

OSHA'S Final Rule For

HEXAVALENT CHROMIUM

Pursuant to a court order, OSHA issued a final rule on February 28, 2006 that addresses occupational exposure to hexavalent chromium (Cr(VI)). OSHA determined that the Cr(VI) rule is necessary to reduce significant health risks due to Cr(VI) exposure. Certain Cr(VI) compounds have been found to cause lung cancer and nasal cancer in humans. Inhaling relatively high concentrations of Cr(VI) can also cause a wide range of other health effects (such as runny nose, sneezing, itching, nosebleeds, ulcers, and holes in the nasal septum). Ingestion of very high doses of Cr(VI) can cause kidney and liver damage, nausea, irritation of the gastrointestinal tract, stomach ulcers, convulsions, and death. Dermal exposures may cause skin ulcers or allergic reactions.

Chromium has been used commercially in the U.S. for more than 100 years. Chromium occurs mainly in three forms, described by its valence state. Metallic chromium (Cr[0]) is a steel-gray solid with a high

melting point that is used to make steel and other alloys. Chromium metal does not occur naturally but is produced from chrome ore. Trivalent chromium (Cr(III)) occurs naturally in rocks, soil, plants, animals, and volcanic emissions. Cr(III) is used industrially as brick lining for high-temperature industrial furnaces and to make metals, metal alloys, and chemical compounds. Cr(VI) occurs through the oxidation of chromium compounds with lower valence states. Cr(VI) is considered the greatest occupational and environmental health concern, as it is the most toxic.

According to OSHA, there are a total of 380,000 workers exposed to Cr(VI). Activities that have the potential for Cr(VI) exposure include the following:

- Production and use of chromium metal and chromium metal alloys
- Chromium electroplating
- Welding of metals containing chromium such as stainless steel or other high chromium

steels, or chromium coatings

- Production and use of Cr(VI)-containing compounds (such as Cr(VI) pigments, Cr(VI) catalysts, and chromic acid)
- Production of chromium-containing pesticides
- Painting activities involving the application of strontium chromate coatings to aerospace parts
- Removal of lead chromate

Welders, who represent nearly half of the workers covered by this final rule, do not ordinarily work with materials containing Cr(VI). Rather, the high temperatures created by welding oxidize chromium in steel to the hexavalent state.

OSHA issued separate standards for general industry, construction, and shipyard sectors. The provisions in the standards for each of these industry sectors are similar. The major provisions of the final rule are summarized in Table 1.

TABLE 1
OSHA's Final Rule for Hexavalent Chromium
Summary of Major Provisions

Scope	All exposures to Cr(VI) in all forms and compounds. Excludes: <ul style="list-style-type: none"> • Pesticide application • Exposures to Portland cement • Objective data demonstrates exposures are below 0.5 µg/m³ 	General Industry, Construction, Shipyards (including marine terminals and longshoring)
Permissible exposure limit (PEL)	5 µg/m ³	General Industry, Construction, and Shipyards
Action level (AL)	2.5 µg/m ³	General Industry, Construction, and Shipyards
Exposure determination	May use any combination of exposure monitoring data, historical monitoring data, or objective data.	General Industry, Construction, and Shipyards
Exposure monitoring	If the scheduled exposure monitoring option is used to determine exposure, exposure monitoring must be performed: <ul style="list-style-type: none"> • Initially • Every 3 months if ≥ PEL • Every 6 months if ≥ AL • Discontinue if < AL (and subsequent exposure monitoring taken at least 7 days later confirms exposure < AL) • Additional monitoring must be performed when there is a change that may result in new or additional exposures to Cr(VI) 	General Industry, Construction, and Shipyards
Employee notification	Results of the exposure determination must be posted (or each affected employee must be notified in writing) within 15 working days if exposure is greater than the PEL. Must describe the corrective action being taken. Results of the exposure determination must be posted (or each affected employee must be notified in writing) within 5 working days if exposure is greater than the PEL. Must describe the corrective action being taken.	General Industry Construction and Shipyards
Regulated areas	Regulated areas must be demarcated when reasonably expected to be in excess of the PEL.	General Industry
Methods of compliance	Must use feasible engineering controls to reduce exposure to or below the PEL. When infeasible to reduce exposures to or below the PEL, must reduce to the lowest achievable levels and supplement with respiratory protection. For a process or task where employees are not exposed to Cr(VI) for 30 or more days per 12 consecutive months, the requirement to implement engineering and work practice controls does not apply. Painting of aircraft or large aircraft parts, engineering controls must be used to reduce exposures below 25 µg/m ³ and supplement engineering controls with respiratory protection. Job rotation is prohibited to achieve compliance with the PEL.	General Industry, Construction, and Shipyards General Industry, Construction, and Shipyards General Industry General Industry, Construction, and Shipyards

**TABLE 1 (CONT.)
OSHA's Final Rule for Hexavalent Chromium
Summary of Major Provisions**

Protective work clothing and equipment	Must be provided to employees where skin or eye contact to Cr(VI) is present or likely.	General Industry, Construction, and Shipyards
Hygiene areas and practices	Change rooms and wash facilities are required when protective clothing and equipment is required. Certain activities (e.g., eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics) are prohibited in areas where skin or eye contact with Cr(VI) occurs.	General Industry, Construction, and Shipyards General Industry, Construction, and Shipyards
Housekeeping	Keep surfaces free as practicable of accumulations of Cr(VI) and clean spills and releases of Cr(VI) materials promptly.	General Industry Only
Medical Surveillance	Medical surveillance (initially and annually) for employees who: <ul style="list-style-type: none"> • Are exposed to Cr(VI) at or above the AL for 30 or more days a year. • Experience signs or symptoms of the adverse health effects associated with Cr(VI) exposure. • Are exposed in an emergency. 	General Industry, Construction, and Shipyards
Communication of Cr(VI) hazards to employees	Employee training must be performed.	General Industry, Construction, and Shipyards
Recordkeeping	The following documents must be maintained: <ul style="list-style-type: none"> • Air monitoring data • Historical monitoring data • Objective data • Medical surveillance records 	General Industry, Construction, and Shipyards
Dates	Compliance with all sections (except for engineering controls) must be achieved by 11/27/06. Employers with 19 or fewer employees have until 5/30/07 to comply. Compliance with engineering controls must be achieved by 5/31/10.	General Industry, Construction, and Shipyards General Industry, Construction, and Shipyards



19314 Timber Ridge Drive, Suite 100
Magnolia, Texas 77355
Phone (281) 252-0005
jerome.spear@jespear.com
www.jespear.com