SRCSD

Wastewater Treatment

06/21/06 BMtg Item
Chlorine Policy
Deadline: June 5, 2006

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June 5, 2006

Song Her, Clerk of the Board
State Water Resources Control Board
Executive Office
1001 I Street, 24th Floor
Sacramento, CA 95814

Re: Comments on the Revised Proposed Total Residual Chlorine and Chlorine-Produced Oxidants Policy of California

Dear Song Her:

The Sacramento Regional County Sanitation District (SRCSD) is pleased to provide comments on the State Water Resources Control Board's (SWRCB) Proposed Draft Total Residual Chlorine (TRC) and Chlorine-Produced Oxidants Policy of California (TRC Policy) including the Substitute Environmental Document (SED) and Economic Considerations all dated April 2006. SRCSD provided comments on the original version of the TRC Policy in a letter to the SWRCB dated July 7, 2005, participated in the additional stakeholder meeting in Northern California on September 26, 2005, met with SWRCB staff to discuss certain aspects of the proposed policy on November 8, 2005, and provided additional written comments January 4, 2006 after given the opportunity to "Test Drive" the policy by the SWRCB. By way of some background, SRCSD provides sanitary sewer conveyance, treatment and reclamation to over one million residents and thousands of commercial and industrial businesses in the greater Sacramento area. On average, over 165 million gallons (annual average) of wastewater are conveyed, treated and safely discharged each day.

We appreciate your willingness to work with us and are encouraged that the SWRCB incorporated some of our comments submitted previously, including the addition of a provision to allow the use of mixing zones if authorized by the applicable Basin Plan. However, we still have concerns with other aspects of the TRC policy and the supporting documents and are providing the following comments, which are focused on the freshwater aspects of TRC.

There are several areas of the SED and Economic Considerations that have referenced a SRCSD staff member in 2004. SRCSD requests that these references be removed unless a public document containing the information can be reviewed by SRCSD and confirmed. Many of the statements made under this citing are inaccurate and are addressed in the following comments. In the future, it would be appreciated if the SWRCB could contact their references in advance, to ensure they are relaying accurate information.

SRCSD has worked closely with Tri-TAC regarding the TRC Policy and is in full support of all comments submitted by their organization. Also, SRCSD has serious concerns about our ability to comply with the proposed hourly limit. A significant increase in total chlorine residual exceedances is expected.

TRC POLICY AND SUBSTITUTE ENVIRONMENTAL DOCUMENT

United States Environmental Protection Agency 304(a) criteria for chlorine

The SED states that it is important to note that many other states, such as Virginia, Illinois, Delaware, and Connecticut, have already adopted the United States Environmental Protection Agency's (US EPA) recommended criteria. SRCSD agrees that it is important to consider other states that have adopted the criteria. However, SRCSD believes it is even more important to consider how the other states are *implementing* the criteria. The County Sanitation Districts of Los Angeles County (LACSD) have provided the SWRCB with an evaluation of various states that have adopted the EPA criteria and how the criteria have been implemented. This study was included as an Appendix to the LACSD's written comments dated January 4, 2006. Although the study shows that numerous other states have adopted the 1984 EPA criteria; it also shows that other states have implemented the criteria drastically different than what is proposed in the California TRC Policy. The two main items that differ in the way other states have implemented this criteria are the continuous monitoring requirements and in the calculation of effluent limits. Of the wastewater treatment plants from the various states that were surveyed, only one facility performs continuous monitoring and permit limits for all facilities are based on daily averages, daily maximums and 30-day averages – *not on an hourly basis as is being proposed by the SWRCB*. The SWRCB should include a similar evaluation in the SED, as provided by LACSD, and explain why their interpretation on implementation of the EPA criteria is so different and more stringent than all other states implementing the same criteria.

The SED also states that US EPA's one-hour and four-day averages are explicitly for continuous discharges. This is not accurate. The US EPA criteria are intended for continuous exposure, not discharge. As stated in SRCSD's previous comments and the US EPA 1984 criteria, the criteria are "intended to apply to situations of continuous exposure, whether the concentrations are fluctuating or constant, but not to situations of specially controlled intermittent exposures." Wastewater treatment plants discharge continuously, but only discharge chlorine for very short intermittent periods of time usually associated with some type of system failure (operations and maintenance, mechanical malfunction, electric supply interruption, etc.). Applying criteria developed specifically to identify aquatic toxicity in situations of continuous exposure to intermittent exposures from wastewater treatment facilities seems inappropriate; however, there is no evaluation of this in the SED as requested in our July 7, 2005 comments.

Mixing Zones

We appreciate the SWRCB including a provision that allows the individual Regional Boards to use their own discretion in granting a discharger a mixing zone in the TRC Policy; however the SED is confusing, in that it recommends this alternative (Alternative 3) along with the alternative to not allow for mixing zones (Alternative 1). SRCSD suggests only recommending Alternative 3 in the SED.

In addition, the SED states that Fish and Game has a Policy that "no acutely toxic concentration of pollutant shall be present at the discharge point prior to dilution" and specifically states that "chlorine is highly toxic to aquatic life and discharge of concentrations above 0.019 parts per million (ppm) in receiving waters is a violation of Fish and Game Code 5650." Please reference the specific Fish and Game Policy document(s) that provided this information. Further, exposure has two components (concentration and duration). The citation is unclear on the inclusion of the duration component of exposure in the Fish and Game Policy.

Compliance Determination

As worded, the TRC Policy is unclear regarding how online monitoring of a dechlorination agent will be considered by the permitting authority. It is our understanding that the SWRCB intended to allow dischargers various options to demonstrate compliance. Some suggested wording to clarify the language could include (additions and deletions are in bold red underline/strikeout in blue):

First Paragraph In This Section

> Continuous monitoring analyzers for chlorine and/or dechlorination agent residual in the effluent are appropriate methods of process control. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limits. This type of monitoring can also prove that some chlorine residual exceedances are false-positives. Reporting a positive dechlorination agent residual ~~and~~ or a zero chlorine residual are sufficient to show compliance with the chlorine residual effluent limit, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

Quantification/Reporting Requirements

On-Line Analyzer Detection Limits

The TRC Policy states that on-line devices must have a manufacturer's stated detection limit, scale range, or sensitivity below the permitted effluent limit. The SWRCB should consider replacing the term "detection limit" in this statement with accuracy. Detection limits are not published by the manufacturers, whereas accuracy is stated by the manufacturers. Based on manufacturer literature, there is no way to verify compliance with this section if the term "detection limit" remains in the statement. Further, the term scale range appears to be incorrectly used. A scale range is the range of values for which a quantity can be measured. To have a range below the permitted effluent limit would result in the operating range of the analyzers set at 0 parts per billion (ppb) to11 ppb. Values exceeding 11 ppb would only be recorded as upper limits because they would exceed the scale range that was set on the instrument. SRCSD would suggest replacing the term "scale range" with "analyzer range" and adding the definitions of these terms.

The TRC Policy goes on to state that the minimum calibration shall not be above the lowest effluent limit in the permit. Does the SWRCB intend the concentration of the calibration standard to be below 11 ppb? Typically, the calibration concentration is at a value close to the middle of the operating range. For example, if an analyzer is set at an operating range of 0-20 ppm, the concentration for calibration would be 10 ppm (10,000 ppb).

In general the SWRCB should understand that many published accuracy claims are stated as "accurate to 1 ppb or 1% of reading, whichever is greater." In almost all cases, the percent of reading is always greater than the 1 ppb claim, except at extremely low operating ranges (e.g. 0-0.1 ppm). However, as stated above, such extremely low operating ranges are in no way practical because the maximum value the analyzer can report is the upper limit of the range for which it is set. In this example, anything above 0.1 ppm will be reported as 0.1 ppm-upper limit. This is obviously a problem when discharge quantities need to be calculated and reported to the Regional Board. It should be noted that manufacturers' reporting limits are sales point claims most likely targeting the drinking water industry, not the wastewater industry.

Calibration Using Standard Method 4500-Cl E

The TRC Policy also states all calibration and off-line sampling should be evaluated by Standard Method 4500-Cl E. The stated detection limit for this method is 10 ppb; but it is unclear if this detection level is achieved in the field by any wastewater agency while calibrating the online analyzers. The calibration process as defined in the TRC Policy is problematic. There is no way to determine if the analyzer is accurate to levels mandated in the policy (i.e. 1 ppb) for reasons stated above. Further, both the United States Environmental Protection Agency (EPA) and the California Department of Health Services do not recognize Standard Method 4500-Cl E (20th Edition) as an approved method for testing chlorine in wastewater. Standard Methods lists this procedure as applicable for "Natural and treated waters," and does NOT list this procedure under the "Wastewater" testing section. There is no California Department of Health Services certification available for this method with wastewater. The SED states that monitoring must generally be conducted using test procedures approved in 40 CFR Part 136. This method is not included in 40 CFR 136.3(a) Table IB. Currently SRCSD uses Standard Methods 330.2 (which is listed in 40 CFR part 136) and achieves a detection limit of approximately 200 ppb when calibrating analyzers in the field. SRCSD recommends that the SWRCB recognize the limitations of the test method in the TRC Policy and use only approved methods listed for wastewater in the CFR part 136 as suggested in the SED.

Quantification/Reporting Limit

The TRC Policy states that the quantification/reporting limit (QRL) shall not exceed the facility's effluent limit (0.011 ppm). As stated in the section above, SRCSD calibrates using an approved method listed in 40 CFR 136; but is only able to achieve a detection limit of 0.2 ppm. Further, even if SRCSD were required to use the unapproved method currently proposed in the policy, we will not be able to achieve a detection limit of 0.01 ppm in the field. In order to provide the flexibility for dischargers in this situation to conduct a QRL study to establish an achievable QRL, SRCSD recommends the policy be modified as follows (additions and deletions are in bold red underline/strikeout in blue):

> The quantification reporting limit (QRL) shall not exceed the facility's effluent limit. However, if the Regional Water Board determines on a case-by-case basis that a discharger cannot meet the QRL set at the effluent limit ~~and that it is infeasible for the discharger to show compliance via the presence of residual dechlorination agent or by another means (see the Compliance Determination section of this Policy),~~ the Regional Water Board may establish a QRL, provided that the discharger completes and submits a QRL study.

This approach would not penalize those dischargers that have chosen to monitor the dechlorination agent to assist in determining compliance with the policy. In addition, the SWRCB should provide additional clarity on what is involved in a QRL study in the TRC Policy so there is no room for interpretation and inconsistent implementation among the different Regional Boards.

One Hour and Four Day Averaging Periods

Both the TRC Policy and SED acknowledge the fact that NPDES permit regulations require permit limits for POTWs be expressed, unless impractical, as average weekly and average monthly limits. The SWRCB contends that because chlorine residual can be acutely toxic within minutes of exposure to fish and other aquatic life, weekly and monthly limits are not protective and therefore, impractical. SRCSD agrees that weekly and monthly limits may not be protective; however we strongly believe that the one-hour limit currently proposed is overly protective. As stated previously in these comments, the SWRCB should consider how this policy has been implemented in other states (e.g. daily limit).

Compliance Schedule

We appreciate the SWRCB extending the compliance schedule from two to five years in the TRC Policy; however, the SED recommends implementing either two year compliance schedules with an optional extension at the discretion of the Regional Boards (Alternative 3) or the five year compliance schedule the dischargers have requested (Alternative 4). SRCSD suggests only recommending Alternative 4 in the SED.

Also, as written, it is unclear when the TRC Policy goes into effect (e.g. immediately after SWRCB adoption, 60 days after adoption, or upon adoption of a new permit by the permitting authority.)

It would be helpful if this was clarified and explicitly stated in the TRC Policy so dischargers know when the proposed new limits will go into effect so that they may determine the feasibility to comply within a certain time frame or can request a compliance schedule.

ECONOMIC CONSIDERATIONS

Averaging Periods – Hourly/Daily/Monthly

The Sacramento Regional Wastewater Treatment Plant (SRWTP) currently has permit limits of 0.018 ppm daily average and 0.011 ppm monthly average for chlorine residual. The Economic Considerations Document (ECD) contains inconsistent comparisons between our currently regulated chlorine residual limits and the proposed policy. Exhibit 5-2 in the ECD should indicate that the SWRCB is considering the SRWTP monthly average limit. Doing so would make the comparison of SRWTP monthly average monitoring data to the proposed hourly average limit for determining our ability to comply meaningless. These comparisons are inaccurate because they do not take into account the averaging period. All tables and comparisons need to include the averaging period and a justification of why the SWRCB is comparing limits with different averaging period in their analysis. Currently, Exhibit 2-1, 4-2 and 5-2 are of little value without consideration of the averaging period.

The SWRCB should be comparing equivalent averaging periods to evaluate a facility's ability to comply with the proposed policy. Chlorine excursions at SRWTP are isolated discharges typically short in duration (much less than 60 minutes). A more accurate assessment of compliance could be determined by converting daily average monitoring data into an hourly average. This would be done by multiplying our daily average value by a factor of 24 hours per day. Since the daily average values typically represent a single chlorine excursion lasting only minutes, applying this method of analysis would be accurate. If the SWRCB performed its compliance evaluation in this manner, the conclusions derived would be much different and demonstrate the difficulty that SRWTP will have in complying with the new policy.

Case Study - SRWTP

The ECD currently contains information about SRWTP that is not accurate. Exhibit 4-2 currently indicates flows at SRWTP are 160 million gallons per day (mgd). This is closer to the current annual average flow while the SRWTP is currently permitted to discharge up to 181 mgd based on an average dry weather flow. Exhibit 4-2 should have a footnote to explain which flow is being shown. Exhibit 5-2 indicates that SRWTP has an average flow of 184 mgd. The footnote in this exhibit should include more detail (annual average?). Also the description of SRWTP in the appendix should be modified to note that the permitted capacity for the facility is for the 30-day average dry weather flow and that discharge to the Sacramento River is permitted as long as the river to discharge ratio is 14:1 **and** the river flow is greater than 1300 cfs.

Exhibit A-24 does include a footnote indicating that the current limit in the SRWTP permit is 0.011 ppm monthly average and 0.018 ppm daily average; however there is a disconnect in comparing historical compliance to our current monthly average limit and arriving at the conclusion that SRWTP "would most likely be in compliance with the potential permit limits based on the proposed TRC policy." This statement is inaccurate. SRWTP will have difficulty complying with the proposed limits and expects to see a significant increase in chlorine residual exceedances as a result of this policy. As stated in the previous section, the SWRCB cannot translate compliance with a monthly average value to mean compliance with an hourly average. Translating our monthly average operating data to an hourly average for comparison with the proposed policy would increase the values by a factor of 720 (24 hours per day x 30 days per month).

SRCSD currently doses sulfur dioxide at a ratio of approximately 1:1, not 4:1 as stated in the ECD. Also, the ECD indicates that "Maintenance activities for the system include calibrating chlorine analyzers once per shift, backing up with a paper copy, manually checking all computer readouts, and using redundant residual analyzers to minimize equipment failure and occurrence of violations." SRCSD does not have backup paper copies unless the SRWCB is referring to the paper strip charts used as backup to the Plant Control Center System or calibration sheets.

Increased Violations Versus Achieving the Proposed Criteria

It should be noted that we believe the TRC Policy will result in increased violations for all dischargers, without a substantial increase in benefit in water quality. In developing the TRC Policy, the SWRCB has used a 1984 EPA criteria document intended to apply to continuous chlorine exposures (e.g. elevated chlorine residuals over long periods of time) and instead applied them to

short, discreet and intermittent discharges of chlorine from industrial and wastewater discharges. The result is a policy that is overly protective, without a measurable benefit to the receiving water.

Table 1 outlines the amount of time a discharger can have a chlorine release at various chlorine residuals before violating the proposed effluent limitation. For example, a discharger can only release chlorine with a residual of 4 mg/L for 17.1 seconds before violating the effluent limit of 0.019 mg/L one-hour average. Due to the response time of online monitoring systems (30 seconds to 2 minutes) these occurrences will result in a violation before the discharger is aware there is a problem and even has the chance to rectify the situation; therefore, assuming the proposed limits can be met with process optimization in the ECD is not accurate and should be changed. If operating under this policy, SRCSD would have experienced 7 violations in one year (2003), versus zero violations based on a daily and monthly average effluent limits. SRCSD would have experienced 23 violations of the 0.019 hourly average limit over the past four years if operating under this policy; therefore, it is inaccurate for the ECD to state that SRCSD will not have difficulties complying with the policy and "therefore, the facility would most likely not incur costs associated with the proposed policy." *SRCSD feels very strongly that we will incur significant costs, if the proposed policy is implemented.*

Table 1

Residual Concentration mg/L	Discharge Concentration mg/L	Time to Exceed Permit Limits - Minutes	Time to Exceed Permit Limit - Seconds
10	0.167	0.114	6.84
8	0.133	0.1425	8.55
6	0.100	0.19	11.4
4	0.067	0.285	17.1
2	0.033	0.57	34.2
1	0.017	1.14	68.4
0.5	0.008	2.28	136.8
0.25	0.004	4.56	273.6

Equipment and Operational Costs

It appears that many costs have been underestimated or not considered in the Economic Analysis. The ECD notes costs of $2,000 to $8,000 for continuous monitoring equipment throughout the text. It appears the SWRCB is using manufacturers stated cost with little or no cost for installation, testing, and implementation. Consideration of these factors would substantially increase costs. Further, the $10 million to $13 million in increased costs for capital and annual operations and maintenance is a very low estimate and should be adjusted upwards to reflect a more realistic estimate. The SWRCB should adjust the costs to reflect realistic labor rates. Currently it costs SRCSD from $73 to $86 per hour for an engineer and $55 to $75 for a wastewater treatment plant operator (note: this actual costs reflecting hourly wage, cost of benefits and administrative overhead). This varies from the $45 per hour for an engineer and $38 per hour for a wastewater treatment plant operator that is used in the ECD.

The ECD assumes weekly calibrations of online analyzers. At a minimum, daily calibrations should be assumed. SRCSD currently calibrates the chlorine analyzers 3 times per day at the SRWTP. The

ECD also assumes that maintenance costs for backup analyzers will be negligible. This is not accurate. Facilities will likely use both analyzers equally to ensure compliance with the continuous monitoring requirement.

Finally, ECD indicates that an excess of 1 ppm of sulfur dioxide would be used at facilities to ensure compliance with the proposed policy. This is not accurate. One ppm of excess sulfur dioxide will not ensure compliance at SRWTP. SRCSD normally injects an excess of 3 to 5 ppm excess sulfur dioxide. Even with this amount of excess sulfur dioxide injected, SRCSD does not anticipate being able to consistently meet the limits in the proposed policy.

Conclusion

In closing, SRCSD appreciates the opportunity to review and comment on the Proposed TRC Policy and supporting documents. Please call Terrie Mitchell (916-876-6092) if you have any questions regarding these comments.

Sincerely,

Terrie Mitchell

for Wendell H. Kido
District Manager

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