

# ACGIH Chromium Compounds TLV

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## ACGIH CHROMIUM COMPOUNDS TLV CHANGE SUM STATEMENT

The American Conference of Governmental Industrial Hygienists (ACGIH) advised in March of 2018 that it had adopted its proposed change to the Threshold Limit Values (TLVs) for Chromium Compounds. The change was published in the 2018 Edition of its TLVs and Biological Exposure Indices (BEIs) publication. The new TLV is 0.0002 mg/m<sup>3</sup> for inhalable hexavalent chromium compounds, representing a 250-fold reduction from the previous 0.05 mg/m<sup>3</sup> TLV. The new TLV for chromium compounds includes a .003 mg/m<sup>3</sup> limit for inhalable chromium (III) compounds, which is a 167-fold reduction from the previous 0.5 mg/m<sup>3</sup> TLV. These changes are not specific to the welding industry, but may impact welding and its allied processes that contain chromium compounds and/or may contain chromium compounds in the fume.

The ACGIH's recent change in the chromium compounds TLVs appears to be based primarily on animal studies for the hexavalent chromium TLV changes, and studies of Finnish chromium workers for the chromium (III) compounds TLV change.

The ACGIH acknowledges that its TLVs are not consensus standards and do not take into account economic or technical feasibility issues. The ACGIH recognizes that that some governmental entities may utilize its TLVs in adopting standards.

Where exposures are assessed to be over the TLV, many approaches can be considered in the workplace for reducing exposure levels to contaminants to levels below the TLV, including these new TLVs related to chromium compounds.

## ACGIH CHROMIUM COMPOUNDS TLV CHANGE FAQs:

### What changed?

The American Conference of Governmental Industrial Hygienists (ACGIH) adopted new Threshold Limit Values (TLVs) for Chromium and Inorganic Compounds.

The TLV for inhalable hexavalent chromium compounds [Cr(VI)] was reduced from 0.05 mg/m<sup>3</sup> to a new TLV of 0.0002 mg/m<sup>3</sup>. A Short-Term Exposure Limit (STEL) of 0.0005 mg/m<sup>3</sup> for inhalable hexavalent chromium compounds was also established.

The TLV for inhalable inorganic chromium (III) compounds was reduced from 0.5 mg/m<sup>3</sup> to is a new TLV of 0.003 mg/m<sup>3</sup>.

This reduction in the TLVs by ACGIH does not specifically target welding products or applications. The fume from some welding consumables - and from some other allied processes - does contain chromium and chromium compounds which is why this change is of importance to the welding industry.

The ACGIH continues to place Cr(VI) in Category A1: Confirmed Human Carcinogen.

### **Why did the American Conference of Governmental Industrial Hygienists (ACGIH) decide to make these changes to the TLVs for chromium compounds?**

Although the fume from some welding consumables does contain chromium and chromium compounds, it appears that the ACGIH's latest TLV reduction for hexavalent chromium (Cr(VI)) is based on animal studies and studies involving workers in the chromium smelting, ferrochromium production, chromite ore mining and chrome plating industries. No new studies on the impact of chromium compounds on human health were discussed. The ACGIH states that this new TLV for Cr(VI) compounds should minimize the potential for respiratory sensitization and the likelihood of asthmatic responses in already sensitized individuals.

The new TLV for inhalable inorganic chromium (III) compounds is based upon studies of Finnish chrome workers.

### **What is the ACGIH, and is it part of the government?**

The ACGIH, is a non-profit, non-governmental corporation dedicated to promoting worker health and reducing exposures to environmental health stressors in the workplace.

### **What exactly is a TLV?**

According to the ACGIH, a TLV represents the level of exposure to which nearly every worker can be exposed throughout their (8-hours per day, 40 hours per week) working career without adverse health effects. They also caution that TLVs are not intended to represent fine lines between safe and unsafe exposure levels.

### **Is the TLV a legal or regulatory exposure limit?**

No, the TLV is not a regulatory limit such as OSHA's Permissible Exposure Limit (PEL). The ACGIH acknowledges that its TLVs are not consensus standards and do not take into account economic or technical feasibility issues. The ACGIH acknowledges that some governmental entities utilize its TLVs in adopting standards. The Permissible Exposure Limit (PEL) of 5.0 µg/m<sup>3</sup>, remains the US exposure limit for Cr(VI) compounds enforced by OSHA.

### **Should we follow the new TLVs – and if so – why?**

The ACGIH is a long-standing body that is comprised of professional industrial hygienists and environmental health scientists whose fundamental task is to review applicable health studies, monitor reports related to the health effects and risks of exposure to compounds encountered

in the workplace, and to advise regarding safe exposure levels. Lincoln Electric continues to recommend that exposures in the workplace be controlled to the TLV or the applicable regulatory exposure limit, whichever is the more conservative.

### **Do countries outside the U.S. adopt the ACGIH TLVs as their legal regulatory exposure limit?**

In short, yes. A number of governments have adopted exposure limits that are equal to the ACGIH TLVs. Countries with exposure limit standards equivalent to the 2017 TLVs include Canada, many European countries, Japan, Malaysia, Mexico and much of South America.

### **How do I know if a welder's exposure is below a TLV?**

The welder's breathing zone and general area should always be clear of any visible fume or particulate. In order to confirm that exposures are below the TLV or the OSHA PEL (or other applicable local limit), a qualified individual such as a professional industrial hygienist must conduct a proper exposure assessment in your workplace.

### **If any exposures are over a TLV, how can they be reduced to acceptable levels?**

Many approaches should be considered for the workplace in order to meet applicable workplace exposure limits, including the new TLVs for chromium compounds. These might include: a change in the welding process or procedure to reduce the rate of fume production where consistent with application requirements, the use of engineering controls such as local exhaust ventilation, work practice improvements and work process design changes. Should these or other options prove infeasible or inadequate, respiratory protection may also be necessary, such as the use of positive pressure options like supplied-air and Powered Air Purifying (PAPR) systems.

### **What if we still have questions?**

If you need any assistance you can contact your Lincoln Electric local sales representative or the Lincoln Electric Corporate EHS Department. Direct inquiries can be addressed to [Lincoln Electric Customer Support](#). Lincoln will continue to work with customers to develop the solutions they need to weld effectively and meet these new TLVs. To learn more about the ACGIH and its TLVs, including the TLVs for chromium compounds, visit <https://www.acgih.org/science/tlv-bei-guidelines/policies-procedures-presentations/>.

More information about OSHA and its PELs can be found at <https://www.osha.gov/dsg/annotated-pels/>

### **Where can I find more Information?**

Please consider consulting the following references for more details:

- The ACGIH TLV webpage: <https://www.acgih.org/science/tlv-bei-guidelines/policies-procedures-presentations/>
- The OSHA Information webpage on Chromium: <https://www.osha.gov/SLTC/chromium/index.html>

- "[ATSDR Chromium ToxFAQs](#)". Agency for Toxic Substances and Disease Registry (ATSDR), (October 2012). Answers the most frequently asked health questions about chromium.
- "[ATSDR Chromium Tox Profile](#)". Agency for Toxic Substances and Disease Registry (ATSDR), (September 2012). Characterizes the toxicological and adverse health effects information regarding chromium and chromium compounds.
- "[Public Health Statement for Chromium](#)". Agency for Toxic Substances and Disease Registry (ATSDR), (September 2012). Describes chromium and its effects on humans.