

# Chromium VI in leather has been well managed for over 100 years

Environmental and leather chemistry expert **Dr Catherine Money** explains the significant impact the proposed European regulation for Cr VI of 1mg/kg could have on the global leather industry.



**A**pproximately 80% of global leather is tanned with chromium III (Cr III) salts. Over 0.2% of the European population is said to be sensitive to chromium, but chrome tanned leather has been worn for over 100 years, and this sensitivity has been known but managed; some chromium VI (Cr VI) would always have been present in chrome leathers. Tanners and others who are allergic to chromium use barrier creams, made from ascorbic acid (vitamin C) and EDTA, and cortisone ointments to control dermatitis. People allergic to leather shoes can wear barrier socks or

synthetic shoes if necessary.

The best leathers for shoes and many other items are chrome tanned. Allergy to Cr VI is a greater problem than allergy to Cr III, but Cr III sensitivity can also be a problem. A 2006 study by MB Hansen demonstrated that elimination of Cr VI in leather would not overcome chrome allergies to leather.

The issue of Cr VI in leather has recently been raised due to newly proposed European legislation. The European Chemicals Agency (ECHA) has proposed (April 12, 2019 – Annex XV Restriction Report Proposal for a Restriction Substance Name(s): Skin Sensitising Substances) that the limit should be lowered from its current 3ppm (mg/kg) limit to 1ppm, so that the leather industry is in line with the textile industry. In an article published on its website, ILM featured a 2019 paper by Dr Will Wise, Research Leader at the Institute for Creative Leather Technologies (ICLT) in Northampton, UK, which explains the fundamental inability of the current Cr VI test methods to reach such low levels of detection reliably. (Article published October 25, 2019)

If Europe introduces the proposed regulation for Cr VI of 1mg/kg, then the world leather industry will be severely threatened. There is, at present, no viable alternative to chrome in shoe leather and there is no viable way to ensure 1mg/kg Cr VI in chrome tanned leather articles.

Peanut allergy is estimated to affect about 1% of children and adults worldwide and is a far worse allergy than Cr VI. Peanut allergy is one of the most common causes of

food-related death. However, peanuts are not banned but are avoided by those allergic to them. It is far more difficult to avoid eating products containing peanuts than to avoid dermatitis due to contact with chrome tanned leathers.

Hansen's results show that the proposal of Cr VI < 1 mg/kg is unlikely to overcome the dermatitis issue with chrome tanned leather. This study is of particular relevance because it tested leather samples and showed that 50% of the allergic reactions were caused by leathers with Cr VI < 3 mg/kg.

## Controlling Cr VI in leathers

Considerable research has determined processes to be used to produce leather containing less than 3mg Cr VI/kg, and these processes are now used in Europe. However, Cr VI can be generated in these leathers during storage and use. Cr VI is formed in chrome tanned leathers during manufacture of articles, exposure to heat, low humidity, daylight and UV light. Ageing tests do not simulate the real ageing of leather over months rather than days.

## If Europe introduces the proposed regulation for Cr VI, the leather industry will be severely threatened

## Conclusion

- The proposed restriction of 1mg/kg Cr VI in leather is not justified and should not be introduced.
- Cr III and Cr VI are both capable of eliciting dermatitis at low concentrations.
- The dermatitis is controlled with barrier creams, made from ascorbic acid (vitamin C) and EDTA, or cortisone ointments.
- People allergic to chromium can wear barrier socks or wear synthetic shoes.
- Hansen's 2006 study found that 30% of chrome-allergic patients reacted to leathers which contained less than 3mg Cr VI/kg.
- Cr VI formation occurs during the life of leather products.
- The global leather industry must not be ruled by European textile industry Cr VI regulations. |