

Proposed Toxicity Provisions

For the Water Quality Control Plan for
Inland Surface Waters, Enclosed Bays, and Estuaries of California

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Goals

1. Adopt consistent, statewide numeric water quality objectives for acute and chronic toxicity
2. Adopt a program of implementation
3. Create a consistent, yet flexible framework for monitoring toxicity and laboratory analysis
4. Incorporate a statewide statistical approach to analyze test results that will provide a transparent determination of toxicity

Toxicity Provisions

- Apply to inland surface waters, enclosed bays, and estuaries and coastal lagoons for the protection of aquatic life beneficial uses
- Establish:
 - Numeric water quality aquatic toxicity objectives
 - Program of implementation
- Supersede section 4 of the State Implementation Policy
- Supersede portions of Basin Plans

Numeric Water Quality Objectives for Aquatic Toxicity

Numeric Chronic Aquatic Toxicity Objective

Null Hypothesis (H₀):

Mean Response (ambient receiving water) \leq 0.75 x Mean Response (control)

Numeric Acute Aquatic Toxicity Objective

Null Hypothesis (H₀):

Mean Response (ambient receiving water) \leq 0.80 x Mean Response (control)

Aquatic Toxicity Test Methods

- Toxicity tests shall be conducted using one or more test species in Table 1 of the Toxicity Provisions
- Methods shall follow EPA method manuals



Fathead Minnow



Green Algae (*Selenastrum*)



Water flea (*Ceriodaphnia*)

Test of Significant Toxicity

- A statistical hypothesis test
- Data analysis approach, not a change to test methods
- Tests the hypothesis:
 - Does the test sample and the control differ by a biologically significant amount?
- Incorporates the regulatory management decision
- Produces a clear pass/fail result
- Provides greater confidence

4. Test of Significant Toxicity

- The validity of the TST was evaluated by the U.S. EPA TST Test Drive and the California TST Test Drive
- CA TST Test Drive
 - Results of TST and NOEC approach were generally the same overall
 - Indicates TST is not expected to change the number of exceedances
- Experience with the TST
 - 5 of 9 Regional Water Boards use the TST in NPDES permits
 - Regions 4 and 9 establish effluent limitation similar to the proposed Provisions

Program of Implementation

- Non-Stormwater NPDES Dischargers
 - Species Sensitivity Screening
 - Reasonable Potential Analysis
 - Routine Monitoring Frequency
 - Effluent Limitations
 - Toxicity Reduction Evaluation
- Storm Water and Nonpoint Source Dischargers

Program of Implementation

Implementation for Non-Stormwater NPDES Dischargers

Species Sensitivity Screening

- Screening conducted as follows:
 - Chronic Testing – at least one vertebrate, one invertebrate, and one aquatic plant species
 - Acute Testing – at least one vertebrate and one invertebrate species
- Four sets of tests must be conducted over one year or applicable discharge period
- Required either prior to issuance of permit or within 18 months after first issuance
- No less than once every 10 years
- Species with highest percent effect at the Instream Waste Concentration is generally selected as the most sensitive species

Reasonable Potential Analysis

- Reasonable potential exists if:
 - Any toxicity test results in a “fail” of the TST; or
 - If the percent effect is greater than 10% at the instream waste concentration
- Data to use in the reasonable potential analysis:
 - At least 4 tests analyzed using the TST
 - All data generated in the previous 5 years
 - May also use older data
- If reasonable potential exists, the permit must include numeric effluent limitations and routine monitoring

Routine Monitoring Frequency

- **Chronic Toxicity** Routine Monitoring Frequency:

POTWs ≥ 5 MGD	Other NPDES Dischargers ≥ 5 MGD w/ RP	POTWs < 5 MGD w/ RP	Other NPDES Dischargers < 5 MGD w/ RP
Monthly	Monthly	Quarterly	Quarterly

- **Acute Toxicity** Routine Monitoring Frequency:
 - Determined by the Regional Water Boards
 - At a minimum, must be conducted annually

Chronic Toxicity Numeric Effluent Limitations

Chronic Toxicity Maximum Daily Effluent Limitation

No chronic toxicity test shall result in a "fail" at the IWC for the sub-lethal endpoint measured in the test and a percent effect for the survival endpoint $\geq 50\%$*

Or if no survival endpoint can be measured, then:

No chronic toxicity test shall result in a "fail" at the IWC for the sub-lethal endpoint measured in the test and a percent effect for the sub-lethal endpoint $\geq 50\%$*

Chronic Toxicity Monthly Median Effluent Limitation

No more than one chronic toxicity test initiated in a calendar month shall result in a "fail" at the IWC for any endpoint*

** Using the most sensitive species*

MMEL Compliance

Routine Monitoring Test	Compliance Test 1	Compliance Test 2	MMEL Violation?
Pass	NA	NA	No
Fail	Pass	Pass	No
Fail	Pass	Fail	Yes
Fail	Fail	NA	Yes

Toxicity Reduction Evaluation

- A toxicity reduction evaluation (TRE) is required when two violations of either effluent limitation occurs within a calendar month or in consecutive calendar months
- Routine monitoring shall continue during a TRE
- Regional Water Boards have discretion to require a TRE if other information (i.e., fish kills) indicates toxicity

Storm Water & Nonpoint Source Dischargers

- Water Boards have discretion to require toxicity testing using any species
- If requiring species from Table 1, the TST statistical approach must be used
- Any future requirements for testing with the species in Table 1 also will be required to use the TST statistical approach

Timeline

Public Comment Period	Released on 10/19/2018 To close on 12/7/18
Board Hearing for Public Comment	November 2018
Staff Stakeholder Workshops	June 2019
2nd Board Workshop	July 2019
Board Adoption	August/September 2019

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