



Hexavalent Chromium Medical Surveillance Exams for Army Personnel

FACT SHEET 65-043-1118

Introduction

Hexavalent Chromium [Cr(VI)] is one form of the element chromium. There are three main forms of chromium including Cr(0), Cr(III), and Cr(VI). Cr(III) is categorized as an essential nutrient by the Institute of Medicine and is required for metabolism. Cr(III) is found in breads, cereal, fish, vegetables, meats and spices.

Chromium is a naturally-occurring element; however Cr(VI) is typically produced by industrial processes and is valued for its hardness and corrosion resistance. In the work environment it is found in pigments used for paints, inks and plastics; anti-corrosion coatings; stainless steel; textile dyes; wood preservation; and leather tanning. Common Army processes associated with occupational Cr(VI) exposure are aircraft maintenance; brazing/soldering/ welding/cutting; coating and painting operations; and metal treatment and metal machining.

Exposure

Occupational exposure to Cr(VI) most commonly occurs through inhalation or dermal exposure, but can also occur via ingestion.

Cr(VI) is classified as a known carcinogen by the International Agency for Research on Cancer and occupational exposure via inhalation has been associated with lung and nasopharyngeal cancers. Other more common respiratory effects include irritation of the nose, nose bleeds, perforated septum and nasal ulcerations. It is also associated with pneumoconiosis, asthma, allergies and decreased pulmonary function.

Dermal exposure can result in chrome ulcers, which are usually painless but can lead to secondary infection. Dermal exposure can also result in irritant or allergic dermatitis. Allergy can be confirmed by patch testing.

Medical Surveillance

OSHA has established medical surveillance standards for workers exposed to Cr(VI) which are found in 29 CFR 1910.1026(k), 29 CFR 1910, *Toxic and Hazardous Substances*. The exam must be performed under the supervision of a physician or other licensed healthcare professional (PLHCP) and at no cost to the employee. The purpose of the exam is to determine if the worker can be exposed to Cr(VI) without adverse health effects; to detect adverse health effects of Cr(VI) so that appropriate interventions can be taken; and to determine the workers' fitness to wear a respirator.



Per OSHA, workers who are exposed to Cr(VI) at or above the Action Level of .0025 mg/m³ for 30 days or more per year must be enrolled in medical surveillance. However, by policy, the Army follows the ACGIH TLV[©] if more stringent. In March 2018 the ACGIH published an updated TLV[©] of .0002 mg/m³ and a short term exposure limit of .0005 mg/m³. Additionally, workers who experience signs and symptoms of Cr(VI) exposure or who were exposed in an unintentional release of Cr(VI) must be enrolled in medical surveillance. Medical surveillance must occur within 30 days of job assignment with Cr(VI) exposure, annually, after any suspected emergency exposure and at termination of employment or acute exposure.

The exam must include a medical history focusing on workers' past, present and future exposure to Cr(VI); history of smoking; history of respiratory system dysfunction including asthma; examination of the respiratory system; and examination of the skin for dermatitis or ulceration. Workers who smoke should be counseled to quit tobacco because it has synergistic effects with Cr(VI). The PLHCP may also order additional tests that they feel are necessary such as spirometry. Any spirometry should be performed in accordance with American Thoracic Society standards. The PLHCP is responsible for providing a written statement within 30 days on any detected medical condition that places the worker at increased risk of impairment due to Cr(VI), provide recommendations for the use of personal protection equipment such as respirators and a statement that the PLHCP has explained the results of the exam to the worker.

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