



Company Name: _____ Job Site Location: _____

Date: _____ Start Time: _____ Finish Time: _____ Foreman/Supervisor: _____

Topic 149: Hexavalent Chromium

Introduction: Hexavalent chromium is a toxic form of the element chromium. Hexavalent chromium compounds are man-made and widely used in many different industries. **Major industrial sources of hexavalent chromium are:**

- Chromate pigments in dyes, paints, inks, and plastics
- Chromates added as anti-corrosive agents to paints, primers, and other surface coatings
- Chrome plating by depositing chromium metal onto an item's surface using a solution of chromic acid
- Particles released during smelting of ferrochromium ore
- Fume from welding stainless steel or nonferrous chromium alloys and impurities present in portland cement

Workplace exposure to hexavalent chromium may cause the following health effects: Keep MSDS's for all chromium on site.

- Lung cancer in workers who breathe airborne hexavalent chromium
- Irritation or damage to the nose, throat, and lung (respiratory tract) if hexavalent chromium is breathed at high levels
- Irritation or damage to the eyes and skin if hexavalent chromium contacts these organs in high concentrations

How hexavalent chromium affects the nose, throat, and lungs: Breathing in high levels of hexavalent chromium can cause irritation to the nose and throat. Symptoms may include runny nose, sneezing, coughing, itching, and a burning sensation.

- Repeated or prolonged exposure can cause sores to develop in the nose and result in nosebleeds. If the damage is severe, the nasal septum (wall separating the nasal passages) develops a hole in it (perforation).
- Breathing small amounts of hexavalent chromium even for long periods does not cause respiratory tract irritation in most people.
- Some employees become allergic to hexavalent chromium so that inhaling chromate compounds can cause asthma symptoms such as wheezing and shortness of breath.

How hexavalent chromium affects the skin: Some employees can develop an allergic skin reaction, called allergic contact dermatitis. This occurs from handling liquids or solids containing hexavalent chromium.

- Once an employee becomes allergic, brief skin contact causes swelling and a red, itchy rash that becomes crusty and thickened with prolonged exposure. Allergic contact dermatitis is long-lasting and more severe with repeated skin contact.
- Direct skin contact with hexavalent chromium can cause a non-allergic skin irritation. Contact with non-intact skin can also lead to chrome ulcers. These are small crusted skin sores with a rounded border. They heal slowly and leave scars.



Employees can inhale airborne hexavalent chromium as a dust, fume, or mist while:

- Producing chromate pigments and powders; chromic acid; chromium catalysts, dyes, and coatings
- Working near chrome electroplating
- Welding and hot working stainless steel, high chrome alloys, and chrome-coated metal
- Applying and removing chromate containing paints and other surface coatings
- Skin exposure can occur during direct handling of hexavalent chromium containing solutions, coatings, and cements

Workplace standards require employers to: Provide respiratory protection, personal protective clothing, and protective equipment.

Limit eight-hour time-weighted average hexavalent chromium exposure in the workplace to 5 micrograms or less per cubic meter of air.

- Perform periodic monitoring at least every 6 months if initial monitoring shows employee exposure at or above the action level (2.5 micrograms per cubic meter of air calculated as an 8-hour time-weighted average).
- Implement good personal hygiene and housekeeping practices to prevent hexavalent chromium exposure.
- Prohibit employee rotation as a method to achieve compliance with the exposure limit (PEL).
- Make available medical examinations to employees within 30 days of initial assignment, annually, and to those exposed in an emergency situation. Examinations must be given when signs or symptoms of adverse health effects are associated with exposure, to those who are or may be exposed at or above the action level for 30 or more days a year, and at termination of employment.



Conclusion: The NIOSH Manual of Analytical Methods (NMAM) is for sampling and analysis of contaminants in workplace air.

Work Site Review

Work-Site Hazards and Safety Suggestions: _____

Personnel Safety Violations: _____

Material Safety Data Sheets Reviewed: _____ (Name of Chemical)

Employee Signatures:

(My signature attests and verifies my understanding of and agreement to comply with, all company safety policies and regulations, and that I have not suffered, experienced, or sustained any recent job-related injury or illness.)

Foreman/Supervisor's Signature: _____

These guidelines do not supercede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.