KAISER ALUMINUM

Best in Class

Flat Rolled Products

Trentwood Works

December 2, 2020

Mr. Pat Hallinan
Department of Ecology
4601 N Monroe
Spokane, WA 99205-1295

RE: 2020 Fourth Quarter Bioassay Test Results
NPDES Permit No. WA0000892

Dear Mr. Hallinan:

Enclosed please find our most recent bioassay test results. The following table summarizes the test results.

Ceriodaphnia dubia Test Results (October 27, 2020) (Percent Effluent)			
Test Type	NOEC (%)	LOEC (%)	LC_{50} (%) / IC_{25} (%)
Acute	100%	>100%	>100%
Chronic	100%	> 100%	88.1%

If you should have any questions, please feel free to contact me at (509) 927-6219.

Sincerely,

Brent Downey
Manager - Environmental Affairs

PO Box 15108
Spokane Valley, WA 99215

eurofins | Environment Testing TestAmerica

AQUATIC TOXICOLOGY REPORT

Project Name: KAISER ALUMINUM

Location: SPOKANE VALLEY, WASHINGTON
Outfall 001

Prepared by: Eurofins TestAmerica - Corvallis
(aka TestAmerica – ASL)

1100 NE Circle Boulevard, Suite 310
Corvallis, Oregon 97330
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NELAP ACCREDITED TNI LABORATORY

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Oregon Environmental Laboratory Accreditation Program #OR100022 (NELAP)
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California State Environmental Laboratory Accreditation Program, Certificate No.: 1726

Report Date: November 30, 2020 Released by: Michelle Bennett

Lab I.D. No. B4835

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INTRODUCTION

Eurofins TestAmerica – Corvallis (ET-C) Aquatic Toxicology Laboratory conducted toxicity testing on sample(s) from Kaiser Aluminum, Spokane Valley, Washington.

Testing was initiated on: October 27, 2020

The Sample ID was: Outfall 001

The test(s) were conducted using:

- the water flea (*Ceriodaphnia dubia*)

OVERVIEW OF REGULATORY GUIDANCE

The following provides an overview and excerpts of applicable permit specifics, regulatory guidance, and other relevant information. This is intended only as a helpful guide, from a laboratory perspective, for understanding test outcomes. The final responsibility for interpretation of results remains with the client and/or regulatory agency.

The following guidance is taken from ET-C's reading of the NPDES permit for Kaiser Aluminum Fabricated products, LLC (permit #WA0000892, effective July 1, 2011, and expired on June 30, 2016). As of the date of this report, ET-C has not received updated NPDES permit information.

Acute toxicity:

- **S13.B:** *Effluent Limit for Acute Toxicity*:
  - "… no acute toxicity detected in a test concentration representing the acute critical effluent concentration (ACEC)."
  - "The ACEC equals 71.8% effluent."
- **S13.C:** *Monitoring for Compliance with an Effluent Limit for Acute Toxicity*:
  - "Monitoring … shall be conducted quarterly … using each species listed .. on a rotating basis ... using at a minimum 100%, the ACEC, and a control"
  - "<u>Compliance with the effluent limit for acute toxicity means no statistically significant difference in survival between the control and the test concentration representing the ACEC</u>."
  - "The Permittee shall immediately implement subsection D if any acute toxicity test conducted for compliance monitoring determines a statistically significant difference in survival between the control and the ACEC using hypothesis testing at the 0.05 level of significance" (i.e. alpha = 0.05)
  - "If the difference in survival between the control and the ACEC is less than 10 percent, … the hypothesis test shall be conducted at the 0.01 level of significance."
- **S13.D:** *Compliance Testing for Acute Toxicity:*
  - "Conduct quarterly acute toxicity testing on the final effluent."
  - "… using each of the species and protocols listed … on a rotating basis."
- **S13.E:** *Response to Noncompliance With an Effluent Limit for Acute Toxicity*:

- "If Permittee violates the acute toxicity limit in subsection the Permittee shall begin additional compliance monitoring within one week from the time of receiving the test results".

Chronic toxicity:

- **S14.B:** *Effluent Limit for Chronic Toxicity*:
  - "... no toxicity detected in a test concentration representing the chronic critical effluent concentration (CCEC)."
  - "The CCEC equals 17.1% effluent."
- **S14.C:** *Compliance with the Effluent Limit for Chronic Toxicity*:
  - "Monitoring ... shall be conducted quarterly ... using each species listed .. on a rotating basis ... using at a minimum the CCEC, the ACEC, and a control."
  - "<u>Compliance with the effluent limit for chronic toxicity means no statistically significant difference in response between the control and the test concentration representing the CCEC</u>."
  - "The Permittee shall immediately implement subsection D if any chronic toxicity test conducted for compliance monitoring determines a statistically significant difference in response between the control and the CCEC using hypothesis testing at the 0.05 level of significance" (i.e. alpha = 0.05)
  - "If the difference in response between the control and the CCEC is less than 20%, the hypothesis test shall be conducted at the 0.01 level of significance."
- **S14.D:** *Response to Noncompliance With an Effluent Limit for Chronic Toxicity*:
  - "If a toxicity test ... determines a statistically significant difference in response between the CCEC and the control, the Permittee shall begin additional compliance monitoring within one week from the time of receiving the test results".

The following is taken from the WDOE guidance (WQ-R-95-80, June 2016 revision):

- "To reduce WET limit violations due to statistically significance that is a Type I error (false positive), we lower the alpha for hypothesis testing when differences in test organisms response are small."
- "Alpha will be lowered from 0.05 to 0.01 if a 10% difference in an acute test is significant or a 20% difference in a chronic test is significant."

SUMMARY OF TEST RESULTS

Exhibits 1 and 2 provide a summary of the final test results.

EXHIBIT 1
Summary of Acute Test Results

Species	NOEC (%)	LOEC (%)	LC_{50} (%)	Was there a statistically significant difference in survival between the control and the test concentration representing the ACEC (71.8%)?
C. dubia	100	> 100	> 100	No

Note: acronyms are as defined below.

From the NPDES permit: "Compliance with the effluent limit for acute toxicity means no statistically significant difference in survival between the control and the test concentration representing the ACEC."

More detailed information is provided in the Results and Discussion section.

EXHIBIT 2
Summary of Chronic Test Results

Species	NOEC (%)	LOEC (%)	IC_{25} (%)	Was there a statistically significant difference in response between the control and the test concentration representing the CCEC (17.1%)?
C. dubia	100	> 100	88.1	No

Note: acronyms are as defined below.

From the NPDES permit: "Compliance with the effluent limit for chronic toxicity means no statistically significant difference in response between the control and the test concentration representing the CCEC."

ACRONYM DEFINITIONS (from EPA guidance):

NOEC = No Observed Effect Concentration: The highest test concentration that causes no observable adverse effects on the test organisms (i.e. no statistically significant reduction from the control).
LOEC = Low Observed Effect Concentration: The lowest test concentration that does cause an observable adverse effect on the test organisms (i.e. is statistically significant reduction from the control).
LC_{50} = Lethal Concentration (50%): A point estimate of the test concentration that would cause death in 50 percent of the test population.
IC_{25} = Inhibition Concentration (25%): A point estimate of the test concentration that would cause a 25 percent reduction of a non-quantal biological measurement (i.e. growth, reproduction, etc.) for the test population.

SAMPLE INFORMATION

Exhibit 3 provides a summary of the sample conditions as received.

EXHIBIT 3
Sample Conditions on Receipt

Sample ID	**Outfall 001**		
ET-C SDG	B4835		
+ suffix	-01	-02	-03
Collection - Date and Time	10/26/2020 12:00	10/28/2020 12:00	10/30/2020 12:00
Receipt - Date and Time	10/27/2020 10:30	10/29/2020 11:00	10/31/2020 09:45
Temperature (°C)	0.9	0.5	1.0
Dissolved Oxygen (mg/L)	11.3	9.5	11.1
pH	8.0	7.9	7.6
Conductivity (µS/cm)	273	217	298
Total Residual Chlorine (mg/L)	0.04	< 0.02	< 0.02
Ammonia (mg/L as NH_3-N)	< 0.10	< 0.10	< 0.10
Total Hardness (mg/L as $CaCO_3$)	117	122	128
Total Alkalinity (mg/L as $CaCO_3$)	100	103	106

METHODS AND MATERIALS

TEST METHODS

The acute test methods were performed according to: *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, USEPA Office of Water (2002), EPA-821-R-02-012.

The chronic test methods were performed according to: *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, (2002), EPA-821-R-02-013.

Additional guidance was provided by:

- *Whole Effluent Toxicity Testing Guidance and Test Review Criteria*, Washington State Department of Ecology (revised Jun 2016) Pub# WQ-R-95-80.

DEVIATIONS FROM PROTOCOLS

Deviations from <u>required</u> procedures in the test methods:

- None noted.

Deviations from <u>recommended</u> procedures in the test methods:

- None noted.

TEST DESIGN

The following summarizes the conditions used for both overall testing and the specifics for each test (observations and notations can be found on the datasheets in Appendix A):

<u>Overall Test Design:</u>

- Acute tests: 6.25, 17.1 25, 71.8, and 100 percent sample + dilution water for the control.
- Chronic tests: 6.25, 17.1 25, 71.8, and 100 percent sample + dilution water for the control.

<u>Test Organism Conditions:</u>

- All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA (2002).
- The test organisms appeared vigorous and in good condition prior to testing.

<u>*C. dubia* acute test:</u>

- Source: ET-C's in-house cultures
- Age: Less than 24 hours old
- Design: Four test vessels per concentration, five organisms per vessel
- Test Solution Renewal: None (i.e. static test)
- Monitoring:
    - Daily: Survival, DO, pH, and temperature; all concentrations.

    - Test Initiation and Termination: Conductivity, all concentrations
- Termination: 48 hours.
- Endpoints: Survival (at termination)

C. dubia chronic test:

- Source: ET-C's in-house cultures
- Age: Less than 24 hours old and within an 8-hour age range, with blocking by known parentage
- Design: Ten test vessels per concentration, one organism per vessel
- Test Solution Renewal: Daily
- Monitoring:
    - Daily: Survival and neonate production (with brood determination)
    - Daily: DO and pH in pre and post-renewal solutions, all concentrations
    - Daily: Temperature in pre-renewal solutions, all concentrations
    - With each new sample: Conductivity in post-renewal solutions, control and highest sample concentration
- Termination:
    - Survival: @ after 7 days.
    - Reproduction: When 60%+ of surviving control organisms produce a 3rd brood.
- Endpoints: Survival (at termination) and Reproduction (through first 3 broods)

DILUTION WATER

The dilution water used was the standard culture water used by ET-C:

- Reconstituted, moderately hard water (as per EPA protocol) with a total hardness of 75 to 105 mg/L as $CaCO_3$ and an alkalinity of 50 to 75 mg/L as $CaCO_3$.

SAMPLE COLLECTION AND STORAGE

Samples were collected by Kaiser Aluminum personnel. The samples were accepted as scheduled by ET-C. Chain of Custody and Sample Receipt Records are provided in Appendix C.

- All samples were received within the EPA recommended 0 to 6 °C range.
- All samples were received within the WDOE required 0 to 6 °C range.
- All samples were initially used for test initiation or test solution renewal within the EPA recommended maximum holding time of 36 hours of sample collection.
- All subsequent uses of a sample occurred within the EPA recommended maximum holding time of 72 hours past the time of initial use of that sample.
- All subsequent uses of a sample occurred within the WDOE recommended maximum holding time of 72 hours past the time of sample collection.
- All subsequent uses of a sample occurred within the WDOE recommended maximum holding time of 84 hours past the time of sample collection. (Extended for renewals of a 96 hour duration acute test).
- Following receipt, the samples were stored in the dark at 0 to 6 °C until test solutions were prepared and tested.

SAMPLE PREPARATION

Samples used during these tests were:

- Temperature adjusted prior to test initiation and each daily renewal.

DATA ANALYSIS

The statistical analyses performed for the acute tests were those outlined in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, USEPA Office of Water, Fifth Edition (2002), EPA-821-R-02-012, using CETIS.

The statistical analyses performed for the chronic tests were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, USEPA Office of Water, Fourth Edition (EPA 2002), EPA-821-R-02-013, using CETIS.

- The specific statistical analysis and CETIS version used for each endpoint evaluation is listed with the statistical outputs included with each test in Appendix A.
- If any additional analysis methods were also used, an explanation of the rationale and reference to the source method is included with the presentation of those results below.

Additional guidance was provided by:

- *Whole Effluent Toxicity Testing Guidance and Test Review Criteria*, Washington State Department of Ecology (revised Jun 2016) Pub# WQ-R-95-80.

RESULTS AND DISCUSSION

The raw data sheets for all tests are presented in Appendix A.

ACUTE BIOASSAY

Table 1 summarizes the survival data for the *C. dubia* acute test.

Table 1 **Summary of Acute Results** ***C. dubia***	
Sample Concentration (%)	**Percent Survival (at Test Termination)**
Control	100
6.25	95.0
17.1	100
25.0	100
71.8	100
100	95.0

Statistical analysis in accordance with the EPA protocol and WDOE guidance results in:

- NOEC = 100 %
- LOEC > 100 %
- LC_{50} > 100 %

From the NPDES permit: "Compliance with the effluent limit for acute toxicity means no statistically significant difference in survival between the control and the test concentration representing the ACEC."

- No statistically significant difference in survival between control and ACEC (71.8%) was shown.

Dissolved oxygen concentrations remained at 4.0 mg/L or greater throughout the test period. Test temperatures remained in the range of 20±1 °C. Test pH remained within the recommended 6.0 to 9.0 range.

The *C. dubia* acute test meets Test Acceptability Criteria (TAC) of a minimum 90 percent control survival. Unless referenced above, the tests proceeded without any noted deviations or interruptions that could have affected test results. The testing should be considered "valid".

CHRONIC BIOASSAY

Table 2 summarizes the survival and reproduction data for the *C. dubia* chronic test.

Table 2 **Summary of Chronic Results** ***C. dubia***		
Sample Concentration (%)	**Percent Survival**	**Mean Number of Young Per Adult**
Control	100	20.7
6.25	100	23.8
17.1	100	23.8
25	100	22.3
71.8	100	18.0
100	100	16.5

Statistical analysis in accordance with the EPA protocol and WDOE guidance results in:

- NOEC = 100 %
- LOEC > 100 %
- IC_{25} = 88.1 %

From the NPDES permit: "Compliance with the effluent limit for chronic toxicity means no statistically significant difference in response between the control and the test concentration representing the CCEC."

- No statistically significant difference in response between control and CCEC (17.1%) was shown.

Dissolved oxygen concentrations remained at 4.0 mg/L or greater throughout the test period. Test temperatures remained at 25±1°C. Test pH remained within the recommended 6.0 to 9.0 range.

The *C. dubia* test meets Test Acceptability Criteria (TAC) for a minimum 80 percent control survival and a minimum 15 young produced per surviving control adult. Unless referenced above, the tests proceeded without any noted deviations or interruptions that could have affected test results. The overall testing should be considered "valid".

REFERENCE TOXICANT TESTS

Reference toxicant (reftox) testing is performed to document both initial and ongoing laboratory performance of the test method(s). While the health of the test organisms is primarily evaluated by the performance of the laboratory control, reftox test results also may be used to assess the health and sensitivity of the test organisms. Reftox test results within their respective cumulative summary (Cusum) chart limits are indicative of consistent laboratory performance and normal test organism sensitivity.

This demonstrates ongoing laboratory proficiency of the test methods and suggests normal test organism sensitivity in the associated client testing.

The *C. dubia* reftox tests were conducted using sodium chloride.

The data sheets for the reference toxicant tests are provided in Appendix B.

Table 3 and 4 summarizes the reference toxicant test results and Cusum chart limits.

Table 3
Acute Reference Toxicant Tests (g/L)

Species	LC_{50}	Cusum Chart Limits
C. dubia	2.54	1.75 to 3.23

Table 4
Chronic Reference Toxicant Tests (g/L)

Species	IC_{25}	Cusum Chart Limits
C. dubia (survival)	0.86	0.52 to 2.45
C. dubia (reproduction)	0.19	0.04 to 1.38

APPENDIX A

RAW DATA SHEETS

TestAmerica

FRESHWATER TOXICITY TEST: SAMPLE AND DILUTION WATER DATA

Client: Kaiser Aluminum - Trentwood

Contact: Bud Leber - or - Ron Lehrman (509) 927-6554

SDG # B 4835-61

Test Initiation: Date 10/27/20

Test Termination: Date 11-3-20

Sample ID Number	Field ID	Collected Date (mm/dd/yy)	Collected Time (Pacific Zone)	Received Date (mm/dd/yy)	Received Time (Pacific Zone)	Temp (°C) as Rc'vd	Total Residual Chlorine (mg/l) ☐ Dechlorination allowed as Rc'vd / after Dechlor.	Ammonia NH_3-N mg/l as Rc'vd	Hardness mg/l as $CaCO_3$ as Rc'vd	Alkalinity mg/l as $CaCO_3$ as Rc'vd	DO (mg/L) as Rc'vd	pH as Rc'vd	Cond. (uS) as Rc'vd	60 um filtered? (organisms noted)
B4835-01	Outfall 001	10/26/20	12:00	10/27/20	10:30	0.9	0.04 / -	<0.10	117	100	11.3	8.0	273	☐ BC
-02	Outfall 001	10/28/20	12:00	10/29/20	11:00	0.5	<0.02 / -	<0.10	122	103	9.5	7.9	217	☐ BC
-03	Outfall 001	10/30/20	12:00	10/31/20	09:45	1.0	<0.02 / -	<0.10	128	106	11.1	7.6	298	☐ BC
							/							
							/							
							/							
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							/							
							/							
			Reporting Limits:			na	0.02 mg/L	0.10 mg/L	5 mg/L	5 mg/L	na	na	na	na

Note: "–" Indicates data collection or dechlorination not needed. Any other adjustments to samples prior to use are documented in Comments below or on Dilutions page.

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
Recon MH (FHM)	5202	78	64
	5203	78	60
	5205	86	62

Comments: ☑ Indicates the action was taken, (☐= action not taken): " – " = sample not dechlorinated, or analyte not collected/needed.

Water Quality Meters Used/ID#: Dissolved Oxygen # 4 pH # 11 Conductivity 2 #

001

Test Solution Preparation and Dilution Record

Client: Kaiser Aluminum - Trentwood

Note: ☐ Indicates task not done, ☑ Indicates task was done. Temp adj. = Temperature adjusted to ambient or test temp

Ditto marks ('') indicate that the same SDG, batch of dilution water, or food as the previous day's entry was used.

Ceriodaphnia dubia - Chronic

Test Concentration (%)	Sample Volume (mls)		Final Volume (mls)
Control	0.00	→	200
6.25	12.5	→	200
17.1	34.2	→	200
25	50.0	→	200
71.8	144	→	200
100	200	→	200

Total Sample volume needed per day = 441 mls

Test Day	Sample ID Used	Daily Sample Preparation (prior to dilution)	Dilution Water Used	YCT ID Used	Algae ID Used	Date	Time	Initials
0 (Initiation)	B 4835-01	☐ Temp adj, ☐ Aerated	ID # 5202	# 1039	# 1270	10/27/2020	12:30	SD
1	B 4835-01	☐ Temp adj, ☐ Aerated	ID # 5202	# 1266	# 1270	10/28/"	11:00	BC
2	B 4835-02	☐ Temp adj, ☐ Aerated	ID # 5203	# 1266	# 1270	10/29/"	12:20	BC
3	B 4835-02	☐ Temp adj, ☐ Aerated	ID # 5203	# 1269	# 1272	10/30/"	11:00	BC
4	B 4835-03	☐ Temp adj, ☐ Aerated	ID # 5203	# 1269	# 1272	10/31/"	10:55	BC
5	B 4835-03	☐ Temp adj, ☐ Aerated	ID # 5205	# 1264	# 1272	11/1/20	04:05	MS
6	B 4835-03	☐ Temp adj, ☐ Aerated	ID # 5205	# 1264	# 1272	11-2-20	M2 0505	0535
7	B -	☐ Temp adj, ☐ Aerated	ID #	#	#	/ / "	:	

Ceriodaphnia dubia - Acute

Test Concentration (%)	Sample Volume (mls)		Final Volume (mls)
Control	0.00	→	200
6.25	12.5	→	200
17.1	34.2	→	200
25	50.0	→	200
71.8	144	→	200
100	200	→	200

Test Day	Sample ID Used	Daily Sample Preparation (prior to dilution)	Dilution Water Used	Date	Time	Initials
0 (Initiation)	B 4835-01	☐ Temp adj, ☐ Aerated	ID # 5202	10/27/2020	12:40	SD

Total Sample volume needed per day = 441 mls

TestAmerica

FRESHWATER TOXICITY TEST: TEST ORGANISM INFORMATION

Client Kaiser Aluminum - Trentwood

Sample Designation (SDG): B 4835

Test Species Information	Cd # 3751 *Ceriodaphnia dubia* Chronic	Cd # 3752 *Ceriodaphnia dubia* Acute			
Organism Age at Initiation	<24 hrs, all within an 8 hr window	< 24 hrs			
Test Container Size	30 ml	30 ml			
Test Volume	15 ml	25 ml			
Feeding: Type and Amount	0.10 ml Algae and 0.10 ml YCT daily	Algae and YCT during acclimation			
Aeration: In Test Chambers via Slow Bubble :	☒ None ☐ Prior to use	☒ None ☐ Prior to use			
Acclimation Period	<24 hrs	<24 hrs			
Organism Source	In-House	In-House			
Size	-	-			
Loading Rate	-	-			

Dissolved Oxygen aeration justifications (in test chambers):

Test(s): ☐ All ☐ _____

Date:

Comments:

TestAmerica

48 HOUR FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Kaiser Aluminum - Trentwood — Sample ID # B 4835-01 — Beginning, Date 10-27-20 Time 1410

001 — Outfall 001 — Ending, Date 10-29-20 Time 1535

Random Template Used: Wubker Cup random # 6x4 #24 A-D — Waterbath/Incubator Used: # 7

Test Species: *Ceriodaphnia dubia* — ID# Cd 3752

	0 hr	24 hr	48 hr
Technician	BW	BW	BW
Time	1410	1650	1535
Therm. ID#	# 251	# 251	# 255

Percent	Test Container Number	Number of Live Organisms			Dissolved Oxygen (mg/l)			pH			Temperature (°C)			Conductivity (µmohs/cm)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	Surrogate					8.0			8.0			21.0				
	A	5	5	5	8.9		7.8	8.2		7.6	19.9		20.8	300		314
	B	5	5	5												
	C	5	5	5												
	D	5	5	5												
6.25	Surrogate					8.0			7.9			21.0				
	A	5	5	5	8.9		8.2	8.2		7.7	19.8		20.7	302		298
	B	5	5	5												
	C	5	5	4												
	D	5	5	5												
17.1	Surrogate					8.1			7.9			20.8				
	A	5	5	5	8.9		8.4	8.1		7.7	19.7		20.7	300		298
	B	5	5	5												
	C	5	5	5												
	D	5	5	5												
25	Surrogate					8.1			7.9			21.0				
	A	5	5	5	8.9		8.5	8.0		7.7	19.6		20.6	295		311
	B	5	5	5												
	C	5	5	5												
	D	5	5	5												
71.8	Surrogate					8.2			7.9			20.8				
	A	5	5	5	9.1		8.5	7.8		7.7	19.3		20.6	283		305
	B	5	5	5												
	C	5	5	5												
	D	5	5	5												
100	Surrogate					8.2			7.9			21.0				
	A	5	5	5	9.1		8.5	7.7		7.8	19.2		20.5	277		296
	B	5	5	5												
	C	5	5	5												
	D	5	5	4												

Note: Use surrogate test chamber to determine temperature, DO, pH, and Conductivity measurements @ 24 hrs (to avoid injuring the organisms).

CETIS Summary Report

Report Date: 10 Nov-20 11:38 (p 1 of 1)
Test Code/ID: B483501cda / 02-4774-8852

Ceriodaphnia 48-h Acute Survival Test — **Eurofins TestAmerica - Corvallis**

Batch ID:	05-5926-3264	**Test Type:**	Survival (48h)	**Analyst:**	Michelle Bennett
Start Date:	27 Oct-20 14:10	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	29 Oct-20 15:35	**Species:**	Ceriodaphnia dubia	**Brine:**	
Test Length:	49h	**Taxon:**		**Source:**	In-House Culture **Age:** <24

Sample ID:	18-9017-8027	**Code:**	B4835-01	**Project:**	
Sample Date:	26 Oct-20 12:00	**Material:**	Industrial Effluent	**Source:**	Kaiser Aluminum Trentwood (WA0000
Receipt Date:	27 Oct-20 10:30	**CAS (PC):**		**Station:**	Outfall 001
Sample Age:	26h (0.9 °C)	**Client:**			

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	√	NOEL	LOEL	TOEL	PMSD	TU	S
19-9409-6638	48h Survival Rate	Steel Many-One Rank Sum Test		100	>100	---	11.3%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	√	Level	%	95% LCL	95% UCL	TU	S
18-1525-5150	48h Survival Rate	Linear Interpolation (ICPIN)		EC50	>100	---	---	<1	1

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits Lower	TAC Limits Upper	Overlap	Decision
18-1525-5150	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Criteria
19-9409-6638	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Criteria

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
6.25		4	0.9500	0.7909	1.1090	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
17.1		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
71.8		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
100		4	0.9500	0.7909	1.1090	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%

48h Survival Rate Detail MD5: 7F2CF6FCDCDDA2BA6406FEA7B8E18A34

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	0.8000	1.0000
17.1		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
71.8		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	0.8000

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	5/5	5/5	5/5	5/5
6.25		5/5	5/5	4/5	5/5
17.1		5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5
71.8		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	4/5

Ceriodaphnia 48-h Acute Survival Test — **Eurofins TestAmerica - Corvallis**

Analysis ID:	19-9409-6638	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	10 Nov-20 11:36	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	10 Nov-20 11:36	**MD5 Hash:**	7F2CF6FCDCDDA2BA6406FEA7B8E18A3	**Editor ID:**	006-834-630-9

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.1128	11.28%

Steel Many-One Rank Sum Test

Control vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	16	10	1	6	CDF	0.6105	Non-Significant Effect
	17.1	18	10	1	6	CDF	0.8333	Non-Significant Effect
	25	18	10	1	6	CDF	0.8333	Non-Significant Effect
	71.8	18	10	1	6	CDF	0.8333	Non-Significant Effect
	100	16	10	1	6	CDF	0.6105	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0189026	0.0037805	5	0.8	0.5640	Non-Significant Effect
Error	0.0850618	0.0047257	18			
Total	0.103964		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
Distribution	Shapiro-Wilk W Normality Test	0.6154	0.884	<1.0E-05	Non-Normal Distribution

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	5.00%
17.1		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
71.8		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	5.00%

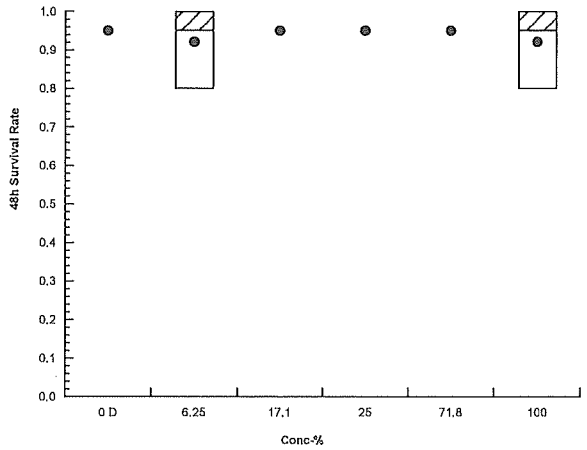
Angular (Corrected) Transformed Summary

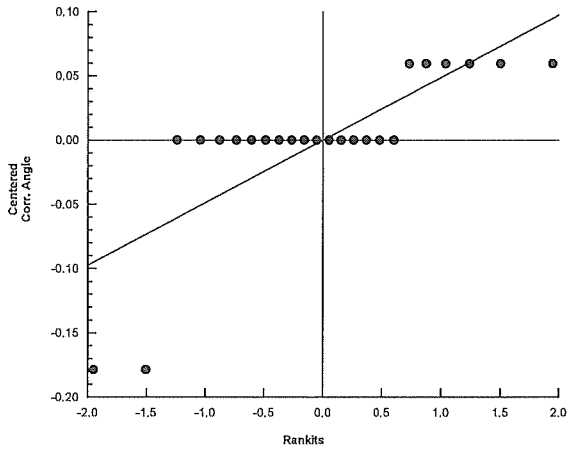
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
6.25		4	1.2860	1.0960	1.4750	1.3450	1.1070	1.3450	0.0595	9.26%	4.43%
17.1		4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
25		4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
71.8		4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
100		4	1.2860	1.0960	1.4750	1.3450	1.1070	1.3450	0.0595	9.26%	4.43%

Ceriodaphnia 48-h Acute Survival Test — **Eurofins TestAmerica - Corvallis**

Analysis ID:	19-9409-6638	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	10 Nov-20 11:36	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	10 Nov-20 11:36	**MD5 Hash:**	7F2CF6FCDCDDA2BA6406FEA7B8E18A3	**Editor ID:**	006-834-630-9

Graphics





CETIS Analytical Report

Report Date:	10 Nov-20 11:37 (p 1 of 1)
Test Code/ID:	B483501cda / 02-4774-8852

Ceriodaphnia 48-h Acute Survival Test — **Eurofins TestAmerica - Corvallis**

Analysis ID:	18-1525-5150	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	10 Nov-20 11:36	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	10 Nov-20 11:36	**MD5 Hash:**	7F2CF6FCDCDDA2BA6406FEA7B8E18A3	**Editor ID:**	006-834-630-9

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	975660	200	Yes	Two-Point Interpolation

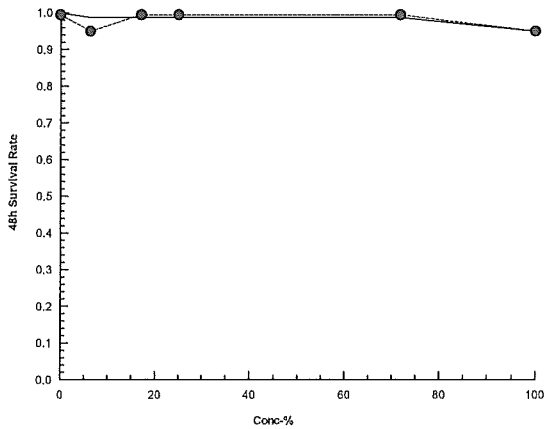
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC50	>100	---	---	<1	---	---

48h Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**A/B**	**Mean**	**%Effect**
0	D	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
6.25		4	0.9500	1.0000	0.8000	1.0000	10.53%	5.00%	19/20	0.9875	1.25%
17.1		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	0.9875	1.25%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	0.9875	1.25%
71.8		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	0.9875	1.25%
100		4	0.9500	1.0000	0.8000	1.0000	10.53%	5.00%	19/20	0.9500	5.00%

Graphics



TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ceriodaphnia dubia Survival and Reproduction Test Data Summary

Client: Kaiser Aluminum - Trentwood

Test Start Date: 10-27-20

Sample Description: Outfall 001

Initial Sample ID#: B U835-01

Data summarized by: ABL

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	6	14	~~26~~ 27	14	19	29	32	17	28	21	10	207
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
6.25 %	26	30	18	17	33	31	19	23	20	21	10	238
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
17.1 %	26	17	28	24	20	22	30	28	24	19	10	238
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
25 %	25	16	17	15	27	31	23	19	21	29	10	223
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
71.8 %	15	15	18	23	~~25~~ 23	31	15	26	9	15	10	180
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
100 %	20	9	19	22	16	10	22	18	17	12	10	165
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Survival data summarized through Day 7. 60%+ of surviving controls with 3+ broods first observed on Day 7.

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-600-4-91-002 and EPA-821-R-02-013, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

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CERIODAPHNIA CHRONIC SURVIVAL AND REPRODUCTION DATA

Neo's obtained from	A	B	C	D	E	F	G	H	I	J
Culture Board ID:	G	G	G	G	G	G	G	G	E	E
Slot #:	15	9	20	32	44	38	21	23	11	32

Incubator Used: # 5
Random Template Used: 6 conc # 12

Client: Kaiser Aluminum - Trentwood
Test Initiation: Date: 10 pm 20 10/27/20 12/27/2020 Time: 13:20
Sample Description: Outfall 001
Initial Sample ID # B4G25 - 01
Termination: Date: 11 13 /2020 Time: 16:05
Technician: Day 0 [illegible] Day 1 [illegible] Day 2 [illegible] Day 3 [illegible] Day 4 MS Day 5 MS Day 6 MS Day 7 [illegible] Day 8 ____
Time: Day 0 1320 Day 1 1540 Day 2 1410 Day 3 1500 Day 4 1152 Day 5 1015 Day 6 1003 Day 7 1605 Day 8 ____

001

Percent	Day	A	B	C	D	E	F	G	H	I	J	Adults	Live Young
		Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	0	2	0	3	0	0	2	0	0	10	7
	5	3	4	0	4	7	2	3	4	3	0	10	30
	6	3	10	11	10	0	13	14	0	13	11	10	85
	7	0	0	14	0	9	14	15	11	12	10	10	85
	8												
6.25 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	3	0	2	3	0	0	2	3	1	4	10	18
	5	0	5	6	4	5	4	4	6	5	4	10	43
	6	13	14	10	0	14	13	13	14	0	13	10	104
	7	10	11	0	10	14	14	0	0	14	14	10	73+
	8												
17.1 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	0	0	3	0	2	0	3	2	2	10	12
	5	5	3	4	7	0	6	6	11	11	8	10	61
	6	11	0	13	14	9	14	13	0	0	0	10	~~104~~
	7	10	14	11	0	11	0	11	14	11	9	10	91
	8												
25 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	~~0~~	0	0	0	0	0	2	2	2	0	10	9
	5	0	3	6	6	0	3	6	6	6	5	10	41
	6	12	13	0	0	15	17	15	0	0	10	10	82
	7	10	0	11	9	12	11	0	11	13	14	10	91
	8												
71.8 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	2	0	0	0	2	0	10	4
	4	2	0	2	0	0	0	2	0	0	0	10	6
	5	0	4	4	5	5	8	6	3	7	4	10	46
	6	8	0	0	8	6	8	7	7	0	0	10	44
	7	5	11	12	10	14	15	13	16	0	11	10	~~94+~~
	8										RO6.80%	11-7-20	80+
100 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	2	4	0	3	5	0	0	0	10	14
	4	0	2	0	0	0	0	0	0	3	0	10	5
	5	2	0	5	4	2	3	0	3	4	4	10	27
	6	4	0	0	4	0	4	4	3	0	0	10	19
	7	14	7	12	10/0	14	12	13	12	10	8	10	102
	8												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, "F" = Female, "R" = Adult releasing young, " / " = split brood (carry-over brood / current day brood),
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing, remove from analysis. A circled neonate count = 4th brood

Footnote: As per WDOE, C. dubia test reproduction should be when 60% of the surviving control organisms have produced their third brood (Days 6, 7, or 8). Survival is at seven days.

Kaiser Aluminum- OF001 Cd Ac and Chralum Dao Control ID: ASL 800-0017

TestAmerica

CERIODAPHNIA WATER QUALITY DAT 001

Client: Kaiser Aluminum - Trentwood
Sample Description: Outfall 001

Initiated Date 10/27/2020 Time 13 20
Initial Sample ID # B 4255 - 01

Adults Isolated Date 10/24/2020 Time 14:10
Neo's Collected Date 10/26/2020 Time 16:30

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Tech:	Bw	Bw	Bw	Bw	MS	MS	MS	Bw	
Time	16:00	17:20	14:20	15:20	11:52	10:15	10:04	17:35	:
Therm.	# 251	# 251	# 251	# 255	# 255	# 255	# 255	# 267	#

%	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7	8
Control	8.3	7.6 / 7.3	8.0 / 8.0	7.9 / 7.9	8.1 / 7.5	7.7 / 7.4	6.4 / 6.3	7.8 /	
6.25 %	8.3	7.6 / 7.4	8.0 / 8.1	7.8 / 7.9	8.2 / 8.3	7.9 / 7.9	6.6 / 6.8	7.8 /	
17.1 %	8.3	7.6 / 7.9	8.0 / 8.1	7.8 / 7.9	8.2 / 8.4	7.9 / 7.9	6.7 / 6.8	7.7 /	
25 %	8.4	7.6 / 7.6	8.1 / 8.2	7.8 / 7.9	8.2 / 8.4	7.9 / 7.8	6.7 / 6.8	7.7 /	
71.8 %	8.4	7.6 / 7.5	8.1 / 8.3	7.8 / 8.0	8.2 / 8.4	7.9 / 7.9	6.8 / 6.9	7.7 /	
100 %	8.4	7.6 / 7.5	8.1 / 8.3	7.9 / 8.1	8.2 / 8.6	8.0 / 8.0	6.7 / 6.9	7.7 /	

%	pH Day 0	1	2	3	4	5	6	7	8
Control	7.8	7.8 / 7.9	8.1 / 8.0	7.6 / 7.8	8.0 / 8.0	7.9 / 8.0	8.0 / 7.9	8.0 /	
6.25 %	7.8	7.8 / 7.9	8.0 / 7.9	7.6 / 7.8	8.0 / 8.0	7.9 / 8.0	7.9 / 7.9	7.9 /	
17.1 %	7.8	7.8 / 7.9	8.0 / 7.9	7.6 / 7.8	8.0 / 8.0	7.9 / 8.0	7.9 / 8.0	7.9 /	
25 %	7.8	7.8 / 7.8	8.0 / 7.9	7.6 / 7.8	8.0 / 7.9	7.9 / 7.9	7.9 / 7.9	8.0 /	
71.8 %	7.8	7.8 / 7.7	8.1 / 7.8	7.7 / 7.7	8.1 / 7.8	7.9 / 7.9	7.9 / 7.9	8.0 /	
100 %	7.9	7.9 / 7.8	8.2 / 7.7	7.8 / 7.7	8.1 / 7.8	7.9 / 7.8	7.9 / 7.8	8.1 /	

%	Temperature (°C) / Conductivity (µS) (1st use of each sample only) Day 0	1	2	3	4	5	6	7	8
Control	24.6 / 312	25.2 /	25.3 / 309	25.1 /	24.7 / 320	24.8 /	24.4 /	25.3 /	
6.25 %	24.6 / 312	25.9 /	24.9 / 305	25.3 /	24.4 / 312	24.6 /	24.8 /	25.3 /	
17.1 %	24.6 / 310	25.0 /	24.9 / 303	24.5 /	24.3 / 308	24.5 /	24.4 /	25.0 /	
25 %	24.6 / 305	25.1 /	25.8 / 302	25.0 /	24.1 / 302	25.1 /	24.7 /	25.0 /	
71.8 %	24.5 / 297	24.8 /	25.3 / 298	24.8 /	24.6 / 293	24.5 /	24.6 /	25.1 /	
100 %	24.4 / 299	24.8 /	25.8 / 296	25.1 /	24.7 / 290	25.1 /	24.5 /	25.3 /	

COMMENTS: Temperatures taken just prior to test solution renewals. DO, pH, and Conductivity taken following organism transfer.

23.8 – Temp out of recom. range

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Summary Report

Report Date: 10 Nov-20 12:03 (p 1 of 2)
Test Code/ID: B483501cdc / 13-5295-1455

Ceriodaphnia 7-d Survival and Reproduction Test — **Eurofins TestAmerica - Corvallis**

Batch ID:	10-5806-5307	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Michelle Bennett
Start Date:	27 Oct-20 13:20	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	03 Nov-20 16:05	**Species:**	Ceriodaphnia dubia	**Brine:**	
Test Length:	7d 3h	**Taxon:**		**Source:**	In-House Culture **Age:** <24

Sample ID:	18-9017-8027	**Code:**	B4835-01	**Project:**	
Sample Date:	26 Oct-20 12:00	**Material:**	Industrial Effluent	**Source:**	Kaiser Aluminum Trentwood (WA0000
Receipt Date:	27 Oct-20 10:30	**CAS (PC):**		**Station:**	Outfall 001
Sample Age:	25h (0.9 °C)	**Client:**			

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
11-9905-5977	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	---	---	1	1
01-5530-0109	Reproduction	Dunnett Multiple Comparison Test	100	>100	---	29.9%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
16-7408-5441	Reproduction	Linear Interpolation (ICPIN)	IC25	88.09	42.51	---	1.135	1

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
11-9905-5977	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
01-5530-0109	Reproduction	Control Resp	20.7	15	>>	Yes	Passes Criteria
16-7408-5441	Reproduction	Control Resp	20.7	15	>>	Yes	Passes Criteria
01-5530-0109	Reproduction	PMSD	0.2986	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
17.1		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
71.8		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	---	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	20.7	14.8	26.6	6	32	2.608	8.247	39.84%	0.00%
6.25		10	23.8	19.63	27.97	17	33	1.843	5.827	24.48%	-14.98%
17.1		10	23.8	20.73	26.87	17	30	1.356	4.29	18.02%	-14.98%
25		10	22.3	18.28	26.32	15	31	1.777	5.618	25.19%	-7.73%
71.8		10	18	13.23	22.77	9	31	2.108	6.667	37.04%	13.04%
100		10	16.5	13.12	19.88	9	22	1.493	4.72	28.61%	20.29%

Ceriodaphnia 7-d Survival and Reproduction Test — Eurofins TestAmerica - Corvallis

7d Survival Rate Detail — MD5: 96EE902D9B582A0F8551382570A24560

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
17.1		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
71.8		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail — MD5: C07558DCD95BCA19EC0BD334947FA641

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	6	14	27	14	19	29	32	17	28	21
6.25		26	30	18	17	33	31	19	23	20	21
17.1		26	17	28	24	20	22	30	28	24	19
25		25	16	17	15	27	31	23	19	21	29
71.8		15	15	18	23	13	31	15	26	9	15
100		20	9	19	22	16	10	22	18	17	12

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
17.1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
71.8		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date:	10 Nov-20 12:03 (p 1 of 1)
Test Code/ID:	B483501cdc / 13-5295-1455

Ceriodaphnia 7-d Survival and Reproduction Test — **Eurofins TestAmerica - Corvallis**

Analysis ID:	11-9905-5977	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.7
Analyzed:	10 Nov-20 12:02	**Analysis:**	STP 2xK Contingency Tables	**Status Level:**	1
Edit Date:	10 Nov-20 11:59	**MD5 Hash:**	96EE902D9B582A0F8551382570A24560	**Editor ID:**	006-834-630-9

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	>100	---	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		17.1	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		71.8	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

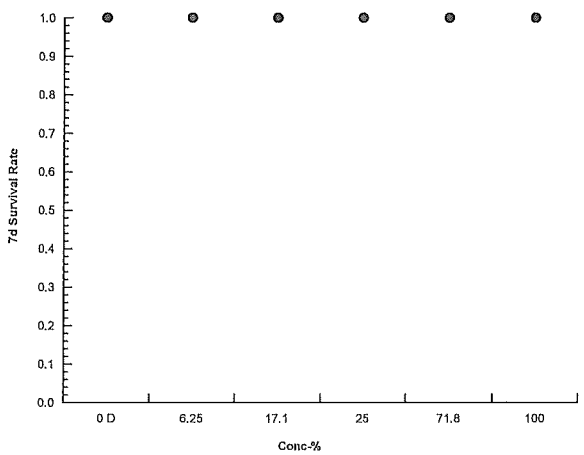
7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	D	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
17.1		10	0	10	1.0000	0.0000	0.00%
25		10	0	10	1.0000	0.0000	0.00%
71.8		10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
17.1		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
71.8		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Graphics



CETIS Analytical Report

Report Date:	10 Nov-20 12:02 (p 1 of 1)
Test Code/ID:	B483501cdc / 13-5295-1455

Ceriodaphnia 7-d Survival and Reproduction Test — **Eurofins TestAmerica - Corvallis**

Analysis ID:	01-5530-0109	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	10 Nov-20 12:00	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	10 Nov-20 11:59	**MD5 Hash:**	DB2AD08CCB53865ED1E32292E39BA7E	**Editor ID:**	006-834-630-9

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	6.18	29.86%

Dunnett Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	6.25	-1.148	2.289	6.18	18	CDF	0.9900	Non-Significant Effect
	17.1	-1.148	2.289	6.18	18	CDF	0.9900	Non-Significant Effect
	25	-0.5927	2.289	6.18	18	CDF	0.9527	Non-Significant Effect
	71.8	1	2.289	6.18	18	CDF	0.4166	Non-Significant Effect
	100	1.556	2.289	6.18	18	CDF	0.1992	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	465.75	93.15	5	2.556	0.0379	Significant Effect
Error	1967.9	36.4426	54			
Total	2433.65		59			

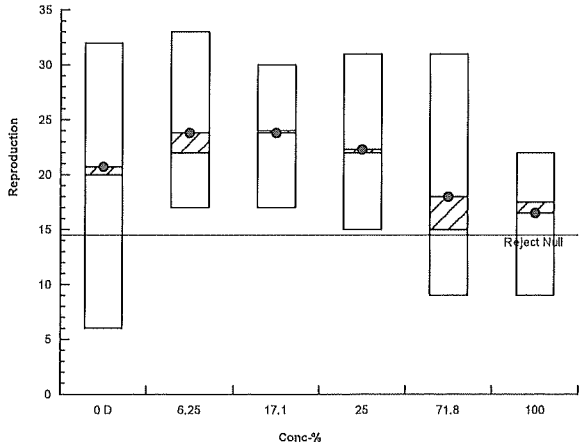
ANOVA Assumptions Tests

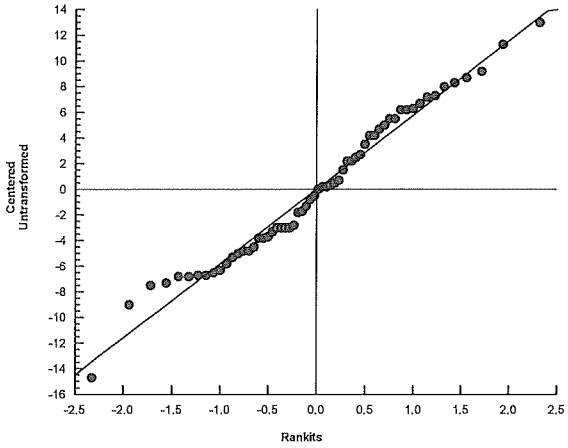
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	4.895	15.09	0.4288	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9782	0.9459	0.3583	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	20.7	14.8	26.6	20	6	32	2.608	39.84%	0.00%
6.25		10	23.8	19.63	27.97	22	17	33	1.843	24.48%	-14.98%
17.1		10	23.8	20.73	26.87	24	17	30	1.356	18.02%	-14.98%
25		10	22.3	18.28	26.32	22	15	31	1.777	25.19%	-7.73%
71.8		10	18	13.23	22.77	15	9	31	2.108	37.04%	13.04%
100		10	16.5	13.12	19.88	17.5	9	22	1.493	28.61%	20.29%

Graphics





CETIS Analytical Report

Report Date:	10 Nov-20 12:02 (p 1 of 1)
Test Code/ID:	B483501cdc / 13-5295-1455

Ceriodaphnia 7-d Survival and Reproduction Test — **Eurofins TestAmerica - Corvallis**

Analysis ID:	16-7408-5441	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.7
Analyzed:	10 Nov-20 12:01	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	10 Nov-20 11:59	**MD5 Hash:**	DB2AD08CCB53865ED1E32292E39BA7E	**Editor ID:**	006-834-630-9

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	373663	200	Yes	Two-Point Interpolation

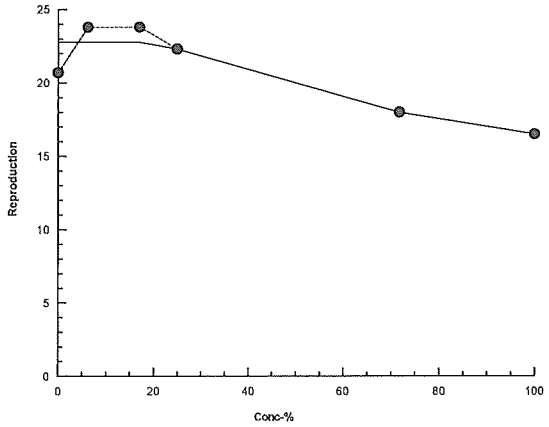
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	88.09	42.51	---	1.135	---	2.353

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	D	10	20.7	20	6	32	39.84%	0.00%	22.77	0.00%
6.25		10	23.8	22	17	33	24.48%	-14.98%	22.77	0.00%
17.1		10	23.8	24	17	30	18.02%	-14.98%	22.77	0.00%
25		10	22.3	22	15	31	25.19%	-7.73%	22.3	2.05%
71.8		10	18	15	9	31	37.04%	13.04%	18	20.94%
100		10	16.5	17.5	9	22	28.61%	20.29%	16.5	27.53%

Graphics



APPENDIX B

REFERENCE TOXICANT DATA SHEETS

*RO6 SD 10/7/20

REFERENCE TOXICANT DATA SHEET

Client: QA / QC
Test Organism: *Ceriodaphnia dubia*
Source: In-House culture
ID#: Cd 3742
Age: < 24 hours
Feeding: none
Test Chamber Size: 30 ml
Volume per Replicate: 25 ml

Reference Toxican: NaCl
Stock Solution: 20 g/L in DI (ASTM Type I) water
Reagent Log ID #: 7B 082-08
Designed Test Temperature: 20 ± 1 °C

Test Begin: Date 10 / 6 / 2020 Time 15 : 00
Test End: Date 10 / 8 / 2020 Time 14 : 10
*Dilution Water (Recon MH) ID# 5189
Dilution Water Hardness (as $CaCO_3$) 82
Dilution Water Alkalinity (as $CaCO_3$) 70

	0 hr	24 hr	48 hr
Technician	BL	SD	SD
Time	1500	1415	1410
Therm. ID #	264	266	266

Toxicant Concentration (g/L)	Test Chamber Number	Number of Live Organisms			Dissolved Oxygen (mg/l)			pH			Temperature (°C)			Conductivity (µS)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	A	5	5	5	8.7	—	8.5	7.2	—	7.6	19.9	20.0	19.8	325	—	347
	B	5	5	5												
1.0	A	5	5	5	8.6	—	8.6	7.7	—	7.8	19.9	19.9	19.9	2.33ms	—	2220
	B	5	5	5												
1.5	A	5	5	5	8.7	—	8.7	7.7	—	7.9	19.9	19.9	20.0	3.30ms	—	3340
	B	5	5	5												
2.0	A	5	5	5	8.8	—	8.8	7.8	—	8.0	19.9	19.9	20.0	4.25ms	—	4220
	B	5	5	5												
3.0	A	5	*82	1	8.8	—	8.8	7.8	—	7.9	20.0	19.9	20.1	6.13ms	—	6010
	B	5	1	0												
4.0	A	5	0	—	7.9	8.3	—	7.8	7.9	—	20.0	19.9	—	8.01ms	7730	—
	B	5	0	—			—			—			—			—
Test Acceptability Criteria (TAC) or test condition:		Survival in Controls: ≥ 90% (required TAC)			(@ 20°C): > 4.0 and < 9.1 (recommended)			pH: > 6.0 and < 9.0 (recommended)			Temperature + 1 °C (recommended)			(QA) none		

Note: If organisms are alive @ 24hrs, no DO, pH, or Cond. measurements to be taken in that test chamber to avoid injuring the organisms

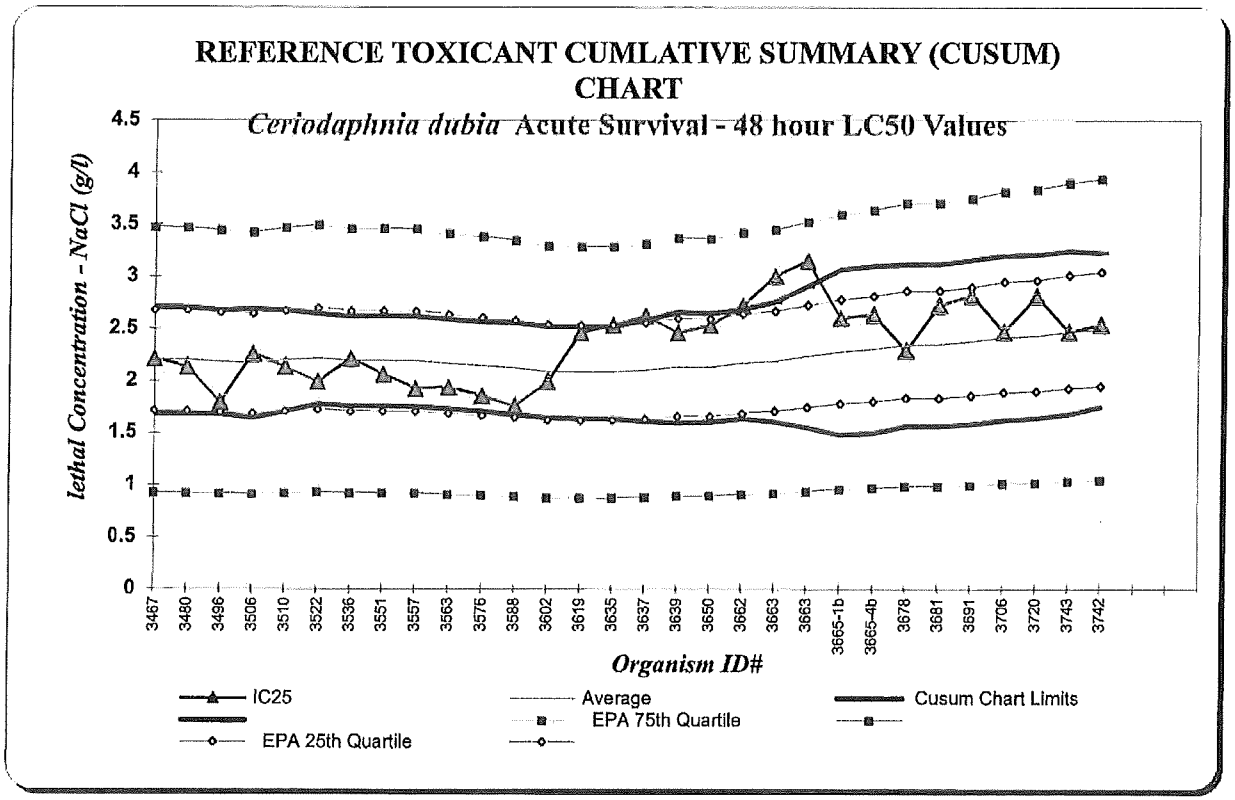
We verify this data is true and correct.

*Dilution Water Code
Recon. - reconstituted water
MH - moderately hard

48 Hour LC_{50}: 2.54
Cusum Chart Limits: 1.75 to 3.23
Statistical Method: Spearman-Karber

Task Manager: [signature]
Project Manager: Alyssa Lamp
QA Officer: [signature]

REFTOX - Cd acute (ASL 670-0220).xlsm
Doc Control ID: ASL670-0220



Ceriodaphnia dubia - ACUTE (EPA Test Method 2002.0)

SODIUM CHLORIDE (g/L)

Endpoint: 48 hour Survival

Stats Method: Probit, Spearman-Karber, Linear Interpolation

Test Conditions: Recon MH, 20 oC

From EPA 833-R-00-003:

10th Quartile CV (*control limit*) =	0.06
25th Quartile CV (*warning limit*) =	0.11
75th Quartile CV (warning *limit*) =	0.29
90th Quartile CV (*control limit*) =	0.34

*Intralab CV is compared to EPA **Warning limits** (25th and 75th CV's) and **Control limits** (10th and 90th CV's), If lab CV is outside EPA Control limits, the EPA Control limits are used to set Cusum chart limits.*

Event #	Cerio ID #	Test Start Date	LC50	Running Average	Running SD	Cusum Chart Limits AVG-2SD	Cusum Chart Limits AVG+2SD	Intralab CV
179	3662	02/18/20	**2.72**	2.2	0.26	**1.64**	**2.69**	0.13
180	3663	02/25/20	**3.00**	2.2	0.29	**1.61**	**2.76**	0.15
181	3663	02/25/20	**3.15**	2.2	0.34	**1.55**	**2.91**	0.17
182	3665-1b	03/03/20	**2.60**	2.3	0.40	**1.48**	**3.07**	0.17
183	3665-4b	03/03/20	**2.63**	2.3	0.40	**1.50**	**3.10**	0.17
184	3678	04/03/20	**2.29**	2.3	0.39	**1.56**	**3.12**	0.17
185	3681	04/08/20	**2.72**	2.3	0.39	**1.56**	**3.12**	0.17
185	3691	05/07/20	**2.81**	2.4	0.39	**1.58**	**3.16**	0.16
185	3706	07/07/20	**2.46**	2.4	0.40	**1.62**	**3.20**	0.16
185	3720	08/06/20	**2.81**	2.4	0.39	**1.64**	**3.21**	0.16
185	3743	09/10/20	**2.46**	2.5	0.39	**1.68**	**3.25**	0.15
185	3742	10/06/20	**2.54**	2.5	0.37	**1.75**	**3.23**	0.14

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: QA / QC Test Start Date: 10-6-20

Sample Description: NaCl Initial Sample ID#: 2 B 083-03

Data summarized by: SD

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	25	24	25	25	20	24	25	24	24	23	10	239
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.25 g/L	16	22	15	16	11	14	13	23	10	21	10	161
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.50 g/L	14	17	11	21	11	11	12	19	13	13	9	142
	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?	AD?	AD?		
1.0 g/L	14	17	13	11	10	4	11	2	5	16	7	103
	AD?	AD?	AD?	AD?	AD? ✓	AD? ✓	AD?	AD?	AD? ✓	AD?		
1.5 g/L	0	13	3	3	1	3	0	6	0	1	4	30
	AD? ✓	AD? ✓	AD?	AD? ✓	AD?	AD? ✓	AD? ✓	AD?	AD? ✓	AD?		
2.0 g/L	0	0	0	0	0	0	0	0	0	0	2	0
	AD?	AD?	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		
4.0 g/L	0	0	0	0	0	0	0	0	0	0	0	0
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-600-4-91-002 and EPA-821-R-02-013, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

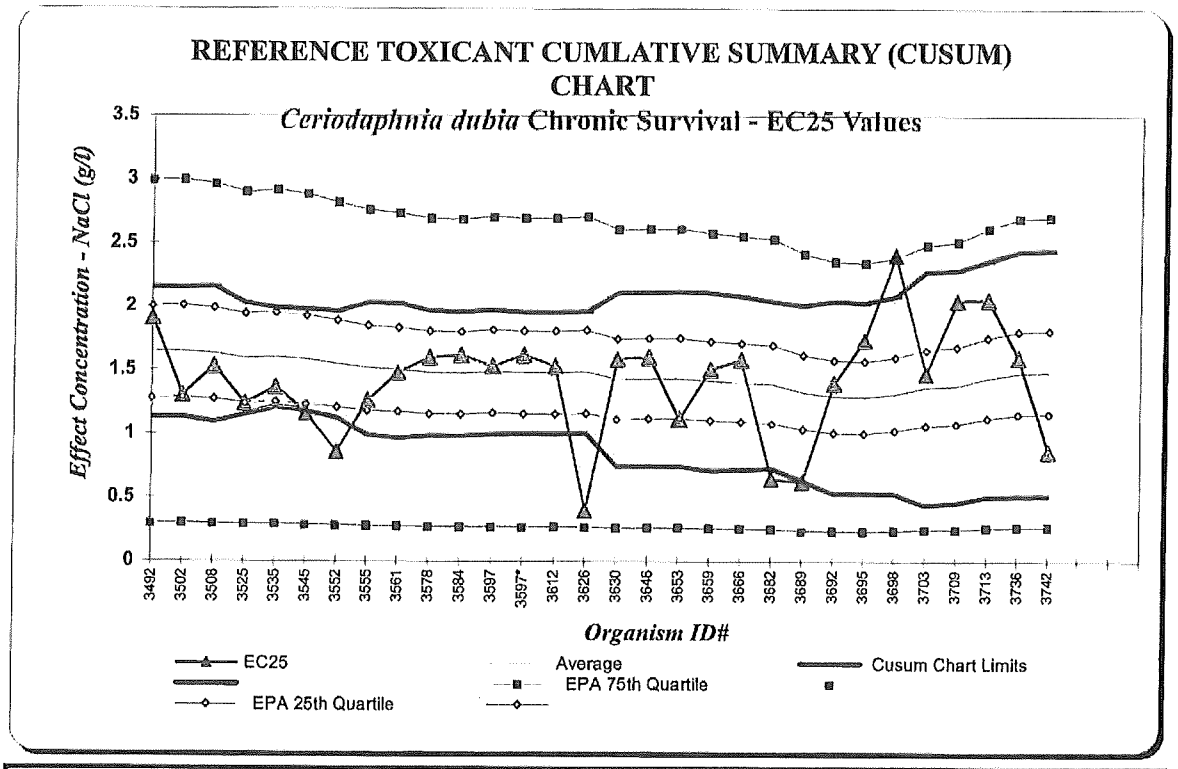
Endpoint	Value	Cusum Chart Limits
Survival - EC_{25}	0.86	0.50 to 2.45
Reproduction - IC_{25}	0.19	0.04 to 1.38

Task Manager: [signature]

Project Manager: [signature]

QA Officer: [signature]

REFTOX - Cerio chronic.xlsmDoc Control ID: ASL671-0313



***Ceriodaphnia dubia* - Chronic (EPA Test Method 1002.0)**

SODIUM CHLORIDE (g/L)

Endpoint: Chronic Survival

Stats Method: Linear Interpolation

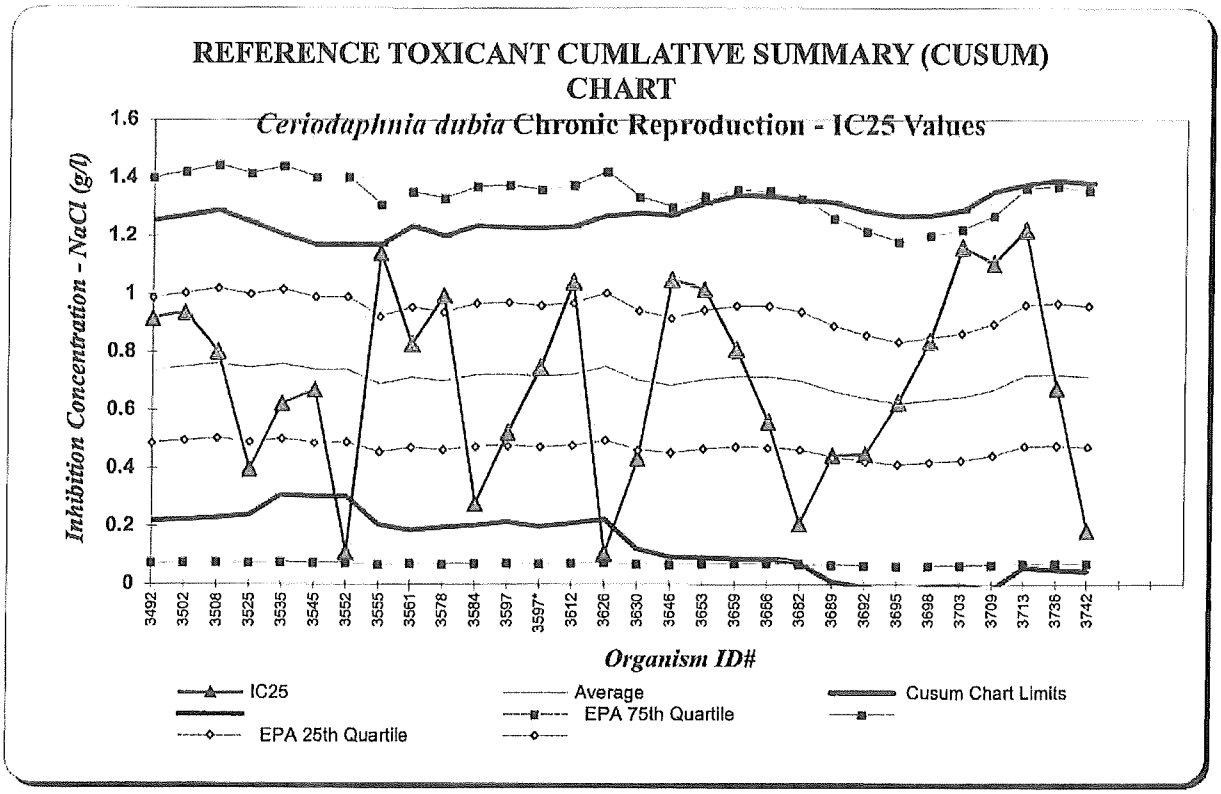
Test Conditions: Recon MH, 25 oC

From EPA 833-R-00-003:

10th Quartile CV (*control limit*) =	0.07
25th Quartile CV (*warning limit*) =	0.11
75th Quartile CV (warning *limit*) =	0.41
90th Quartile CV (*control limit*) =	0.81

*Intralab CV is compared to EPA **Warning limits** (25th and 75th CV's) and **Control limits** (10th and 90th CV's), If lab CV is outside EPA Control limits, the EPA Control limits are used to set Cusum chart limits.*

Event #	Cerio ID #	Test Start Date	EC25	Running Average	Running SD	Cusum Chart Limits AVG-2SD	Cusum Chart Limits AVG+2SD	Intralab CV
347	3626	10/30/19	**0.40**	1.48	0.24	**1.01**	**1.96**	0.24
348	3630	11/05/19	1.59	1.43	0.34	**0.75**	**2.11**	0.24
349	3646	12/31/19	1.60	1.43	0.34	**0.75**	**2.11**	0.24
350	3653	01/28/20	1.11	1.43	0.34	**0.75**	**2.12**	0.25
351	3659	02/11/20	1.50	1.41	0.35	**0.72**	**2.11**	0.24
352	3666	03/03/20	1.58	1.40	0.34	**0.72**	**2.08**	0.24
353	3682	04/14/20	**0.65**	1.39	0.33	**0.73**	**2.05**	0.26
354	3689	04/28/20	**0.63**	1.33	0.34	**0.64**	**2.01**	0.29
355	3692	05/12/20	1.40	1.29	0.38	**0.54**	**2.05**	0.29
356	3695	05/19/20	1.74	1.29	0.37	**0.54**	**2.03**	0.30
357	3698	06/02/20	**2.41**	1.31	0.39	**0.54**	**2.09**	0.34
358	3703	06/23/20	1.48	1.36	0.46	**0.45**	**2.28**	0.33
359	3709	07/14/20	2.05	1.38	0.46	**0.46**	**2.29**	0.32
360	3713	07/28/20	2.06	1.44	0.46	**0.51**	**2.37**	0.33
361	3736	09/15/20	1.60	1.48	0.48	**0.52**	**2.44**	0.32
362	3742	10/06/20	0.86	1.48	0.48	**0.52**	**2.45**	0.35
363								



Ceriodaphnia dubia - Chronic (EPA Test Method 1002.0)

SODIUM CHLORIDE (g/L)

Endpoint: Chronic Reproduction

Stats Method: Linear Interpolation

Test Conditions: Recon MH, 25 oC

From EPA 833-R-00-003:

10th Quartile CV (*control limit*) =	0.08
25th Quartile CV (*warning limit*) =	0.17
75th Quartile CV (warning *limit*) =	0.45
90th Quartile CV (*control limit*) =	0.62

Intralab CV is compared to EPA ***Warning limits*** *(25th and 75th CV's) and* ***Control limits*** *(10th and 90th CV's), If lab CV is outside EPA Control limits, the EPA Control limits are used to set Cusum chart limits.*

Event #	Cerio ID #	Test Start Date	IC25	Running Average	Running SD	Cusum Chart Limits AVG-2SD	Cusum Chart Limits AVG+2SD	Intralab CV
351	3659	2/11/2020	0.81	0.71	0.31	**0.09**	**1.34**	0.44
352	3666	3/3/2020	0.56	0.71	0.31	**0.09**	**1.34**	0.45
353	3682	4/14/2020	0.21	0.70	0.31	**0.07**	**1.32**	0.49
354	3689	4/28/2020	0.45	0.66	0.33	**0.01**	**1.32**	0.51
355	3692	5/12/2020	0.45	0.64	0.32	**-0.01**	**1.29**	0.52
356	3695	5/19/2020	0.63	0.62	0.32	**-0.03**	**1.27**	0.50
357	3698	6/2/2020	0.84	0.63	0.32	**-0.01**	**1.27**	0.50
358	3703	6/23/2020	1.16	0.64	0.32	**0.00**	**1.29**	0.51
359	3709	7/14/2020	1.11	0.67	0.34	**-0.02**	**1.35**	0.46
360	3713	7/28/2020	1.22	0.72	0.33	**0.06**	**1.38**	0.46
361	3736	9/15/2020	0.68	0.72	0.34	**0.05**	**1.39**	0.47
362	3742	10/6/2020	0.19	0.71	0.33	**0.04**	**1.38**	0.52
363								

APPENDIX C

CHAIN OF CUSTODY

eurofins | Environment Testing TestAmerica

Sample Receipt Record

Batch Number: B4835-01

Client/Project: Kaiser A1 OF 001

Date Received: 10/27/20

Received By: [illegible]

Were custody seals intact?	☒ Yes	☐ No	☐ N/A
Packing Material:	☒ Ice	☐ Blue Ice	☐ Box
Temp OK? (≤ 6°C) Therm ID: 171173 Expires: 1/31/2021 Observed: 1.0 °C, Actual Temp: 0.9 °C	☒ Yes	☐ No	☐ N/A
If sample is noted @ ≤ 0.0 °C, is the sample frozen or partially frozen?	☐ Yes	☐ No	☒ N/A
Was a Chain of Custody (CoC) Provided?	☒ Yes	☐ No	☐ N/A
Was the CoC correctly filled out? (If No, document below)	☒ Yes	☐ No	☐ N/A
Were the sample containers in good condition (not broken or leaking)?	☒ Yes	☐ No	☐ N/A
Are all samples within 36 hours of collection?	☒ Yes	☐ No	☐ N/A

Method of Shipment: ☐ Hand Delivered, ☐ FedEx, ☒ UPS, ☐ Greyhound, ☐ Other: _____ ☐ N/A

Sample Exception Report (The following exceptions were noted)

CHAIN OF CUSTODY RECORD - FOR AQUATIC TOXICITY TESTING

eurofins | Environment Testing TestAmerica

Client: Kaiser Aluminum
Address: 15000 E Euclid Ave
Spokane Valley, WA 99215

NPDES#: WA0000892

Contact Person: Brett Pitcher
Phone: (208) 215-5984

PO#: P20-110426

Composite Sample Information

Samples/Hour: 4 Volume/Sample:
Total Hours: 24 Total Volume:
Initiated: Date 10/25/20 Time 1600
Ended: Date 10/26/20 Time 1000
Chilled During Collection: Yes

Ship Samples to:
Eurofins TestAmerica - Corvallis
Attention: Aquatic Toxicology Laboratory
1100 NE Circle Blvd, Suite 310
Corvallis, OR 97330
Phone: 541.243.6137

Analysis Required / Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	CA Haz Waste	WA Haz Waste			Concentration and/or Comments
#001	10/26/20	1200	X		1	B4835-01			X	X														
#004	10/26/20	1200	X		1	B4836-01			X	X														

Sampled By & Title (Please sign and print name): Brett Pitcher, Wastewater Supervisor	Date/Time: 10/26/20 1230	Relinquished By (Please sign and print name): Brett Pitcher	Date/Time: 10/26/20 1230
Received By (Please sign and print name): Alyssa Lawson	Date/Time: 10-27-20 1030	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via: UPS___ Bus___ Fed-Ex___ Hand___ Other___	Shipping #: COC_Bioassay.xls
Work Authorized By (Please sign and print name)	Remarks		

Doc Control ID: ASL612-0519

eurofins | Environment Testing TestAmerica

Sample Receipt Record

Batch Number: B4835-02 B4836-02

Client/Project: Kaiser Al 001, 004

Date Received: 10/29/20

Received By: [illegible]

Were custody seals intact?	☒ Yes	☐ No	☐ N/A
Packing Material:	☒ Ice	☐ Blue Ice	☐ Box
Temp OK? (≤ 6°C) Therm ID: 173 Expires: 01/21/2021 Observed: 001: 0.3 004: -1.1 °C, Actual Temp: 0.5 -0.9 °C	☒ Yes	☐ No	☐ N/A
If sample is noted @ ≤ 0.0 °C, is the sample frozen or partially frozen?	☐ Yes	☒ No	☐ N/A
Was a Chain of Custody (CoC) Provided?	☒ Yes	☐ No	☐ N/A
Was the CoC correctly filled out? (If No, document below)	☒ Yes	☐ No	☐ N/A
Were the sample containers in good condition (not broken or leaking)?	☒ Yes	☐ No	☐ N/A
Are all samples within 36 hours of collection?	☒ Yes	☐ No	☐ N/A

Method of Shipment: ☐ Hand Delivered, ☐ FedEx, ☒ UPS, ☐ Greyhound, ☐ Other: _____ ☐ N/A

Sample Exception Report (The following exceptions were noted)

Client was

Resolutio

MATERIAL CONTROL CENTER
(509) 927-6407
KAISER ALUMINUM
15000 E EUCLID AVE
SPOKANE VALLEY WA 99216

SHIP TO:
FISH BIO
(541) 768-3160
EUROFINS TESTAMERICA-CORVALLIS
1100 NE CIRCLE BLVD SUITE 310
CORVALLIS OR 97330

53 LBS

DWT: 25,14,15

OR 973 1-01

UPS NEXT DAY AIR

TRACKING #: 1Z 20A 238 01 4420 3219

1

BILLING: P/P

WS 21.0.23

LP2844 34.0A 10/2020

SEE NOTICE ON REVERSE regarding UPS terms, and notice of limitation of liability. Where allowed by law, shipper authorizes UPS to act as forwarding agent for export control and customs purposes. If exported from the U.S., shipper certifies that the commodities, technology or software were exported from the US in accordance with the Export Administration Bulletins or Regulations. Diversion contrary to law is prohibited.

Bioassay Receipt verification.xlsx
Doc Control ID: ASL993-1119

CHAIN OF CUSTODY RECORD - FOR AQUATIC TOXICITY TESTING

eurofins | Environment Testing TestAmerica

Client: Kaiser Aluminum
Address: 15000 E Euclid Ave
Spokane Valley, WA 99215

Contact Person: Brett Pitcher
Phone: (208) 215-5984

PO#: P20-110426

NPDES#: WA 0000892

Composite Sample Information

Samples/Hour: 4 Volume/Sample:
Total Hours: 24 Total Volume:
Initiated: Date 10/27/20 Time 1000
Ended: Date 10/28/20 Time 1000
Chilled During Collection:

Ship Samples to:
Eurofins TestAmerica - Corvallis
Attention: Aquatic Toxicology Laboratory
1100 NE Circle Blvd, Suite 310
Corvallis, OR 97330
Phone: 541.243.6137

Analysis Required / Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	CA Haz Waste	WA Haz Waste			Concentration and/or Comments
#001	10/28/20	1200	X		1	B4835-02			X	X														
#004	10/28/20	1200	X		1	B4836-02			X	X														

Sampled By & Title (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Brett Pitcher Wastewater Supervisor Br		Brett Pitcher	10/28/20 1230
Received By (Please sign and print name): Brett Condon	Date/Time 10/29/20 1100	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via: UPS___ Bus___ Fed-Ex___ Hand___ Other___	Shipping # COC_Bioassay.xls
Work Authorized By (Please sign and print name)	Remarks		

Doc Control ID: ASL612-0519

eurofins | Environment Testing TestAmerica

Sample Receipt Record

Batch Number: B4835-03 B4836-03

Client/Project: Kaiser Al 001, 004

Date Received: 10/3/20

Received By: BC

Were custody seals intact? [X] Yes [ ] No [ ] N/A

Packing Material: [X] Ice [ ] Blue Ice [ ] Box

Temp OK? (≤ 6°C) Therm ID: 173 Expires: 01/21/2021 Observed: ~~0.9~~ 1.0 °C, Actual Temp: ~~0.9~~ 1.0 °C [X] Yes [ ] No [ ] N/A

If sample is noted @ ≤ 0.0 °C, is the sample frozen or partially frozen? [ ] Yes [ ] No [X] N/A

Was a Chain of Custody (CoC) Provided? [X] Yes [ ] No [ ] N/A

Was the CoC correctly filled out? (If No, document below) [X] Yes [ ] No [ ] N/A

Were the sample containers in good condition (not broken or leaking)? [X] Yes [ ] No [ ] N/A

Are all samples within 36 hours of collection? [X] Yes [ ] No [ ] N/A

Method of Shipment: [ ] Hand Delivered, [ ] FedEx, [X] UPS, [ ] Greyhound, [ ] Other: _____ [ ] N/A

Sample Exception Report (The following exceptions were noted)

Label was ripped after I opened the cooler. I Coudnt read the tracking number BC 10/3/20

Client was notified on: Client contact:

Resolution to Exception:

Bioassay Receipt verification.xlsx
Doc Control ID: ASL993-1119

CHAIN OF CUSTODY RECORD - FOR AQUATIC TOXICITY TESTING

eurofins | Environment Testing TestAmerica

Client: Kaiser Aluminum
Address: 15000 E Euclid Ave
Spokane Valley, WA 99215

Contact Person: Brett Pitcher
Phone: (208) 215-5984

PO#: P20-110426

NPDES#: WA 0000892

Composite Sample Information

Samples/Hour: 4 Volume/Sample:
Total Hours: 24 Total Volume:
Initiated: Date 10/29/20 Time 1000
Ended: Date 10/30/20 Time 1000
Chilled During Collection: yes

Ship Samples to:
Eurofins TestAmerica - Corvallis
Attention: Aquatic Toxicology Laboratory
1100 NE Circle Blvd, Suite 310
Corvallis, OR 97330
Phone: 541.243.6137

Analysis Required / Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	CA Haz Waste	WA Haz Waste			Concentration and/or Comments
#001	10/30/20	1200	X		1	B4835-03			X	X														
#004	10/30/20	1200	X		1	B4836-03			X	X														

Sampled By & Title (Please sign and print name) Wastewater Supervisor Brett Pitcher	Date/Time 10/30/20 1200	Relinquished By (Please sign and print name) Brett Pitcher	Date/Time 10/30/20 1230
Received By (Please sign and print name) Brett Gordon	Date/Time 09 45 10/31/20	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Received By (Please sign and print name)	Date/Time	Shipped Via UPS___ Bus___ Fed-Ex___ Hand___ Other___	Shipping # COC_Bioassay.xls
Work Authorized By (Please sign and print name)	Remarks		

Doc Control ID: ASL612-0519