

DPR ADVISORY GROUP MEETING

Feb. 21 2014

TODAYS AGENDA


- Bagley-Keene Open Meeting Act
- Briefing on DPR
- Statutory Mandate and Tasks of Group
- Lunch
- Discussions on Expert Panel
- Public Comments
- Future Meetings
- Final Discussion



BAGLEY-KEENE OPEN MEETING ACT


PURPOSE OF THE ACT

- Enacted by Legislature, the Bagley-Keene Act imposes requirements for open meetings
 - some efficiency may be sacrificed for the benefits of public contribution to the decision-making process.



COVERED BODIES


- Advisory Bodies
- Delegated Bodies
- Commissions
- Other Bodies



The Bagley-Keene Act will influence the conduction of the Advisory Group's open meetings.

WHAT IS A MEETING?

- Needs a quorum
- Serially or together
- In one place
- To address issues within the jurisdiction
- Includes
 - Receiving information
 - Informal gatherings
- Briefing papers



SERIAL MEETINGS

- Series of communications
- Less than a quorum
- Involves majority of the members
- Examples

5-Person Body

- Member A communicates with Member B, then
- Member A communicates with Member C
 - A -> B and A -> C = Serial meeting

CONTACTS TO PUBLIC

- The public has rights to contact individual members.
 - The public communicating an issue with others does not violate the Bagley-Keene Act. (§ 11122.5(c)(1).)
 - The body that does not solicit or orchestrate such contacts does not violate the Act.

SOCIAL GATHERINGS

- Social situations do not violate the Bagley-Keene Open Meeting Act.
 - But avoid "shop talk" at those social events.



ACCESS TO RECORDS

- Public is entitled access to records
 - Includes:
 - Writings
 - Materials provided to a majority of the body
 - Must be available to persons with disabilities



BRIEFING ON DIRECT POTABLE REUSE BACKGROUND

TOPICS WE WILL COVER

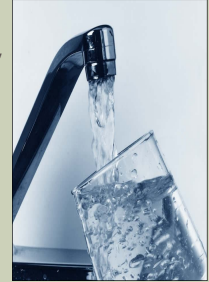
- Permitting and Impaired Sources
- Permitting IPR Projects
- Treatment Technologies
- Permitting DPR
- DPR Treatment Goals/Concerns



PERMITTING AND IMPAIRED SOURCES

WATER SUPPLY PERMITS

- Health and Safety Code
 - Right to "pure and safe drinking water"
 - Requires CDPH evaluation
- Permit is the permission to operate
 - Legal document
 - States operating conditions
 - Determination: pure, wholesome, and potable



ASSESSMENT OF A NEW SOURCE

- Drinking Water Source Assessment Program (DWSAP)
- Evaluate existing and potential contamination and pollution sources
- Does the new source meet DW standards?
 - Surface water sources require treatment to meet primary and secondary DW standards
 - Some wells may need treatment for specific contaminants
 - Best Available Technology (BAT) for contaminants

IMPAIRED SOURCES

- Extremely Impaired Sources
 - Source assessment - vulnerability
 - Raw water quality - full characterization
 - Source protection
 - Effective monitoring and optimum treatment
 - Health risks of failure
 - Identify source alternatives



TECHNICAL REPORT

- Technical report required
 - Source water information
 - Treatment information
 - Unit processes
 - Parameters
 - Reliability
 - Disinfection
 - Monitoring plan
 - Operations plan
 - Operator certification



WATER QUALITY

- Water Quality Monitoring Plan
 - All sources
 - Test for:
 - General mineral
 - General physical
 - Inorganics
 - Organics
 - Radioactivity
 - Sample frequency
 - Special monitoring



OPERATIONS

- Operations Plan
 - Overall operations
 - Treatment methods
 - Treatment optimization
 - Staff certification
 - Operator responsibilities
 - Monitoring water quality
 - Equipment calibration
 - Alarms and responses



CERTIFICATION

- Operator Certification
 - Required by Title 22
 - Described in permit
 - Certification levels set by treatment type



ISSUANCE OF THE PERMIT

- Applicant submits a technical report
- CDPH performs technical evaluation
- CDPH prepares a permit report
 - PE stamped
 - Meets all drinking water standards
 - Adequate treatment
 - A pure, wholesome, potable water
- CDPH issues a Water Supply Permit



PERMITTING IPR PROJECTS



PORTER-COLOGNE ACT CDPH SWRCB RWQCB

- State Board has ultimate authority over water rights and water quality.
- Established nine Regional Boards.
- Boards permit discharges that affect ground and surface waters.



REGULATORY STRUCTURE CDPH SWRCB RWQCB

- Memorandum of Agreement (MOA) in 1996
- MOA delineates responsibilities
- RWQCBs have the permitting and ongoing oversight authority
- CDPH reviews reports when requested by RWQCB



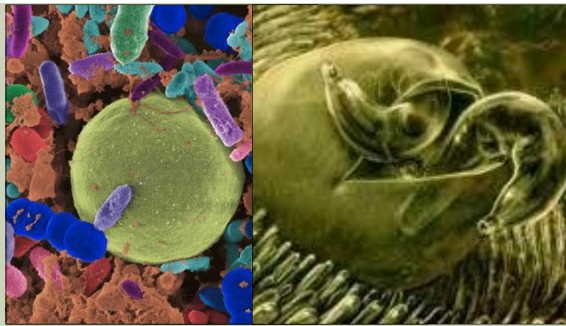
CURRENT REGULATIONS

- Statutes
 - Health & Safety Code
 - Water Code
- Regulations
 - Title 17
 - Title 22
 - Groundwater Recharge (new draft)
 - Surface Water Augmentation (under development)



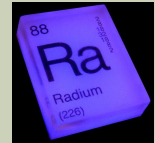
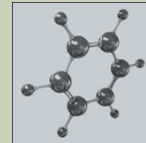
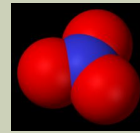
USING MUNICIPAL WASTEWATER AS A SOURCE

PATHOGENS



REGULATED CHEMICALS

- Inorganics
 - Nitrogen compounds
 - Lead
- Organics
 - Benzene
- Radionuclides
 - Radium
- DPBs
 - TTHMs
 - HAA5



UNREGULATED CHEMICALS

- CECs
- Pharmac
- Endocrin
- Personal
- Industria

DEET

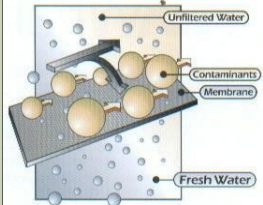
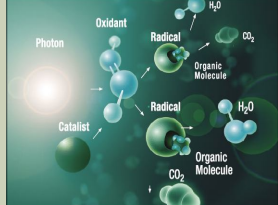
Triclosan

DEET

TREATMENT TECHNOLOGIES

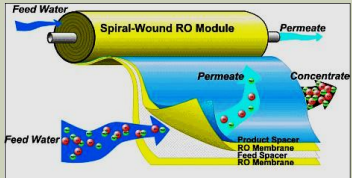
FULL ADVANCED TREATMENT

- Reverse Osmoses - Advanced Oxidation Process
- Common AOP
 - Ozone/H₂O₂ or UV/H₂O₂

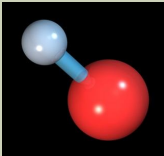
RO BASICS

- Best Available Technology for contaminants
- Effective on large / ionic / hydrophobic CECs
- Most MW > 200 are removed
- Less effective on:
 - NDMA
 - 1,4-dioxane



AOP BASICS

- Process of generating chemical radicals used to oxidize organic material
- Very fast reaction (seconds)
- Produced via UV/H₂O₂ or Ozone/H₂O₂



•OH

OZONE BASICS

- Composed of O₃
- Very strong oxidant
- Short life, goes back to O₂

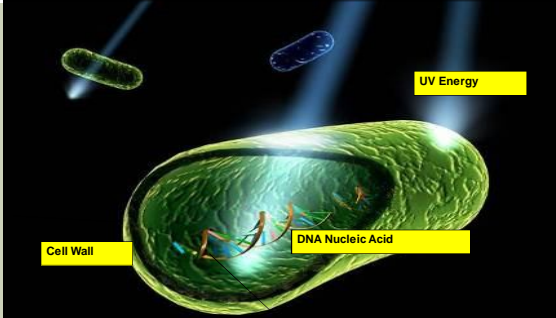
Ozone formation in an electrical field

$$\text{H}_2\text{O}_2 + \text{H}_2\text{O} \rightarrow \text{HO}_2^- + \text{H}_3\text{O}^+$$

$$\text{HO}_2^- + \text{O}_3 \rightarrow \cdot\text{OH} + \text{O}_2^- + \text{O}_2$$

with oxygen molecules

UV BASICS



UV Energy

DNA Nucleic Acid

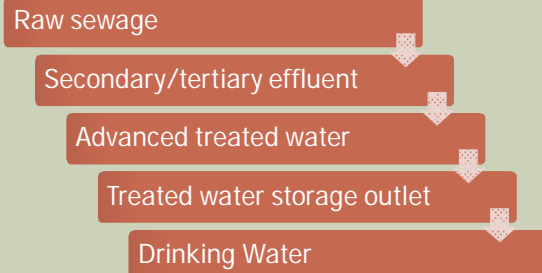
Cell Wall

HOW TO REGULATE DPR

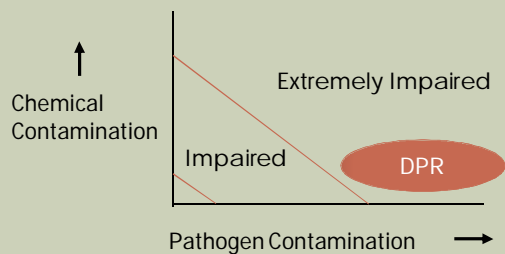
CALIFORNIA SAFE DRINKING WATER ACT

- Pure, wholesome, potable, and healthy water
- Chemical Standards (MCLs)
- Surface Water Treatment Rule (SWTR)
 - A water system “using an approved surface water shall provide multi-barrier treatment necessary to reliably protect users from the adverse health effects of microbiological contaminants ...”
 - Organism log reductions determined as part of source approval process

TRANSITION: WATER CODE TO SDWA WHEN “APPROVED SOURCE”



SOURCE QUALITY



A REGULATORY SCHEME FOR DPR

- Clean Water Act regulators could regulate what they have the authority, expertise, and operator certification program for:
 - Source control for the collection system
 - Treatment through secondary or tertiary
 - Disposition of inadequately treated wastewater

A REGULATORY SCHEME FOR DPR

- Drinking Water Regulators could:
 - Approve secondary or tertiary effluent meeting the State Water Boards permit as the “approved” surface water source
 - Specify advanced treatment and monitoring in the water system permit as it would for any impaired or extremely impaired source

DPR PRINCIPLES

- Make a “safe” drinking water
- Low tolerable risk
 - 10^{-4} annual risk of infection
 - Drinking water standards
 - Unregulated chemical controlled to match good existing supplies
- Low risk of failure
 - Multiple barriers for contaminants

THREATS IN THE SOURCE WATER



Pathogens
Nitrate, Nitrite, ...
Trace Organic
Chemicals?

TRACE ORGANIC CHEMICALS

- Chronic risk
 - Have time to react to a treatment problem
 - Not unlike indirect potable reuse
- FAT is effective at 100% RWC
 - FAT of the entire flow
 - Treatment alternatives may be allowed if they assure the same level of health protection

PATHOGENIC MICROORGANISMS

- Acute risk
- Set a log reduction treatment requirement (as in draft IPR regulations)
 - Raw sewage to finished drinking water
 - 12-log Virus
 - 10-log Giardia
 - 10-log Cryptosporidium
 - Based on high sewage levels and USEPA drinking levels for a 10^{-4} risk

45

CALIFORNIA POTABLE REUSE COMMITTEE (1996)

- DPR is "unacceptable ... because of the lack of reliable real-time water quality monitoring methods and lack of time to react to accidental emergencies or system upsets.
- Monitoring and control technologies have improved since 1996, but ...

PATHOGEN CONTROL APPROACHES

- We could assure safe water by providing:
 - Real-time monitoring of organism reduction for the required barriers,
- or, possibly
- Best available monitoring and redundant barriers to provide extra log reduction capacity to compensate for monitoring limitations

PATHOGENS CONTROL QUESTIONS

- Is the monitoring sensitive enough?
- How do we measure the overall reliability?
 - How consistent?
 - Multiple redundant barriers
 - But how do we determine the necessary number and capability of the redundant barriers?

**CONCLUSION
A POSSIBLE DPR SCHEME**

- Regulate the critical treatment under the SDWA
- Focus on acute risks (pathogens)
- Continuously verify treatment performance

**CONCLUSION
A POSSIBLE DPR SCHEME**


- Provide sufficient barriers with:
 - Real-time organism reduction verification monitoring
or
 - Best available monitoring with redundant barriers to strictly restrict the chance of inadequately treated water
- Provide a fail → safe response to a system problem

ANY QUESTIONS?

STATUTORY MANDATES
AND TASKS OF
ADVISORY GROUP

STATUTORY MANDATE

- Water Code, Section 13565
 - Feasibility of DPR criteria
 - Convene an Expert Panel
 - December 31, 2016
- Senate Bill 322
 - Convene an Advisory Group
 - Consult on selection of Expert Panel
 - Advise Expert Panel on DPR feasibility issues



TASKS OF ADVISORY GROUP

- Department to consult with Advisory Group and the State Board on selection of Expert Panel.
- Advise the Expert Panel on DPR criteria and draft report issues.
- Subject to the Bagley-Keene Open Meeting Act.

ANTICIPATED EXPERT PANEL SCHEDULE

Activity	2014			2015				2016			
	1 st Qtr	2 nd Qtr	3 rd Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
Surface Water Augmentation Criteria	Intense activity			Ongoing work							
Direct Potable Reuse Feasibility	Intense activity						Ongoing work				
WaterReuse Foundation Proposed Projects	Identify critical research projects		Review of critical Research Projects								

LUNCH
AND
SHORT BRIEFINGS

INITIAL TASK OF
ADVISORY GROUP

EXPERT PANEL

- Overview of process by NWRI
- Panel qualifications



DISCUSSION

- Advisory Group input on Expert Panel



CHAIRPERSON

- Selection of Advisory Group Chairperson



PUBLIC COMMENTS

FUTURE MEETINGS

FUTURE MEETINGS

- Preparation of future efforts
- Schedule
- Communications



FINAL DISCUSSION AND REVIEW

THANK YOU