and people with preexisting health conditions. If you would like to know more about the specific ESLs, AMCVs and ReVs developed, what the values are and what they are used for, please see the DSD on the TCEQ website.