



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

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August 21, 2012



Via Electronic Mail

Ms. Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
1001 I Street, 15th Floor
Sacramento, CA 95814

Dear Ms. Townsend:

Comment Letter - Policy for Toxicity Assessment and Control

The Sanitation Districts of Los Angeles County (Sanitation Districts) appreciate the opportunity to provide written comments regarding the State Water Resources Control Board's (State Water Board's) draft Policy for Toxicity Assessment and Control (draft Policy). The Sanitation Districts would like to start by recognizing and expressing our gratitude for the significant efforts made by State Water Board staff to engage and work with stakeholders over the past few years to address significant issues and concerns identified by stakeholders in previous versions of the draft Policy.

We believe that the draft Policy has been substantially improved through these efforts. The Sanitation Districts are fully committed to the effective and appropriate implementation of the Whole Effluent Toxicity (WET) program and support the use of WET testing as a tool to address uncertainties associated with chemical specific monitoring and biological assessment. The following five comments are respectfully submitted with this premise in mind, and with the intent to improve the implementation of WET provisions designed to assess and improve the quality of surface waters, enclosed bays, and estuaries within the State of California.

1. The proposed water quality objective is inconsistent with the proposed numeric effluent limits and will result in an unacceptably large number of non-toxic receiving waters being classified as "impaired."

The State Water Board has addressed the issue of false determinations of toxicity associated with individual test of significant toxicity (TST) results in the draft Policy with respect to effluent discharge limitations. However, the draft Policy does not address false determinations of toxicity associated with individual TST results with respect to the proposed water quality objectives. As written, the draft Policy would lead to the unintended consequence of a significant number of water bodies being incorrectly classified as impaired for toxicity, and thus placed on the state's 303(d) list of impaired waters. Unless this issue is resolved, the Water Boards would be put in a position of having to divert substantial resources, which could otherwise be used to improve water quality, to unnecessarily address these incorrect "impairment" listings. Similarly, dischargers would have to expend scarce resources attempting to solve a problem that does not exist.

The draft Policy proposes a numeric toxicity water quality objective that is functionally set as a pass or fail of a single receiving water TST result, with a "fail" result considered an exceedance of the objective.

Section 3.6 of California's 303(d) listing policy¹ (Listing Policy) specifies that a water body segment shall be placed on the 303(d) list for toxicity if the number of exceedances is more than the number listed in Table 3.1, which in turn is based on application of a binomial test. On a practical basis, as written, the draft Policy in conjunction with the Listing Policy would lead to listing of a water body for toxicity if two or more of 24 TST measurements in a waterbody exhibit a "fail" result.

Some disagreement exists as to the exact rate at which the TST gives false determinations of toxicity for non-toxic samples. The USEPA interlaboratory validation study used to promulgate the chronic toxicity methods indicated that this error rate is as high as 15%, while the State Water Board's "Test Drive" indicated the error rate could be similar to the 5% error rate associated with the current NOEC statistical test. However, using either estimate, application of the proposed numeric objective will result in an unacceptably high number of non-toxic receiving water bodies being incorrectly listed as impaired. At a 15% false determination of toxicity error rate, the probability of listing a non-toxic water body (i.e., of observing at least two TST exceedances in 24 samples) is 89%, while at a minimal 5% error rate, 34% of California's non-toxic waterbodies would still be listed as impaired. Note that assessments based on less than 24 samples would have a lower rate of incorrect toxicity listings, but as more samples are collected over time, the number of incorrectly 303(d)-listed water bodies would eventually increase to the proportions listed above.

Recommended Solution:

If the State Water Board continues to move forward with the current numeric chronic toxicity objective, it should include specific 303(d) listing guidance in Part II of the draft Policy to address uncertainties associated with the TST "pass/fail" approach. The recommended guidance would direct regulatory authorities to use a 66% TST "pass" rate among all toxicity tests conducted in a receiving water reach as evidence of a receiving water meeting toxicity objectives. Use of a 66% TST "pass" rate is consistent with the two out of three multiple TST test approach used for final effluent compliance, which addresses uncertainty in the analytical and statistical methods. Additionally, guidance allowing continued use of the Listing Policy would be appropriate for evaluating results exhibiting effects greater than twice the regulatory management decision (e.g., a 50% effect for chronic toxicity testing), which is consistent with proposed chronic maximum daily effluent limits (MDELs). Employing this recommended listing guidance would result in less than 1% of non-toxic waters being erroneously listed as "impaired," assuming a 5% false determination of toxicity error rate, and less than 2% would be incorrectly listed if that error rate is 15%. Note that the State Water Board has incorporated guidance regarding 303(d) listings into other policies, such as the State Board's Sediment Quality Objective Policy².

2. *The Policy should explicitly specify that any effluent toxicity limits in WDRs or NPDES permits, including those associated with Total Maximum Daily Loads (TMDLs), be consistent with Part III(A)(2) of the draft Policy.*

The effluent limitations in the draft Policy are set to require that all discharges, after consideration of any mixing zones, are non-toxic, while also accounting for false determinations of toxicity in individual test results. The Sanitation Districts are concerned, however, that some Regional Water Boards may attempt to set different effluent toxicity limits when establishing TMDLs, in the mistaken belief that such effluent limits are more "stringent" than the ones proposed in the policy. For example, in a TMDL a Regional Board may specify that chronic toxicity effluent limits be set such that a single sample "fail" with a percent effect at or above 0.25 is an exceedance of the chronic MDEL, not 0.50 as specified in the policy. Such an action would not be appropriate, since it would not adequately account for the uncertainty in toxicity testing. To address this issue, the draft Policy should explicitly specify that all toxicity effluent limits, even those associated with toxicity TMDLs, be set in accordance with Part III(A)(2).

¹ Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. State Water Resources Control Board. Adopted September 2004.

² Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1: Sediment Quality. Effective August 25, 2009. Pages 17 and 18. http://www.waterboards.ca.gov/water_issues/programs/bptcp/docs/sediment/sed_qlty_part1.pdf.

Recommended Solution:

The Districts recommend including the edits (underlined) to Part III(A)(2) on page 7 as indicated below:

Numeric Effluent Limitations in Permits

If the applicable Water Board determines that reasonable potential exists for any NPDES wastewater discharger or point source WDR discharger or if a TMDL-derived waste load allocation for toxicity is warranted, ~~in accordance with Part III (A)(1)~~, the applicable Water Board shall include numeric effluent limitations for chronic toxicity in accordance with Part III(A)(1) in any permit issued, reissued, or reopened to address toxicity requirements after the effective date of the Policy...

3. *Allowing Regional Water Boards discretion to require and incorporate acute toxicity provisions for dischargers will not achieve the State Water Board's goal of statewide consistency for toxicity requirements, and may result in redundant and unnecessary toxicity monitoring that will not provide additional protection for aquatic life.*

It is commonly accepted that chronic toxicity testing represents a more sensitive measurement of toxicity than acute testing. Chronic toxicity tests typically utilize a more critical and sensitive life-stage (typically larvae), have longer exposure durations, and incorporate more sensitive endpoints than survival, such as growth or reproduction. For these reasons, any sample exhibiting acute toxicity would be expected to exhibit at least as much toxicity in a chronic test and, in most instances, more toxicity. Therefore, where robust monitoring requirements and effluent limits have been established for chronic toxicity, it is unnecessary and duplicative to conduct acute toxicity monitoring and establish acute toxicity limits. Additionally, conducting pointless acute toxicity tests would be a waste of resources and lead to the needless sacrifice of a great many laboratory animals. Establishing acute toxicity limits in addition to chronic toxicity limits does not provide additional environmental safeguards, but instead simply doubles enforcement liability for toxicity exceedances.

As written, the draft Policy gives broad discretion to the Regional Water Boards regarding acute toxicity. Per Part III(A)(4) of the draft Policy, Regional Water Boards can require acute toxicity testing for NPDES wastewater and point source WDR dischargers, even if a discharger is already conducting monthly monitoring for chronic toxicity and has chronic toxicity effluent limits. This broad discretion will lead to inconsistent acute toxicity monitoring provisions across the state, as some Regional Water Boards will choose to require the expensive and duplicative acute toxicity testing provisions and some will not. Similarly, Parts III(A)(1) and III(A)(2) of the draft Policy give broad discretion to the Regional Boards to require reasonable potential analyses and numeric effluent limitations for acute toxicity, respectively. No justification is provided in the draft Policy as to why such broad discretion relative to acute toxicity has been proposed, in contrast to the detailed requirements that have been established to provide consistency with regard to chronic toxicity. While the draft Policy Preamble states that the Policy "...establishes a uniform approach to toxicity monitoring, analysis, and remediation measures...", the draft Policy fails to establish a uniform approach to addressing acute toxicity. Therefore, restrictions need to be incorporated into the draft Policy that specifically delineate when a Regional Water Board shall implement acute toxicity provisions.

As stated above, where robust monitoring requirements and effluent limits have been established for chronic toxicity, it is not appropriate to require acute toxicity monitoring, an acute toxicity reasonable potential analysis, or acute toxicity effluent limitations. However, when a discharger does not have a chronic toxicity limit, Regional Water Boards could be given discretion to require acute toxicity testing and issue acute toxicity limits if the discharger has a reasonable potential for acute toxicity exceedances. Similarly, when chronic toxicity testing is less frequent (e.g., less than monthly), Regional Water Boards could be given discretion to require more frequent acute toxicity monitoring.

In summary, in order to more efficiently attain the State Water Board's goal of statewide consistency and to minimize costs and efforts associated with redundant and unnecessary acute toxicity testing efforts, the draft Policy should include specific restrictions on Regional Water Board discretion regarding acute toxicity provisions. A permit should include either a numeric acute toxicity limit or a numeric chronic toxicity limit, but not both. Additionally, a Regional Water Board should only have discretion to require acute toxicity monitoring in instances where no chronic toxicity monitoring is conducted or when chronic toxicity monitoring is conducted less frequently.

Recommended Solution:

Edit Part III(A)(2) of the draft Policy (page 7) to limit Regional Water Board discretion regarding inclusion of a numeric acute toxicity limit to instances where chronic toxicity limits are not incorporated into the permit OR when a discharger is required to conduct acute toxicity monitoring to supplement lower frequency chronic toxicity monitoring (i.e., frequency of chronic toxicity monitoring is less than monthly). This can be accomplished by the recommended edits (in bold) to Part III(A)(2) on page 7:

*The applicable Water Board has the discretion to include a numeric effluent limitation for acute toxicity **when numeric limits for chronic toxicity are not included in the permit or when acute toxicity monitoring is used to supplement lower frequency (less than monthly) chronic toxicity monitoring.** If acute toxicity limitations are included in the permit, the applicable Water Board shall document the need for acute limitations in the NPDES fact sheet or WDR information sheet (or equivalent document). If numeric effluent limitations for acute toxicity are imposed, they shall also be expressed as an MDEL and an MMEL.*

Along with the highlighted changes to Part III(A)(3) on page 8:

*NPDES wastewater and point source WDR dischargers that demonstrate reasonable potential, as determined in Part III (A)(1), are required to conduct routine chronic toxicity monitoring at a frequency no less than that established in Part III (A)(4)(a) of this Policy. **If chronic toxicity monitoring is conducted less frequently than monthly or if a chronic toxicity effluent limit has not been established, the applicable Water Board has discretion to require acute toxicity monitoring** ~~determines that a discharger demonstrates reasonable potential to exceed the acute toxicity objective, the discharger shall conduct routine acute toxicity monitoring,~~ in addition to chronic toxicity monitoring. The test species that exhibits the highest percent effect at the IWC during a reasonable potential analysis/species sensitivity screening (i.e. the most sensitive species) shall be utilized for routine monitoring during the permit cycle. Routine toxicity test design shall, at a minimum, include a single-concentration analysis of the IWC compared to a control. Results shall be analyzed using the TST method as described in Appendix A. In the absence of reasonable potential, the applicable Water Board has the discretion to require NPDES wastewater and point source WDR dischargers to conduct periodic monitoring for chronic ~~or acute~~ toxicity.*

4. Percent effect at the Instream Waste Concentration (IWC) is incorrectly calculated using arc-sine transformed data.

Transforming percentage data (e.g., survival responses) is a commonly accepted practice prior to conducting hypothesis testing, since normal data distribution assumptions are critical in the statistical analysis. However, these transformations are not necessary or advisable when calculating means and other descriptive estimates. Doing such calculations on arc-sine transformed data tends to positively bias the estimate, resulting in the calculation of larger effects than were actually observed using original units. The EPA's TST Spreadsheet Tool (Version 1.5) correctly addresses this by performing all percent effect calculations with original, untransformed units, including percentage data. However, the draft Policy includes an example, in Appendix C, where arc-sine transformed data is used to calculate percent effect (i.e., the acute fish survival test example on pages 21 and 22).

Recommended Solution:

Correct the percent effect at the IWC calculation on page 22 of the draft Policy to reflect the use of original, untransformed data in the example as indicated below:

$$\% \text{ Effect at IWC} = [(10 - 8.75) / 10] * 100 = 12.5\%$$

The State Water Board should also explicitly specify in the draft Policy that all percent effect calculations must be conducted on original, untransformed units.

5. *Requiring all testing associated with monthly median effluent limit (MMEL) compliance to be conducted during a calendar month is impracticable and will result in significant and unnecessary increases in the cost of toxicity monitoring.*

Page 9 of the draft Policy specifies that, "If an initial toxicity test (i.e., not a verification test) results in a "fail," but the percent effect is below the MDEL, the discharger shall conduct two additional toxicity tests within the same calendar month in order to determine compliance with the MMEL." In order to provide adequate time for conducting the two additional tests within the same calendar month, if necessary, dischargers will attempt to perform all initial toxicity monitoring during the first week of every month. This will result in a huge increase in demand for toxicity testing services in the first part of each month for laboratories that conduct toxicity tests for multiple discharges (e.g., contract laboratories and laboratories operated by agencies with more than one discharge). These laboratories will need to hire significantly more staff to accommodate such an increase in workload during the first part of the month, and the additional and ultimately unnecessary costs associated with this will be incurred directly or indirectly by dischargers. Such costs were not accounted for by the State Water Board.

Recommended Solution:

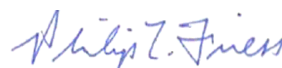
Replace the MMEL with a 30-day effluent limit on the grounds that incorporation of a monthly effluent limit is "impracticable", per 40 Code of Federal Regulations Part 122.45(d). It is impracticable for every NPDES and WDR discharger in the state of California to conduct initial toxicity testing within the first week of every month considering the logistical constraints, the relatively small number of high quality laboratories available, and the unnecessary increase in costs such an expectation would cause.

An alternative solution would be to include language in the draft Policy that allows and encourages Regional Boards to define "month" in each NPDES and WDR permit, for the purpose of toxicity testing, as starting and ending on specified dates. The specified dates would be staggered among dischargers to alleviate overloading of toxicity laboratories at the beginning of each calendar month. For example, a month could be defined for a particular POTW as starting on the tenth calendar day of a month and ending on ninth calendar day of the following month.

The Sanitation Districts again thank the State Water Board for this opportunity to provide input into the draft Policy. We look forward to working with the State Water Board as it continues to develop a policy on WET. If you have any questions about these comments or require additional information, please contact Phil Markle at (562) 908-4288, extension 2808, or by email at pmarkle@lacsds.org.

Very truly yours,

Grace Robinson Chan



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