Public Comment
Toxicity Provisions
Deadline: 12/21/18 by 12 noon

California Stormwater Quality Association®
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December 21, 2018

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board

Subject: Comments on Draft Toxicity Provisions

Dear Ms. Townsend:

The California Stormwater Quality Association (CASQA) is writing to comment on the State Water Resources Control Board's (State Water Board) proposed Establishment of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (ISWEBE); and Toxicity Provisions (hereafter Draft Toxicity Provisions).

CASQA understands that, if adopted, the ISWEBE Plan will be a single planning document that includes all water quality control plan provisions adopted by the State Water Board that relate to surface waters other than open bays and the ocean and the Draft Toxicity Provisions would establish numeric acute and chronic toxicity water quality objectives (WQOs), which are stated in the form of a null hypothesis and alternative hypothesis. These Draft Toxicity Provisions describe consistent toxicity testing and analyses for determining whether ambient receiving water meets the numeric WQOs. The Draft Toxicity Provisions would require the use of the Test of Significant Toxicity (TST) when Storm Water Dischargers are required to conduct testing. Finally, only for Non-Storm Water NPDES Dischargers, these Draft Toxicity Provisions establish whether a permitting authority shall require effluent limitations and whether permittee effluent complies with applicable permit terms.

We appreciate the modifications to the Draft Toxicity Provisions regarding the monitoring provisions for Stormwater Dischargers and feel that they address most of the concerns provided in our previous comments. We also support the discussion in the Staff Report and Section III.B.4 clarifying that numeric effluent limitations for toxicity are not appropriate for storm water permittees at this time. Additionally, CASQA appreciates the efforts by the State Water Board in developing the Draft Toxicity Provisions to help standardize the state approach and further protect California waters and aquatic life. As stated in the Staff Report[1], the Draft Toxicity Provisions aim to provide consistent protection of aquatic life beneficial uses in waters throughout the state and protect aquatic habitats and biological life from the effects of known and unknown toxicants. The Draft Toxicity Provisions are also meant to provide the Regional Water Quality Control Boards (Regional Water Boards) "consistent requirements for monitoring and assessing compliance with toxicity water quality objectives." CASQA supports the intent of the Draft Toxicity Provisions to reconcile the current inconsistency when addressing aquatic toxicity across the regions.

While we support the intent of creating statewide consistency, CASQA is concerned with the potential implications of the numeric objectives proposed in the Draft Toxicity Provisions and the relationship between the Toxicity Provisions and the Urban Pesticide Amendments that are under development by the State Water Board. The concerns and recommended modifications to address the identified concerns are discussed in the following four comments.

[1] Draft Staff Report, including Substitute Environmental Documentation, for the Toxicity Provisions. October 19, 2018.

Comment #1: The Toxicity Provisions Should Distinguish Between Dry and Wet Weather Conditions

CASQA continues to have concerns with the lack of consideration of the differences between dry weather conditions and storm events when developing WQOs and the appropriate application of WQOs during those two very distinct flow conditions. The proposed WQOs do not include any implementation provisions that account for the differences between wet and dry weather conditions. The variable nature of stormwater runoff presents unique challenges in accurately characterizing water quality and potential receiving water impacts that needs to be explicitly considered in the implementation provisions for the toxicity WQOs. The science required to effectively characterize the duration, exposure, and environmental impacts of toxicity during wet weather events is lacking, and the application of methods derived for continuous wastewater discharges is not appropriate. Of primary concern is the mismatch between the exposure periods for toxicity testing, typically lasting four to ten days, and the duration of stormwater flows, typically lasting some number of hours, and rarely exceeding one full day. As proposed, the toxicity WQOs are applied equally to wet and dry weather samples without consideration of these differences. CASQA requests that the Draft Toxicity Provisions be revised to clarify that only the acute objectives should be applied to wet weather samples.

Under the California Water Code (CWC Section 13241), the State and Regional Water Boards are required to consider a number of factors when adopting water quality objectives, including in relevant part here: consideration of past, present and probable future beneficial uses of water; and consideration of the water quality condition that could reasonably be achieved through coordinated control of all factors which affect water quality in the area. The Staff Report should include appropriate information separately for wet and dry weather events to ensure that the State Water Board has all of the necessary information to consider the required 13241 factors. Dry and wet weather have different foreseeable methods of compliance that could impact the analysis of the water quality that could be reasonably achieved. The current language of the Draft Toxicity Provisions does not indicate if the differences between wet and dry conditions were evaluated in the Section 13241 analysis. Without such information, the State Water Board will be unable to properly consider compliance with section 13241. In short, such considerations might result in different requirements for wet weather or different implementation provisions.

While we recognize that conducting this analysis for the proposed toxicity WQOs may not be realistic at this point, CASQA has identified some proposed modifications in the remaining comments in this letter to help moderate this concern and requests that all future statewide WQOs be developed through a process that considers the appropriate application of the science that is the basis for the WQOs and the different foreseeable methods of compliance during storm events.

CASQA Recommendation:

- Add implementation language to clarify that the chronic toxicity objectives are not applicable during wet weather events.
- Conduct a 13241 analysis specific to wet weather and modify the objectives for wet weather if necessary, after the analysis.
- Include recommended changes outlined in comments #2, #3, and #4 below.

Comment #2: The Toxicity Provisions Must Provide Toxicity Specific Guidelines for Evaluating Waters for Placement on the Section 303(d) List for Aquatic Toxicity Alone

CASQA has significant concerns about the numeric objectives included in the Draft Toxicity Provisions and the potential implications of those numeric objectives for 303(d) listings and Total Maximum Daily Load (TMDL) development. The key concerns are:

- As noted in comment #1, the application of the proposed numeric objectives to wet weather events has not been appropriately evaluated.
- Toxicity test data, as demonstrated by laboratory intercalibration studies, is variable and challenging to replicate.

- The proposed numeric objectives are based on a statistical analysis procedure that includes an acknowledged rate of false positives.
- Toxicity is not a pollutant and addressing toxicity requires identification of the pollutant causing toxicity.

Each of these points is discussed in more detail in the following sections. These concerns could result in 303(d) listings based on intermittent toxicity or false positives that cannot be effectively addressed by a TMDL. As a result, the Draft Toxicity Provisions should include toxicity specific 303(d) listing procedures that supersede the Listing Policy.[2]

Toxicity Data Variability Needs to be Addressed in 303(d) Listing Guidelines

Concerns have been raised about the reproducibility of toxicity data, particularly for stormwater toxicity samples. The Southern California Stormwater Monitoring Coalition[3] conducted a laboratory intercalibration study to assess comparability of toxicity test results obtained from different laboratories. "Although standardized methods are used by the multiple contract laboratories who conduct SMC toxicity testing, the method protocols typically have options or interpretations left to the laboratory, potentially leading to different test outcomes. This uncertainty is compounded by concerns about the toxicity test's inherent variability within each laboratory."[3] The intercalibration study results found that "After two intercalibration iterations, nearly all laboratories scored comparable (moderate to very high comparability) for three of the four species (four of five endpoints) including both marine species, Hyalella (the newest method), and the survival endpoint for Ceriodaphnia. However, approximately half the laboratories scored moderate or better comparability for the Ceriodaphnia reproduction test, and these laboratories were not consistent between intercalibration rounds. While intra-laboratory precision was generally comparable for Ceriodaphnia reproduction, there was a range of responses among laboratories to each sample, including the lab dilution water."[3] While this study resulted in the development of standardized guidance for laboratory toxicity testing to support more comparability, it also demonstrated the inherent variability in toxicity testing results. Procedures for evaluating waterbody impairment need to take into account this variability.

303(d) Listing Guidelines for Toxicity Should Account for False Positives

The proposed numeric toxicity WQO in the Draft Toxicity Provisions includes an acknowledged best-case 5% false determination of toxicity. The proposed numeric toxicity WQO states that failing to reject the NULL HYPOTHESIS (referred to as a "fail") is equivalent to an exceedance of the acute/chronic toxicity WQO. This functionally indicates that a single TST failure in a receiving water bioassay test represents an exceedance of the toxicity WQO. As acknowledged within the Staff Report, there is a concern regarding false positive aquatic toxicity test results. Notwithstanding concerns specific to the TST which have been documented in previous comment letters related to these Draft Toxicity Provisions, the concern regarding false positive aquatic toxicity test results are applicable to all common statistical approaches for interpretation of aquatic toxicity testing, yet the concerns regarding false positives are minimal for almost all pollutants (e.g. chemical parameters, bacterial indicators).

The implementation procedures for Non-Storm Water National Pollutant Discharge Elimination System (NPDES) Dischargers require compliance with Median Monthly Effluent Limitations (MMEL) and Maximum Daily Effluent Limitations (MDEL) when certain conditions are met. The MMEL and MDEL in the Draft Toxicity Provisions are designed so that a single exceedance with a low percent effect will not result in a violation of the effluent limitations. The State Water Board's Response to Comments (RTC)[4] states that "a percent effect threshold reduces the

[2] Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. State Water Resources Control Board. Adopted September 30, 2004. Amended February 3, 2015.

[3] Southern California Coastal Water Research Project, 2016. Stormwater Monitoring Coalition: Toxicity Testing Laboratory Guidance Document. Technical Report 956.

[4] Response to Comments on the 2012 Draft Policy for Toxicity Assessment and Control. State Water Resources Control Board. October 26, 2018.

probability of a violation from a single sporadic insignificant event or erroneous toxic identification while still addressing high level toxicity events." An additional threshold of 50 percent effect is incorporated into the MDEL for non-stormwater dischargers to be certain the magnitude of toxicity is high enough by itself to warrant a permit violation. The RTC goes on to state that the "MDEL is consistent with an LC_{50}, which is a measurement often used in toxicity to demonstrate a significant toxicity effect."

Although the Draft Toxicity Provisions try to address the issues with the false positive aquatic toxicity test results rate through the implementation procedures for wastewater dischargers, the implications of the false determination rate are not addressed for the proposed numeric toxicity objective itself. California's 303(d) Listing Policy[5] uses a binomial approach for placing waters on the section 303(d) list. Table 3.1 of California's 303(d) listing policy specifies that if two or more of 24 measurements in a waterbody exceed the water quality objective, the waterbody will be listed as impaired. At a false determination rate of 5%, 34% of California's waterbodies would be expected to be incorrectly listed as impaired based on an assessment of 24 samples. The Draft Toxicity Provisions should include guidelines for 303(d) listing procedures that are similar to the implementation procedures for Non-Storm Water NPDES permittees to address the false positive rate.

<u>Toxicity is not a Pollutant Suitable to being addressed through a TMDL and the 303(d) Listing process should prioritize pollutant identification</u>

Toxicity testing is a tool for measuring pollution and associated adverse effects, but toxicity is not a pollutant. Addressing persistent toxicity requires the identification of a toxicant (i.e., pollutant) so that mechanisms to reduce the discharge of the toxicant can be identified. Intermittent toxicity and low level chronic toxicity often present challenges for toxicant identification. Additionally, intermittent toxicity is likely to be due to isolated events that would not be effectively addressed through a TMDL. 303(d) listing procedures should result in listings for persistent toxicity with significant effects where toxicants can be identified and TMDL development will be effective in addressing observed toxicity.

To address the concerns outlined above, an approach to placing waters on the section 303(d) list specific to aquatic toxicity that accounts for the concerns regarding the application of the objectives to storm events noted in Comment #1, toxicity test variability, false positive aquatic toxicity test results, and ability to develop a TMDL to address the toxicity should be included within the Draft Toxicity Provisions. Section 3.6 of the Listing Policy provides the following guidance for placing waters on the section 303(d) list for aquatic toxicity: "The segment shall be listed if the observed toxicity is associated with a pollutant or pollutants. Waters may also be placed on the section 303(d) list for toxicity alone." There is further guidance provided for how to determine association of pollutant concentrations with toxic or other biological effects, but the Listing Policy does not provide further guidance to address the complexities of placing waters on the 303(d) list for toxicity alone. Similar to the provision included within the ISWEBE Sediment Quality Provisions[6], a provision should be included within Section IV (Programs of Implementation) of the Draft Toxicity Provisions titled "Evaluating Waters for Placement of the Section 303(d) List". Within this section, the State Water Board can provide guidance to Regional Water Boards regarding when water should be placed on the section 303(d) list for toxicity alone.

CASQA Recommendation

- Include a new section of Section IV (Programs of Implementation) of the Toxicity Provisions titled "Evaluating Waters for Placement of the Section 303(d) List" that clearly supersedes the Listing Policy[5]. Include provisions that address the toxicity test variability and false positive concerns by:

[5] Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. State Water Resources Control Board. Adopted September 30, 2004. Amended February 3, 2015.

[6] Amendments to the Water Quality Control Plan for Enclosed Bays and Estuaries of California, Sediment Quality Provisions. State Water Resources Control Board. May 7, 2018.

- Clarifying that only the acute WQOs should be applied to wet weather samples for assessment purposes.
- Incorporate a similar method for addressing false positives as was included in the implementation requirements for Non-Stormwater Dischargers or identify a different statistical threshold for listing that is representative of persistent toxicity impairments that are impacting beneficial uses. Potential language that could be considered is as follows:

  "The numeric interpretations of the aquatic toxicity water quality objective described in Chapter IV.B.1 shall be used to assess waters for placement on the section 303(d) list for toxicity alone. Water segments shall be placed on the section 303(d) list for exceedance of the narrative aquatic toxicity objective when persistent toxicity is observed in a waterbody segment. Persistent toxicity is defined as at least three consecutive sampling events failing to reject the NULL HYPOTHESIS for chronic or acute toxicity or at least three sampling events in one year failing to reject the NULL HYPOTHESIS with each sample having a percent effect greater than 50%."

Comment #3: Clarify Application of Provisions to Stormwater NPDES Permits

CASQA supports the language provided in *Section III.B.4. Interaction of Toxicity Provisions with Narrative and Numeric Toxicity Water Quality Objectives* that clarifies that numeric effluent limitations for toxicity will not be included in permits for Storm Water NPDES Dischargers. As noted in the Draft Staff Report "There are significant difficulties associated with numeric effluent limitations calculations and compliance monitoring. While a compliance schedule would aid implementation efforts, the highly variable nature of storm water, coupled with the multitude of point sources within a municipality, continues to caution against a blanket policy of imposing numeric effluent limitations."[7] CASQA agrees with the discussion in the Staff Report, the conclusions of the Blue Ribbon Panel cited in the Staff Report, and notes that the concerns identified with toxicity testing in the previous comments further support that numeric effluent limitations for toxicity should not be applied in storm water permits. CASQA encourages the State Water Board to maintain the language in this section to avoid inconsistent application of the Provisions in storm water permits. Should numeric effluent limitations become feasible to develop and the concerns identified in previous comments be addressed in the future, the Provisions could be modified at that time with new implementation provisions for stormwater. Until such a time, the Provisions should be clear that development of effluent limitations is not feasible at this time.

Although we appreciate the language in this section, CASQA requests some minor modifications to clarify the intent of the section and address the potential for the numeric objectives to result in receiving water limitation violations for Storm Water NPDES permittees prior to their ability to identify and address the toxicant. Section 4, page 4, of the Draft Toxicity Provisions indicate that toxicity should not be included as a numeric effluent limitation in Stormwater NPDES permits but does not address receiving water limitations. Additionally, based on recent Phase I MS4 permits in the Los Angeles and San Diego Regions, any toxicity allocations identified in a TMDL could be applied as numeric effluent limitations. CASQA requests that this section be clarified that numeric receiving water limitations and effluent limitations, even when a TMDL exists, should not be included in Stormwater NPDES permits.

CASQA Recommendation

- Modify Chapter III.B.4 as follows:

  III.B.4. Interaction of Toxicity Provisions with Narrative and Numeric Toxicity Water Quality Objectives

[7] Draft Staff Report page 111.

> Compliance with narrative toxicity water quality objectives is determined by use of indicator species, analysis of species diversity, pollution density, toxicity tests or other appropriate method as specified by the PERMITTING AUTHORITY. The PERMITTING AUTHORITY may also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the California Department of Health Services, the U.S. Food and Drug Administration, the National Academy of Sciences, the U.S. EPA, and other appropriate organizations, to evaluate ~~compliance with~~ actions necessary to address pollutants potentially causing toxicity in receiving waters. ~~narrative toxicity water quality objectives~~.
>
> The PERMITTING AUTHORITY shall have discretion regarding the application of narrative ~~or numeric~~ toxicity water quality objectives to derive narrative effluent or narrative receiving water limitations.
>
> The PERMITTING AUTHORITY shall not include numeric effluent limitations for aquatic toxicity endpoints addressed by any of the acute and chronic toxicity test methods identified in Table 1 of Section IV.B.1.b to implement either the toxicity narrative or numeric water quality objectives except as indicated in section IV.B.2.e and only for Non-Storm Water NPDES Dischargers.

Comment #4: Integrate Implementation Requirements for Municipal Storm Water Dischargers Regulated Pursuant to NPDES Permits Through the Urban Pesticides Plan Amendments

Section 4.2 of the Staff Report provides evidence that the primary cause of freshwater toxicity statewide is pesticides. Monitoring data from California urban watersheds that is more recent than the data described in the staff report has strengthened this linkage to current pesticides and identified the pyrethroid insecticides and fipronil as the primary causes of toxicity in urban watersheds.[8] Responding to a joint request by CASQA and the State and Regional Water Boards, California Department of Pesticide Regulation (DPR) has already implemented usage restrictions on both pyrethroid insecticides and fipronil. DPR is currently collaborating with the Water Board's Surface Water Ambient Monitoring Program Sediment Pollution Trends program to monitor the effectiveness of these usage restrictions and to determine if additional mitigation measures are necessary.

As noted in CASQA's previous comment letter, despite DPR's actions, due to the Clean Water Act, pesticide-related toxicity in surface waters receiving urban runoff has created a multi-million dollar regulatory burden for our municipality members. CASQA is actively working with the State Water Board staff on alternative, more effective approaches to both toxicity monitoring and addressing pesticide-related toxicity impairments that should be acknowledged in these Provisions.

Under Objective 6 of Strategy to Optimize Resource Management of Storm Water (STORMS) (increase source control and pollution prevention), the State Water Board is developing a statewide framework for urban pesticides reduction (Urban Pesticides Plan Amendments) that will formally implement a multi-agency pesticides management approach that has been informally implemented for the last decade. This approach involves cooperation between the Water Boards, municipalities, and state and federal pesticide regulators to achieve water quality objectives for pesticides and toxicity in urban receiving water and to prevent or readily address future water quality impairments. The Urban Pesticides Plan Amendments program will establish consistent statewide requirements for MS4 dischargers to manage the causes and MS4 contributions to pesticide-related toxicity and to create a comprehensive, coordinated statewide monitoring framework for pesticides and toxicity in urban runoff and receiving water that improves resource efficiency, usefulness of data, and coordination of data collection to support management decisions.[9,10,11]

[8] See California Department of Pesticide Regulation's Surface Water Database and the State Water Board's CEDEN database.

[9] Statewide Urban Pesticides Reduction Fact Sheet. State Water Resources Control Board. July 20,2017.

Given that pesticides are the primary cause of urban runoff toxicity, the State Water Board is developing Urban Pesticide Plan Amendments to address toxicity caused by pesticides, and that the Urban Pesticides Plan Amendments will be contained within the same documents as the Draft Toxicity Provisions, the Water Board should ensure that the Draft Toxicity Provisions do not constrain the implementation of the Urban Pesticides Plan Amendments (including, but not limited to, implementation requirements related to waters placed on the section 303(d) list for toxicity-related impairments and monitoring requirements for storm water dischargers). By directly targeting the toxicant and specifying implementation actions for storm water permitees, the Urban Pesticides Plan Amendments will provide an effective mechanism for addressing the majority of toxicity in urban runoff, precluding the need to identify additional requirements for storm water permittees in the Toxicity Provisions. Additionally, similar, source control approaches should be supported in the future in the unlikely event that a non-pesticide widespread toxicant is identified in urban runoff.

To avoid conflicts with the Urban Pesticides Plan Amendments, CASQA requests that the requirement to modify Storm Water NPDES permit monitoring requirements within one year of the effective date of the amendments be removed from the Draft Toxicity Provisions. Toxicity monitoring requirements for all MS4 permits will need to be modified shortly after Pesticides Plan Amendments adoption to implement the monitoring necessary to support the new urban runoff pesticides control program. The State Water Board should not require modifications to the same monitoring requirements twice in close succession. The removal of this requirement will not result in delayed implementation of the toxicity monitoring provisions but will avoid confusion and burdens on dischargers and the Regional Water Boards to implement modified toxicity monitoring programs in close succession. Recently adopted Phase I MS4 permits in the Los Angeles, San Diego, and San Francisco regions already include the requirement to analyze data using the TST. The majority of the other Phase I MS4 permits are either in active permit renewal or will be renewed within the next two years and would be required to include the TST at the time of permit modification. As a result, the majority of the toxicity monitoring will be conducted using the TST within a year of the effective date of the amendments without the need to issue 13267 or 13383 Orders to modify the monitoring programs.

CASQA Recommendation

- In the adopting resolution, recognize that a control program to address the main cause of toxicity in urban runoff – current use pesticides – is in development through the "Urban Pesticides Plan Amendments" and direct staff to ensure that nothing in the Toxicity Provisions would constrain implementation (e.g., limit toxicity or pesticides monitoring) of the pesticides control program, including the monitoring to support that program.
- Modify Chapter IV.B.3 as follows:
  The PERMITTING AUTHORITY shall have discretion to require toxicity monitoring using any test method. ~~For all STORM WATER dischargers with existing chronic or acute toxicity monitoring requirements with test methods described in Section IV.B.1.b , the PERMITTING AUTHORITY shall issue Water Code section 13267 or 13383 Orders within one year of the effective date of these TOXICITY PROVISIONS that requires the statistical approach, percent effect, and reporting to be conducted in accordance with Section IV.B.1.c, IV.B.1.d, & IV.B.1.e commencing within one year from the date of the Order.~~

[10] Information Document, Public Scoping Meeting, Proposed Amendments to the Water Quality Control Plan for Ocean Waters of California and Proposed Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California for the Control of Pesticide Discharges from Municipal Separate Storm Sewers. State Water Resources Control Board. January 25, 2017.

[11] Strategy to Optimize Resource Management of Storm Water, Attachment A Establish Statewide Framework for Urban Pesticides Reduction, Proposed Urban Pesticides Amendments Work Team Report. State Water Resources Control Board. August 4, 2017.

We appreciate your consideration of our comments. If you have any questions, please contact CASQA Executive Director Geoff Brosseau at (650) 365-8620.

Sincerely,

Daniel Apt, Chair
California Stormwater Quality Association

cc: CASQA Board of Directors, CASQA Executive Program Committee
Geoff Brosseau, Executive Director
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