Public Staff Workshop: Toxicity Provisions

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Email questions to DWQ-IPSI@waterboards.ca.gov

Purpose of the Workshop

1. Provide an overview of the new Staff Report Appendix
2. Provide an overview of the scope of the *Ceriodaphnia dubia* study
3. Discuss an option for implementation of *C. dubia* during the study (Option 4)

New Appendix Overview

Contents

- Findings from publication (Fox et al. 2019)
- Findings from memo (Fox 2019) regarding the probability of a violation from false positives
- Summary of staff's data analysis based on comments received

Review process

- Will be released for a 30-day public comment period

New Appendix Overview

Fox et al. 2019 publication findings

- Some California labs do achieve low within-test variability (high test precision)
- Other labs need to improve their test precision or increase number of replicates
- The Test of Significant Toxicity (TST) statistical approach incentivizes labs to increase test precision

New Appendix Overview

Fox 2019 Memo findings

- 1 in 500 chance of a Median Monthly Effluent Limitation (MMEL) violation based on the probability of false positives for many of the labs studied
- 1 in 1,000 chance of a toxicity reduction evaluation (TRE) triggered for these same labs

New Appendix Overview

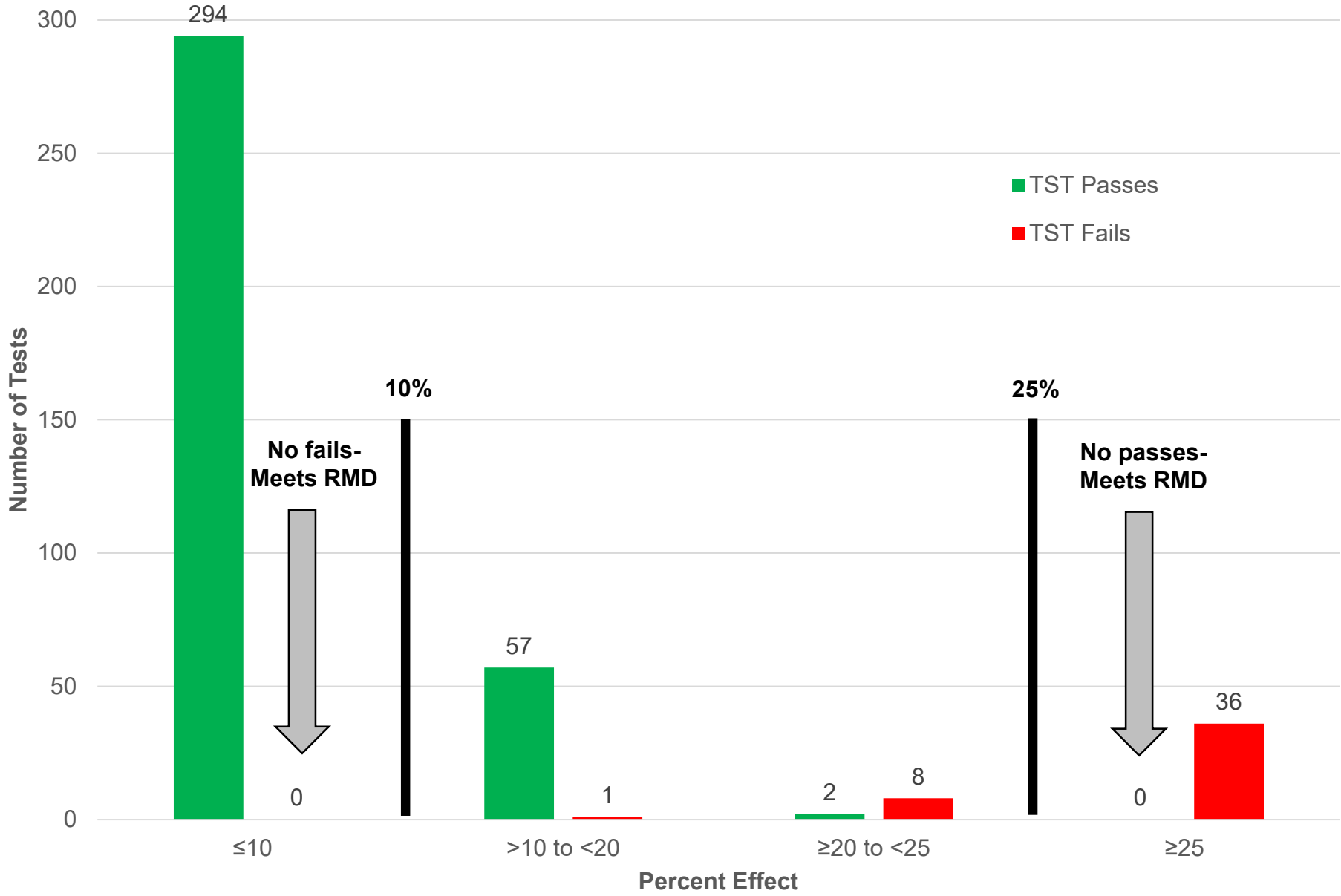
State Water Board Staff recent data analysis:

Example

- 10 facilities permitted by the Los Angeles Regional Water Quality Control Board
- 589 *C. dubia* chronic TST test results

Conclusions

- No fails below 10 percent effect
- Labs conducting tests for facilities that are required to use the TST show increased test precision over time


Eight LACSD Facilities - San Jose Creek Lab
Combined TST Pass/Fail Results for C. dubia reproduction (N=398 Results)
Number of Tests
300
250
200
150
100
50
0
294
0
57
1
2
8
0
36
10%
25%
No fails-
Meets RMD
No passes-
Meets RMD
TST Passes
TST Fails
≤10
>10 to <20
≥20 to <25
≥25
Percent Effect

Ceriodaphnia dubia Study

Need for study

- A number of municipal and commercial labs in California conduct the chronic *C. dubia* test with sufficiently low within-test variability
- Some labs have higher within-test variability and need to run more replicates to meet the 5 percent or less false positive rate
- Split sample and blank results are not always consistent among labs

Study objective

- State Water Board proposes to conduct a study to identify ways to reduce within-lab variability and improve consistency between labs

Ceriodaphnia dubia Study

What the study is NOT

- It is not a study to determine if the chronic *C. dubia* test should be used in California regulatory programs
- It is not a study of the false positive rate
- It is not a study to establish an accuracy benchmark based on a standard
  - Method-defined analytes like toxicity do not have standards like chemistry

Scope of *Ceriodaphnia dubia* Study

Evaluate variability within and among labs

- Conduct rounds of testing the same samples including toxic and non-toxic blanks
  - Initial round, evaluating labs based on results, implementing changes based on evaluation, final confirmation round
- Evaluate historical performance data to assess within-lab variability
  - Reference toxicant results, control charts, coefficients of variation, etc.
- Evaluate lab standard operating procedures and lab protocols
- Evaluate areas of flexibility in the method that may contribute to variability within or among labs

Organization of *Ceriodaphnia dubia* Study

Southern California Coastal Water Research Project will

- Facilitate and manage the study
- Convene a panel of national experts to review the study design and interpretation of results, as well as making final recommendations
- Convene a Stakeholder Advisory Group including lab representatives, ELTAC, Permittees, NGOs, ELAP staff, and U.S. EPA
- Provide access to data from peer reviewed studies and existing lab data
- Coordinate the writing and submission of the findings

Organization of *Ceriodaphnia dubia* Study

- Involve as many labs that are willing to participate
- Estimated cost = $2 million
- Time certain end date: 2023

Issue 3: *Ceriodaphnia dubia* Chronic Reproduction Test

4 options presented at the October Board Workshop

- Option #1: No change; use *C. dubia* to assess compliance with effluent limitations
- Option #2: Use *C. dubia* as a monitoring/toxicity reduction evaluation trigger but not for compliance and use the second most sensitive species to assess compliance until the end of the study or until a specified future date
- Option #3: Do not use *C. dubia* as a monitoring/toxicity reduction evaluation trigger or for compliance until the end of the study or until a specified future date
- Option #4: Delay inclusion of MMEL using *C. dubia* in permits that do not have numeric effluent limits until a future date

Issue 3, Option 4: What happens to the use of *C. dubia* during the interim period of the study?

- After the effective date of the Provisions, dischargers will continue to comply with requirements in their current permits until renewed, reissued, or reopened
- For permits that are renewed, reissued, or reopened while the *C. dubia* study is being conducted, the reissued permits will contain the following effluent limits, triggers, or both

Option 4: Scenario #1

Current Permit Requirements	Most Sensitive Species Identified During Permit Renewal, Reissuance, or Reopening	Renewed, Reissued, or Reopened Permit Requirements
Scenario #1: **Numeric effluent limits** ***C. dubia*** **is the most sensitive species**	*C. dubia*	MMEL and MDEL as specified in Provisions using *C. dubia*
	Another species (not *C. dubia*)	MMEL and MDEL as specified in Provisions using the most sensitive species (not *C. dubia*)

Option 4: Scenario #2

Current Permit Requirements	Most Sensitive Species Identified During Permit Renewal, Reissuance, or Reopening	Renewed, Reissued, or Reopened Permit Requirements
<u>Scenario #2:</u> **Numeric effluent limits *C. dubia* is not the most sensitive species**	*C. dubia*	Option #1: MMEL and MDEL as specified in Provisions using *C. dubia* or Option #2: MMEL and MDEL using the second most sensitive species, require monitoring with *C. dubia*, and include monitoring triggers for *C. dubia* that could lead to a TRE
	Another species (not *C. dubia*)	MMEL and MDEL as specified in Provisions using the most sensitive species (not *C. dubia*)

Option 4: Scenario #3

Current Permit Requirements	Most Sensitive Species Identified During Permit Renewal, Reissuance, or Reopening	Renewed, Reissued, or Reopened Permit Requirements
Scenario #3: **No numeric effluent limits Trigger for monitoring/TRE using *C. dubia* or any other species**	*C. dubia*	MDEL as specified in Provisions and trigger for monitoring/TRE (same as MMEL compliance monitoring) using *C. dubia*
	Another species (not *C. dubia*)	MMEL and MDEL as specified in Provisions using the most sensitive species (not *C. dubia*)

Project Timeline

December 2019	Release of New Appendix & Start of 30-day Limited Scope Comment Period
Spring 2020	State Water Board Consideration (Tentative)

Contacts

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Documents & Additional Information Available at:
https://www.waterboards.ca.gov/water_issues/programs/state_implementation_policy/tx_ass_cntrl.html

Questions?