

# State of California Constituents of Emerging Concern Freshwater, Coastal and Marine Ecosystems Science Advisory Panel

Meeting #6

March 23, 2012  
Richmond, CA



# BACKGROUND

- **State of California formed a CEC scientific advisory panel for recycled water in 2009**
- **The State also requires a strategy for monitoring and management of CECs in discharged water**
- **Much of the expertise required for developing an ambient water strategy is similar to that for recycled waters**
- **Packard Foundation partnered with the State to form a second panel that leverages the State's investment in the recycled panel**
  - SCCWRP asked to facilitate the “Ecosystems” Panel

# QUESTIONS TO BE ADDRESSED

- **What are the relative contributions of CECs discharged into freshwater, coastal and marine ecosystems from treated wastewater effluent and stormwater?**
- **What specific CECs, if any, are most appropriate for monitoring in discharges, and what are the applicable monitoring methods and detection limits?**
- **How are these priority CECs affected by the chemistry, biology, and physics of wastewater treatment, by discharge in and transport by coastal waterways and estuaries, and as a result of mixing and dilution with receiving waters?**

# QUESTIONS TO BE ADDRESSED

- **What approaches should be used to assess biological effects of CECs?**
- **What is the appropriate design (e.g. media, frequency, locations) for a CEC monitoring and biological effects assessment program, given the current state of the art?**
  - What level of effects will be detectable with such a monitoring program and how will its sensitivity vary with investment?
- **What concentrations of CECs or levels of biological effects should trigger further actions and what options should be considered for further actions?**

# STAKEHOLDER ADVISORS

- **Jim Colston** (Tri-TAC)
- **Mark Gold** (Heal the Bay)
- **Chris Crompton** (CA Stormwater Quality Association)
- **Linda Sheehan** (CA Coastkeeper Alliance)
- **Amber Mace** (CA Ocean Protection Council)
- **Rick Moss, Gary Dickenson** (State Water Board)

# PANEL MEMBER SELECTION

- **Started with members of the Recycled Water Panel**
  - Wanted continuity between panels
  - All panel members expressed interest in continuing
- **Panel asked if they needed additional expertise**
  - Also asked project sponsors
- **Identified two needs: marine resources and physical oceanography**
  - Oceanography needs better addressed through consultation
  - Expertise in antibiotic resistance sought
- **Vetted four marine resources candidates through stakeholder advisory committee**

# EXPERT PANEL MEMBERS

- **Dr. Paul Anderson**
  - Human Health Toxicologist
  - Arcadis US
- **Dr. Adam Olivieri**
  - Risk Assessor
  - EOA Incorporated
- **Dr. Nancy Denslow**
  - Biochemist
  - University of Florida
- **Dr. Daniel Schlenk**
  - Environmental Toxicologist
  - UC Riverside
- **Dr. Jörg Drewes**
  - Civil Engineer
  - Colorado School of Mines
- **Dr. Shane Snyder**
  - Analytical Chemist
  - University of Arizona
- **Dr. Geoff Scott**
  - Marine Resources
  - NOAA

# SCHEDULE

- **Three-year project to be completed May 2012**
- **Meeting #1: Jan 2010 @ SCCWRP**
  - Defining/refining the charge
  - Perspectives of interested parties
  - Identify short term data gaps
- **Meeting #2: Fall 2010 @ SCCWRP**
  - Joint with WERF
  - Parallel project on prioritizing trace organics in wastewater



# SCHEDULE (cont.)

- **Meetings #3-5: Winter 2011 – Jan 2012**
  - Working meetings to address charge questions
  - Public report out built in at each
  - Charge expanded to freshwater systems in Fall 2011
- **Draft Report released – Feb 23, 2012**
  - public comments due 3/19/12
- **Meeting #6: March 23, 2012**
  - Panel response to public comments
  - outline revision of draft
- **Final Report due to SWB: May 1, 2012**

# COMMENTS RECEIVED

## Detailed comments from 15 entities

- *State Water Board, LA Regional Board*
- *SFEI, SAWPA (Risk-Sciences)*
- *Heal the Bay; CCKA; Heal the Ocean*
- *CASA/Tri-TAC; OCSD; LACSD; CVCWA*
- *BASMAA; County of Orange Watershed Protection*
- *Proctor & Gamble; Intl Fragrance Assoc N/A*
- Panel reviewed all comments and considered various modifications to the final report

# THANK YOU

- **We received 72 pages of comments**
  - All showed a great deal of thought
  - Our report will be better as a result of your help
- **All the comment letters seemed to endorse (or at least not critique) our underlying framework**
  - But many critiques focused on our application of that framework
- **Goal today is to highlight our response to the most encompassing of the comments**
  - We want to be sure that we heard you correctly and that our response makes sense (even if it is not always the response you want)
- **There are many other detailed comments which we will address directly in the revised document**
  - Won't focus on those in the presentation, but will be glad to respond if anyone in the audience wants to elevate a more detailed comment

# MAJOR POINTS FOR DISCUSSION

- **More/fewer parameters should be recommended for monitoring**
- **Use of “readily available data” limits applicability of the recommendations**
- **Bioaccumulation was dismissed prematurely**
- **Ocean impacts were not thoroughly addressed leading to incorrect conclusion that monitoring of ocean discharges is unnecessary**
- **Clarify the relationship between trigger levels and regulatory standards**
- **Need a better connection to effects on biological communities**
- **The public process was inadequate**

# MORE/FEWER PARAMETERS SHOULD BE MEASURED

- **Obviously a challenge to make everyone happy**
  - Key is in recognizing there are multiple sets of recommendations
- **Known-knowns**
  - Derived from the risk-based framework with conservative assumptions
  - Responses to comments may cause this list to change, but only a little
  - Adaptive list; chemicals will come off if they have concentrations below the MTL
- **Known unknowns**
  - Chemicals that don't have both occurrence and toxicity data needed to apply the framework
  - Prioritize based on usage, fate modeling and toxicity (literature)
  - Will refine the document to clarify this section
- **Unknown unknowns**
  - Biological screening & nontargeted analysis

# MORE/FEWER PARAMETERS SHOULD BE MEASURED

- **Does every chemical need to be measured at every facility?**
  - No, but the burden of proof for doing otherwise should be large
  - There is enough evidence supporting the core list that the focus should be on collecting data and removing chemical after demonstrating concentrations are < MTL
- **Economic factors should not be considered in developing the list**
  - They were not!!!
  - Section 9 raises need for future discussion about relative emphasis on legacy vs. emerging contaminants, but only after initial data collection
  - We will modify Section 9 to clarify our intent
- **Availability of standard methods should not be considered in developing the list**
  - It wasn't directly, as the framework was applied to all available data
  - Of course, data availability will be less for parameters without methods
  - These chemicals will mostly fall in the research category

# **“READILY AVAILABLE DATA”**

- **Misnomer on our part**
  - We did a comprehensive job looking for the most relevant data
  - We will use different terminology in the revised document
- **There were a few data that we missed**
  - Thank you to the commenters who identified those
  - We will incorporate those data in the revised document
- **Our biggest contribution was a framework**
  - It is possible that there are still some data we missed
  - Moreover, new data are being developed as we speak
  - You now have the framework to assess any new data
- **Glad to see so many commenters endorse our recommendation for a follow-up panel after a few years**

# BIOACCUMULATION WAS DISMISSED PREMATURELY

- **We disagree**
  - We addressed it directly
  - We have a whole section on it
- **The general approach is in section 3**
  - screened by chemical properties
  - details are in the appendix
- **Shortage of toxicity (body residue) benchmarks limits ability to perform risk assessment**
- **Even so, we identified tissue CECs for monitoring**



# OCEAN IMPACTS NOT EVALUATED

- **Panel assessed ocean discharge scenario using the risk-based framework**
  - Safety factor of 10 for fresh to saltwater toxicity
  - CECs in sediments were listed for this scenario
- **We used a 1000:1 dilution factor for aqueous CECs**
  - That is what has been measured on average at large ocean outfalls
  - However, it does not represent the extreme
- **Based on your feedback, we are going to run a sensitivity analysis examining 100:1 dilution**
  - We will include the outcome in the report
- **There may be the rare facility that has even less dilution**
  - We have provided the tools that allow for facility specific assessments

# TRIGGER LEVELS VS. REGULATORY STANDARDS

- **Trigger levels are not intended as compliance standards!**
- **We are early in an evolving process**
  - The safety factors we used were for screening, not compliance
  - Considerably more data are needed before moving toward compliance assessment
- **We will refine wording in the document to provide clarity on this topic**

# BETTER CONNECTION TO EFFECTS ON BIOLOGICAL COMMUNITIES

- **We agree and it occurs at two levels**
  - Relating the high throughput in vitro analyses to in vivo responses
  - Relating “toxicological” tests to community-based end points
- **There was also concern about relating biological response back to the chemical of concern**
  - What is the CEC TIE equivalent?
- **There is time to address these**
  - Biological testing was part of our research recommendations
  - The research efforts should be directed to make these connections
- **We will refine the document to better call out the need**

# PUBLIC PROCESS WAS INADEQUATE

- **We couldn't disagree more vehemently**
  - We worked to engage the community, even though we are not a regulatory body and had no obligation to do so
- **We had six meetings with opportunity for public involvement at each**
  - Two of the meetings were specifically to gather input and data from the community; you were privy to all of the information we worked from
  - Two of the meetings were to receive feedback on our findings
  - More than 50 people attended those meetings
- **Four of the meetings were held in California, even though most of the Panel are out of state**
  - The remainder were working meetings at which we still held a conference call to provide a progress update
- **We'd like to hear if others agree with the concern**

# OTHER COMMENTS?

- **There were many valuable comments of finer detail**
  - Ranged from spelling errors to (minor) calculation errors
  - We are poring through each of those and will refine the document
- **Are there any other major comments we haven't verbally addressed that you would like to discuss?**