



Safety Bulletin - Hexavalent Chromium

Exposure to hexavalent chromium (Cr(VI)) may occur when welding or cutting operations are performed on stainless steel, low alloy carbon steel, other metals containing chromium or surfaces coated with paint containing chromium compounds.

Factors that can affect exposures to Cr(VI) during welding operations include the following:

- Type of welding process used
- The welding environment - confined or enclosed spaces
- Fume generation rate, which is affected by the composition of the filler metal, flux material, shielding gas, base metal and any coatings, and the welding current and voltage.
- Local exhaust or general building ventilation

Standard for Cr(VI)

On February 28, 2006, the Occupational Safety and Health Administration (OSHA) published a new standard, *Occupational Exposure to Hexavalent Chromium*, to protect workers from the potential hazards of Cr(VI). Some HOBART-brand consumables contain chromium and chromium compounds that may be transiently converted to Cr(VI) in the welding fume.

The OSHA standard addresses potential exposure of workers to virtually all forms of Cr(VI).

The effective date of the standard was November 27, 2006 for employers with twenty or more employees and May 30, 2007 for employers with nineteen or fewer employees. Engineering controls need to have been implemented by May 31, 2010.

OSHA requires that the occupational exposure to airborne Cr(VI) be equal to or below the Permissible Exposure Limit (PEL) of $5 \mu\text{g}/\text{m}^3$ as an eight-hour time-weighted average.

- Workplace or job-specific monitoring must be done to establish areas of potential exposure and to quantify the potential exposure.
- Employees who may be exposed to levels of Cr(VI) above the new PEL must be informed and corrective measures implemented.
- Protective clothing and respiratory protection may be required for employees with potential exposure to Cr(VI).
- Medical surveillance of employees with potential exposure to Cr(VI) may be required.
- Areas where exposure exceeds or can reasonably be expected to exceed the Cr(VI) PEL must be indicated with warning signs.
- Rotation of employees in and out of the welding environment to reduce the time-weighted average exposure to less than the current Cr(VI) PEL is strictly prohibited.
- The action level for Cr(VI) is $2.5 \mu\text{g}/\text{m}^3$. Certain sections of the new standard apply if the exposure level is at or above $2.5 \mu\text{g}/\text{m}^3$. Reference the OSHA standard for further information regarding action level and other requirements.
- Engineering controls may be required to reduce exposures to levels in compliance with the Cr(VI) PEL.

The specific details of the standard are complex and an occupational health professional should be consulted. Specialized equipment is required for monitoring Cr(VI) concentration in the workplace. OSHA Analytical Method Number ID-215 (version 2) for area and breathing zone sampling and OSHA Analytical Method Number W4001 for wipe samples are listed on the OSHA website as acceptable methods for measuring exposure to Cr(VI).

More Information

Additional information on this subject can be gathered from the OSHA website at www.osha.gov. The specific standard is 29 CFR 1910.1026 for general industry, 29 CFR 1915.1026 for shipyards and 29 CFR 1926.1126 for construction. OSHA has a small business guide for compliance with the new standard available at https://www.osha.gov/Publications/OSHA_small_entity_comp.pdf.

The Safety Data Sheets (SDSs) for all HOBART-brand products reflect the current OSHA Cr(VI) PEL. SDSs for all Hobart Brothers LLC products are available at www.hobartbrothers.com.