

# Chromium 6

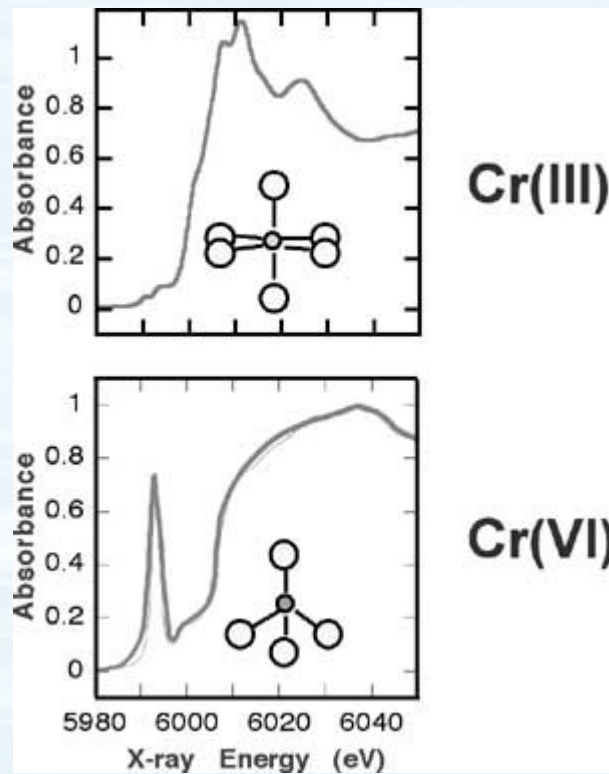
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An overview for the Sierra Club 2012

# What is Chromium 6

- A heavy metal
- A chemical compound where the element Chromium exists in the +6 oxidation state

# Structure of Chromium 6<sub>(1)</sub>



# Sources of Cr6+

- Paint and primers
- Autobody shops
- Plastics
- Electroplating
- Byproduct of nuclear fuel production

# Effects of Cr6+<sup>(2)</sup>

- Recognized carcinogen
- Suspected respiratory toxicant

## Recent regulatory developments

- July 29 2011 Office of Environmental Health Hazard Assessment (OEHHA) proposed new Public Health Goal (PHG) of 0.02 ppb

- State of California must set Maximum Contaminant Level (MCL) and Public Health Goal (PHG)

# BUT

- Data collected in the early 2000's were at the 1ppb level
- New PHG is 50 times below detection level for the latest data



- EPA will issue guidelines on new monitoring levels
- Total MCL for Chromium already exists at 50ppb

# At present

- CDPH has an unregulated contaminant monitoring rule (UCMR) and collects voluntary data on Cr6+
- CDPH anticipates 18 to 24 months to develop MCL formal rules
- This takes into account the actual feasibility and economic cost of the new 0.02 ppb level

# This would include the following

- Drafting legislation
- Development of actual test at new level
- Estimate of populations exposed to Cr6+
- Costs of treatment
- Cost benefit analysis
- Review by Department of Finance
- Submitting to Office of Administrative law

- 45 public commentary period
- Second 15 day public commentary period
- Response to comments
- Submit to OAL for final review
- Upon approval, sign into law within 30 days

# Treatment options

- As investigated by the city of Glendale<sup>(3)</sup>

Weak base anion exchange (WBA)

Strong base anion exchange (SBA)

Reduction/coagulation/filtration (RCF)

# Treatment options

- Pilot projects were built by Glendale
- 425 GPM WBA
- 100 GPM RCF

# Treatment options-RCF

- Similar to conventional treatment
- Ferrous sulfate is used to reduce  $\text{Cr}^{6+}$  to  $\text{Cr}^{3+}$  which is then removed via flocculation
- Adjustments for Ph and aeration may be needed
- Media filtration needed
- Cr levels reduced below 1ppb

# Treatment options-WBA

- Anion exchange (similar to reverse osmosis)
- Columns last about a year
- Cr levels reduced to below 1ppb
- SBA not used due to excess usage of salt and problems of brine disposal
- All processes produces hazardous waste



# Sources and references

#1

<http://www2.slac.stanford.edu/tip/2004/apr02/chromate.htm>

#2 [http://scorecard.goodguide.com/chemical-profiles/summary.tcl?edf\\_substance\\_id=7440-47-3\(Cr6%2B\)](http://scorecard.goodguide.com/chemical-profiles/summary.tcl?edf_substance_id=7440-47-3(Cr6%2B))

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