State of California
Constituents of Emerging Concern
Ecosystems
Science Advisory Panel

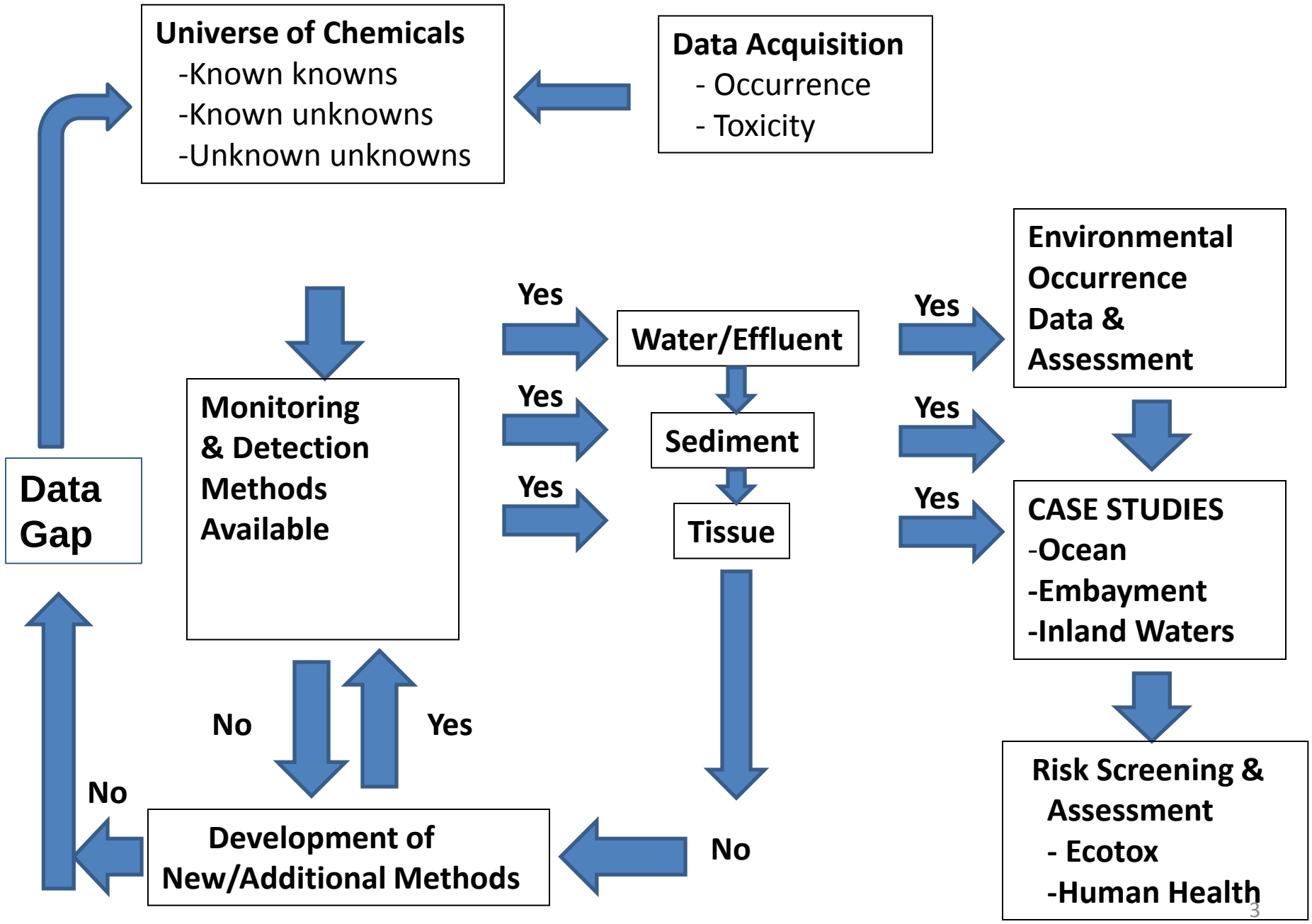
Panel Report Out

Meeting #4

October 12 – 13, 2011
Costa Mesa, CA

QUESTIONS TO BE ADDRESSED

- What are the relative contributions of wastewater and stormwater?
- What specific CECs, if any, are most appropriate for monitoring in discharges to State receiving waters?
- What is the fate of CECs in wastewater systems, after discharge, transport and mixing in receiving waters?
- What approaches should be used to assess biological effects of CECs to sentinel species?
- What is the appropriate design (e.g. media, frequency, locations) for a CEC monitoring and biological effects assessment program?
- What concentrations of CECs or levels of biological effects should trigger further actions. What actions should be considered?


Universe of Chemicals
-Known knowns
-Known unknowns
-Unknown unknowns
Data Acquisition
- Occurrence
- Toxicity
Environmental Occurrence Data & Assessment
Yes
Yes
Yes
Water/Effluent
Sediment
Tissue
Yes
Yes
Yes
Monitoring & Detection Methods Available
Data Gap
CASE STUDIES
-Ocean
-Embayment
-Inland Waters
No
Yes
No
No
Development of New/Additional Methods
Risk Screening & Assessment
- Ecotox
-Human Health

CASE STUDIES

- **Inland receiving water (coastal river)**
  - wastewater effluent dominated system
- **Embayment receiving water**
  - stormwater input
  - variable freshwater input & oceanic connectivity
- **Coastal ocean discharge**
  - Larger POTW discharging to mid-shelf (> 50 m)
  - Smaller POTW discharging nearshore (< 50 m)

RISK SCREENING

- **Risk quotients being finalized for**
  - Three matrices (aqueous, sediment, tissue)
  - Three case scenarios (river, embayment, ocean)
- **Most data available for aqueous exposure**
- **Additional data for expanded universe needed**

ANTIBIOTIC RESISTANCE

- **Issues: chemical exposure & gene transfer**
- **Chemical exposure**
  - Maximum inhibitory conc. (MIC)
  - Lowest concentration to cause resistance (LCCR)
  - Screening Ratio: MIC to LCCR
- **Still addressing issue of gene transfer**
  - likely needing further research

MONITORING QUESTIONS

- **What is the occurrence of CECs?**
  - Levels? How widespread? Increasing?
  - Do we have robust methods?
  - What DQOs are needed for MTLs?
- **What evidence of CEC effects do we see?**
  - What endpoints/species are most relevant? WET?
  - Severity of effect? How widespread? Increasing?
  - Confidence in linkage to CECs and higher level impacts (population, ecosystem)
- **What is the relative contribution of effluent vs. stormwater to occurrence? Effects?**

MONITORING APPROACH

- Phased approach to monitoring
  - Defining appropriate tools
  - Refining & updating monitoring list
    - Targeted special studies
  - Conduct monitoring
  - Assess & interpret results

- **Link with existing monitoring programs**
  - Permit-based, regional and state-wide programs

REMAINING SCHEDULE

- **Meeting #5: Jan 2012**
  - Discuss data gaps and make recommendations
- **Release Draft Report – Feb 1, 2012**
  - 30 d comment period
- **Meeting #6: March 2012**
  - Respond to public comments and revise draft report
- **Final Report to SWB: May 1, 2012**