

Toxicity Reduction Evaluation (TRE) Work Plan

OVERVIEW

In Waste Discharge Requirements for the Donner Summit Public Utility District Wastewater Treatment Plant (Order No. R5-2009-0034, NPDES No. CA0081621), the District is required to submit to the Regional Water Board a Toxicity Reduction Evaluation (TRE) Work Plan for approval by the Executive Officer (EO). This document has been produced to fulfill the TRE Work Plan requirement contained in Special Provision VI.C.2.a.i of the Order.

REGULAR CHRONIC TOXICITY TESTING

The Order, in Attachment E, Section V.B, contains chronic toxicity testing requirements. These requirements specify that quarterly effluent three species chronic toxicity testing is required to determine whether the effluent is contributing chronic toxicity to the receiving water. Chronic toxicity testing is required to be performed using 100% effluent and the dilution series shown in Attachment E, Table E-4 of the Order. In addition, two controls are required using 100% receiving water and 100% laboratory water. If toxicity is found in any effluent test, the District will re-sample and re-test within 14 days of receiving notification of a test failure, as specified in Attachment E, Section V.B.8 of the Order.

ACCELERATED MONITORING AND TRE INITIATION

As specified in Special Provision VI.C.2.a.ii of the Order, the District is required to initiate accelerated monitoring when the numeric toxicity monitoring trigger of one chronic toxic unit (1 TUc) is exceeded during regular effluent chronic toxicity monitoring, and the testing meets all test acceptability criteria. The TUc value is determined by dividing 100 by the No Observed Effect Concentration (NOEC). If the toxicity trigger is exceeded during regular effluent chronic toxicity monitoring, the following protocol will be used for accelerated monitoring and TRE initiation:

1. Within 14 days of notification of a test result that exceeds the numeric toxicity monitoring trigger, accelerated monitoring will be initiated. Accelerated monitoring will consist of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. If the results of four consecutive accelerated monitoring tests do not exceed the monitoring trigger, accelerated monitoring will be discontinued.
2. If the source of toxicity is easily identified (i.e. temporary plant upset), corrections will be made to the Facility, if appropriate, and accelerated monitoring continued

until four consecutive accelerated test results are reported at levels that do not exceed the monitoring trigger.

3. If the result of any accelerated toxicity test exceeds the monitoring trigger, accelerated monitoring will be discontinued and a TRE initiated to investigate the cause of toxicity and to identify corrective actions to reduce or eliminate effluent toxicity. Within 30 days of notification by the laboratory of an accelerated monitoring test result exceeding the monitoring trigger, the District is required to submit a TRE Action Plan to the Regional Water Board. The TRE Action Plan will include the following items:
 - Specific actions the District will take to investigate and identify the cause of toxicity and a monitoring schedule;
 - Specific actions the District will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
 - A schedule of these actions.

Within 60 days of notification by the laboratory of accelerated monitoring test results exceeding the monitoring trigger, the District is required to submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan will outline the procedures for identifying the source or sources of toxicity and procedures for reducing or elimination effluent toxicity.

TRE COMPONENTS

The following phased TRE approach will be used to identify and reduce or eliminate the source or sources of effluent toxicity. The TRE components presented below are consistent with Toxicity Reduction Evaluation for Municipal Wastewater Treatment Plants, USEPA August 1999.

1. INFORMATION AND DATA ACQUISITION

When the toxicity monitoring trigger of 1 TUc is exceeded during regular effluent chronic toxicity monitoring, the first step will include a thorough review of the laboratory report by a qualified individual. This thorough review will include a check for laboratory reporting errors and a check to confirm that all test methods were conducted according to appropriate protocol. Additionally, results from the laboratory controls, associated with the toxicity test, will be carefully evaluated. Additional data and information from the laboratory may be necessary in order to complete these thorough reviews.

Subsequent to verification of the laboratory data report(s), sample collection and handling procedures will be reviewed and evaluated to determine if the potential for sample contamination existed. If any sampling concerns are identified, appropriate corrections to sampling procedures and/or equipment will be implemented prior to the initiation of required accelerated monitoring.

2. FACILITY PERFORMANCE EVALUATION

Operations and performance data will be reviewed, including the review of results from routine effluent water quality sampling conducted within the same time frame as toxicity sampling. These data will be evaluated and compared to historical data to determine if elevated concentrations of potentially toxic constituents existed.

If a treatment deficiency is causing noncompliance with an NPDES effluent limit, studies will be conducted to evaluate treatment modifications before proceeding further with the TRE. If Facility performance is not determined to be a cause of toxicity, the District will move forward with Toxicity Identification Evaluation (TIE) procedures.

In addition to the review of plant performance, a review of collection system operations will be conducted for the purpose of determining if any new dischargers or maintenance anomalies correlate with effluent toxicity.

3. TOXICITY IDENTIFICATION EVALUATION

If the District is required to move forward with TIE procedures, District staff will conduct sample collection and coordinate with a qualified contract toxicity laboratory, which will implement USEPA TIE procedures.

The generic TIE protocol is performed in three phases: Toxicity characterization, toxicant identification, and toxicant confirmation.

4. TOXICITY SOURCE EVALUATION

A toxicity source evaluation involves the sampling and analysis of wastewater at strategic locations within the collection system. One of two types of source evaluation studies will be performed: Chemical tracking or toxicity-based tracking.

5. TOXICITY CONTROL EVALUATION

Using the results from TRE elements 1 through 4 above, alternatives for effluent toxicity reduction will be identified and the most feasible approach will be selected for implementation. Effluent toxicity may be controlled through collection system discharge restrictions or in-plant treatment modifications or additions. Several control methods may be required to achieve the desired toxicity reduction.

6. TOXICITY CONTROL IMPLEMENTATION

The toxicity control method or technology will be implemented and follow-up monitoring conducted to ensure TRE objectives are met.

TREATMENT EFFICIENCY & GOOD HOUSEKEEPING PRACTICES

Good housekeeping practices are implemented in order to maximize in-house treatment efficiency and minimize the potential for toxicity. These methods and practices are summarized below:

- All hazardous chemical storage areas include secondary containment;
- Efforts are made to keep chemical usage quantities at the facility to a minimum;
- A sewer use ordinance is in place to control wastewater discharges; and
- An ongoing collection system maintenance program is in place, which reduces the potential for accumulation of contaminants within the system which could upset the Facility.

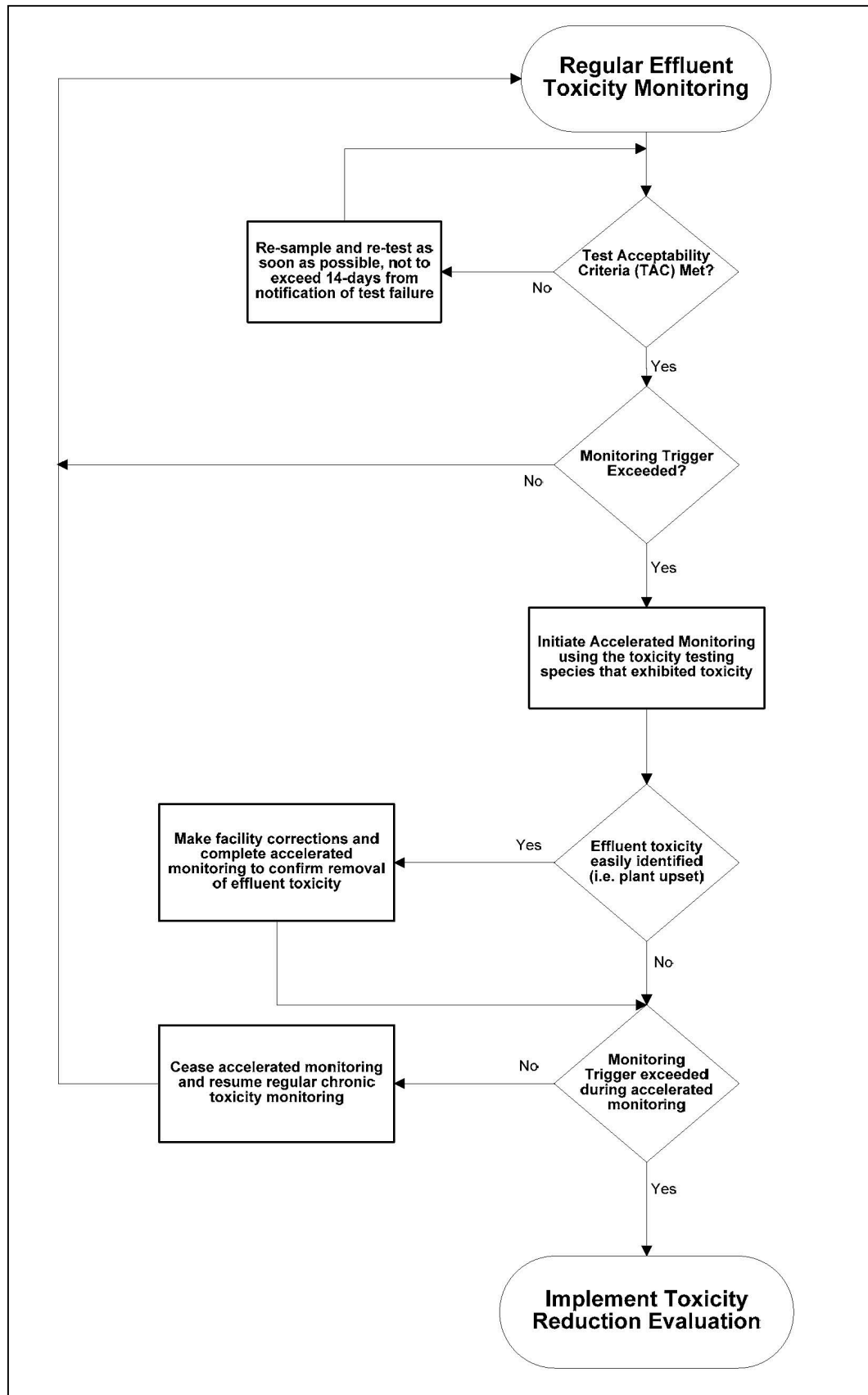
CHEMICALS USED IN FACILITY OPERATION

The following chemicals are used in the operation of the wastewater treatment facility

- Chlorine gas,
- Sulfur Dioxide gas,
- Ammonia Anhydros
- Soda Ash,
- Methanol,
- Cationic Polymer, and
- Alum Solution liquid.

Attachment A

Accelerated Monitoring Flow Chart



Accelerated Monitoring Flow Chart