UNREGULATED CONTAMINANTS IN DRINKING WATER

THE LONG ROAD SHOULD BE "COMING REGULATED"

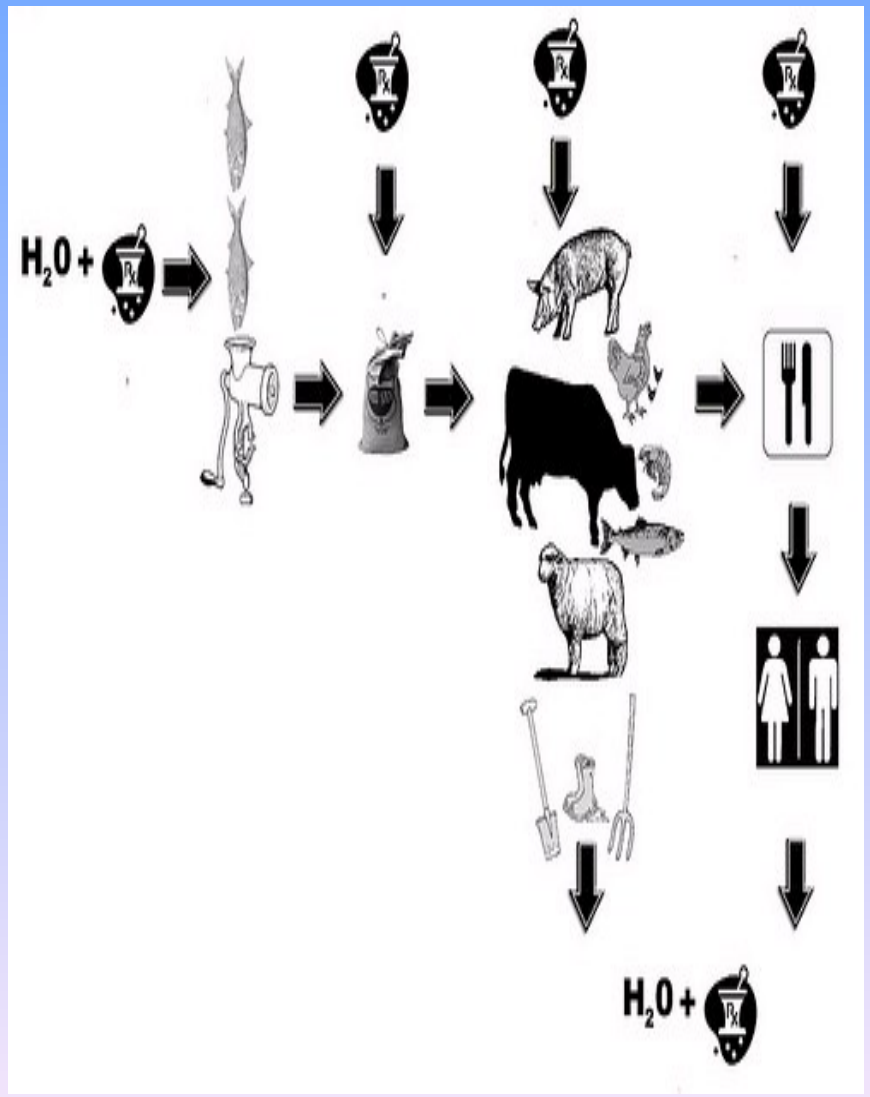
TOPICS

- EMERGING OR UNREGULATED CONTAMINANTS?
- CEC PROGRAM AT MDH
- GUIDANCE VS STANDARDS
- REGULATION PROCESS
- 4 CONTAMINANTS TO BE REGULATED ?

"EMERGING CONTAMINANTS"

Contaminants of emerging concern are substances that have been released to, found in, or have the potential to enter Minnesota waters (groundwater or surface water) and:

- do not have Minnesota human health-based guidance (how much of a substance is safe to drink);



MDH CEC PROGRAM

- *Mission: Investigate and communicate the health and exposure potential of contaminants of emerging concern in drinking water*

- Program Steps:
  - Collaborate with partners and the public to identify contaminants of interest.
  - Investigate potential sources, exposures, and health risks of contaminants in drinking water.
  - Determine how much of a contaminant in water is safe to drink.
  - Inform partners and the public of appropriate options for action and decision-making.

Chemicals evaluated:

- Acetominophen (pain reliever)
- Bisphenol A (BPA)
- Phthalates
- Microcystins (HAB)
- DEET (mosquito repellent)
- Triclosan (anti-bacterial soaps)

MDH HEALTH BASED GUIDANCE

- 3 Guidelines – HRLs, HBVs, RAA
- Not enforceable
- Some agencies do use or "enforce"
- Purely health based, do not consider the feasibility of detecting the compound or achieving the values
- Range of values (tiered)

HRLs & HBVs

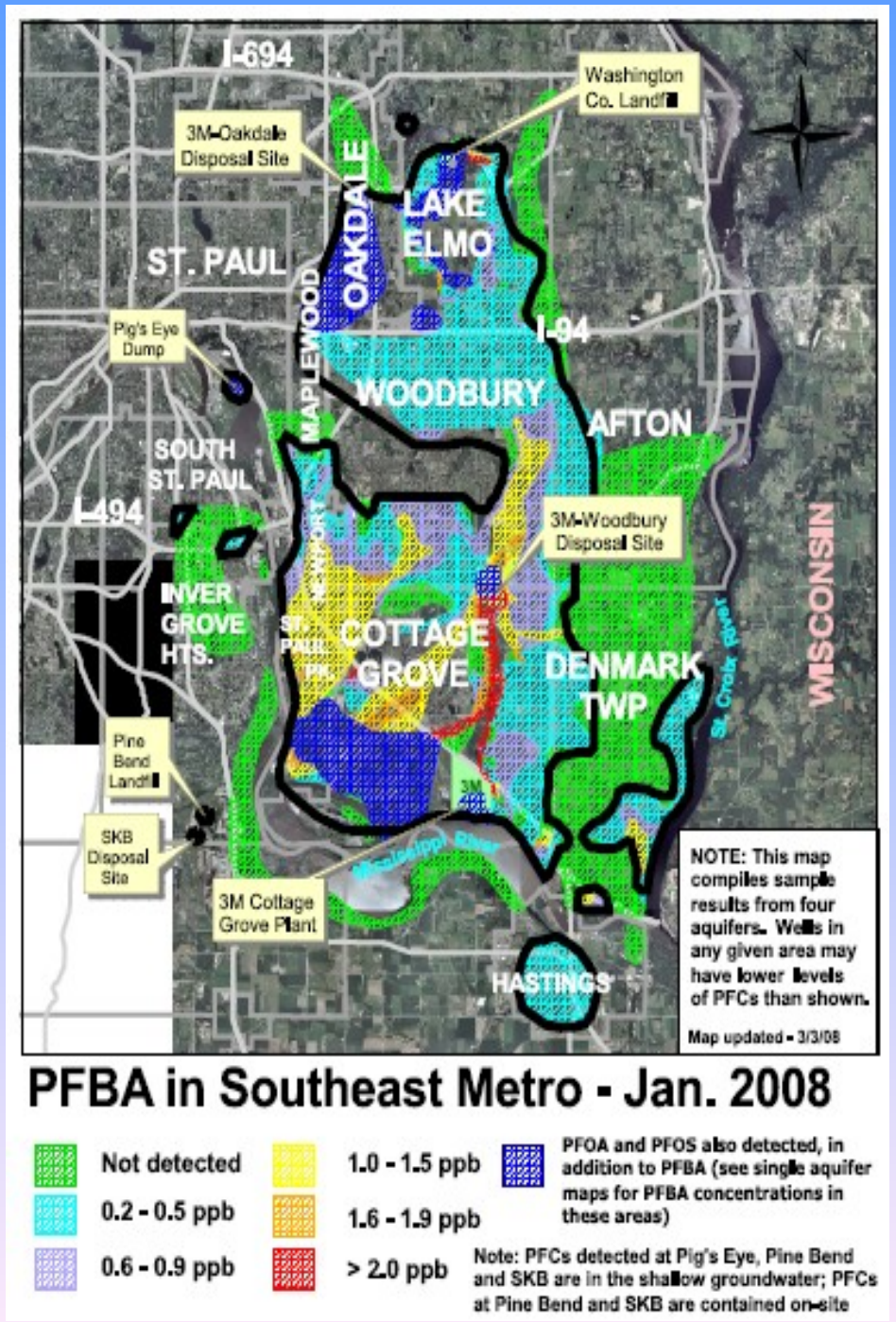
- Concentration of a chemical in water (or ambient air) that is unlikely to pose a health risk to the general public
- Designed to protect vulnerable sub-populations, such as infants and children (tiered-advice)
- HBVs have not been promulgated
- To become a HRL, the chemical must be

NATIONAL PRIMARY DRINKING WATER STANDARDS

- Maximum contaminant levels (MCLs)
  - *Set by EPA – MDH enforces (primacy)*
  - *MCLG set first: level at which a person could drink 2L every day for 70 years with no ill effects. Set to zero for carcinogens*
  - *MCL set close as possible to MCLG, taking into account treatment technology and cost*
  - *Usually are a quarterly running annual average*
  - *Examples – arsenic, benzene, uranium*
- Treatment Techniques
  - *Used in lieu of a quantifiable number*
  - *CxT and turbidity for surface water systems*

EAST METRO PFCs

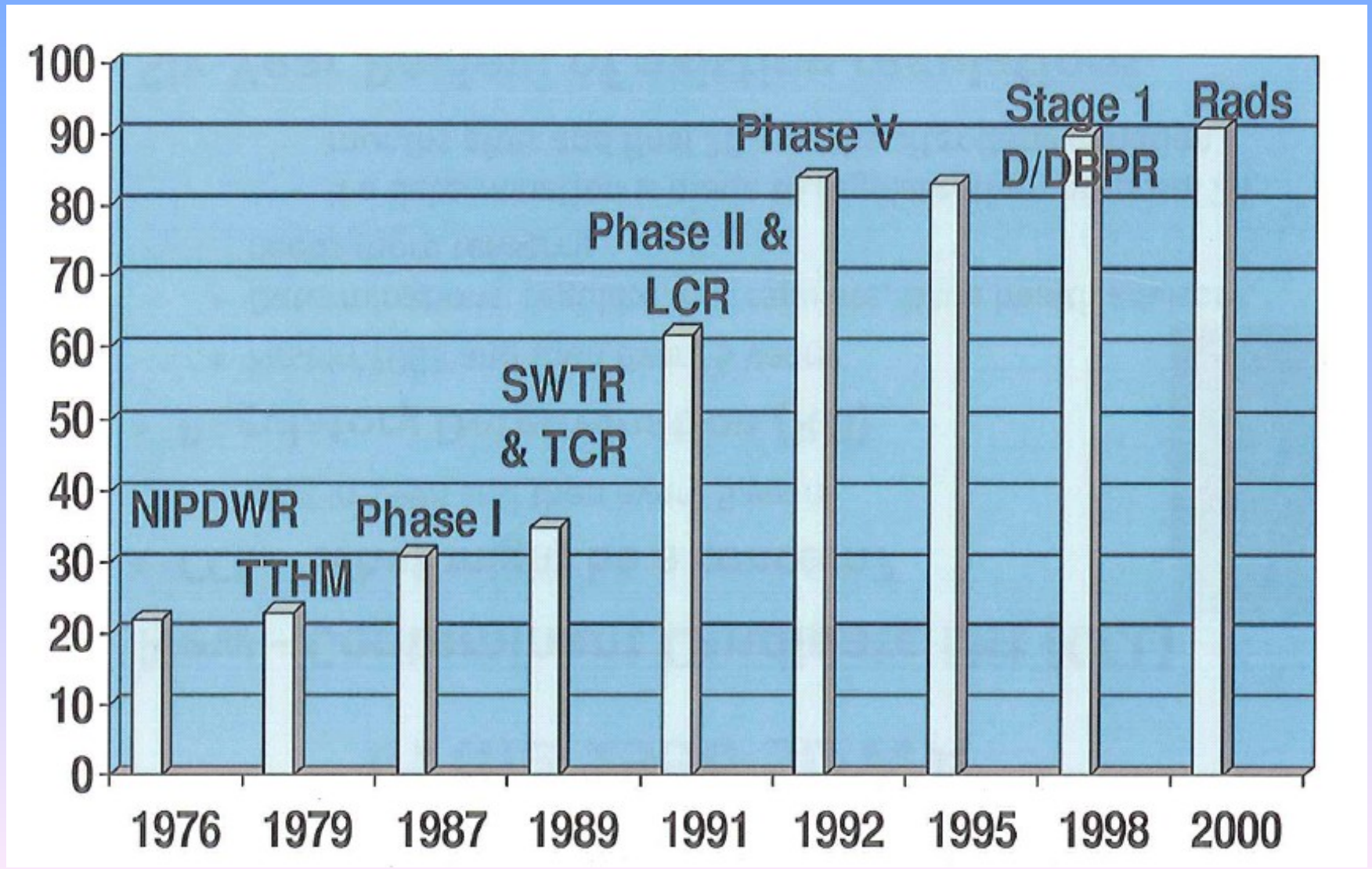
- In 2004 began to detect in East Metro PWSs
- No MCLs existed for any of the PFCs
- MDH had to develop health based guidance
- These values were used for "compliance" in lieu of MCLs



WHERE WE STAND NOW

- EPA finalized 18 drinking water regulations between 1975-2006
  - Nine Prior to 1996 SDWA Amendments
    - *NIPDWRS, Fluoride, TTHMs, VOCs, TCR, SWTR, Phase II & V Rules, and LCR*
    - *Most regs based on numerical MCLs using quarterly running annual average*
  - Nine after 1996 Amendments
    - *Arsenic, Radionuclides, FBR, and M/DBP Cluster, IESWTR, LT1 and LT2 ESWTRS, and GWR*
    - *Generally more complex regs*
    - *Last new contaminant regulated was uranium in 2000*

NUMBER OF REGULATED CONTAMINANTS (Source – AWWA)



Two Regulatory Processes in the 1996 SDWA

- Contaminant Candidate List (CCL)
  - ✓ Primary source of priority contaminants for which research is conducted to make decisions about whether regulations are needed
  - ✓ Contaminants on the list are known or anticipated to occur in PWSs, but are currently unregulated
  - ✓ Used in tandem with occurrence data to make regulatory determinations
- Six-Year review of existing regulations

CCL

- CCL1
  - *60 contaminants reviewed in 1998*
- CCL2
  - *51 contaminants reviewed in 2005*
- CCL3 (2009)
  - *Final CCL3 includes 104 chemicals or chemical groups and 12 microbiological contaminants*
  - *Evaluated 7,500 candidates for the CCL3*

UNREGULATE CONTAMINANT MONITORING RULE (UCMR)

- UCMR1 (2001-2003)
  - *24 chemicals and one bacteria genus*
- UCMR2 (2008-2010)
  - *25 chemicals*
- UCMR3 (2013-2015)
  - *28 chemicals and 2 viruses*
    - 7 VOCs, 6 metals, 1 SOC, chlorate, 6 PFCs, 7 hormones
  - *Includes distribution system monitoring*

Regulatory Determination (RD)

- Formal decision on whether to regulate a specific contaminant
- Required to make a RD on at least 5 from the CCL
- First RD was in 2003, and then every five years
- Determinations:
  - ✓ *Regulate*
  - ✓ *Not regulate*
  - ✓ *Health advisory*

RD continued

- Law requires three areas to be considered when making an RD
  - ✓ *The contaminant may have an adverse health effect*
  - ✓ *The contaminant is know or likely to occur with a frequency at levels of public health concern*
  - ✓ *National regulation presents a "meaningful opportunity" for health risk reduction*
- 9 RDs from CCL1 in 2003

6 YEAR REVIEW

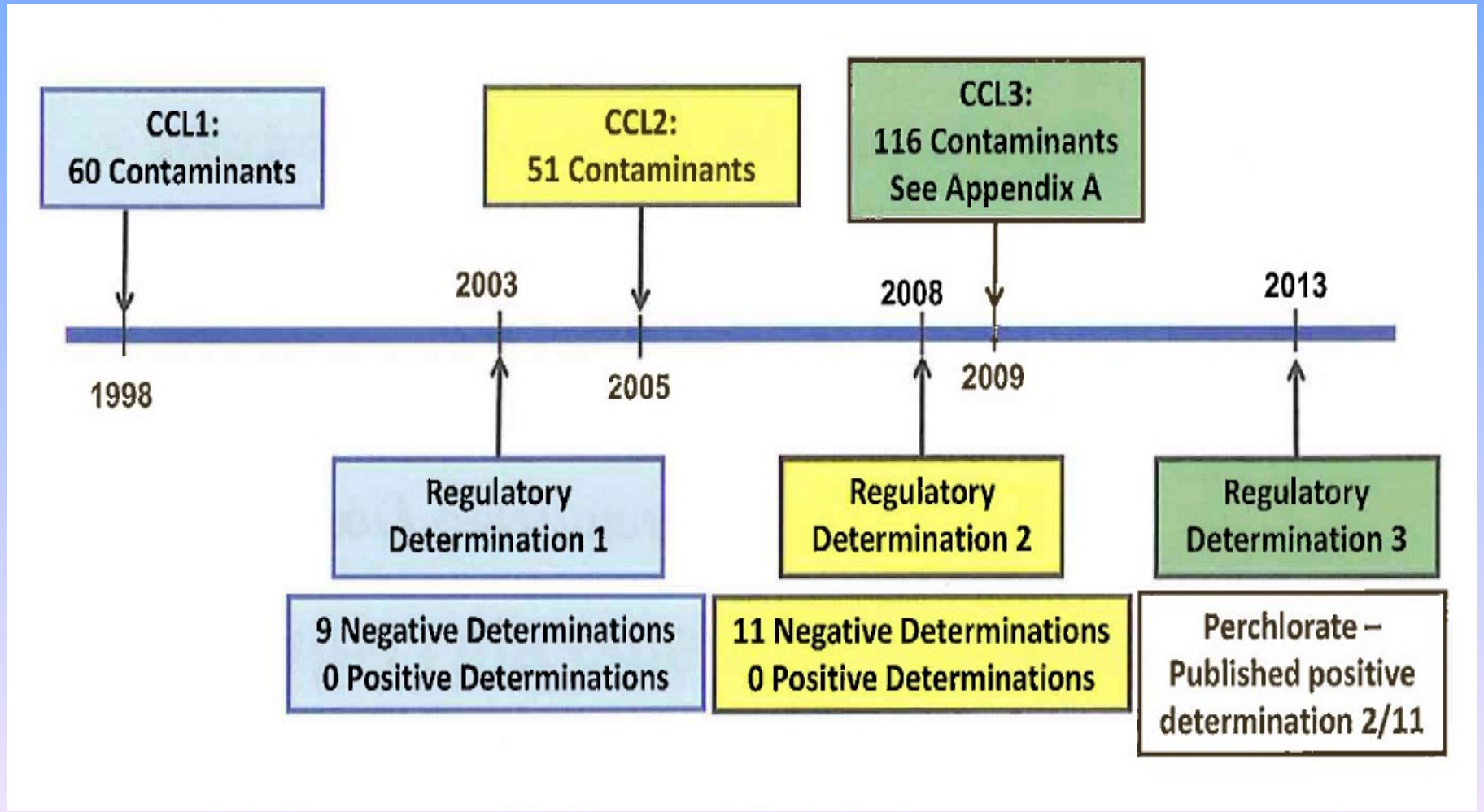
- EPA must review dw regs every six years

- First review in April 2002 (pre-1997 NPDWRs)
  - Revise total coliform rule
  - No action for 68 other contaminants

- Second review completed in March 2010
  - 4 (of 71) revisions recommend: TCE, PCE, acrylamide, & epichlorohydrin
  - TCE & PCE
    - Both MCLs of 5 ug/L and MCLGs of 0 ug/L
    - EPA decided standards could be revised due to improved analytical methods

- Possible that some contaminants regulated as carcinogens will be regulated based on shorter term health effects – shorter compliance timeframe?

CCL and RD TIMELINE



CONTAMINANTS "ON THE RADAR"

- Perchlorate
- CVOC
- Nitrosamines
- Chromium 6 (hexavalent chromium)

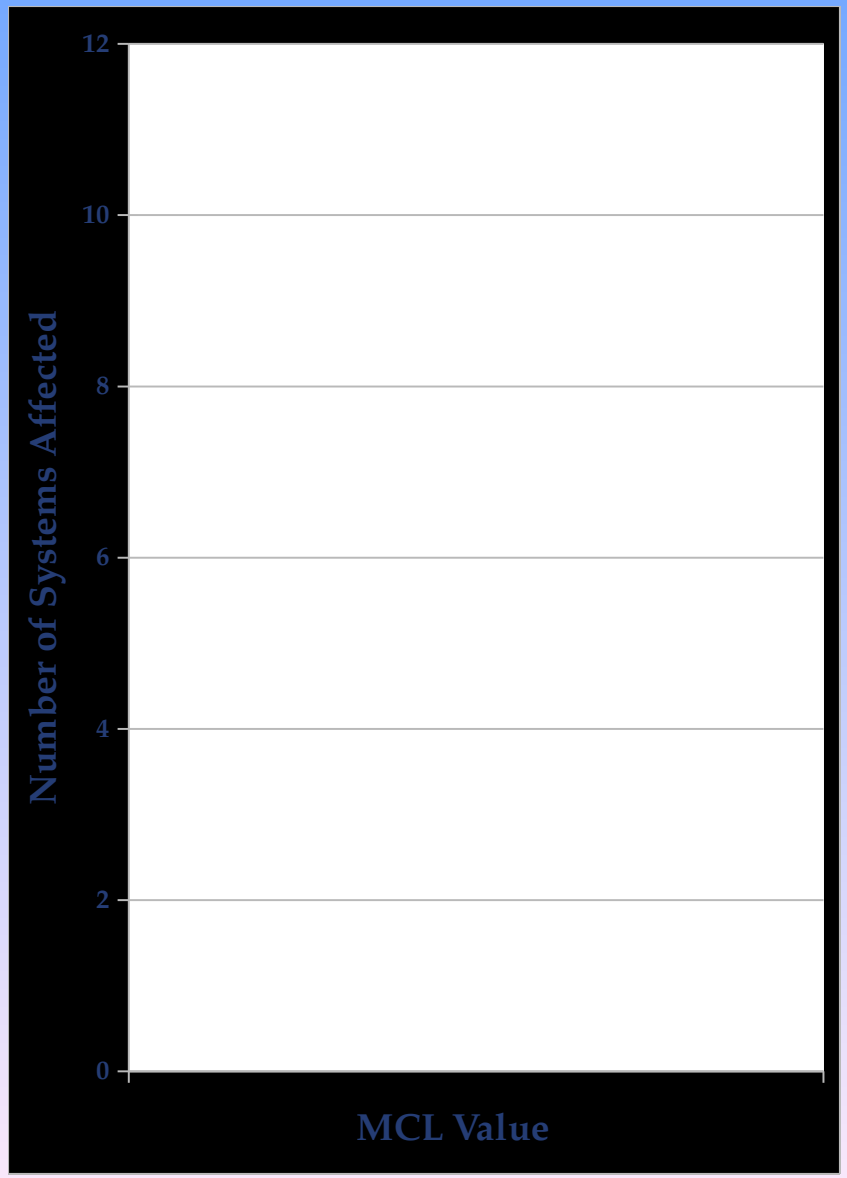
PERCHLORATE (ClO4-)

- Occurs primarily as a salt, ammonium perchlorate & potassium perchlorate
- Primarily used as an oxidizer in solid fuels (rockets, missiles, and fireworks)
- Identified in certain nitrate fertilizers
- Occurs naturally in calcium

PERCHLORATE

- Perchlorate on the CCL1, CCL2, and CCL3
- 1999 – UCMR 1 included perchlorate
  - *Detected in 4% of 3,865 systems, in 26 states and Puerto Rico*
- 2003 – No decision on whether to regulate.
- 2008 - Preliminary RD not to regulate
  - *Not a meaningful opportunity for health risk reduction*

ClO4 Impacts



- MCL of 2 ug/L
  - ~904 systems "affected"
- MCL of 20 ug/L
  - ~9 systems "affected"
- Current EPA interim HA of 15 ug/L
  - ~25 systems "affected"
- Is it worth developing a reg for only 25 systems?

"GROUP" REGULATIONS

- March 2010 – EPA announced a strategy to evaluate regulating compounds as groups
- Precedence with some regs
  - *Disinfection byproducts (THMs/HAA5s)*
  - *Radionuclides Rule (gross alpha, radium 226 and 228)*
- Factors:
  - *Similar health endpoints*
  - *Measured by same analytical methods*

CARCINOGENIC VOCS (CVOCS)

- First "group" under this new approach
- Met the four criteria
  - *All carcinogenic – likely MCLG of zero*
  - *Most can be measured by same method (EPA 524.2)*
  - *Common treatment methods (aeration and/or GAC)*
  - *Preliminary evaluation indicates that may co-occur*
- Likely to include 8 currently regulated VOCs and 8 from the CCL3

NITROSAMINES

- Seven on the CCL3, NDMA the most common
- Sources
  - Manufacturing of rocket fuels, foods, beverages, pesticides, etc.
  - Discharges of municipal wastewater
  - Certain foods (bacon, grilled meat)
  - Milk and Beer!
  - By product of water

NITROSAMINES

- RD expected in RD3 (2013)

- Issues
  - *Although dietary levels have decreased, exposure from food and that generated inside the body may be greater than drinking water (meaningful opportunity for risk reduction?)*
  - *Regulation could restrain chloramine use and make it more difficult for surface water systems to complete with disinfection by product rules (tradeoffs)*

HEXAVALENT CHROMIUM (Cr6+)

- Late addition to the UCMR3
- Total chromium is currently regulated:
  MCL – 100 ug/L
- December 2010: EWG published a report (non peer reviewed) claiming that hex chromium was found in the tap water of 89% of cities sampled in their study
- Political pressure to evaluate

QUESTIONS?

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