DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
POLICY AND PROCEDURES MANUAL

# Hexavalent Chromium Inspection Guidelines	P&P C-50 Issue Date: 3/10/09 Rev: 5/22/09

AUTHORITY: California Labor Code Sections 142.3, 144.6, 6400, 6402 through 6404 and 9000 through 9009 and Title 8, California Code of Regulations (CCR) Sections 1527, 3203, 3204, 3360 through 3385, 5141, 5155, 5194, 5206, 1532.2 and 8559.

POLICY: It is the policy of the Division of Occupational Safety and Health to ensure that the Division effectively and uniformly enforces regulations covering all occupational exposures to airborne hexavalent chromium (when the substance is a carcinogen and a respiratory irritant and sensitizer) and to skin and eye exposures (when the substance is a skin sensitizer and eye irritant). Applicable provisions of Title 8 include hexavalent chromium regulations for general industry, construction and shipbuilding and also include regulations providing for proper use of personal protective equipment, training and others.

Overview:

In 2006, three regulations were adopted (first by Federal OSHA and then by Cal/OSHA) for exposures to Hexavalent Chromium (Chrome VI) in the workplace: 8CCR 5206, 1532.2 and 8559 respectively in the General Industry, Construction and Shipbuilding Safety Orders. The primary intent of these standards is to prevent occupational lung cancer but Chrome VI can also cause asthma, nasal ulcerations and perforations, skin sensitization (both allergic contact and irritant contact dermatitis), skin ulcerations and eye irritations. Typical industries with Chrome VI exposures: electroplating, pigments, dyes, welding, spray painting and paint removal, primer paints in aerospace and auto refinishing. Welders make up half the employees exposed. Stainless steels contain 12 to 30% chromium; Chrome VI associated with stainless steel is created by the welding process.

Federal OSHA has adopted very detailed, specific Chrome VI inspection procedures, Inspection Procedures for the Chromium (VI) Standards [CPL 02-02-074]; **as a state plan state Cal/OSHA must have inspection**

procedures that are at least as effective. Cal/OSHA Chrome VI inspections should be as comprehensive in scope as required by the Federal instructions but should be implemented by following the Cal/OSHA Policy and Procedure Manual.

This document primarily focuses on differences between Federal OSHA and Cal/OSHA Chrome VI regulations and procedures. This guideline will only lightly touch upon the main elements of Chrome VI inspection procedures that are common to Federal OSHA and Cal/OSHA; readers may refer to the Federal OSHA document for more detail: http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-02-074.pdf

Differences between Federal OSHA and Cal/OSHA Guidelines

1. Federal OSHA entered into an agreement with the electroplating industry for states with Federal OSHA jurisdiction that permits deviation from the General Industry Chrome standard's respirator requirements in exchange for earlier engineering control implementation; this agreement does NOT apply in California. So Cal/OSHA inspectors must not follow the Federal instructions regarding the Federal agreement with the Surface Finishing Industry Council (SFIC) [although the agreement is a good reference on good engineering controls and work practices in the electroplating industry, see http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-02-074.pdf].

2. Cal/OSHA has a more stringent PEL for Chrome VI than does Federal OSHA when the hexavalent chromium is in the substance strontium chromate: 0.05 µ/m3.

3. Cal/OSHA has a ceiling limit for Chrome VI while Federal OSHA does not: Cal/OSHA Ceiling Limit: 0.1mg/m3 Sampling Time to sample for ceiling: 15 to 30 minutes Flow rate: For expected low concentrations it is advisable to increase the flow rate from 2L/min up to 4 L/min; do not exceed 4 L/min. OSHA Salt Lake City lab will validate this flow increase although it is not in the published method. Submit a blank from each batch of cassettes. Take a bulk sample for each process sampled.

Special Agreements Affecting Chrome VI Inspections in California

1. The National Association of Manufacturers settled its suit on the Chrome VI standards with the issuance of a Federal OSHA letter of interpretation regarding feasibility of engineering controls in welding environments. This letter can be found at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=25716 and its implications for inspections are discussed in CPL 02-02-074. This letter also interprets the meaning of the Chrome VI standards' objective/historical monitoring data provisions. Both of these interpretations are identical to the Cal/OSHA understandings on these issues.

2. **Portland cement**, although it can contain up to 40 µg of Chrome VI per gram, was excluded from the scope of the Chrome VI standard because there is little inhalation risk when the cement is wet. Sued by building trades and other unions over this exclusion, Federal OSHA agreed to the following settlement:

    A. **To determine at every inspection involving construction work** whether work involving Portland cement exposure is being performed.

    B. If so, then the inspector must determine if the relevant employers are in compliance with the appropriate standards covering sanitation, personal protective equipment, Hazard Communication, training and record keeping.

    This means that employers' control measures for the dermatological hazards (burns from alkalinity of cement, irritant contact dermatitis from wet cement skin exposure and allergic contact dermatitis from the Chrome VI content) of wet Portland cement will be evaluated in such inspections. Additionally, for Federal OSHA construction inspections, if dry Portland cement use poses a hazard at a work site, airborne exposures will be assessed for total and respirable dust and silica PELs.

    Cal/OSHA's inspection procedures regarding Portland cement must be at least as effective as Federal inspection procedures, so possible Portland cement exposure should be evaluated whenever Portland cement is found during Cal/OSHA construction inspections. More detail about the Federal OSHA inspection protocol can be found in Appendix

C-1 of the compliance directive at http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-02-074.pdf although Cal/OSHA inspectors are to reference the California regulations such as, but not limited to: 8CCR 1527, 3362, 3380, 5155 (for Chrome VI ceiling exposures where there is a risk from dry cement, in addition to total and respirable dust and silica exposures), 5174 (allaying media) and 5194.

Portland cement is an ingredient in concrete, mortar, plaster, grout, stucco, and terrazzo. Portland cement is estimated to account for 25 percent or more of all work-related skin problems. Additional information about the dermatological hazards of Portland cement and workplace methods of control can be found at: http://www.osha.gov/dsg/guidance/cement-guidance.html ; and, http://www.cdc.gov/eLCOSH/docs/d0400/d000457/d000457.html ; and, http://www.cdc.gov/eLCOSH/docs/d0400/d000458/d000458.html.

For all Cal/OSHA inspections where compliance inspectors find employee exposures to Portland cement, the Inspection Report (OSHA-1) Form shall be marked with the following IMIS coding for future tracking purposes:
For inspections conducted where there is employee exposure to Portand cement, please use the optional information code of **N 11 PORTLAND**.

Inspections conducted where we sample for hexavalent chromium, please use the optional information code of **S 06 HEX CHROM**E.

If a citation is the result of sampling, please enter the applicable substance code in the Violation Document (OSHA 1B) Form.

(Note: there is a search feature (F7) on the substance code line 25 of the 1B data entry screen)

0577 PORTLAND CEMENT (LESS THAN 1% QUARTZ)(TOTAL DUST)
P104 PORTLAND CEMENT (RESPIRABLE FRACTION)
0685 CHROMIUM, METAL & INSOLUBLE SALTS (AS CR)
0689 CHROMIUM (VI) (HEXAVALENT CHROMIUM) TWA
0690 CHROMIUM, SOLUBLE CHROMIC, CHROMOUS SALTS (AS CR)
0691 CHROMIUM (VI) (HEXAVALENT CHROMIUM) ACTION LEVEL

0694 CHROMIUM (VI) (HEXAVALENT CHROMIUM)AEROSPACE PAINT
C111 CHROMIUM, UNIDENTIFIED CHROMIUM SUBSTANCE (AS CR)
C113 CHROMIUM III COMPOUNDS (AS CR)
C121 CHROMIUM II COMPOUNDS (AS CR)

Chrome VI Sampling and Analysis in California

Chrome VI in California will almost always be analyzed utilizing OSHA Method ID215; alternative analytical methods should not be requested unless approved by Regional Senior Industrial Hygienists. Because Chrome VI is a very reactive species, welding and electroplating samples will suffer sample loss unless either the sample is field stabilized (generally this is not the sampling media to be utilized by Cal/OSHA) or the sample collected on a PVC filter is analyzed within the OSHA ID 215 prescribed time limits. For electroplating this is six days, for welding the period is eight days. Welding samples suffer loss proportional to the time since the sample was taken. (Ten percent of a welding sample is lost in eight days, 5% in four days.) Therefore, Chrome VI samples will be shipped via overnight mail.

Cal/OSHA Consultation and Enforcement Units will send samples to the appropriate laboratory under contract and send the appropriate e-mail notifications. Cal/OSHA staff should refer to the complete guidelines found on the DOSH intranet site, which is accessible to all in-house staff, to obtain specific procedural information.

Note: To avoid unnecessary delays in analysis, Cal/OSHA compliance inspectors should either request expedited analysis in block 9 of the Laboratory Sample Analysis Request Form (Cal/OSHA Form IH) unless verified arrangements exist with the contracted laboratory for analysis to be performed as soon as possible after the lab receives the samples.

See also sampling for Chrome VI Ceiling level in the section above on differences between California and Federal OSHA. For more information about the Federal OSHA sampling method, please see: http://www.osha.gov/dts/sltc/methods/inorganic/id215_v2/id215_v2.html

Additional Chrome VI Issues

The Chrome VI regulations allow the use of historic monitoring data as substitutes for monitoring since the new regulations took effect. The Federal Chrome VI guidance document makes it clear that this historic data must be well documented to represent conditions nearly the same as today's exposures. The specificity on this data extends even to the detail and the accuracy of the sampling and analysis that was done in the past; this is necessary given what is now known about the possibility for sample loss under some of the older sampling and analytical procedures. See the Federal OSHA directive for further detail on the subject of historical data: http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-02-074.pdf

Finally, Cal/OSHA inspectors should pay careful attention to the implementation dates for engineering controls that are embedded in the Chrome VI regulations. In some cases in which exposures over the PEL have been documented, citations would not be issued if proper respiratory protection has been utilized—that is, until the 2010 engineering control deadline. For more information on this topic, see http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-02-074.pdf.