



January 17, 2006

Regina Linville
Division of Water Quality
State Water Resources Control Board
1001 I Street, 15th Floor
Sacramento, CA 95814
rlinville@waterboards.ca.gov

Re: **Comments on the Informational Document for Proposed Revisions to the Toxicity Control Provisions of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California**

Dear Ms. Linville:

Tri-TAC, the California Association of Sanitation Agencies (CASA), the Bay Area Clean Water Agencies (BACWA), the Central Valley Clean Water Association (CVCWA) and the Southern California Alliance of Publicly Owned Treatment Works (POTW) (SCAP) appreciate the opportunity to provide written comments on the State Water Resources Control Board's (SWRCB) Informational Document for Proposed Revisions to the Toxicity Control Provisions of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (referred to hereafter as the Scoping Document). Our associations represent public wastewater agencies providing sewer collection, wastewater treatment and water recycling services to millions of Californians.

We are committed to the effective and appropriate implementation of the Whole Effluent Toxicity (WET) program and strongly support the use of WET tests as a tool to address uncertainties in effluent quality associated with chemical specific monitoring and biological assessment. The comments and suggestions contained within this letter are intended to provide our views on the appropriate way to carry forward the WET program in California.

The following comments are respectfully submitted based upon this knowledge and with the intent to improve the implementation of toxicity test provisions designed to protect the water quality of inland surface waters, enclosed bays, and estuaries within the State of California.

We support several potential revisions presented in the Scoping Document. In particular, we strongly support the use of narrative limits with accelerated monitoring and toxicity reduction evaluation (TRE) triggers as the appropriate approach to control WET. As recognized in the Scoping Document, it is extremely difficult for publicly owned treatment works (POTWs) to predict and control all sources of toxicity entering their treatment plants. While POTWs do treat all of their influent, they receive influent from numerous sources, including diffuse residential and commercial sources, over which they may not have direct control. Because of this, imposition of numeric effluent limitations would result in a permit violation whenever there is toxicity in the effluent, even if the cause were from a domestic source for which the POTW has little or no ability to determine the cause in advance.

To effectively control toxicity, it is necessary to identify the causative agent. For instance, domestic wastewater may contain pesticides and other toxins as a result of homeowner applications for which there is no reasonable method of predicting the toxic event or identifying the source or sources. In this respect, domestic wastewater is a difficult source to control and the challenges of controlling it are similar to municipal stormwater discharges. In the case of a homeowner discharge of a toxic substance, the discharge is often a one-time or seasonal event, and the location, frequency and magnitude of the discharge are likely to be extremely unpredictable. Thus, the use of numeric effluent limitations for chronic toxicity does not make sense at POTWs.

A preferable approach is an iterative approach to regulation of WET, which is supported by the USEPA (both regionally and nationally), recommended by recognized experts in the use of these methods, and already has been successfully implemented in many NPDES permits in California and elsewhere. We do not believe the use of narrative limits for WET would require significant additional resources for the Regional Boards when compared to implementation of numeric limits in permits, because a TRE, with oversight by the Regional Board, is necessary to identify and control toxicity regardless of whether narrative or numeric limits for toxicity are used. Further, many of the regulatory and basic technical aspects of TRE oversight can be accomplished through a standardized approach to preparation of TRE Plans, which would be submitted by permit holders for approval by Regional Boards under either scenario (as is already done under many NPDES permits). In summary, the use of narrative limits combined with accelerated monitoring and TRE triggers, and TRE implementation in accordance with Regional Board-approved TRE plans is an effective and reasonable approach to the regulation of toxicity within the State and should be pursued in amendments to the SIP.

We also strongly support the use of point estimation procedures for evaluation of chronic toxicity test results for reasonable potential, trigger/limit derivation, and trigger/limit compliance. The USEPA, as well as many experts in the field of toxicology, has long expressed a strong preference for the use of point estimation techniques (e.g. EC25/IC25) rather than hypothesis test procedures for compliance monitoring in the WET program. These recommendations are based upon a number of toxicological and statistical limitations of hypothesis test results, particularly when used in a compliance setting. In fact, since its inception, the acute toxicity program has successfully used effect-based statistics (i.e. LC50 or percent effect) for compliance determination. Use of point estimates to measure chronic toxicity is embracing the best science available and would demonstrably improve the consistency, reliability, and accuracy of the WET program within the State without any loss of environmental protection. Therefore, we urge the SWRCB to be consistent with these recommendations and join the growing number of State programs that use point estimates to regulate chronic toxicity.

Our detailed comments on the Scoping Document are included below for your consideration, and are organized in accordance with the Scoping Document.

Item 1. Clarify the Use of Chronic Toxicity Limits in the SIP

We believe that numeric limits for chronic toxicity are inappropriate and unnecessary to protect water quality within the State and strongly support the use of narrative limits with prescriptive accelerated monitoring and toxicity reduction evaluation (TRE) triggers. Since toxicity is a characteristic and not a chemical constituent, its unique properties limit the functionality of numeric limits. Toxicity is not always additive but under a numeric limit scenario it would be assumed to be so. For example, the ultimate downstream fate of two discharges containing measurable toxicity caused by different constituents may, after mixing, result in no toxicity observed in the receiving water (through simple dilution of the different constituents or antagonistic interactions) or increase toxicity in the receiving water (additive or synergistic interactions). Additionally, because the cause of toxicity can not be determined without follow-up research into the cause, it is impossible for POTWs to predict when “toxicity” is entering the plant, know what chemical(s) need to be removed and/or reduced in the influent, or how to effectively change treatment to protect against the discharge of toxicity.

Contrary to statements contained in the Scoping Document stating that numeric limits “*will assure the protection of water quality*” (page 5), we believe that the use of narrative toxicity limits with numeric accelerated testing and TRE triggers represents the most effective means to assure water quality protection. In fact, the use of numeric limits as opposed to accelerated testing and TRE triggers will primarily result in more permit violations and a resultant potential for more enforcement actions, rather than in a more timely solution to a toxicity problem. Furthermore, the step-wise approach using

accelerated testing and TRE triggers is consistent with guidance from the USEPA at both the national¹ and regional² levels, a diverse national expert advisory panel³ formed by the Society of Environmental Toxicology and Chemistry and funded by USEPA to provide guidance on WET issues, and the SWRCB's 1995 Toxicity Task Force⁴ specifically assembled to provide guidance on the regulatory use of toxicity tests within the State's water quality regulatory programs.

Item 2. Clarify and Expand the General Toxicity Control Implementation Provision in the SIP

We generally support the SWRCB's efforts to clarify and expand the toxicity implementation language in the SIP, as these efforts are expected to lead to a more consistent and appropriate use of WET testing.

Consideration of Acute Provisions

We support the State's consideration of the efficacy of requiring limits on both acute and chronic toxicity. We feel it is redundant and unnecessary to include both acute and chronic toxicity limits in NPDES permits, particularly in situations when there is low to no dilution in receiving waters and thus no acute and chronic mixing zones or where acute and chronic mixing zones are the same. Furthermore, the approach of determining which provision (acute or chronic) is more sensitive (and therefore more protective) and applying limits (narrative or numeric) on only that performance level is supported in the USEPA TSD (page 99).

For these reasons, we recommend that the SWRCB consider directing RWQCBs to use only the more sensitive performance level (acute or chronic) when placing toxicity limits in permits.

Data Collection

We support the SWRCB's proposed approach to collect sufficient data (e.g. 10 valid and representative WET testing data points) before making determinations of reasonable potential for both new discharges and during permit renewals.

¹ Technical Support Document for Water Quality-based Toxics Control, U.S. EPA Office of Water, March 1991, EPA/505/2-90-001, pg. 62, Section 3.3.7.

² Regions 9 and 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs, U.S. EPA, May 31, 1996, pgs. 2-1, 4-1, and 5-2.

³ SETAC WET Expert Advisory Panels, <http://www.setac.org/wettre.html>, Sections 1 and 4.

⁴ Memo to Members of the State Water Resources Control Board from the Toxicity Task Force, September 27, 1995. Recommendations 2, 5, 9, and 10.

Valid and Representative Data

We agree with the SWRCB that all WET data points should be valid and representative; however, we question the utility of a standardized data evaluation form. Current WET testing protocols already contain specific requirements that must be met to ensure that WET results are valid and representative and participating laboratories must undergo State certification to ensure that proper procedures including specified testing requirements are being followed. Also, the permittee already certifies in the NPDES reports that the results contained are accurate and true. The development of a standardized form would not be a trivial undertaking and this effort should not be underestimated. Furthermore, many “requirements” in the WET testing protocol require a significant exercise of discretion (such as temperature maintenance and reference toxicant control charting) by the practitioner, and therefore do not lend themselves to a standardized data evaluation form.

Calculation of Reasonable Potential

We support SWRCB efforts to revise the reasonable potential (RP) determination procedure in the SIP and agree that a statistical procedure should be used to determine RP for toxicity. We would support the use of the statistical RP analysis procedure developed for the California Ocean Plan (COP) in the SIP, rather than the procedure contained in the TSD. We also request that only toxicity data that meet the assumptions of the calculation method be used. Addressing a similar issue in the COP, SWRCB staff evaluated numerous approved RP analysis procedures including the USEPA’s TSD approach and made the following conclusions and recommendations

“Because a tolerance bound procedure more appropriately utilizes facility-specific effluent data, State Water Board staff recommend the primary use of a lognormal tolerance interval-based procedure for reasonable potential determinations rather than the TSD-based procedure. When using a parametric statistical approach, the water quality objective should be compared to the one sided, upper 95 percent confidence bound of the 95th percentile of a lognormal distribution. Furthermore, when dilution is allowed, the one-sided upper confidence bound on the upper percentile should be adjusted by the mass balance equation (Equation 1 solved for C_o) prior to comparison with the water quality objective. In addition, the monitoring data should be adjusted for the averaging period expressed by the Table B objective (e.g. six-month median, 30-day average) when possible.”⁵

⁵ State Water Resources Control Board, Division Of Water Quality, Draft Functional Equivalent Document, Amendment Of The Water Quality Control Plan For Ocean Waters Of California, California Ocean Plan, March 2005, Amended April 2005, pg. 38.

Based upon this analysis and staff recommendations, the lognormal tolerance interval-based procedure was approved for use in the COP in 2005. The same rationale used to select this RP analysis method rather than the TSD approach applies to RP analysis for inland surface waters, enclosed bays, and estuaries.

However, we recommend that traditional RP procedures be modified so that ambient (upstream) toxicity not be considered in the RP determination. The rationale for considering ambient toxicity in the RP determination would erroneously assume that all toxicity is additive, as it would be for a chemical constituent. As noted above, toxicity is a characteristic, not a specific chemical constituent and the net effect of the mixing of toxic waters may be no toxic effect or a greater effect, depending on the characteristics of the toxic constituents. As such, it is erroneous to assume that the addition of a discharge with some toxicity to an already toxic receiving water will result in greater impairment.

One aspect of using a statistically-based RP determination procedure, which is not addressed in the TSD or COP RP methods but is essential to the validity and accuracy of the analysis, is the use of toxicity data that meet the assumptions of parametric statistical analysis. Specifically, the use of data from hypothesis test results (i.e., No Observable Effect Concentrations or NOECs) to calculate a mean, standard deviation, or coefficient of variation (CV) is statistically invalid since these metrics assume the data is continuous (can assume any value). NOECs, even when converted to TUs, are discrete variables because they can only be one of the tested concentrations. Therefore, any RP procedure that uses means, standard deviations, or CVs obtained from hypothesis test results (or TUs based on hypothesis testing) to determine the need for WET limits violates the statistical assumptions of the limit calculation method and is therefore invalid. Both the TSD and COP statistically-based RP determination procedures calculate averages, standard deviations, and CV's and thereby require the use of continuous data, such as point-estimate data, to prevent violating basic statistical principles of the analysis and thereby rendering the results inaccurate.

USEPA confirms the statistical limitations of NOECs in the promulgated methods by stating "Note: Because NOEC's can only be a fixed number of discrete values, the mean, standard deviation, and CV cannot be interpreted and applied in the same way that these descriptive statistics are interpreted and applied for continuous variables such as the IC25 or LC50."⁶ Point estimate data, on the other hand, is a valid data type for statistically-based RP determination procedures and should be used in any procedure requiring the calculation of the mean, standard deviation, or CV.

⁶ Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 2002, EPA-821-R-02-013, pg. 15, section 4.16.3.
<http://www.epa.gov/waterscience/WET/disk3/ctf.pdf>

Because of this, as well as many other well-documented limitations associated with the use of hypothesis test results, the USEPA has consistently and strongly recommended the general use of point estimate procedures for regulatory purposes. Specifically, after listing several limitations of hypothesis tests results, the TSD states “*For the above reasons, if possible, the IC25 is the preferred statistical method for determining the NOEC.*”⁷ Several recent editions of the test method manuals also include the following statement in bold print; “***NOTE: For the NPDES Permit Program, the point estimation techniques are the preferred statistical methods in calculating end points for effluent toxicity tests.***”⁸ Finally in the clearest endorsement of the use of point estimates, the final USEPA rule promulgating the WET test methods states that “*In today’s action, EPA reiterates the recommendation of the method manuals and the TSD (USEPA, 1991) by stating that for the NPDES Permit Program, point estimation techniques are preferred over hypothesis testing approaches for calculating endpoints for effluent toxicity tests.*”⁹ It is clear that USEPA prefers and recommends the use of point estimates in all aspects. The states of Alaska, Colorado, Ohio, Wisconsin, Maryland, Kentucky, Mississippi, New Jersey, Missouri, and Michigan have already followed USEPA’s recommendation and utilize point estimates in their toxicity control programs. We strongly urge the SWRCB to use the best tools available for implementing WET testing in California by adopting the use of point-estimates in all aspects of the program.

Determination of Permit Limit or Numerical Monitoring Triggers

As with RP determination, the statistical approaches for limit derivation within the SIP require the use of continuous data to calculate means, standard deviations, and CVs. Therefore, the discussions regarding the use of point-estimates instead of hypothesis testing in the RP section above also apply to this issue. Consequently, we again strongly urge the SWRCB to adopt the use of point-estimates in all aspects of the WET testing program.

Monitoring Schedules for all Dischargers (with or without limits)

In the Scoping Document, the SWRCB states that the USEPA recommends weekly testing for dischargers with a limit. We are unaware of such a recommendation for WET testing and request additional references supporting such a recommendation. Although the USEPA TSD does not recommend any specific monitoring frequencies for

⁷ Section 1.3, pg. 6.

⁸ Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 2002, EPA-821-R-02-013, pg. 15, section 4.16.3.

<http://www.epa.gov/waterscience/WET/disk3/ctf.pdf>

Section 9.5.1, pg. 41.

⁹ <http://www.epa.gov/fedrgstr/EPA-WATER/2002/November/Day-19/w29072.pdf>, section B.1., page 69958.

WET, it does provide an example on page 113 that includes monthly WET monitoring for chronic toxicity. Furthermore, the USEPA Region 9 and 10 WET Implementation Guidance specifically recommends monthly WET testing with a provision allowing for a reduction in frequency if no exceedance of a numeric limit or trigger is observed after one year. Additionally, the numeric limit/trigger recommended in these documents is a monthly median. Use of a monthly median numeric trigger will result in near weekly testing frequencies should an exceedance be observed during routine monitoring, by way of additional testing conducted to calculate a monthly median or immediate application of weekly accelerated testing.

In general, we support the use of a monthly WET monitoring frequency for discharges identified as having RP and less frequent monitoring for those without RP. Based on the relatively high cost involved with WET testing, consideration of less frequent monitoring requirements should also be given for small dischargers. For all dischargers, subsequent reductions in monitoring efforts should be allowed in the event that limit or trigger exceedances do not occur after a year of monitoring. In any case, if a numeric trigger is exceeded, we support the use of accelerated monitoring, prior to the triggering of a TRE. For instance, following an exceedance of a numeric trigger, the monitoring frequency could be increased for a sequence of six tests to characterize the persistence of the toxicity. If, after six tests, toxicity is determined to be persistent, a TRE should be implemented.

TRE Requirements

Significant guidance on TRE implementation is currently available. Furthermore, this guidance already has been incorporated into TRE Plan development requirements contained in some California NPDES permits. Specific elements contained in the guidance include an examination of existing data including:

1. Historical toxicity and chemical specific results, pre-treatment, and facility design and operation;
2. Facility performance evaluation;
3. Toxicity Identification Evaluation (TIE) testing;
4. Toxicity source evaluation;
5. Toxicity control evaluation; and
6. Toxicity control implementation.

The majority of these elements can be readily incorporated into a detailed “initial” TRE Plan prepared and approved prior to a discharger actually exceeding any triggers. This plan should be prepared by the permittee and submitted to the RWQCB for review and approval within a specified time period, such as 120 days. In order to prevent any significant delays in implementation, the plan should specify in detail the initial steps to

be taken immediately and in the months following the triggering of a TRE. The ultimate goal of this initial TRE Plan should be to identify any in-plant sources of toxicity that could be immediately corrected and to sufficiently characterize the toxicity quickly in case in-plant sources cannot be identified. Additionally, this plan should contain specific and enforceable deadlines for completion of the specified actions. For example, a review of specific historical chemical, toxicological, facility, and operations data should be conducted including specific parameters and constituents to examine. Should the outcome of this review fail to identify the cause of the exceedance, the TRE plan should lead the permittee to the next step: initiation of phase 1 TIE testing including details regarding testing frequency and specific TIE manipulations to be conducted and data analysis approaches to be taken. Typically, it would be expected that complete implementation and exhaustion of this initial TRE Plan could take three to six months, depending on individual toxicity conditions. All elements in this initial TRE characterization plan should be thoroughly detailed prior to triggering the TRE and would be fairly standardized for most dischargers. If, after complete implementation of the initial TRE Plan, the cause and control of the toxicity still has not been identified, a subsequent TRE Plan would need to be developed and prepared by the permittee detailing additional steps to be taken, with applicable deadlines, to address the exceedance. This subsequent plan would most likely be more directed and incident-specific than the initial characterization Plan, since it is assumed that through the significant characterization conducted during the implementation of the initial Plan, some narrowing down of suspected constituents and/or the source would be achieved.

This approach places the responsibility to design and develop the TRE Plan on the permittee but allows the RWQCB to amend it as necessary. This type of approach already has been successfully implemented in NPDES permits in at least 2 regions in California (Los Angeles and San Francisco).

Potential Enforcement Steps

By requiring the development of a detailed and specific TRE Plan containing step by step implementation deadlines, RWQCB staff will be able to readily track compliance with the permit requirements. Documentation of compliance would be available through reporting specified in permits (and in the TRE Plan). Contrary to what is indicated in the Scoping Document, we believe that the SWRCB's Water Quality Enforcement Policy (as adopted in February 2002) already provides adequate direction on enforcement steps to be taken for violations of toxicity requirements (*see for example* p. 10 of the Policy). However, if the SWRCB feels there are gaps in that Policy, amendments to the Enforcement Policy would be the appropriate vehicle to address them, rather than placing policies related to enforcement in the SIP.

Regina Linville
Division of Water Quality
State Water Resources Control Board
January 17, 2006
Page 10

Thank you again for the opportunity to provide comments on the Scoping Document. We look forward to working with the Board as new toxicity control provisions for the SIP are developed. Should you have any questions about our comments, please contact Sharon Green at (562) 699-7411, x-2503.

Sincerely,



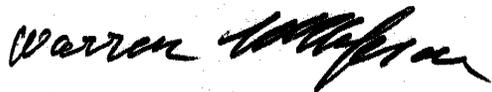
Roberta Larson, CASA



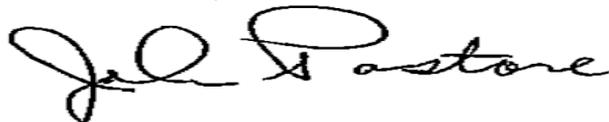
Charles V. Weir, Tri-TAC



Michele Pla, BACWA



Warren Tellefson, CVCWA



John Pastore, SCAP