

# Respiratory Protection from Hexavalent Chromium



*With Information to Help Comply with the NEW CrVI Standard*

## **New OSHA rule limits CrVI exposure to 8-hr. TWA of 5 µg/m<sup>3</sup>**

On February 28, 2006, OSHA published a new final standard for occupational exposure to hexavalent chromium (Cr(VI)) covering general industry, construction, and shipyards. The new standard lowers OSHA's permissible exposure limit (PEL) from 52 to 5 micrograms of Cr(VI) per cubic meter of air as an eight-hour time-weighted average (TWA). The PEL is lowered to 5 µg/m<sup>3</sup> over an 8-hr.TWA.

### **Effective Dates**

- May 30, 2006 - The new standard goes into effect.
- November 27, 2006 - The "start-up date" for the rule's provisions - except engineering controls.
- May 30, 2007 - For employers with fewer than 20 employees, this is the start-up date.
- May 31, 2010 - The engineering control provisions will not be effective until this date to help employers spread costs over 4 years.

### **The Hazard**

Chromium hexavalent compounds, often called hexavalent chromium, exist in several forms known as chromates. Close to a half million welders of stainless steel will be affected by this standard, although chromates can also be present in varied industries involving photographic pigments, dyes, surface coatings, paints, inks, plastics, thermal cutting and chrome plating.

Cr(VI)-related major health effects include lung cancer, damage to nasal passages, skin rashes and ulcers, eye irritation, and possible eye, kidney and liver damage. This new OSHA standard aims to reduce the associated risks of Cr(VI) airborne exposure by lowering the permissible exposure limit (PEL). Covered industries are required to comply via use of personal protective equipment (PPE) for at-risk workers, engineering controls, medical surveillance and education. OSHA has

provided for certain exemptions and exclusions as well as a transition period for employers affected by this regulatory change. OSHA also recognizes a special provision for aerospace painting.

OSHA's exposure determination covering general industry, construction, and shipyards contain identical provisions, although a performance-oriented option in all industries has been added for employer flexibility in making exposure determinations.

*Since there were substantial differences between the proposed standard released in 2004 and the final standard, the following chart comparison is provided to illustrate OSHA's proposed and final requirements for hexavalent chromium:*

| OSHA STANDARD ITEM                       | PROPOSED   | FINAL   |
|--|--|---|
| Permissible Exposure Limit               | PEL of 1 µg/m <sup>3</sup>   | PEL of 5 µg/m <sup>3</sup>  |
| Portland Cement Exclusion                | Exclude exposures to portland cement in construction industry.   | Expanded portland cement exclusion to general industry and shipyards.   |
| Scope Exemption                          | None   | Exemption for employers demonstrating that under no expected conditions will concentrations be above 0.5 µg/m <sup>3</sup> .                              |
| Special Provision for Aerospace Painting | All industries covered by standard achieve PEL through feasible engineering and work practice controls.              | Employers required to reduce exposures only to 25 µg/m <sup>3</sup> and must then use respiratory protection to meet PEL.                                 |
| Exposure Determination                   | Did not include exposure determination provisions for construction or shipyards.                                     | Identical provisions for exposure determination for industry, construction, and shipyards. Performance-oriented option included for employer flexibility. |
| Medical Surveillance                     | Proposed that medical surveillance be offered to employees with signs and symptoms of Cr(VI)-related health effects. | Changed the exposure-based trigger to 30 or more days above the action level (one-half the PEL).  |

## A Few Helpful Notes

- **OSHA's exclusion for portland cement** has been expanded to include general industry and shipyards, as new information demonstrated airborne exposures to Cr(IV) from portland cement in these industries are comparable to those found in construction.
- **OSHA has provided a supplemental provision for the aerospace painting industry**, recognizing the unfeasibility of reducing PEL exposures through engineering and work practice controls when painting large aircraft and related parts. Employers within this industry are required only to reduce exposures to 25 µg/m<sup>3</sup> and must use respiratory protection to meet the PEL.
- **Worker education required by OSHA** under this new standard includes chromium (VI) related medical examination when necessary as well as providing portions of the standard for employees to view. Employers must keep accurate records and include dates, numbers and durations of all air monitoring conducted, operations, sampling methods used and results, job classifications and types of PPE worn when working with chromium (VI). Exposure records must be kept in accordance with 29 CFR 1910.1020.

## What You Can Do Now

OSHA's new standard will require many more workers to be provided with respiratory protection for exposure to hexavalent chromium. To comply, a traditional half-mask respirator with N-95 filters is approved for use, as long as the exposure is no more than 10 times the PEL level. For maximum protection however, MSA recommends a P-100 filter.

## Respiratory Protection

MSA offers a wide variety of respiratory protection to comply with this new standard. The work application will determine the style of respirator as well as its composition.

## MSA's Advantage<sup>®</sup> Respirators

The Advantage Respirator Series offers both half- and full-facepiece styles of air-purifying respirator. The NIOSH-approved



Advantage 200 LS half-mask respirator's clear blue thermoplastic rubber facepiece offers unmatched fit and comfort. Its patented MultiFlex<sup>®</sup> System equalizes pressure on the facepiece area to prevent collapse during wear. The Advantage 200 LS respirator can be fitted with a wide variety of cartridges and filters, including P-100 and N-95 particulate filters.



Advantage full-face respirators enhance worker performance by offering a standard noseclip to reduce fogging and a soft, pliable silicone facepiece. A scratch-resistant, optically correct lens eliminates distortion for excellent visibility and peripheral vision.

## More Comfort with Protection: MSA's Powered Air-Purifying Respirator (PAPR)

For maximum comfort on the job, the OptimAir<sup>®</sup> MM2K PAPR is well suited for



industries with hazardous particulate environments. Complete units include motor/blower, nickel metal hydride (NiMH) battery, dual-rate charger, one Type HE (P-100) OptiFilter<sup>®</sup> XL cartridge, belt, and choice of Ultravue<sup>®</sup>, Ultra Elite<sup>®</sup> or Advantage 3000 facepiece. Other features include water-resistant filter with optional prefilter and cover, a low-profile, lightweight NiMH battery pack, and dual-rate smart charger. NIOSH-approved as TC-21C-0758.

## Detection And Monitoring

OSHA's sampling procedure for hexavalent chromium calls for particle collection using a 37-mm, 5 µm-pore-size PVC filters. To test for exposure using an MSA Escort<sup>®</sup> Elf Sampling Pump, you'll also need a 37mm filter cassette cases, and 5.0 µ-pore-size PVC filters.

MSA also offers a complete line of eye and face protection, including faceshield frames, visors, goggles, and eyewear. Your MSA distributor can offer you additional personal protective equipment such as gloves, boots, and protective clothing.

For further information about OSHA's final standard on hexavalent chromium, see [www.osha.gov](http://www.osha.gov).

An MSA sales associate or qualified MSA distributor will be pleased to provide more information on how you can comply with this new OSHA standard.

Simply call MSA Customer Service toll-free at 1-800-MSA-2222.

**Note:** This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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