Hexavalent Chromium: Will There Be A New [EPA] Drinking Water Standard?

WESTCAS Fall 2016 Conference
Regulatory Session
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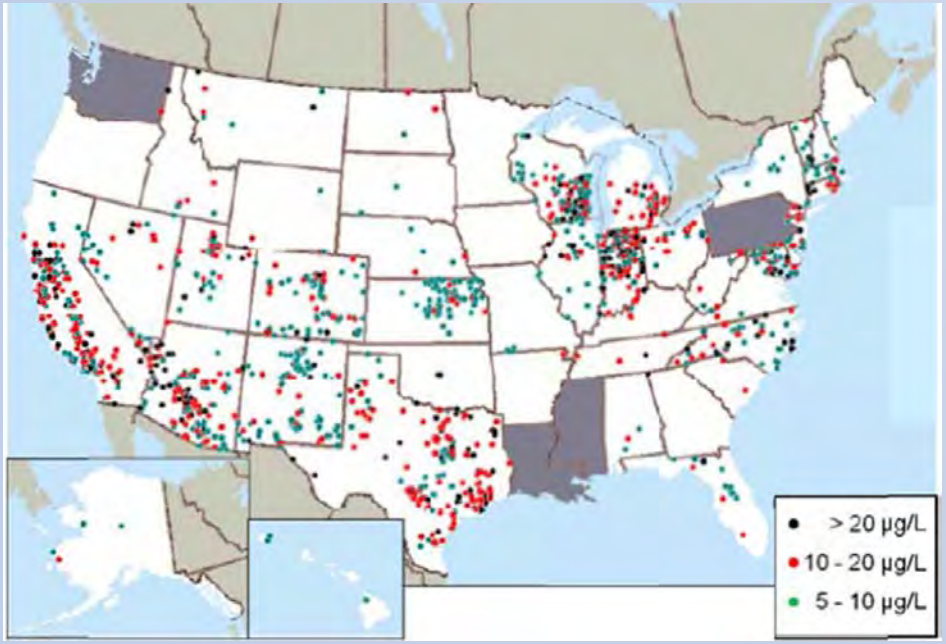
EPA's Threshold to Regulate

- ✓ Occurrence Data
  - UCMR3: widespread occurrence (detectable levels found in 76% of samples tested)
- ? Contaminant may cause health effects
- ? Administrator determines MCL presents meaningful opportunity to reduce health risk



EPA's Cr6 Risk Assessment

- Still at Step 1 of 7 (draft development)
- Draft assessment released Sept 2010
- 2011 Peer Review – need to consider new health effects information
- Oct 2014 – last public meeting to discuss health effects studies
- Date for next draft keeps sliding – now early 2017

Other Risk Assessments

- July 2011 - California Public Health Goal = 0.020 ppb, results in 10 ppb MCL (2014)
- September 2015 - Health Canada releases draft risk assessment to raise total Cr MAL from 50 ppb to 100 ppb
- September 2016 – TCEQ releases Cr6 oral reference dose equivalent to 100 ppb

Other Drivers & Open Discussion

- Public perceptions
  - Media's influence
  - Environmental Working Group
- Political
- Legal
  - CA Lawsuits

Cr6 Water Treatment Development

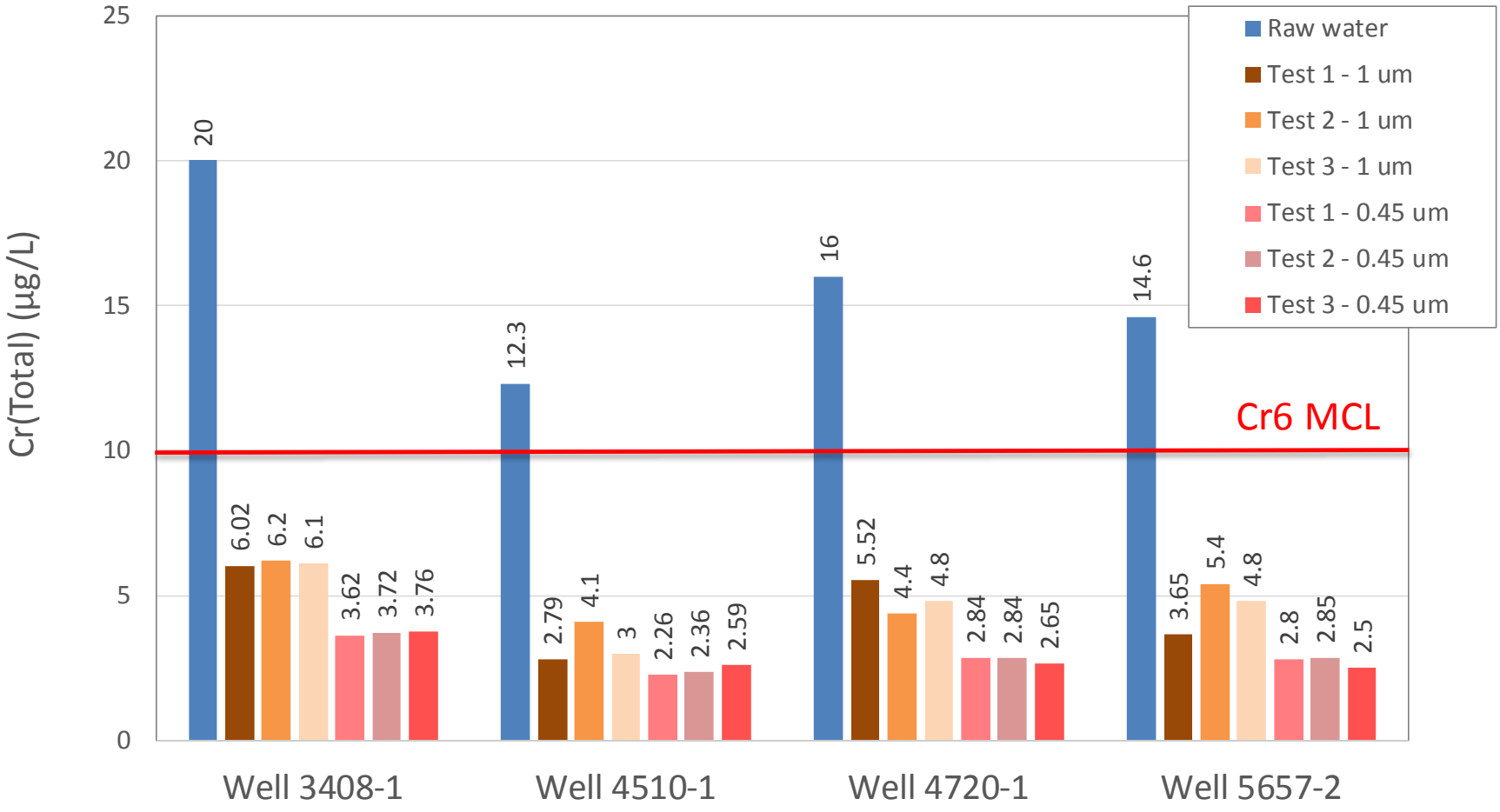
Stannous Chloride ($SnCl_2$) Water Treatment

- Salt made of tin and chloride ($SnCl_2$)
- Drinking water additive used to protect pipes
- Tin like iron reduces Cr6 to Cr3 and has low toxicity – food products, water plumbing
- Evaluated for Chromium-6 (Cr6) water treatment (2004)
  - Removed 40-60% of Total Cr in 3 water types tested
  - Did not meet City of Glendale's 5 ppb goal for Cr6

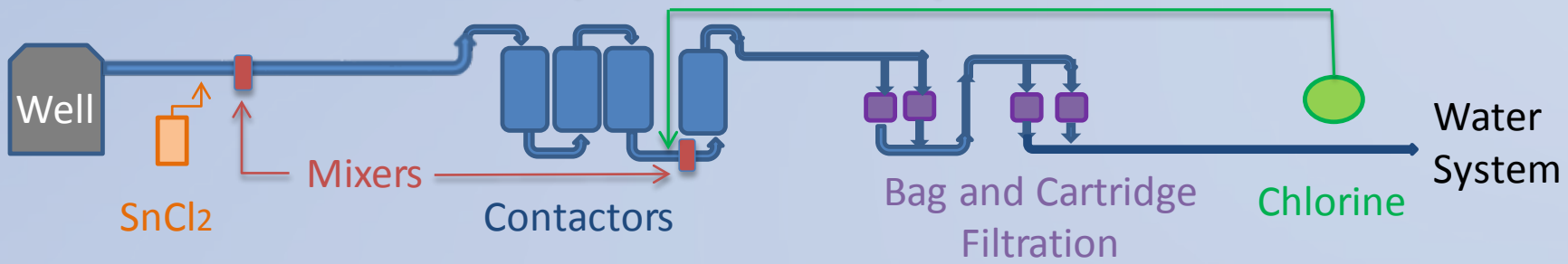
CVWD Evaluation Results

- $SnCl_2$ Desktop evaluation
  - No regulatory challenges or drinking water health effects identified
  - No supply or use challenges expected (drinking water use recertification in progress)
  - No unintended consequences found
- Completed Bench Tests for representative wells
  - Low $SnCl_2$ doses (<1 mg/L) achieved rapid reduction of Cr6 to Cr3 (<5 min)
  - Total Cr levels in treated water are reduced below the 10 ppb MCL with 1 and 0.45 micron filters

Tests with Pre-filter Chlorination
0.75 mg/L SnCl2 dose, 5 min reduction time



Well Site $SnCl_2$ Treatment Concept



- Low doses (< 1 ppm) effective in bench tests
- Most SnCl2 removed with Cr during bench test filtration

- Less costly, simpler vessels and plumbing (similar contact time)
- Amenable to lower profile design

- 5 micron bag filters included in current design
- 1 micron cartridge filters removed enough Cr to meet MCL during bench test
- Disposable used bags & cartridges would represent the treatment process waste