Drinking Water Regulatory Challenges for Bay Delta Water Users

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Regulators' Expectations

- USEPA and CA DHS expect drinking water utilities to meet all National Primary Drinking Water Regulations and CA DHS standards
- Regardless of circumstances

Drinking Water Utility Goals

- Drinking water standards are generally considered to be protective of public health
- Drinking water utilities regard compliance with regulations as proof of providing adequate protection
- Thus, a major goal is regulatory compliance

Source Water Quality Issues

- Drinking water = ✋(source water + treatment)
  - Regulations apply to drinking water
- If source water too poor, treatment may be problematical
  - Treated water may remain unsafe
  - Treated water may be unacceptable to consumers
  - Treated water may not meet standards
  - Treatment may βεχομε too constrained to handle unusual water quality changes
  - Treatment may be too expensive for consumers

Bay Delta Water Quality Issues

- Tributary waters are clean; passage through Delta causes degradation
  - Seawater intrusion yields high salinity, bromide
  - Delta agriculture and restorations yield high TOC
  - Increased wastewater loadings from Delta urbanization not adequately controlled for drinking water source protection
- Export operations protect fish, water quantity; not usually water quality

Implications for Utilities

- Drinking water utilities are currently in compliance with recent regulations
  - Treatment and water quality are sufficient, although sometimes tight
- However, future DW regulations may be so stringent that treatment will be too difficult and/or costly without source water quality improvements

CALFED Drinking Water Goals

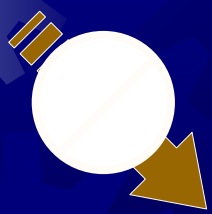
- A CWA beneficial use of Bay Delta waters is for drinking water supply
- Protection of Bay Delta water quality to help meet public health goals is a cornerstone of CALFED
- Criteria for TOC and bromide, or an "equivalent level of public health protection" are in the CALFED ROD

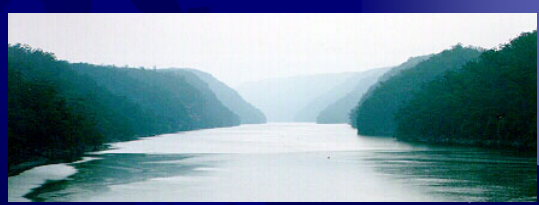
Upcoming Regulations Related to Bay Delta WQ

- Proposed
  - Stage 2 D/DBP Rule
  - Long-term 2 ESWTR
- Under discussion
  - Distribution System Regulations
  - Contaminant Candidate List 2
    - MTBE, perchlorate
  - 6-Year Review: Lead

Long-Term 2 Enhanced Surface Water Treatment Rule

- Provides for additional disinfection to control *Cryptosporidium*
  - Will require extensive initial *Cryptosporidium* and *E. coli* monitoring in sources
  - Monitoring results will determine additional treatment requirements beyond IESWTR/ LT1ESWTR
  - Disinfection profiling for all systems
  - All finished water reservoirs must be covered
- Rule proposed August 11, 2003
- Final Rule expected in 2005





Monitoring Requirements

- Details very specific to system type
  - Filtered systems serving 10,000 or more people monitor for *Cryptosporidium, E. coli* and turbidity
    - At least monthly for 24 months
  - Filtered systems serving <10,000 monitor initially only for *E. coli*
    - Biweekly for 12 months
    - If above benchmarks, then must do *Cryptosporidium* twice a month for 12 months
  - No monitoring for filtereds if 5.5-log treatment
  - All unfiltered systems monitor for *Cryptosporidium*
    - 10,000 or more: monthly for 24 months
    - <10,000: twice a month for 12 months
    - No monitoring if 3.0-log *Crypto* inactivation in place

Filtered System "Bins" and Treatment Requirements

- All IESWTR/ LT2 ESWTR requirements continue to apply
- Four categories (bins) based on results:
- Bin 1, *Crypto* <0.075 oocyst/L
  - No additional treatment (assume 3-log already)
- Bin 2, *Crypto* between 0.075-1.0 oocysts/L
  - Additional treatment to total 4.0-log
- Bin 3, *Crypto* between 1.0-3.0 oocysts/L
  - Additional treatment to total 5.0-log
- Bin 4, *Crypto* >3.0 oocysts/L
  - Additional treatment to total 5.5-log

LT2 ESWTR Implications for Bay Delta DW Users

- No mandatory *Cryptosporidium* disinfection (as initially feared)
- With respect to Bins, Carol Di Giorgio may have this answer…
- But data have suggested that *Cryptosporidium* levels are relatively low in the Delta
  - Most should be in Bin 1 or Bin 2

Stage 2 Disinfectants and Disinfection Byproducts Rule

- Will ultimately require TTHM and HAA5 MCL compliance at each monitoring point in distribution system
  - No averaging across distribution
  - Would control for DBP "hot spots“
  - More linkage between wholesalers and retailers
- Initial Distribution System Evaluation
  - Monitoring requirement to help determine compliance points
- Proposed August 18, 2003
- Final Rule expected in 2005

S2 D/DBPR Implications for Bay Delta DW Users

- DBP MCLs remain the same (unlike initial fears)
- But, control of DBP hot spots may not be possible by corrections within the distribution system proper
- May need to limit DBPs out of the plant
  - Control of TOC, bromide helpful
  - Use of alternative disinfectants (UV, ClO2)
- How much can be done without large-scale upgrades?

New DBP Worries, Though

- Recent studies on DBPs from alternative disinfectants show all sorts of new ones
- Early toxicity tests are showing some potent ones
  - Iodinated DBPs, especially iodoacetate
  - Halonitro DBPs
- Seawater + chloramine = BAD NEWS
  - So are Bay Delta, desalination waters a problem?

Others Regulatory Concerns?

- Simultaneous compliance can be difficult
- Corrosion control under Lead and Copper Rule
- New MCLs for MTBE, NDMA, perchlorate,…???

What's Happening with Lead?

- Lead problem in Washington, DC
  - Lead levels in some homes very high
  - Much news and finger-pointing
- Congress asking for facts
  - State compliance/enforcement data
  - Re-evaluation of Pb/Cu Rule risk reduction
  - Does corrosion control work?
- Will we get a new rule?

Corrosion Control *vs* Other Regulatory Requirements

- Simultaneous compliance with Disinfectants/Disinfection Byproducts Rules, Surface Water Treatment Rules and Total Coliform Rule is problematical
  - pH adjustments
  - Enhanced coagulation
  - Disinfectants
  - Disinfectant residuals

For Example, Changing Disinfectants

- Switch from chlorine to ozone to control DBP formation
  - pH, oxidation and other WQ changes
- Switch residual from chlorine to chloramines to minimize DBPs in distribution
  - Different oxidation potential
  - Can cause sloughing or release, especially if not done carefully

Contaminant Candidate List 2

- EPA recycled 51 leftover CCL1 contaminants for CCL 2
  - Published April 2, 2004
- EPA must review at least five
- Perchlorate, MTBE, triazines (Atrazine) most likely candidates
- But, nothing suggests new federal MCLs for anything in Bay Delta waters anytime soon

Final Thoughts

- Drinking water utilities, you have my sympathies…..