

ACGIH Chromium Compounds TLV Change Statement

The American Conference of Governmental Industrial Hygienists (ACGIH) advised in March of 2018 that it had adopted the proposed changes to the Threshold Limit Value (TLVs) for Chromium and Inorganic Compounds. The changes were published in the 2018 Edition of its TLVs and Biological Exposure Indices (BEIs) publication. A new TLV of .0002 mg/m³ for inhalable hexavalent chromium compounds [Cr(VI)], as well as a Short-Term Exposure Limit (STEL) of .0005 mg/m³, inhalable hexavalent chromium compounds, has been established.

While this is a new TLV for the ACGIH, it should be noted that NIOSH's Recommended Exposure Limit (REL) has been 0.0002 mg/m³ since 2013. Additionally, hexavalent chromium has been listed as a Category A1: Confirmed Human Carcinogen since 1990. The OSHA Permissible Exposure Limit (PEL) of 0.005 mg/m³ for hexavalent chromium compounds, adopted in 2006, remains unaffected.

Although the fume from some welding consumables does contain chromium and chromium compounds, it appears that the ACGIH's latest TLV reduction for Cr(VI) is based on animal studies and studies involving workers in the chromium smelting, ferrochromium production, chromite ore mining and chrome plating industries. The ACGIH states that this new TLV for Cr(VI) compounds should minimize respiratory sensitization and the likelihood of asthmatic responses in already sensitized individuals. Unlike prior TLVs, the 2018 TLV does not distinguish between soluble and insoluble Cr(VI).

Also included, is a new TLV of 0.003 mg/m³ for inhalable inorganic chromium (III) compounds. The new TLV for inhalable inorganic chromium (III) compounds is based upon studies of Finnish chrome workers.

The ACGIH is a non-profit, non-governmental corporation dedicated to promoting health and safety in the workplace. According to the ACGIH, its TLVs represent levels of exposure to which nearly every worker can be exposed throughout their working career without adverse health effects. They also caution that TLVs are not intended to represent fine lines between safe and unsafe exposure levels. The ACGIH acknowledges that its TLVs are not consensus standards and no consideration is given to economic or technical feasibility.

It is imperative that exposure control approaches be considered and implemented in any workplace where welding takes place – particularly when it comes to stainless steel and other high alloy applications. Adequate ventilation, including the use of local exhaust ventilation, continues to be required. However, in light of the new TLV limits for chromium compounds, unless exposure levels are confirmed through a properly conducted industrial hygiene assessment to be below the applicable local limit, TLV or PEL, whichever is lower, respiratory protection is required. When choosing respiratory protection, ensure that it provides protection commensurate with the levels of employee exposure. In many cases, the use of positive pressure options like supplied-air or Powered Air Purifying (PAPR) systems may be necessary in order to provide an adequate level of protection. In addition to proper ventilation, other considerations might include changing the welding process or procedure to reduce the rate of fume or hexavalent chromium production, but only where this option is consistent with the welding application requirements.

Lincoln Electric continues to recommend that exposures in the workplace be controlled to the TLV or the applicable regulatory exposure limit standard, whichever is the more conservative. As always, Lincoln Electric will continue to work with its customers to provide the solutions they need to weld safely and effectively.