



August 21, 2012

VIA EMAIL: commentletters@waterboards.ca.gov



Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-100

Re: *Comment Letter - Policy for Toxicity Assessment and Control*

Dear Ms. Townsend:

The City of Sunnyvale appreciates the opportunity to submit comments on the State's Revised Draft Policy for Toxicity Assessment and Control (Policy) dated June 27, 2012. Sunnyvale supports and incorporates by reference the California Association of Sanitation Agencies (CASA) and Bay Area Clean Water Agencies (BACWA) comments dated August 21, 2012 and the City of San Jose comments dated August 20, 2012.

Sunnyvale believes that the Proposed Policy needs to be substantially revised to achieve its stated goals for enhanced regulation of Publicly Owned Treatment Works (POTW) and protection of the State's water bodies. Sunnyvale recommends that the State Board proceed thoughtfully to avoid detrimental unintended consequences resulting from California being the first state in the United States to implement the Test of Significant Toxicity (TST) method for toxicity testing in lieu of proven point estimate methods.

Sunnyvale believes that the proposed TST based Policy represents a significant step backwards from the robust data rich multiple dilution point estimate based Whole Effluent Toxicity (WET) requirements that have been successfully implemented in POTW NPDES permits (including Sunnyvale's) in the San Francisco Bay area (Region 2) for over 20 years.

Historic water column water quality monitoring conducted by the Regional Monitoring Program (RMP) for over 20 years in the San Francisco Bay documents that the Region 2 WET approach has been protective of receiving water aquatic life beneficial uses. The RMP has found no evidence of water column ambient chronic toxicity and therefore has ceased monitoring for ambient chronic toxicity except for verification monitoring every five years to confirm that conditions have not changed.

Specific Comments and Recommendations

Statistical Method (Staff Report Issue 1B pp. 36-41)

The limited Alternatives Analysis in the Staff Report focuses on acknowledged statistical problems with historic No Observed Effect Concentration (NOEC) protocols vis-à-vis the proposed TST protocols. It

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does not adequately convey the potential advantages of the point estimate (Option 3) or dual endpoint (Option 5) approaches.

The Staff Report recommended Alternative 4 would adopt the TST method as a statewide protocol. The Staff Report contains a very limited and qualitative rationale for selecting the TST hypothesis testing based method versus point estimate methods. The Staff Report does not assess or provide information on the 20 plus years of EPA WET recommendations on use of the the IC/EC25 point source estimation approach (over hypothesis testing) or on the experience from the San Francisco Bay Region as a potential model for the State.

The Staff Report TST recommendation is notably silent on historic USEPA guidance which has consistently recommended the use of point estimation techniques versus hypothesis testing, as evidenced below.

a) The Federal Register Vol. 67, No. 223, Tuesday November 19, 2002 contains the Final Rule ratifying approval of several WET methods in 40 CFR Part 136. Page 69958 of that Federal Register states the following: *“As previously stated in the method manuals (USEPA, 1993; USEPA, 1994a; USEPA, 1994b) and EPA’s Technical Support Document (USEPA, 1991), EPA recommends the use of point estimation techniques over hypothesis testing approaches for calculating endpoints for effluent toxicity tests under the NPDES Permitting Program.”* [emphasis added]

b) The USEPA manual “Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms” (EPA/600/R-95/136) (August 1995) states the following on p. 8: *“2.2 Types of Tests 2.2.3 - Use of pass/fail tests consisting of a single effluent concentration (e.g., the receiving water concentration or RWC) and a control **is not recommended.**”* [emphasis included in the original manual text]

c) The USEPA document “National Pollutant Discharge Elimination System Test of Significant Toxicity Technical Document” (EPA 833-R-10-044) (June 2010) states the following on p. xiii: *“Because TST is a form of hypothesis testing, analyses in this document focus on comparing results of TST to the traditional hypothesis testing approach and not to point estimate techniques such as linear interpolation (i.e. IC25). Therefore, this document does not discuss point estimate procedures.*

The TST guidance document does not address the pros and cons of point source estimates as noted below. There is thus no information in the TST guidance document or in the record for the proposed Policy that rigorously assesses the relative merits of TST versus point estimation. The primary argument presented in the Staff Report against using point estimation is that poor experimental design can introduce bias into the calculations. This is an avoidable flaw that is not unique to point estimate approaches.

Recommended Action: Reject Alternative 4 and instead adopt Alternative 3 “Adopt a Point Estimate Method as a Statewide Protocol” consistent with the EPA recommendations cited above, the recommendations in CASA’s comment letter, and based on the implementation experience gained in the San Francisco Bay Region over the last 10 years. Alternatively, adopt Alternative 5, “Adopt two methods as a statewide protocol.” Dischargers would conduct both point estimate analyses and TST analyses. Sunnyvale has been conducting both analytical methods in parallel for minimal incremental cost for over a year. The dose response point estimate results provide considerable additional information for evaluating the extent of “true” toxicity in the event of a TST “fail” result. In 2012 to date, Sunnyvale has experienced two TST “fail” results coincident with two < 1 TUc test results.

Reasonable Potential Analysis (Staff Report Issue 2A pp. 49-50)

The Staff Report recommended Alternative 4 would unilaterally assign reasonable potential (RP) for all POTWs with an average daily flow above 1 mgd. The rationale given was that *“Because POTWs accept a steady, voluminous flow of effluent from a variety of municipal discharges containing numerous unknown constituents, these facilities harbor the potential to adversely impact aquatic biota.”* The rationale for this automatic RP also asserted that it *“would provide a higher level of ecological protection from the voluminous discharges ...”*

Such generalizations apply equally to pollutant specific parameters. This statement fails to take into account the differences in the types of users served by a POTW, whether the POTW has implemented a pretreatment program, whether the POTW has a robust source control and pollution prevention program, the level of treatment provided by the POTW, the initial dilution received by the discharge, and the quality of the receiving water. POTWs should have to have the opportunity to determine whether or not their discharge indeed has numeric RP and requires effluent limits to protect the receiving water and not unilaterally be saddled with permanent chronic toxicity limits that are impossible to remove, regardless of the quality of their discharge.

In 2000, the SWB faced this same issue of what RP method to include when adopting the State Implementation Plan (SIP). The January 31, 2000 Third Public Draft of the Functional Equivalent Document (FED) for the SIP (Chapter 1.1) presented seven alternatives for determining RP noting that *“the alternatives presented below do not differ in their impact on the environment.”* (emphasis added). This is in direct contrast to the above Staff Report assertions that POTWs require mandatory RP irrespective of their actual effluent quality.

The SIP FED Alternative 7 *“Require effluent limitations for all priority pollutants”* is analogous to the “all POTWs have RP” alternative 4 recommended in the Toxicity Policy Staff Report. This Alternative 7 was rejected by the SWB in favor of the current SIP methodology. The SIP FED and the Toxicity Policy Staff Report both include the USEPA Technical Support Document (TSD) alternative. The SIP FED did not select the TSD in part noting that *“determining “reasonable potential under this alternative requires more calculations and data.”* The Staff Report does not adequately analyze application of RP methods for POTWs, acknowledging the TSD and Ocean Plan methods as “accurate and comprehensive” but dismissing them, citing Staff resources as the limitation.

Recommended Action: Reject Alternative 4 for POTWs and instead adopt either the Alternative 2 (Ocean Plan RPCalc) or Alternative 3 (USEPA TSD) RP approach. RPCalc is a software program developed in 2005 by former SWB staffer Steve Saiz (now with the Central Coast RWB). RPCalc is a more sophisticated version of the TSD approach, has been peer reviewed, and is applicable to both toxicity and individual pollutants. It is simple to use and provides easy to interpret graphical and numeric RP results. It is equally suitable for inland and estuarine discharger RPAs as for ocean discharger RPAs. The Ocean Plan RPCalc RP approach is also much more statistically powerful and technically defensible than the simple single sample maximum concentration approach currently included in the SIP Section 1.3.

Inconclusive TREs/TIEs

Sunnyvale has spent over \$100,000 per year each of the past five years (\$500,000) on chronic toxicity testing, on TIEs and related special toxicity investigations, and on associated consultant support. During

the first half of 2009, Sunnyvale's Water Pollution Control Plant (WPCP) experienced generally low level and non-persistent chronic toxicity. The toxicity testing was conducted using *Americamysis bahia* (Mysid shrimp) and the survival EC25 and growth IC25 endpoints.

In accordance with the Plant's NPDES permit and EPA guidelines, the WPCP conducted accelerated toxicity testing and implemented its previously approved detailed Toxicity Reduction Evaluation (TRE) workplan. Limited TIE work was possible because most tests had results below the 1.25 TUC TRE workplan TIE initiation level.

Ammonia spiking, pH control, and ammonia removal TIE manipulations provided evidence that ammonia was responsible for the majority of the observed toxicity. Ammonia toxicity was determined to be in large part an artifact of the test protocol. The Sunnyvale effluent as discharged has a pH generally in the 7.0 to 7.5 range and unionized ammonia levels well below the Basin Plan toxicity levels. However, the Mysid chronic toxicity test requires salting up the effluent sample to the salinity of seawater. The process of adding salt raises the test solution pH from 7.0-7.5 to typically the 8.0- 8.2 range. Depending on the effluent total ammonia concentrations, the required salting up can raise the test solution unionized ammonia concentrations to levels approaching reported toxicity thresholds for Mysids.

Despite considerable time and expense, Sunnyvale was not able to conclusively identify the cause(s) of the chronic toxicity observed during the January to June 2009 period and again during late 2011. In short, Sunnyvale took all available steps to identify the cause(s) and source(s) of the observed chronic toxicity, but no definitive pollutant or source, other than potentially ammonia, were ever identified. Sunnyvale continues to aggressively implement its Pretreatment and Pollution Prevention Programs that have been in place since the early 1980s. The successes of these programs is evidenced by the fact that there were only three CTR toxic pollutants (out of 126) detected in Sunnyvale's effluent at levels above the applicable CTR water quality objective and therefore that required NPDES permit limits.

The USEPA TIE guidance is over 15 years old (1992/1993) and has not been updated. In Sunnyvale's and our contract laboratory's experience, it is a challenge using the available TIE protocols to be able to successfully identify sources of toxicity at these low levels of toxicity. The proposed Policy needs to acknowledge that not all TREs and TIEs will be successful despite dischargers' best efforts and to provide a mechanism for dischargers to be exempt from discretionary enforcement actions when they are in this situation.

TST vs IC/EC 25 Comparison

Sunnyvale had its contract laboratory perform a comparison of 2009-2010 chronic testing results under the current IC/EC25 approach (relative to the 1 TUC three sample median effluent trigger value) to the TST approach. Sunnyvale would have had five additional "fails" out of 31 tests under the TST method versus the IC/EC25 method. This represents an additional 16% "fails" (false positives), simply due to simply changing the TUC results calculation method to the TST. The underlying effluent quality was the same for each test.

Under the draft Policy's proposed numeric objectives, monitoring frequencies, TST based compliance evaluation, and monitoring and exceedance determination provisions, during 2009-2010, Sunnyvale would have had to conduct an additional 12 accelerated monitoring tests (\$3000 each or \$36,000) and have been required to conduct one additional TRE (\$14,000). Sunnyvale's WPCP would therefore have expended an additional approximately \$50,000 for no discernable environmental benefit.

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Sunnyvale would have incurred 14 chronic toxicity effluent violations during 2009-2010 if numeric objectives and effluent limits had been in place instead of narrative objectives and numeric triggers. Sunnyvale would have been subject to a minimum of \$42,000 in fines if each of the 14 violations were deemed subject to a \$3,000 Mandatory Minimum Penalty (MMP) (Sunnyvale understands that it would not be subject to MMPs under current MMP provisions, given that its NPDES permit contains toxic pollutant effluent limits). Sunnyvale would also be subject to monetary penalties if RWB staff had decided to proceed with an Administrative Civil Liability (ACL) case and be subject to potential third party lawsuits.

Sunnyvale's aggressive monitoring efforts and TRE/TIE source identification activities during 2009-2010 would not have differed if numeric chronic toxicity effluent limits had been in place. The only difference would have been that the WPCP would have been subject to penalties for violations over which it had no control.

The City of Sunnyvale appreciates the opportunity to provide these comments on the Revised Draft Policy for Toxicity Assessment and Control. If you have any questions, please contact me at (408) 730-7808 or Dr. Tom Hall of EOA, Inc. at (510) 832-2852 x110.

Sincerely,

A handwritten signature in black ink, appearing to read "Melody Tovar". The signature is stylized with a large, sweeping initial "M" and a long, horizontal flourish extending to the right.

Melody Tovar, P.E.
Regulatory Programs Division Manager

cc: Lila Tang, SFBRWQCB
Bill Johnson, SFBRWQCB
James Kelly, BACWA
Tom Hall, EOA