Draft Appendix K. Survey of Laboratory Toxicity Testing Logistical Capacities

December 24, 2019

K.1 Background

State Water Board staff surveyed 23 laboratories accredited by the California Environmental Laboratory Accreditation Program (ELAP) to conduct chronic whole effluent toxicity (WET) testing to better understand the logistics of conducting toxicity tests and associated costs. Out of the 23 laboratories, 20 responded to the survey questions, either via e-mail or by phone. Three out of the 20 laboratories stated that they are ELAP accredited but do not conduct WET testing for purposes of compliance with Water Board permits. These laboratories still provided a response for the applicable survey questions. The survey questions and summary of the laboratories' responses are listed below.

K.2 Survey Questions and Summary Responses

1. Logistically, how long does it take to conduct a whole effluent toxicity test using the Test of Significant Toxicity (TST) statistical approach from the start of the test until you receive preliminary results and inform the client that the test resulted in a "pass" or a "fail"?

Summary Response: The time to conduct each toxicity test and receive preliminary results is species-dependent but may take up to 10 days for common tests, such as the chronic *Ceriodaphnia dubia* (*C. dubia*) reproduction test. Generally, laboratories can notify clients with preliminary results within 24 to 48 hours after completion of the test.

2. How much notice do you need to initiate a chronic whole effluent toxicity test? If it is species-dependent, please indicate how much notice you need to initiate the test for each test species.

Summary Response: Responses varied depending on what species the laboratory uses and how the organisms are obtained. Most laboratories prefer at least one week notice before initiating a toxicity test to order organisms, prepare equipment, and plan tests. Many laboratories culture their organisms in-house and require one to two days notice to initiate a toxicity test. Some laboratories may require more than one week notice to obtain certain species. For example, some laboratories that test with species collected from the ocean, such as giant kelp, may require scuba divers to collect a new set of organisms before they can conduct a second or third test.

3. Do you have a contingency plan for when a toxicity test does not meet the Test Acceptability Criteria (TAC) to ensure that your client's or facility's monitoring requirements are met?

Summary Response: In situations when the test does not meet TAC, the laboratories will immediately notify the client, request the client collect another sample, and restart the test. Many laboratories expressed that failing to meet TAC does not happen often because they maintain high quality assurance. In addition, some laboratories have back up organisms and resources to restart a test that does not meet TAC. In the situation when an organism culture is unusable, the laboratories may send the samples to a subcontracted laboratory. Two laboratories mentioned that they try to initiate the first test as close to the beginning of the monitoring period as possible so there is extra time to sample again if necessary.

4. If you are unable to conduct a test that a client requests or your facility is required to conduct due to capacity or other constraints, what is the contingency plan to fulfill the testing requirement (e.g., subcontract with other laboratories)? Does your contract with your client include language to address such contingencies?

Summary Response: In situations when the laboratory has capacity issues or other constraints, most of the laboratories send the samples to a subcontracted laboratory. However, this issue does not occur often. Four laboratories mentioned that they do not subcontract to other laboratories at all. Two larger laboratories maintain sufficient capacity, one laboratory maintains flexibility in their scheduling, and one laboratory reserves 30 percent of their testing capacity for "emergencies." Some laboratories include contingency language in their contract, and some do not.

5. Do you charge clients for toxicity tests that they request but are subsequently canceled? If so, how much?

Summary Response: The laboratories do not charge their clients for cancelled tests, as long as the test has not been started and no expenses have been incurred. However, the laboratories do charge for incurred expenses (e.g., cost of purchasing test organisms, courier fees, etc.). If the test is cancelled after it has been initiated, laboratories charge a prorated fee based on the time and effort the laboratory expended.

6. Do you charge more for unexpected or unscheduled tests?

Summary Response: Laboratories do not charge extra for unscheduled tests. However, one laboratory noted that they may start charging extra for weekend and/or holiday work if the demand increases significantly. Another laboratory noted that they charge extra for expedited results.

7. How much do you charge for a regularly scheduled, chronic whole effluent toxicity test? Is it species specific?

Summary Response: Six of the 20 laboratories that responded to the survey were willing to share species-specific pricing information. Three of the laboratories were commercial laboratories and three were municipal laboratories. However, one of the

municipal laboratories currently outsources their toxicity tests and reported the costs that they are charged by their contracted laboratory. The remaining two municipal laboratories conduct toxicity tests for their own discharge facilities.

The price of each toxicity test was dependent on the individual laboratory, test species, test method, number of required test concentrations, frequency of required reference toxicant test, and workload requirements of the test. For three commercial laboratories, and one municipal laboratory that outsources, when adjusted for inflation, 10 out of the 12 prices reported for conducting multiple concentration toxicity tests were within the range of costs listed in Exhibit 4-4 of the 2018 Economic Analysis prepared by Abt Associates, Inc. (Abt Associates Inc. et al., 2018). The two municipal laboratories reported much higher costs per toxicity test than those in the 2018 Economic Analysis.

K.3 Findings on Calendar Month Timeline

The Toxicity Provisions would require a discharger to initiate up to two median monthly effluent limitation (MMEL) compliance tests within the same calendar month as the routine monitoring test whenever a routine monitoring test results in a "fail." Based on the results of the survey, if a laboratory begins a six to eight day toxicity test at the start of the calendar month, they should have the test result within seven to 10 days. If the toxicity test results in a "fail," some laboratories indicated they begin the first MMEL compliance test within one day of the "fail," while other laboratories indicated they take up to one week to initiate their first MMEL compliance test, depending on the test species. Therefore, the first MMEL compliance test could be initiated somewhere between day eight to day 17 of the calendar month, and test results could be available after an additional seven to 10 days. Dischargers will know if they need to initiate a second MMEL compliance test could be initiated somewhere between day 16 and day 28 of the calendar month, if it is required. A practicable timeframe for completing the MMEL compliance tests is summarized in Table K-1.

	Test Initiation	Test Results
	Starts On:	Available On:
MMEL Routine Monitoring Test	Day 1	Day 7 to 10
1 st MMEL Compliance Test	Day 8 to 17	Day 15 to 27
2 nd MMEL Compliance Test	Day 16 to 28*	Day 23 to 38

|--|

* If required, the second MMEL compliance test must be initiated by the end of the calendar month, which will range from 28 to 31 days in length.

The survey responses indicate there is sufficient time for dischargers to initiate one MMEL routine monitoring test and two MMEL compliance tests within the same calendar month, if the routine monitoring test is initiated at or near the beginning of the calendar month. In addition, good communication and coordination between the dischargers and their laboratories is important to make sure that samples are collected and MMEL compliance tests are initiated promptly whenever a routine monitoring test results in a "fail."

The survey responses also indicate that the size of the laboratory and laboratory staff availability impact the feasibility of conducting multiple toxicity tests in a calendar month. Compared to larger laboratories, smaller laboratories generally require more time to obtain test species, set up tests, and start unscheduled tests due to fewer staff, capacity, and resources. Larger laboratories did not express as much concern with capacity constraints or scheduling difficulties. The survey also found that conducting toxicity tests requires planning, preparation, and communication between laboratories and their clients.