

**Center for Public Environmental Oversight • Clean Water Action • Environmental Working
Group • Erin Brockovich, Inc. • Integrated Resource Management, Inc.
• Natural Resources Defense Council**

November 16, 2011

Fran Kammerer
Office of Environmental Health Hazard Assessment
1001 I Street, 23rd Floor
Sacramento, California 95814

Re: Proposed Amendment to Section 25707(B), Route of Exposure: Hexavalent Chromium (VI)

Dear Ms. Kammerer:

We are writing on behalf of the Natural Resources Defense Council, Center for Public Environmental Oversight, Clean Water Action, Environmental Working Group, Erin Brockovich, Inc., and Integrated Resource Management, Inc. to support amending Section 25707 to remove the reference to hexavalent chromium in Section 25707(b)(4) as posing no significant risk when ingested, based on recent scientific findings that establish that chromium (hexavalent compounds) can be carcinogenic by the oral route. Hexavalent chromium (CrVI) is a known carcinogen in humans. Multiple epidemiologic studies have shown cancers of the lung and respiratory tract in workers in the electroplating industry and other chromium-exposed worker populations. The hypothesis that CrVI may be carcinogenic only when inhaled has been disproven in both animals and humans. A large and determinative study by the National Toxicology Program (NTP) published in 2008, found statistically significant and dose-related tumors of the small intestine in mice and in the oral cavity in rats.ⁱ Human epidemiologic studies on ingestion of CrVI have also identified a statistically significant increase in mortality related to stomach cancers in populations exposed to the chemical via drinking water.^{ii iii}

Even industry groups concede that CrVI causes cancer via ingestion in lab animals, but argue that it is completely converted to harmless CrIII in the stomach in humans, and therefore poses no risk from drinking water. However, this argument presumes that everyone in the population has a stomach that is capable of rapidly reducing CrVI to CrIII prior to any contact with cells. Such an assumption is almost certainly false, because the reduction process is reliant on a very acidic gastric environment, which is not present in newborn babies and in the millions of people that take antacid medications or prescription medications to treat gastritis, ulcers, and gastrointestinal reflux disease. OEHHA previously considered this argument about rapid reduction of CrVI to CrIII in the stomach, and rejected it on the basis of the widespread use of acid-reducing medications, and data on the pH of the stomach in babies.^{iv}

OEHHA has previously concluded that CrVI causes cancer when ingested, and this conclusion forms the basis of OEHHA's Public Health Goal for this compound in drinking water. In order to be consistent with

these findings, section 257071 must be clarified to remove CrVI from the list of substances that pose no risk when ingested.

Thank you for considering these comments.

Sincerely,

Center for Public Environmental Oversight

Lenny Siegel, Executive Director

Clean Water Action

Andria Ventura, Program Manager

Environmental Working Group

Renee Sharp, Director, CA Office and Senior Scientist

Erin Brockovich, Inc.

Erin Brockovich

Integrated Resource Management, Inc.

Robert W. Bowcock, Managing Director

Natural Resources Defense Council

Gina Solomon, MD, MPH, Senior Scientist

ⁱ <http://ntp.niehs.nih.gov/?objectid=E55A03D8-F1F6-975E-7DEA927E8A8EB57D>

ⁱⁱ Linos A, Petralias A, Christophi CA, Christoforidou E, Kouroutou P, Stoltidis M, Veloudaki A, Tzala E, Makris KC, Karagas MR. Oral ingestion of hexavalent chromium through drinking water and cancer mortality in an industrial area of Greece--an ecological study. *Environ Health*. 2011 May 24;10:50.

ⁱⁱⁱ Beaumont JJ, Sedman RM, Reynolds SD, Sherman CD, Li LH, Howd RA, Sandy MS, Zeise L, Alexeeff GV. Cancer mortality in a Chinese population exposed to hexavalent chromium in drinking water. *Epidemiology*. 2008 Jan;19(1):12-23.

^{iv} Final technical support document on public health goal for hexavalent chromium in drinking water. Cal OEHHA. July 29, 2011. p.78-79. <http://oehha.ca.gov/water/phg/072911Cr6PHG.html>