

## Summary of Proposed Toxicity Provisions

April 2017

### **Introduction**

The State Water Resources Control Board (State Water Board) is proposing a statewide plan to establish aquatic toxicity water quality objectives and a statistical approach for assessing the toxicity of effluents and receiving waters (proposed Provisions). The proposed Provisions will be included in the statewide Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE). The proposed Provisions include specific requirements for toxicity monitoring, assessment, and control.

### **Current Toxicity Policy**

Existing statewide toxicity control provisions are found within chapter four of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP). The SIP establishes the minimum chronic toxicity control requirements for implementing the narrative toxicity objectives for aquatic life protection in the Regional Water Quality Control Board (Regional Water Board) Basin Plans. Currently, the SIP lacks implementation provisions for toxicity control for National Pollutant Discharge Elimination System (NPDES) permits. Most critically, the appropriate form and implementation of toxicity limits are not clearly defined. As a result, Regional Water Boards have not established toxicity limits in permits consistently.

### **Purpose of the Proposed Provisions**

The proposed Provisions include a consistent statewide program for monitoring and assessing toxicity in both effluent and surface waters.

### **Applicability & Interaction with the Basin Plans**

The proposed Provisions apply to all waters designated to protect aquatic life beneficial uses, including but are not limited to, warm freshwater habitat (WARM), cold freshwater habitat (COLD), wildlife habitat (WILD), estuarine habitat (EST), commercial and sport fishing (COMM), marine habitat (MAR), inland saline water habitat (SAL), and wetland habitat (WET).

The implementation requirement contained within the proposed Provisions will apply to all Publicly Owned Treatment Works (POTWs) and all other Non-Storm water NPDES Dischargers (e.g. traditional point sources, such as refineries). In addition, if Regional or State Water Board permits require storm water or nonpoint source dischargers to monitor for toxicity with test methods described in the proposed Provisions, then those dischargers will be required to analyze the toxicity test data using the Test of Significant Toxicity (TST).

The proposed Provisions would supersede the Basin Plans regarding the methods of assessing compliance with toxicity water quality objectives and interpretation of toxicity test results.

The proposed Provisions do not supersede narrative toxicity water quality objectives, chemical specific limits, or site-specific water quality objectives in the Basin Plans.

### **Proposed Objectives**

The toxicity water quality objectives are stated in the form of a null hypothesis. Attainment of the water quality objective is demonstrated by rejecting the null hypothesis.

In general terms, the null hypothesis is the following statement: the ambient receiving water is toxic because the test organism adverse response in the ambient receiving water sample is significantly different from the test organism response in the control water sample.

Specifically, for chronic toxicity the difference between the organism response in the test water must be greater than or equal to 25 percent compared to the test organism response in the control water. For acute toxicity, the difference between the organism response in the test water must be greater than or equal to 20 percent compared to the test organism response in the control water.

### **Test of Significant Toxicity (TST)**

The TST is a statistical approach for analyzing toxicity test data and assessing whether an effluent or site water is truly toxic. The proposed Provisions require that toxicity test results be analyzed using the TST method to determine compliance with the objectives. U.S. EPA supports the TST approach as a statistical option for permitting authorities to use when analyzing toxicity test data. The TST approach was developed using extensive data and research, incorporates the latest statistical understanding, and has been subjected to extensive external scientific peer review. It does not alter existing toxicity testing methods. The TST approach can be consistently applied in a cost effective manner across a variety of California regulatory programs and will be implemented in accordance with the U.S. EPA National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document (June 2010), which can be found at:

[https://www3.epa.gov/npdes/pubs/wet\\_final\\_tst\\_implementation2010.pdf](https://www3.epa.gov/npdes/pubs/wet_final_tst_implementation2010.pdf)

### **Acceptable Toxicity Test Methods**

For assessing compliance with the water quality objectives, dischargers are required to use U.S. EPA approved methods and species. Species must be suitable for TST analysis.

### **Implementation for Non-storm water NPDES Dischargers**

#### **A. Species Sensitivity Screening**

Species sensitivity screening includes four sets of tests conducted within one year. For chronic toxicity, each set of tests must consist of at least one vertebrate, one invertebrate and one aquatic plant. For acute toxicity, each set of tests must consist of at least one vertebrate and one invertebrate.

In general, the permitting authority should select the species exhibiting the highest percent effect at the instream waste concentration (IWC) as the most sensitive species.

#### **B. Reasonable Potential**

POTWs that are permitted to discharge at or above 5 million gallons per day (MGD) are not required to perform a reasonable potential analysis for chronic toxicity. POTWs of this size must conduct routine monitoring for chronic toxicity.

All other non-storm water NPDES dischargers must conduct reasonable potential analysis for chronic toxicity

POTWs do not need to conduct a reasonable potential analysis for acute toxicity, unless the Permitting Authority in its discretion requires the analysis. . . All other NPDES dischargers must conduct a reasonable potential analysis for acute toxicity.

#### **C. Reasonable Potential Analysis**

A discharge has reasonable potential to cause or contribute to an excursion above the chronic or acute toxicity water quality objectives, if any of the chronic toxicity tests results in a “fail” at the IWC, or if any of the toxicity tests have a percent effect at the IWC greater than 10 percent.

Furthermore, other information or data, including, but not limited to, fish die off observation, lack of available dilution, or existing data on toxic pollutants, may be used by the permitting authority to determine there is reasonable potential.

#### **D. Routing Monitoring**

For chronic toxicity testing, all Non-Storm water NPDES dischargers that have reasonable potential and are authorized to discharge at or greater than 5 MGD, and all POTWS authorized to discharge at or greater than 5 MGD must conduct monthly routine monitoring for any month having at least 15 days of continuous discharge.

For chronic toxicity testing, Non-Storm water NPDES dischargers that demonstrate reasonable potential and are authorized to discharge at a rate less than 5 MGD must conduct quarterly routine monitoring for any quarter having at least 15 days of continuous discharge.

If a discharger has a routine monitoring frequency of less than monthly and a single violation occurs within any month, the discharger is required to conduct an additional routine monitoring test in the following month.

The proposed Provisions do allow the Permitting Authority to increase or decrease the routine monitoring frequencies under certain conditions.

For acute toxicity testing, the Permitting Authority will determine the monitoring frequency, which shall be no less than annual.

### **E. Effluent Limitations**

Only toxicity tests that use the most sensitive species and analyze the IWC using the TST shall be used to determine compliance with the Maximum Daily Effluent Limitations (MDEL) and Median Monthly Effluent Limitations (MMEL).

### **F. MDEL**

For chronic toxicity, a violation of the MDEL occurs when the toxicity test results in a “fail” and the percent effect for the survival endpoint is greater than or equal to 50 percent at the IWC.

If there is no survival endpoint for the species tested (e.g. plant species), then a “fail” with a 50 percent or greater effect for any endpoint at the IWC results in a MDEL violation.

If the test species is *Ceriodaphnia dubia*, a 50 percent or greater effect in the survival endpoint at the IWC results in a MDEL violation.

For acute toxicity, a violation of the MDEL occurs when the toxicity test results in a “fail” and the percent effect for the survival endpoint is greater than or equal to 50 percent at the IWC.

### **G. MMEL**

For both chronic and acute toxicity, if any test results in a “fail” at the IWC, then the discharger must initiate two additional toxicity tests within the same calendar month. If either of these additional tests results in a “fail” at the IWC then there is a violation of the MMEL.

### **H. Toxicity Reduction Evaluation**

A TRE shall be initiated when there are two or more violations within the same month or in consecutive months. The combination of violations may be acute and/or chronic and may be any combination of two or more MDEL or MMEL violations.

### **Storm water and Nonpoint NPDES Dischargers**

Storm water and nonpoint source dischargers with existing toxicity requirements with test methods described in the Provisions will be required to use the TST statistical approach. The Permitting Authority will be required to send letters to all affected storm water and nonpoint dischargers to notify them that they must use the TST statistical analysis within one year of receipt of the letter. In addition, any storm water or nonpoint source dischargers that are required to conduct toxicity testing in the future with test methods described in the proposed Provisions will need to use the TST.

### **Small Disadvantaged Communities and Insignificant Discharges**

The Permitting Authority may make a finding that a POTW serving a small disadvantaged community or an insignificant Non-Storm water NPDES discharger has no reasonable potential to cause or contribute to an exceedance of the toxicity water quality objective. If the Permitting Authority makes this finding they may exempt the discharger from some of the requirements in the Provisions.

**Schedule for the Proposed Provisions**

<b>Task Name</b>	<b>Target Date</b>
Outreach	April 11, 12, 24th, 2017
Public Comment Period	June 6 – July 21, 2017
Workshop	June 15, 2017
Hearing	July 5, 2017
Board Consideration	October 17, 2017