



December 20, 2018

Mr. Brandon Gee  
Weck Laboratories, Inc.  
14859 East Clark Avenue  
City of Industry, CA 91745-1396

Dear Mr. Gee:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms EPA-821-R-02-013.* " Results were as follows:\*

CLIENT:	Weck Laboratories, Inc.
SAMPLE I.D.:	8K29057-01/ME000000925
DATE RECEIVED:.	30 Nov -18
ABC LAB NO.:	WEC1118.289

#### **CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY**

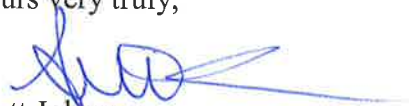
IWC = 100.00%

#### **TST RESULT**

SURVIVAL = PASS      % EFFECT = 5.00 %

REPRODUCTION = PASS      % EFFECT = -49.16 %

Yours very truly,

  
Scott Johnson  
Laboratory Director

\*Note: The chronic survival TST analysis is not available for ceriodaphnia dubia.

# CETIS Summary Report

Report Date: 19 Dec-18 12:40 (p 1 of 1)  
Test Code: WEC1118.289 | 17-8776-8517

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 15-9941-6757	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 30 Nov-18 15:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 07 Dec-18 14:20	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 03-4143-3238	Code: WEC1118.289	Client: Weck Laboratories
Sample Date: 29 Nov-18 11:45	Material: Sample Water	Project: Flood Control District-ME05
Receipt Date: 30 Nov-18 06:55	Source: Bioassay Report	
Sample Age: 28h (4.8 °C)	Station: 8K29057-01/ME000000925	

## Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
01-2087-8003	7d Survival Rate	Fisher Exact Test	0.5000	100% passed 7d survival rate
13-9882-7400	Reproduction	TST-Welch's t Test	1.2E-06	100% passed reproduction

## Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
01-2087-8003	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
13-9882-7400	Reproduction	Control Resp	20.75	15	>>	Yes	Passes Criteria

## 7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	20	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		20	0.9500	0.8453	1.0000	0.0000	1.0000	0.0500	0.2236	23.54%	5.00%

## Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	20	20.75	17.28	24.22	5	39	1.656	7.405	35.69%	0.00%
100		20	30.95	26.09	35.81	10	50	2.323	10.39	33.57%	-49.16%

## 7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
		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	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

## Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	23	17	21	26	22	24	21	39	5	16
		21	10	15	19	14	20	20	32	22	28
100		30	33	25	47	36	24	43	16	30	16
		24	10	28	35	31	31	50	44	37	29

## 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	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
		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	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
		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: 19 Dec-18 12:40 (p 1 of 2)

Test Code: WEC1118.289 | 17-8776-8517

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

<b>Analysis ID:</b> 13-9882-7400	<b>Endpoint:</b> Reproduction	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 19 Dec-18 12:39	<b>Analysis:</b> Parametric Bioequivalence-Two Sample	<b>Official Results:</b> Yes
<b>Batch ID:</b> 15-9941-6757	<b>Test Type:</b> Reproduction-Survival (7d)	<b>Analyst:</b>
<b>Start Date:</b> 30 Nov-18 15:40	<b>Protocol:</b> EPA/821/R-02-013 (2002)	<b>Diluent:</b> Laboratory Water
<b>Ending Date:</b> 07 Dec-18 14:20	<b>Species:</b> Ceriodaphnia dubia	<b>Brine:</b> Not Applicable
<b>Duration:</b> 6d 23h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b>
<b>Sample ID:</b> 03-4143-3238	<b>Code:</b> WEC1118.289	<b>Client:</b> Weck Laboratories
<b>Sample Date:</b> 29 Nov-18 11:45	<b>Material:</b> Sample Water	<b>Project:</b> Flood Control District-ME05
<b>Receipt Date:</b> 30 Nov-18 06:55	<b>Source:</b> Bioassay Report	
<b>Sample Age:</b> 28h (4.8 °C)	<b>Station:</b> 8K29057-01/ME000000925	

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed reproduction

### TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:20%)
Negative Control		100*	5.841	0.8542	29	CDF	1.2E-06	Non-Significant Effect

### Test Acceptability Criteria

#### TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	20.75	15	>>	Yes	Passes Criteria

### ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1040.4	1040.4	1	12.78	9.7E-04	Significant Effect
Error	3092.7	81.3868	38			
Total	4133.1		39			

### Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	1.976	7.353	0.1680	Equal Variances
Variances	Mod Levene Equality of Variance Test	1.998	7.353	0.1657	Equal Variances
Variances	Variance Ratio F Test	1.969	3.432	0.1488	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.5838	3.878	0.1322	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.7044	2.576	0.4812	Normal Distribution
Distribution	D'Agostino Skewness Test	0.09881	2.576	0.9213	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	0.506	9.21	0.7765	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1003	0.1617	0.3764	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9705	0.9236	0.3723	Normal Distribution

### Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	20	20.75	17.28	24.22	21	5	39	1.656	35.69%	0.00%
100		20	30.95	26.09	35.81	30.5	10	50	2.323	33.57%	-49.16%

### Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	23	17	21	26	22	24	21	39	5	16
		21	10	15	19	14	20	20	32	22	28
100		30	33	25	47	36	24	43	16	30	16
		24	10	28	35	31	31	50	44	37	29

# CETIS Analytical Report

Report Date: 19 Dec-18 12:40 (p 2 of 2)

Test Code: WEC1118.289 | 17-8776-8517

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 13-9882-7400

Endpoint: Reproduction

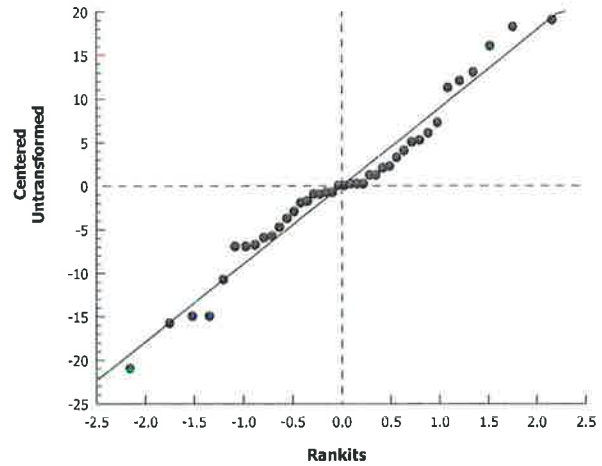
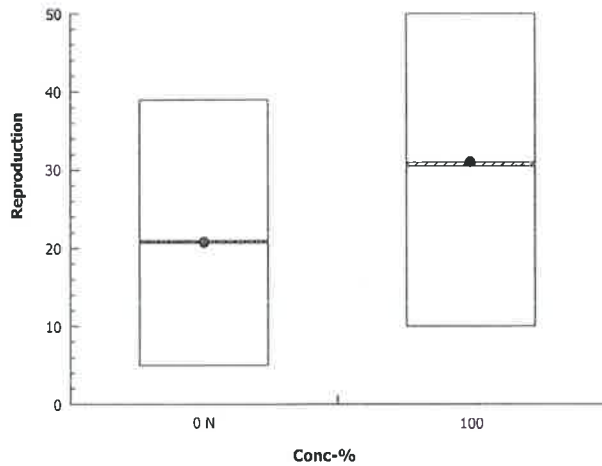
CETIS Version: CETISv1.9.2

Analyzed: 19 Dec-18 12:39

Analysis: Parametric Bioequivalence-Two Sample

Official Results: Yes

### Graphics



## CETIS Analytical Report

Report Date: 19 Dec-18 12:40 (p 1 of 2)

Test Code: WEC1118.289 | 17-8776-8517

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay &amp; Consulting Labs, Inc.

Analysis ID: 01-2087-8003	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 19 Dec-18 12:39	Analysis: Single 2x2 Contingency Table	Official Results: Yes
Batch ID: 15-9941-6757	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 30 Nov-18 15:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 07 Dec-18 14:20	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 03-4143-3238	Code: WEC1118.289	Client: Weck Laboratories
Sample Date: 29 Nov-18 11:45	Material: Sample Water	Project: Flood Control District-ME05
Receipt Date: 30 Nov-18 06:55	Source: Bioassay Report	
Sample Age: 28h (4.8 °C)	Station: 8K29057-01/ME000000925	

Data Transform	Alt Hyp	Comparison Result
Untransformed	C > T	100% passed 7d survival rate

## Fisher Exact Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		100	0.5000	Exact	0.5000	Non-Significant Effect

## Test Acceptability Criteria

## TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	>>	Yes	Passes Criteria

## Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	20	0	20	1	0	0.0%
100		19	1	20	0.95	0.05	5.0%

## 7d Survival Rate Detail

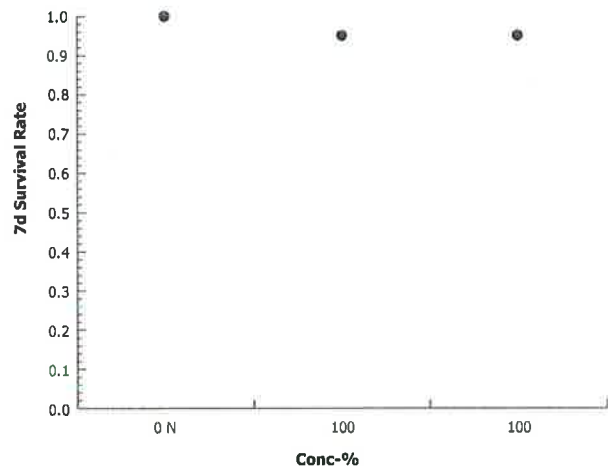
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

## 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	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
		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	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID:	01-2087-8003	Endpoint:	7d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed:	19 Dec-18 12:39	Analysis:	Single 2x2 Contingency Table	Official Results: Yes

Graphics



# CETIS Measurement Report

Report Date: 19 Dec-18 12:40 (p 1 of 2)

Test Code: WEC1118.289 | 17-8776-8517

Ceriodaphnia 7-d Survival and Reproduction Test						Aquatic Bioassay & Consulting Labs, Inc.					
Batch ID:	15-9941-6757	Test Type:	Reproduction-Survival (7d)	Analyst:		Diluent:	Laboratory Water	Brine:	Not Applicable	Age:	
Start Date:	30 Nov-18 15:40	Protocol:	EPA/821/R-02-013 (2002)								
Ending Date:	07 Dec-18 14:20	Species:	Ceriodaphnia dubia								
Duration:	6d 23h	Source:	Aquatic Biosystems, CO								
Sample ID:	03-4143-3238	Code:	WEC1118.289	Client:	Weck Laboratories	Project:	Flood Control District-ME05				
Sample Date:	29 Nov-18 11:45	Material:	Sample Water								
Receipt Date:	30 Nov-18 06:55	Source:	Bioassay Report								
Sample Age:	28h (4.8 °C)	Station:	8K29057-01/ME000000925								
Alkalinity (CaCO3)-mg/L											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	64	64	64	64	64	0	0	0.0%	0
100		8	53	53	53	53	53	0	0	0.0%	0
Overall		16	58.5	55.47	61.53	53	64	1.42	5.68	9.71%	0 (0%)
Conductivity-µmhos											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	336.1	331.3	341	329	344	2.048	5.793	1.72%	0
100		8	373.8	370.2	377.3	369	382	1.521	4.301	1.15%	0
Overall		16	354.9	344.3	365.6	329	382	5.011	20.04	5.65%	0 (0%)
Dissolved Oxygen-mg/L											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.938	7.67	8.205	7.6	8.6	0.1133	0.3204	4.04%	0
100		8	7.45	6.774	8.126	5.9	8.3	0.286	0.8089	10.86%	0
Overall		16	7.694	7.35	8.038	5.9	8.6	0.1614	0.6455	8.39%	0 (0%)
Hardness (CaCO3)-mg/L											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	95.38	94.94	95.81	95	96	0.183	0.5175	0.54%	0
100		8	98	98	98	98	98	0	0	0.0%	0
Overall		16	96.69	95.94	97.43	95	98	0.3502	1.401	1.45%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.85	7.702	7.998	7.6	8.2	0.06268	0.1773	2.26%	0
100		8	7.362	7.222	7.503	7.2	7.6	0.05957	0.1685	2.29%	0
Overall		16	7.606	7.445	7.767	7.2	8.2	0.07554	0.3021	3.97%	0 (0%)
Temperature-°C											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24.33	23.8	24.85	24	25.6	0.2202	0.6228	2.56%	0
100		8	24.26	23.95	24.57	24	24.9	0.1308	0.3701	1.53%	0
Overall		16	24.29	24.03	24.56	24	25.6	0.124	0.4959	2.04%	0 (0%)

# CETIS Measurement Report

Report Date: 19 Dec-18 12:40 (p 2 of 2)

Test Code: WEC1118.289 | 17-8776-8517

Ceriodaphnia 7-d Survival and Reproduction Test						Aquatic Bioassay & Consulting Labs, Inc.			
Alkalinity (CaCO3)-mg/L									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	64	64	64	64	64	64	64	64
100		53	53	53	53	53	53	53	53
Conductivity-µmhos									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	341	331	330	336	336	342	329	344
100		369	373	372	373	377	382	375	369
Dissolved Oxygen-mg/L									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	7.7	8.1	7.8	7.8	7.8	8.1	7.6	8.6
100		8.3	7.3	6.8	7.8	8.2	8	7.3	5.9
Hardness (CaCO3)-mg/L									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	95	95	95	95	95	96	96	96
100		98	98	98	98	98	98	98	98
pH-Units									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	7.7	7.9	7.9	7.8	7.8	7.9	7.6	8.2
100		7.2	7.4	7.2	7.2	7.3	7.4	7.6	7.6
Temperature-°C									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	25.6	24	25	24	24	24	24	24
100		24.9	24.2	24.8	24.1	24.1	24	24	24





WECK LABORATORIES, INC.

# Subcontract Order

## Subcontracted Laboratory:

Aquatic Bioassay & Consulting Labs, Inc.  
29 North Olive Street  
Ventura, CA 93001  
Phone: (805) 643-5621  
Fax: (805) 643-2930

Turn Around Time: Normal unless noted in comments

Project Manager: Brandon Gee

Project Name: Flood Control District - ME05

Project Number: LACFCD\_ME05

Sampler Employed by: \_\_\_\_\_

Work Order: 8K29057

Analysis	Expires	Comments
<b>Sample ID:</b> 8K29057-01/ME000000925 <b>Alias:</b> S14		<b>Sampled:</b> 11/29/2018 11:45
<b>Sample comment:</b>		<b>Matrix:</b> Water <b>Sampled By:</b> Hisham, Matthe
Bioassay EPA 821-R-02-013 Chronic (Freshwater)	11/30/2018 23:45	Ceriodaphnia Dubia, 36 HR, require 0% and 100% dilution,
Containers Supplied:		

~289

Temp. deg. C = 4.8 °C

Chlorine (mg/L) = 40.1

NH3 (mg/L) = 0.3

## Remarks / Special Comments:

## Sample Condition

Temperature: \_\_\_\_\_

Preserved: Yes / No

Evidence Seal Intact: Yes / No

Container Attacked: Yes / No

Preserved at Lab: Yes / No

Relinquished By

Date / Time Received By

Date / Time

Relinquished By

Date / Time Received By

Date / Time

**CHRONIC CERIODAPHNIA SURVIVAL AND REPRODUCTION BIOASSAY**

DATE: 6 November - 2018

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 10.00 ug/l

EC25 = 15.00 ug/l

EC50 = 20.00 ug/l

ENDPOINT: REPRODUCTION

NOEC = 5.00 ug/l

IC25 = 5.70 ug/l

IC50 = 9.55 ug/l

Yours very truly,



Scott Johnson  
Laboratory Director

# CETIS Summary Report

Report Date: 20 Nov-18 12:12 (p 1 of 2)  
Test Code: CER110618 | 20-7893-3599

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 19-9880-0979	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 06 Nov-18 15:31	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Nov-18 14:35	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 08-2510-6729	Code: CER110618	Client: ABC Labs
Sample Date: 06 Nov-18 15:31	Material: Copper chloride	Project: REF TOX
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

## Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
20-5032-8478	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	10	30	17.32		n/a	
00-1135-0834	Reproduction	Steel Many-One Rank Sum Test	5	10	7.071		15.7%	✓

## Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-8175-0223	7d Survival Rate	Linear Interpolation (ICPIN)	EC5	11	11	11		
			EC10	12	12	12		
			EC15	13	13	13		
			EC20	14	14	14		
			EC25	15	15	15		
			EC40	18	18	18		
17-8284-4696	Reproduction	Linear Interpolation (ICPIN)	EC50	20	20	20		
			IC5	2.569	0.9643	5.025		✓
			IC10	3.57	1.929	5.542		✓
			IC15	4.255	2.893	6.068		✓
			IC20	4.94	3.689	6.605		✓
			IC25	5.702	4.25	7.102		✓
			IC40	8.011	6	8.95		✓
			IC50	9.551	8.523	11.37		✓

## Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
14-8175-0223	7d Survival Rate	Control Resp	1	0.8	>>		Yes	Passes Criteria
20-5032-8478	7d Survival Rate	Control Resp	1	0.8	>>		Yes	Passes Criteria
00-1135-0834	Reproduction	Control Resp	27.4	15	>>		Yes	Passes Criteria
17-8284-4696	Reproduction	Control Resp	27.4	15	>>		Yes	Passes Criteria
00-1135-0834	Reproduction	PMSD	0.1567	0.13	0.47		Yes	Passes Criteria

## 7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
3		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
10		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
30		10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
50		10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

## Reproduction Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	27.4	25.88	28.92	25	31	0.67	2.119	7.73%	0.00%
3		10	25.8	22.62	28.98	18	31	1.405	4.442	17.22%	5.84%
5		10	21.8	15.84	27.76	9	32	2.636	8.337	38.24%	20.44%
10		10	12.9	10.73	15.07	10	18	0.9597	3.035	23.53%	52.92%
30		10	0.5	-0.6311	1.631	0	5	0.5	1.581	316.23%	98.18%
50		10	0.1	-0.1262	0.3262	0	1	0.1	0.3162	316.23%	99.64%

CETIS Summary Report

Report Date: 20 Nov-18 12:12 (p 2 of 2)  
Test Code: CER110618 | 20-7893-3599

Ceriodaphnia 7-d Survival and Reproduction Test Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail											
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
30		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Reproduction Detail											
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	25	31	30	26	30	26	26	26	27
3		26	27	23	29	28	19	30	18	31	27
5		10	15	27	28	9	24	32	27	29	17
10		14	10	15	15	18	10	10	11	10	16
30		0	0	0	0	0	0	0	0	5	0
50		0	0	0	0	1	0	0	0	0	0

7d Survival Rate Binomials											
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
10		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
30		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
50		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

# CETIS Analytical Report

Report Date: 20 Nov-18 12:12 (p 1 of 2)  
 Test Code: CER110618 | 20-7893-3599

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

<b>Analysis ID:</b> 00-1135-0834	<b>Endpoint:</b> Reproduction	<b>CETIS Version:</b> CETISv1.9.2
<b>Analyzed:</b> 20 Nov-18 12:11	<b>Analysis:</b> Nonparametric-Control vs Treatments	<b>Official Results:</b> Yes
<b>Batch ID:</b> 19-9880-0979	<b>Test Type:</b> Reproduction-Survival (7d)	<b>Analyst:</b>
<b>Start Date:</b> 06 Nov-18 15:31	<b>Protocol:</b> EPA/821/R-02-013 (2002)	<b>Diluent:</b> Laboratory Water
<b>Ending Date:</b> 13 Nov-18 14:35	<b>Species:</b> Ceriodaphnia dubia	<b>Brine:</b> Not Applicable
<b>Duration:</b> 6d 23h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b>
<b>Sample ID:</b> 08-2510-6729	<b>Code:</b> CER110618	<b>Client:</b> ABC Labs
<b>Sample Date:</b> 06 Nov-18 15:31	<b>Material:</b> Copper chloride	<b>Project:</b> REF TOX
<b>Receipt Date:</b>	<b>Source:</b> Reference Toxicant	
<b>Sample Age:</b> n/a	<b>Station:</b> REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	5	10	7.071		15.67%

## Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		3	101.5	75	4	18	Asymp	0.7427	Non-Significant Effect
		5	91	75	1	18	Asymp	0.3875	Non-Significant Effect
		10*	55	75	0	18	Asymp	3.8E-04	Significant Effect
		30*	55	75	0	18	Asymp	3.8E-04	Significant Effect
		50*	55	75	0	18	Asymp	3.8E-04	Significant Effect

## Test Acceptability Criteria

### TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	27.4	15	>>	Yes	Passes Criteria
PMSD	0.1567	0.13	0.47	Yes	Passes Criteria

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7529.35	1505.87	5	85.61	<1.0E-37	Significant Effect
Error	949.9	17.5907	54			
Total	8479.25		59			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	65.95	15.09	<1.0E-37	Unequal Variances
Variances	Levene Equality of Variance Test	17.8	3.377	<1.0E-37	Unequal Variances
Variances	Mod Levene Equality of Variance Test	7.139	3.377	3.4E-05	Unequal Variances
Distribution	Anderson-Darling A2 Normality Test	1.66	3.878	6.3E-07	Non-Normal Distribution
Distribution	D'Agostino Kurtosis Test	2.453	2.576	0.0142	Normal Distribution
Distribution	D'Agostino Skewness Test	2.168	2.576	0.0302	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	10.72	9.21	0.0047	Non-Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1671	0.1331	2.5E-04	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9309	0.9459	0.0022	Non-Normal Distribution

## Reproduction Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	27.4	25.88	28.92	26.5	25	31	0.67	7.73%	0.00%
3		10	25.8	22.62	28.98	27	18	31	1.405	17.22%	5.84%
5		10	21.8	15.84	27.76	25.5	9	32	2.636	38.24%	20.44%
10		10	12.9	10.73	15.07	12.5	10	18	0.9597	23.53%	52.92%
30		10	0.5	-0.6311	1.631	0	0	5	0.5	316.23%	98.18%
50		10	0.1	-0.1262	0.3262	0	0	1	0.1	316.23%	99.64%

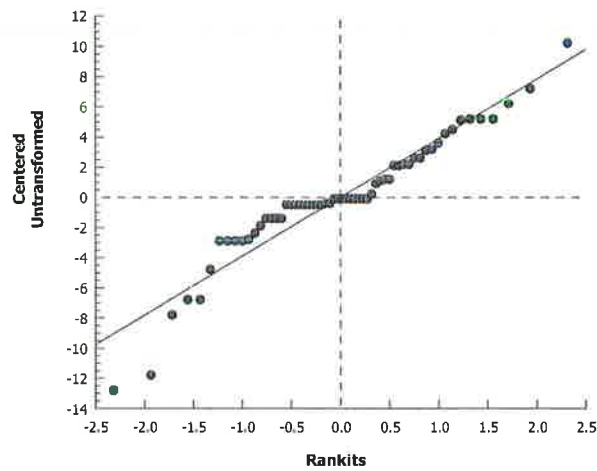
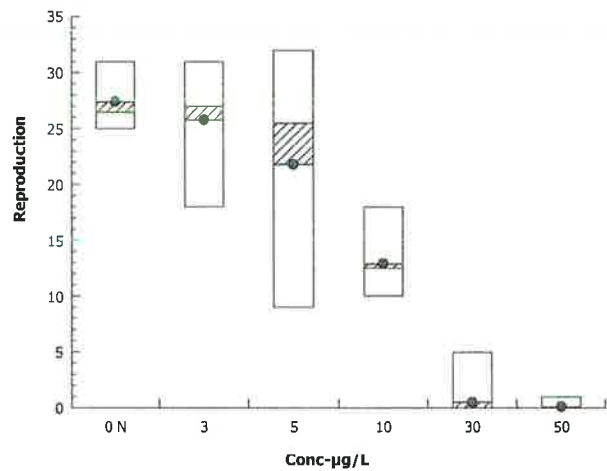
Ceriodaphnia 7-d Survival and Reproduction Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-1135-0834	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 20 Nov-18 12:11	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes

Reproduction Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	25	31	30	26	30	26	26	26	27
3		26	27	23	29	28	19	30	18	31	27
5		10	15	27	28	9	24	32	27	29	17
10		14	10	15	15	18	10	10	11	10	16
30		0	0	0	0	0	0	0	0	5	0
50		0	0	0	0	1	0	0	0	0	0

Graphics



# CETIS Analytical Report

Report Date: 20 Nov-18 12:12 (p 1 of 4)  
Test Code: CER110618 | 20-7893-3599

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-8175-0223	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 20 Nov-18 12:11	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 19-9880-0979	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 06 Nov-18 15:31	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Nov-18 14:35	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 08-2510-6729	Code: CER110618	Client: ABC Labs
Sample Date: 06 Nov-18 15:31	Material: Copper chloride	Project: REF TOX
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

## Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

## Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	>>	Yes	Passes Criteria

## Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	11	11	11
EC10	12	12	12
EC15	13	13	13
EC20	14	14	14
EC25	15	15	15
EC40	18	18	18
EC50	20	20	20

## 7d Survival Rate Summary

7d Survival Rate Summary			Calculated Variate(A/B)									
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	N	10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10	
3		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10	
5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10	
10		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	10	10	
30		10	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	10	
50		10	0.0000	0.0000	0.0000	0.0000	0.0000		100.0%	0	10	

## 7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
30		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

## 7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
10		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
30		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
50		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

# CETIS Analytical Report

Report Date: 20 Nov-18 12:12 (p 2 of 4)

Test Code: CER110618 | 20-7893-3599

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-8175-0223

Endpoint: 7d Survival Rate

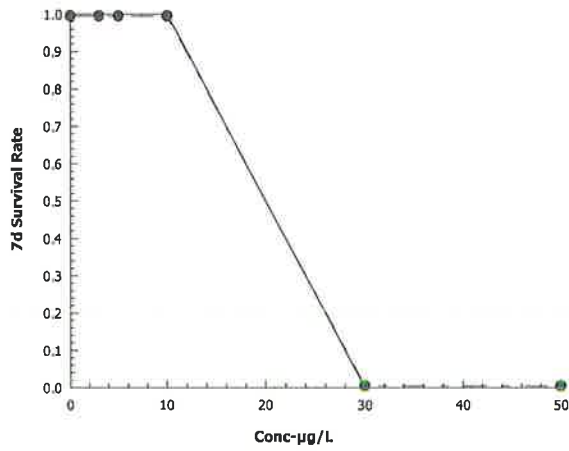
CETIS Version: CETISv1.9.2

Analyzed: 20 Nov-18 12:11

Analysis: Linear Interpolation (ICPIN)

Official Results: Yes

### Graphics





# CETIS Analytical Report

Report Date: 20 Nov-18 12:12 (p 3 of 4)  
Test Code: CER110618 | 20-7893-3599

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-8284-4696	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 20 Nov-18 12:11	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 19-9880-0979	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 06 Nov-18 15:31	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Nov-18 14:35	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 08-2510-6729	Code: CER110618	Client: ABC Labs
Sample Date: 06 Nov-18 15:31	Material: Copper chloride	Project: REF TOX
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

## Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

## Test Acceptability Criteria

### TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	27.4	15	>>	Yes	Passes Criteria

## Point Estimates

Level	µg/L	95% LCL	95% UCL
IC5	2.569	0.9643	5.025
IC10	3.57	1.929	5.542
IC15	4.255	2.893	6.068
IC20	4.94	3.689	6.605
IC25	5.702	4.25	7.102
IC40	8.011	6	8.95
IC50	9.551	8.523	11.37

## Reproduction Summary

### Calculated Variate

Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	27.4	25	31	0.67	2.119	7.73%	0.0%
3		10	25.8	18	31	1.405	4.442	17.22%	5.84%
5		10	21.8	9	32	2.636	8.337	38.24%	20.44%
10		10	12.9	10	18	0.9597	3.035	23.53%	52.92%
30		10	0.5	0	5	0.5	1.581	316.20%	98.18%
50		10	0.1	0	1	0.1	0.3162	316.20%	99.64%

## Reproduction Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	25	31	30	26	30	26	26	26	27
3		26	27	23	29	28	19	30	18	31	27
5		10	15	27	28	9	24	32	27	29	17
10		14	10	15	15	18	10	10	11	10	16
30		0	0	0	0	0	0	0	0	5	0
50		0	0	0	0	1	0	0	0	0	0

# CETIS Analytical Report

Report Date: 20 Nov-18 12:12 (p 4 of 4)

Test Code: CER110618 | 20-7893-3599

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-8284-4696

Endpoint: Reproduction

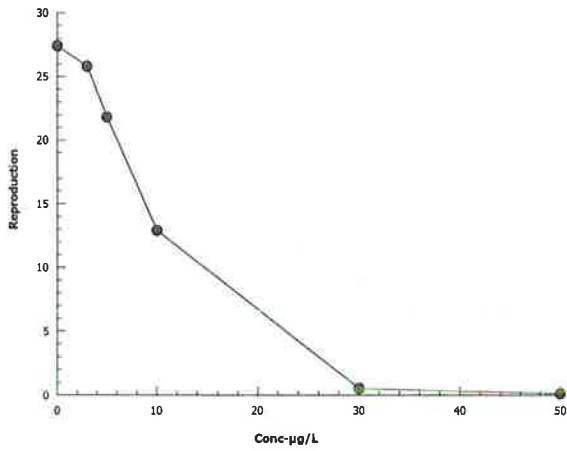
CETIS Version: CETISv1.9.2

Analyzed: 20 Nov-18 12:11

Analysis: Linear Interpolation (ICPIN)

Official Results: Yes

### Graphics



## CETIS Analytical Report

Report Date: 20 Nov-18 12:12 (p 1 of 2)  
 Test Code: CER110618 | 20-7893-3599

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay &amp; Consulting Labs, Inc.

Analysis ID: 20-5032-8478	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 20 Nov-18 12:11	Analysis: STP 2xK Contingency Tables	Official Results: Yes
Batch ID: 19-9880-0979	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 06 Nov-18 15:31	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Nov-18 14:35	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 08-2510-6729	Code: CER110618	Client: ABC Labs
Sample Date: 06 Nov-18 15:31	Material: Copper chloride	Project: REF TOX
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	10	30	17.32	

## Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		3	1.0000	Exact	1.0000	Non-Significant Effect
		5	1.0000	Exact	1.0000	Non-Significant Effect
		10	1.0000	Exact	1.0000	Non-Significant Effect
		30*	0.0000	Exact	2.7E-05	Significant Effect
		50*	0.0000	Exact	2.7E-05	Significant Effect

## Test Acceptability Criteria

## TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	>>	Yes	Passes Criteria

## Data Summary

Conc-μg/L	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1	0	0.0%
3		10	0	10	1	0	0.0%
5		10	0	10	1	0	0.0%
10		10	0	10	1	0	0.0%
30		0	10	10	0	1	100.0%
50		0	10	10	0	1	100.0%

## 7d Survival Rate Detail

Conc-μg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
30		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

## 7d Survival Rate Binomials

Conc-μg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
10		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
30		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
50		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

# CETIS Analytical Report

Report Date: 20 Nov-18 12:12 (p 2 of 2)  
Test Code: CER110618 | 20-7893-3599

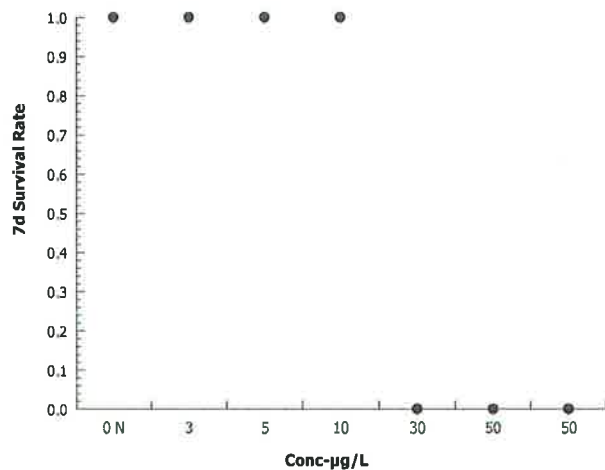
## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-5032-8478      Endpoint: 7d Survival Rate  
Analyzed: 20 Nov-18 12:11      Analysis: STP 2xK Contingency Tables

CETIS Version: CETISv1.9.2  
Official Results: Yes

### Graphics



# CETIS Measurement Report

Report Date: 20 Nov-18 12:12 (p 1 of 2)  
 Test Code: CER110618 | 20-7893-3599

<b>Ceriodaphnia 7-d Survival and Reproduction Test</b>								<b>Aquatic Bioassay &amp; Consulting Labs, Inc.</b>			
<b>Batch ID:</b> 19-9880-0979		<b>Test Type:</b> Reproduction-Survival (7d)				<b>Analyst:</b>					
<b>Start Date:</b> 06 Nov-18 15:31		<b>Protocol:</b> EPA/821/R-02-013 (2002)				<b>Diluent:</b> Laboratory Water					
<b>Ending Date:</b> 13 Nov-18 14:35		<b>Species:</b> Ceriodaphnia dubia				<b>Brine:</b> Not Applicable					
<b>Duration:</b> 6d 23h		<b>Source:</b> Aquatic Biosystems, CO				<b>Age:</b>					
<b>Sample ID:</b> 08-2510-6729		<b>Code:</b> CER110618				<b>Client:</b> ABC Labs					
<b>Sample Date:</b> 06 Nov-18 15:31		<b>Material:</b> Copper chloride				<b>Project:</b> REF TOX					
<b>Receipt Date:</b>		<b>Source:</b> Reference Toxicant									
<b>Sample Age:</b> n/a		<b>Station:</b> REF TOX									

<b>Alkalinity (CaCO3)-mg/L</b>											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60.25	59.66	60.84	60	62	0.25	0.7071	1.17%	0
50		8	59	59	59	59	59	0	0	0.0%	0
Overall		16	59.62	59.2	60.05	59	62	0.2016	0.8062	1.35%	0 (0%)

<b>Conductivity-µmhos</b>											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	341.8	332	351.5	330	359	4.118	11.65	3.41%	0
3		8	337.8	332.7	342.8	331	345	2.119	5.994	1.78%	0
5		8	334.1	330.2	338.1	327	341	1.663	4.704	1.41%	0
10		8	329.5	325.5	333.5	324	338	1.701	4.811	1.46%	0
30		7	332.1	330.2	334.1	330	335	0.7997	2.116	0.64%	0
50		7	326.1	320.8	331.5	320	334	2.198	5.815	1.78%	0
Overall		46	333.8	331.4	336.2	320	359	1.195	8.105	2.43%	0 (0%)

<b>Dissolved Oxygen-mg/L</b>											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.8	7.659	7.941	7.6	8.1	0.05976	0.169	2.17%	0
3		8	8.013	7.821	8.204	7.8	8.5	0.08115	0.2295	2.87%	0
5		8	8.013	7.81	8.215	7.8	8.5	0.08543	0.2416	3.02%	0
10		8	8.038	7.843	8.232	7.8	8.4	0.08224	0.2326	2.89%	0
30		7	7.871	7.491	8.252	7.1	8.3	0.1554	0.4112	5.22%	0
50		6	7.85	7.341	8.359	7.1	8.3	0.1979	0.4848	6.18%	0
Overall		45	7.936	7.846	8.025	7.1	8.5	0.04463	0.2994	3.77%	0 (0%)

<b>Hardness (CaCO3)-mg/L</b>											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	89.38	88.49	90.26	89	92	0.375	1.061	1.19%	0
50		8	92	92	92	92	92	0	0	0.0%	0
Overall		16	90.69	89.87	91.51	89	92	0.3843	1.537	1.70%	0 (0%)

<b>pH-Units</b>											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.837	7.729	7.946	7.7	8	0.04605	0.1302	1.66%	0
3		8	7.888	7.805	7.97	7.7	8	0.03504	0.0991	1.26%	0
5		8	7.838	7.738	7.937	7.6	8	0.04199	0.1188	1.52%	0
10		8	7.813	7.708	7.917	7.6	8	0.04407	0.1246	1.6%	0
30		7	7.814	7.715	7.913	7.7	8	0.04041	0.1069	1.37%	0
50		6	7.8	7.706	7.894	7.7	7.9	0.03651	0.08944	1.15%	0
Overall		45	7.833	7.8	7.867	7.6	8	0.01651	0.1108	1.41%	0 (0%)

# CETIS Measurement Report

Report Date: 20 Nov-18 12:12 (p 2 of 2)  
Test Code: CER110618 | 20-7893-3599

Ceriodaphnia 7-d Survival and Reproduction Test							Aquatic Bioassay & Consulting Labs, Inc.				
Temperature-°C											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24.04	23.95	24.13	24	24.3	0.03751	0.1061	0.44%	0
3		8	24.05	23.96	24.14	24	24.3	0.0378	0.1069	0.44%	0
5		8	24.08	23.98	24.17	24	24.3	0.04118	0.1165	0.48%	0
10		8	24.06	23.99	24.14	24	24.2	0.03237	0.09156	0.38%	0
30		7	24.09	23.99	24.18	24	24.2	0.04039	0.1069	0.44%	0
50		6	24.12	24.01	24.22	24	24.2	0.0401	0.09823	0.41%	0
Overall		45	24.07	24.04	24.1	24	24.3	0.01518	0.1019	0.42%	0 (0%)
Alkalinity (CaCO3)-mg/L											
Conc-µg/L	Code	1	2	3	4	5	6	7	8		
0	N	62	60	60	60	60	60	60	60		
50		59	59	59	59	59	59	59	59		
Conductivity-µmhos											
Conc-µg/L	Code	1	2	3	4	5	6	7	8		
0	N	359	342	343	331	330	337	333	359		
3		333	331	333	342	344	345	332	342		
5		331	330	341	334	338	338	327	334		
10		324	325	338	329	330	332	325	333		
30		330	330	332	332	331	335	335			
50		320	320	331	331	322	325	334			
Dissolved Oxygen-mg/L											
Conc-µg/L	Code	1	2	3	4	5	6	7	8		
0	N	7.6	8.1	7.9	7.6	7.8	7.7	7.8	7.9		
3		8.1	8.1	7.8	8.5	7.9	7.8	7.9	8		
5		8.1	7.9	7.9	8.5	7.8	7.8	7.9	8.2		
10		8.2	7.8	7.9	8.3	7.9	7.8	8	8.4		
30		8.3	7.7	8	8.3	7.9	7.8	7.1			
50		8.2	7.4	8.1	8.3	8	7.1				
Hardness (CaCO3)-mg/L											
Conc-µg/L	Code	1	2	3	4	5	6	7	8		
0	N	92	89	89	89	89	89	89	89		
50		92	92	92	92	92	92	92	92		
pH-Units											
Conc-µg/L	Code	1	2	3	4	5	6	7	8		
0	N	7.9	7.9	7.8	7.7	7.7	7.7	8	8		
3		7.8	7.9	7.9	8	7.9	7.7	7.9	8		
5		7.8	7.6	7.9	7.9	7.8	7.8	7.9	8		
10		7.7	7.6	8	7.8	7.8	7.8	7.9	7.9		
30		7.7	7.7	8	7.8	7.8	7.8	7.9			
50		7.7	7.7	7.9	7.8	7.8	7.9				
Temperature-°C											
Conc-µg/L	Code	1	2	3	4	5	6	7	8		
0	N	24	24	24	24.3	24	24	24	24		
3		24	24.1	24	24.3	24	24	24	24		
5		24	24.2	24	24.3	24.1	24	24	24		
10		24	24.2	24	24.2	24.1	24	24	24		
30		24	24.2	24	24.2	24.2	24	24			
50		24	24.2	24.1	24.2	24.2	24				