

**CHRONIC CERIODAPHNIA SURVIVAL AND REPRODUCTION BIOASSAY**

DATE: 2 June - 2017

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 10.00 ug/l

EC25 = 16.25 ug/l

EC50 = 22.50 ug/l


ENDPOINT: REPRODUCTION

NOEC = 10.00 ug/l

IC25 = 16.36 ug/l

IC50 = 25.19 ug/l

Yours very truly,

  
Scott Johnson  
Laboratory Director

# CETIS Summary Report

Report Date: 22 Jun-17 14:13 (p 1 of 2)  
Test Code: CER060217 | 11-8652-6252

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	14-5298-7569	Test Type:	Reproduction-Survival (7d)	Analyst:			
Start Date:	02 Jun-17 13:50	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	09 Jun-17 12:00	Species:	Ceriodaphnia dubia	Brine:	Not Applicable		
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	00-0405-7341	Code:	CER060217	Client:	Internal Lab		
Sample Date:	02 Jun-17 13:50	Material:	Copper chloride	Project:			
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	✓
15-1960-8341	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	10	30	17.32		n/a	✓
14-3284-1368	Reproduction	Steel Many-One Rank Sum Test	10	30	17.32		32.5%	✓

## Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
00-1919-9447	7d Survival Rate	Linear Interpolation (ICPIN)	EC5	11.25	11	12		
			EC10	12.5	12	14		
			EC15	13.75	13	16		
			EC20	15	14	18		
			EC25	16.25	15	20		✓
			EC40	20	18	26		✓
19-1430-0517	Reproduction	Linear Interpolation (ICPIN)	EC50	22.5	20	30		✓
			IC5	8.567	4.367	12.12		✓
			IC10	11.06	7.164	14.46		✓
			IC15	12.82	8.625	17.22		✓
			IC20	14.59	9.908	20.43		✓
			IC25	16.36	11.7	23.49		
			IC40	21.66	17.27	32		
			IC50	25.19	20.35	35.19		

## Test Acceptability

			TAC Limits						
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision		
00-1919-9447	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria		
15-1960-8341	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria		
14-3284-1368	Reproduction	Control Resp	21.4	15	>>	Yes	Passes Criteria		
19-1430-0517	Reproduction	Control Resp	21.4	15	>>	Yes	Passes Criteria		
14-3284-1368	Reproduction	PMSD	0.3254	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	0.2000	0.0000	0.5016	0.0000	1.0000	0.1333	0.4216	210.82%	80.00%
50		10	0.1000	0.0000	0.3262	0.0000	1.0000	0.1000	0.3162	316.23%	90.00%

## Reproduction Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	21.4	19.11	23.69	18	26	1.013	3.204	14.97%	0.00%
3		10	26	23.14	28.86	20	32	1.265	4	15.38%	-21.50%
5		10	26.8	19.3	34.3	14	44	3.316	10.49	39.13%	-25.23%
10		10	23	20	26	13	29	1.325	4.19	18.22%	-7.48%
30		10	9	1.303	16.7	0	24	3.403	10.76	119.56%	57.94%
50		10	0.9	-1.136	2.936	0	9	0.9	2.846	316.23%	95.79%

# CETIS Summary Report

Report Date: 22 Jun-17 14:13 (p 2 of 2)  
 Test Code: CER060217 | 11-8652-6252

## 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		1.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50		0.0000	0.0000	1.0000	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	18	25	18	22	20	19	26	21	19	26
3		32	29	25	21	20	27	30	26	28	22
5		44	37	39	31	21	14	14	24	24	20
10		29	22	23	23	25	22	23	13	27	23
30		24	5	23	19	0	0	19	0	0	0
50		0	0	9	0	0	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		1/1	0/1	1/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
50		0/1	0/1	1/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

## CETIS Analytical Report

Report Date: 22 Jun-17 14:13 (p 1 of 2)

Test Code: CER060217 | 11-8652-6252

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay &amp; Consulting Labs, Inc.

Analysis ID: 14-3284-1368	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 22 Jun-17 14:12	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes
Batch ID: 14-5298-7569	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 02 Jun-17 13:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jun-17 12:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 22h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 00-0405-7341	Code: CER060217	Client: Internal Lab
Sample Date: 02 Jun-17 13:50	Material: Copper chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	10	30	17.32		32.54%

## 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	138	75	6	18	Asymp	1.0000	Non-Significant Effect
		5	119	75	2	18	Asymp	0.9875	Non-Significant Effect
		10	123.5	75	2	18	Asymp	0.9960	Non-Significant Effect
		30*	75	75	1	18	Asymp	0.0461	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	21.4	15	>>	Yes	Passes Criteria
PMSD	0.3254	0.13	0.47	Yes	Passes Criteria

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5512.75	1102.55	5	23.83	<1.0E-37	Significant Effect
Error	2498.9	46.2759	54			
Total	8011.65		59			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	30.17	15.09	1.4E-05	Unequal Variances
Variances	Levene Equality of Variance Test	13.39	3.377	<1.0E-37	Unequal Variances
Variances	Mod Levene Equality of Variance Test	4.695	3.377	0.0012	Unequal Variances
Distribution	Anderson-Darling A2 Normality Test	1.08	3.878	0.0079	Non-Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.8398	2.576	0.4010	Normal Distribution
Distribution	D'Agostino Skewness Test	1.571	2.576	0.1163	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	3.172	9.21	0.2047	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.15	0.1331	0.0018	Non-Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9593	0.9459	0.0437	Normal Distribution

## Reproduction Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	21.4	19.11	23.69	20.5	18	26	1.013	14.97%	0.00%
3		10	26	23.14	28.86	26.5	20	32	1.265	15.38%	-21.50%
5		10	26.8	19.3	34.3	24	14	44	3.316	39.13%	-25.23%
10		10	23	20	26	23	13	29	1.325	18.22%	-7.48%
30		10	9	1.303	16.7	2.5	0	24	3.403	119.56%	57.94%
50		10	0.9	-1.136	2.936	0	0	9	0.9	316.23%	95.79%

# CETIS Analytical Report

Report Date: 22 Jun-17 14:13 (p 2 of 2)  
 Test Code: CER060217 | 11-8652-6252

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-3284-1368

Endpoint: Reproduction

CETIS Version: CETISv1.9.2

Analyzed: 22 Jun-17 14:12

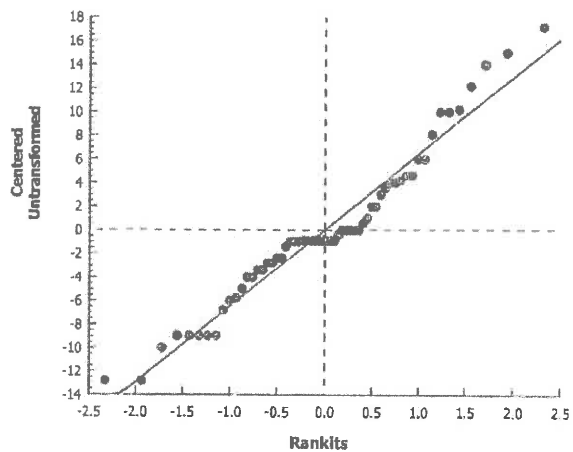
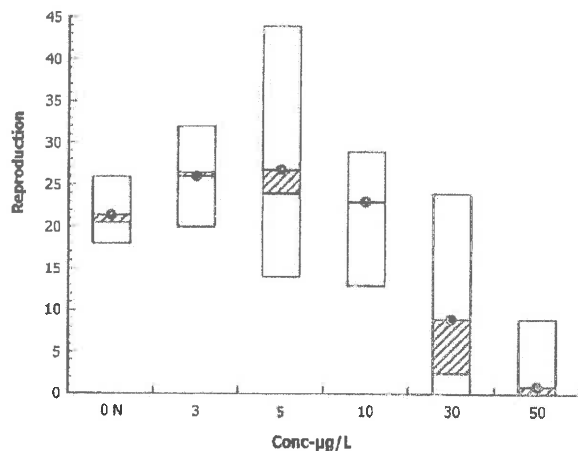
Analysis: Nonparametric-Control vs Treatments

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	18	25	18	22	20	19	26	21	19	26
3		32	29	25	21	20	27	30	26	28	22
5		44	37	39	31	21	14	14	24	24	20
10		29	22	23	23	25	22	23	13	27	23
30		24	5	23	19	0	0	19	0	0	0
50		0	0	9	0	0	0	0	0	0	0

### Graphics



## CETIS Analytical Report

Report Date: 22 Jun-17 14:13 (p 1 of 4)

Test Code: CER060217 | 11-8652-6252

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay &amp; Consulting Labs, Inc.

Analysis ID: 00-1919-9447	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 22 Jun-17 14:12	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 14-5298-7569	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 02 Jun-17 13:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jun-17 12:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 22h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 00-0405-7341	Code: CER060217	Client: Internal Lab
Sample Date: 02 Jun-17 13:50	Material: Copper chloride	Project:
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	1	0.8	>>	Yes	Passes Criteria

## Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	11.25	11	12
EC10	12.5	12	14
EC15	13.75	13	16
EC20	15	14	18
EC25	16.25	15	20
EC40	20	18	26
EC50	22.5	20	30

## 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	0.2000	0.0000	1.0000	0.1333	0.4216	210.80%	80.0%	2	10
50		10	0.1000	0.0000	1.0000	0.1000	0.3162	316.20%	90.0%	1	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		1.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50		0.0000	0.0000	1.0000	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		1/1	0/1	1/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
50		0/1	0/1	1/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

# CETIS Analytical Report

Report Date: 22 Jun-17 14:13 (p 2 of 4)  
Test Code: CER060217 | 11-8652-6252

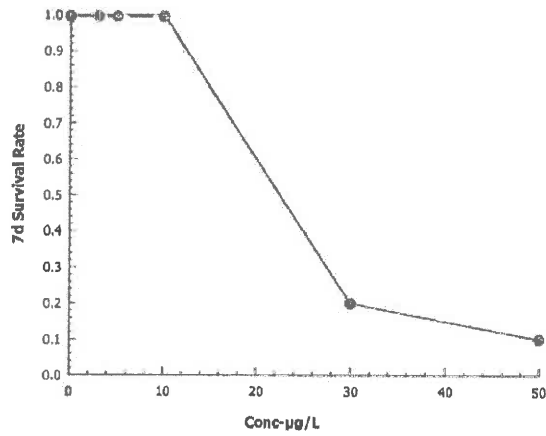
## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-1919-9447      Endpoint: 7d Survival Rate  
Analyzed: 22 Jun-17 14:12      Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.9.2  
Official Results: Yes

### Graphics



## CETIS Analytical Report

Report Date: 22 Jun-17 14:13 (p 3 of 4)

Test Code: CER060217 | 11-8652-6252

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay &amp; Consulting Labs, Inc.

Analysis ID: 19-1430-0517	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 22 Jun-17 14:13	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 14-5298-7569	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 02 Jun-17 13:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jun-17 12:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 22h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 00-0405-7341	Code: CER060217	Client: Internal Lab
Sample Date: 02 Jun-17 13:50	Material: Copper chloride	Project:
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	21.4	15	>>	Yes	Passes Criteria

## Point Estimates

Level	µg/L	95% LCL	95% UCL
IC5	8.567	4.367	12.12
IC10	11.06	7.164	14.46
IC15	12.82	8.625	17.22
IC20	14.59	9.908	20.43
IC25	16.36	11.7	23.49
IC40	21.66	17.27	32
IC50	25.19	20.35	35.19

## Reproduction Summary

## Calculated Variate

Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	21.4	18	26	1.013	3.204	14.97%	0.0%
3		10	26	20	32	1.265	4	15.38%	-21.5%
5		10	26.8	14	44	3.316	10.49	39.13%	-25.23%
10		10	23	13	29	1.325	4.19	18.22%	-7.48%
30		10	9	0	24	3.403	10.76	119.60%	57.94%
50		10	0.9	0	9	0.9	2.846	316.20%	95.79%

## 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	18	25	18	22	20	19	26	21	19	26
3		32	29	25	21	20	27	30	26	28	22
5		44	37	39	31	21	14	14	24	24	20
10		29	22	23	23	25	22	23	13	27	23
30		24	5	23	19	0	0	19	0	0	0
50		0	0	9	0	0	0	0	0	0	0



# CETIS Analytical Report

Report Date: 22 Jun-17 14:13 (p 4 of 4)  
Test Code: CER060217 | 11-8652-6252

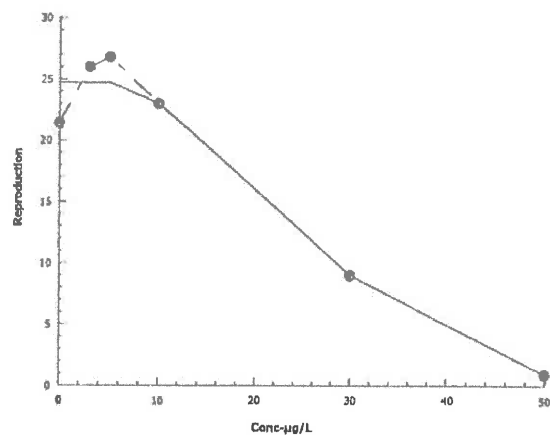
## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-1430-0517      Endpoint: Reproduction  
Analyzed: 22 Jun-17 14:13      Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.9.2  
Official Results: Yes

### Graphics



# CETIS Analytical Report

Report Date: 22 Jun-17 14:13 (p 1 of 2)

Test Code: CER060217 | 11-8652-6252

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 15-1960-8341	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 22 Jun-17 14:12	Analysis: STP 2xK Contingency Tables	Official Results: Yes
Batch ID: 14-5298-7569	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 02 Jun-17 13:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jun-17 12:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 22h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 00-0405-7341	Code: CER060217	Client: Internal Lab
Sample Date: 02 Jun-17 13:50	Material: Copper chloride	Project:
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*	0.0004	Exact	0.0014	Significant Effect
		50*	0.0001	Exact	3.0E-04	Significant Effect

## Test Acceptability Criteria

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		2	8	10	0.2	0.8	80.0%
50		1	9	10	0.1	0.9	90.0%

## 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		1.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50		0.0000	0.0000	1.0000	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		1/1	0/1	1/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
50		0/1	0/1	1/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

# CETIS Analytical Report

Report Date: 22 Jun-17 14:13 (p 2 of 2)  
Test Code: CER060217 | 11-8652-6252

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 15-1960-8341

Endpoint: 7d Survival Rate

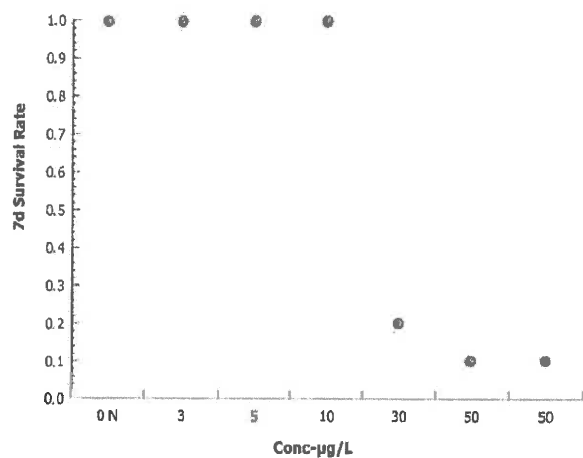
CETIS Version: CETISv1.9.2

Analyzed: 22 Jun-17 14:12

Analysis: STP 2xK Contingency Tables

Official Results: Yes

### Graphics



# CETIS Measurement Report

Report Date: 22 Jun-17 14:13 (p 1 of 2)  
Test Code: CER060217 | 11-8652-6252

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 14-5298-7569  
Start Date: 02 Jun-17 13:50  
Ending Date: 09 Jun-17 12:00  
Duration: 6d 22h  
Test Type: Reproduction-Survival (7d)  
Protocol: EPA/821/R-02-013 (2002)  
Species: Ceriodaphnia dubia  
Source: Aquatic Biosystems, CO

Analyst:  
Diluent: Laboratory Water  
Brine: Not Applicable  
Age:

Sample ID: 00-0405-7341  
Sample Date: 02 Jun-17 13:50  
Receipt Date:  
Sample Age: n/a

Code: CER060217  
Material: Copper chloride  
Source: Reference Toxicant  
Station: REF TOX

Client: Internal Lab  
Project:

### Alkalinity (CaCO<sub>3</sub>)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	61.88	61.58	62.17	61	62	0.125	0.3536	0.57%	0
50		8	61	61	61	61	61	0	0	0.0%	0
Overall		16	61.44	61.16	61.71	61	62	0.1281	0.5123	0.83%	0 (0%)

### Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	332.9	328.8	336.9	328	341	1.705	4.824	1.45%	0
3		8	341	332	350	330	359	3.789	10.72	3.14%	0
5		8	332.5	326.1	338.9	329	351	2.686	7.597	2.29%	0
10		8	335.1	332.6	337.7	331	339	1.076	3.044	0.91%	0
30		8	329.1	327.8	330.5	328	333	0.5806	1.642	0.5%	0
50		8	326.5	323.5	329.5	318	330	1.268	3.586	1.1%	0
Overall		48	332.9	330.7	335	318	359	1.064	7.369	2.21%	0 (0%)

### Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.713	7.462	7.963	7.2	8.1	0.106	0.2997	3.89%	0
3		8	8.15	7.837	8.463	7.6	8.6	0.1323	0.3742	4.59%	0
5		8	8.075	7.808	8.342	7.7	8.6	0.113	0.3196	3.96%	0
10		8	8.088	7.8	8.375	7.5	8.6	0.1217	0.3441	4.26%	0
30		8	8.125	7.858	8.392	7.6	8.5	0.113	0.3196	3.93%	0
50		8	8.163	7.914	8.411	7.8	8.6	0.1051	0.2973	3.64%	0
Overall		48	8.052	7.951	8.153	7.2	8.6	0.05	0.3464	4.30%	0 (0%)

### Hardness (CaCO<sub>3</sub>)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	96.12	94.06	98.19	90	97	0.875	2.475	2.58%	0
50		8	95	95	95	95	95	0	0	0.0%	0
Overall		16	95.56	94.61	96.52	90	97	0.4469	1.788	1.87%	0 (0%)

### pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.813	7.668	7.957	7.6	8.1	0.06105	0.1727	2.21%	0
3		8	7.75	7.577	7.923	7.5	8.1	0.07319	0.207	2.67%	0
5		8	7.688	7.501	7.874	7.5	8.1	0.07892	0.2232	2.9%	0
10		8	7.675	7.509	7.841	7.5	8	0.07008	0.1982	2.58%	0
30		8	7.675	7.509	7.841	7.5	8	0.07008	0.1982	2.58%	0
50		8	7.675	7.509	7.841	7.5	8	0.07008	0.1982	2.58%	0
Overall		48	7.713	7.655	7.77	7.5	8.1	0.02834	0.1964	2.55%	0 (0%)

## CETIS Measurement Report

Report Date: 22 Jun-17 14:13 (p 2 of 2)

Test Code: CER060217 | 11-8652-6252

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay &amp; 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	24	24	24	24	0	0	0.0%	0
3		8	24.01	23.98	24.04	24	24.1	0.01249	0.03531	0.15%	0
5		8	24	24	24	24	24	0	0	0.0%	0
10		8	24	24	24	24	24	0	0	0.0%	0
30		8	24.01	23.98	24.04	24	24.1	0.01249	0.03531	0.15%	0
50		8	24.01	23.98	24.04	24	24.1	0.01249	0.03531	0.15%	0
Overall		48	24.01	24	24.01	24	24.1	0.003531	0.02446	0.10%	0 (0%)

## Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	61	62	62	62	62	62	62	62
50		61	61	61	61	61	61	61	61

## Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	332	334	339	328	331	341	329	329
3		333	344	341	332	330	335	359	354
5		351	329	329	330	329	329	330	333
10		338	338	339	336	333	332	331	334
30		328	328	329	329	329	329	328	333
50		318	327	328	328	327	327	327	330

## Dissolved Oxygen-mg/L

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	7.8	8.1	8.1	7.7	7.2	7.5	7.7	7.6
3		7.8	8.5	8.6	8	7.6	7.9	8.5	8.3
5		7.8	8.6	8.5	8.1	7.7	8	7.9	8
10		7.9	8.5	8.6	8.1	7.5	8	8.1	8
30		7.8	8.5	8.5	8.2	7.6	8	8.3	8.1
50		7.8	8.6	8.5	8.2	7.8	8.1	8.3	8

## Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	90	97	97	97	97	97	97	97
50		95	95	95	95	95	95	95	95

## pH-Units

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	7.8	7.9	7.9	7.6	7.6	7.9	7.7	8.1
3		7.7	7.7	7.8	7.6	7.5	8	7.6	8.1
5		7.5	7.6	7.8	7.6	7.5	7.9	7.5	8.1
10		7.5	7.6	7.8	7.6	7.5	7.9	7.5	8
30		7.5	7.6	7.8	7.6	7.5	7.9	7.5	8
50		7.5	7.6	7.8	7.6	7.5	7.9	7.5	8

## Temperature-°C

Conc-µg/L	Code	1	2	3	4	5	6	7	8
0	N	24	24	24	24	24	24	24	24
3		24	24	24	24	24	24	24.1	24
5		24	24	24	24	24	24	24	24
10		24	24	24	24	24	24	24	24
30		24	24	24	24	24.1	24	24	24
50		24	24	24	24	24.1	24	24	24



June 23, 2017

Mr. Jim Lin  
American Envi. Testing Lab.  
2834 N. Naomi Street  
Burbank, CA 91504

Dear Mr. Lin:

We are pleased to present the enclosed revised 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:	American Envi. Testing Lab.
SAMPLE I.D.:	88023.05
DATE RECEIVED:	7 June - 17
ABC LAB. NO.:	AET0617.107

#### CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY


IWC = 100.00%

#### TST RESULT

SURVIVAL = PASS      % EFFECT = 0.00%

REPRODUCTION = PASS      % EFFECT = -10.49%

Yours very truly,

  
Scott Johnson  
Laboratory Director

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

# CETIS Summary Report

Report Date: 22 Jun-17 15:46 (p 1 of 1)  
Test Code: AET0617.107 | 13-9228-7267

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

<b>Batch ID:</b> 17-1616-6513	<b>Test Type:</b> Reproduction-Survival (7d)	<b>Analyst:</b>
<b>Start Date:</b> 07 Jun-17 15:20	<b>Protocol:</b> EPA/821/R-02-013 (2002)	<b>Diluent:</b> Laboratory Water
<b>Ending Date:</b> 14 Jun-17 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> 01-9328-2304	<b>Code:</b> AET0617.107	<b>Client:</b> American Environmental Testing Labs.
<b>Sample Date:</b> 07 Jun-17 07:15	<b>Material:</b> Sample Water	<b>Project:</b> 88023
<b>Receipt Date:</b> 07 Jun-17 14:10	<b>Source:</b> Bioassay Report	
<b>Sample Age:</b> 8h (4.5 °C)	<b>Station:</b> 88023.05	

## Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
00-3031-5338	7d Survival Rate	Fisher Exact Test	1.0000	100% passed 7d survival rate
02-2386-2829	Reproduction	TST-Welch's t Test	4.0E-06	100% passed reproduction

## Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
00-3031-5338	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
02-2386-2829	Reproduction	Control Resp	27.65	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	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

## Reproduction Summary

Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	20	27.65	23.8	31.5	15	42	1.841	8.235	29.78%	0.00%
100		20	30.55	27.84	33.26	21	44	1.293	5.781	18.92%	-10.49%

## 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	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

## 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	20	33	25	37	29	37	26	15	17	21
		42	21	18	39	35	23	32	23	37	23
100		27	21	24	36	36	34	34	35	44	35
		33	29	22	35	28	32	25	29	26	26

## 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	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

## CETIS Analytical Report

Report Date: 22 Jun-17 15:46 (p 1 of 2)

Test Code: AET0617.107 | 13-9228-7267

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay &amp; Consulting Labs, Inc.

Analysis ID:	02-2386-2829	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.2
Analyzed:	22 Jun-17 15:45	Analysis:	Parametric Bioequivalence-Two Sample	Official Results:	Yes
Batch ID:	17-1616-6513	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	07 Jun-17 15:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	14 Jun-17 14:20	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	6d 23h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	01-9328-2304	Code:	AET0617.107	Client:	American Environmental Testing Labs.
Sample Date:	07 Jun-17 07:15	Material:	Sample Water	Project:	88023
Receipt Date:	07 Jun-17 14:10	Source:	Bioassay Report		
Sample Age:	8h (4.5 °C)	Station:	88023.05		

Data Transform	Alt Hyp	TST <sub>b</sub>	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*	5.187	0.8514	37	CDF	4.0E-06	Non-Significant Effect

## Test Acceptability Criteria

		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	27.65	15	>>	Yes	Passes Criteria

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	84.1	84.1	1	1.661	0.2052	Non-Significant Effect
Error	1923.5	50.6184	38			
Total	2007.6		39			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	5.16	7.353	0.0289	Equal Variances
Variances	Mod Levene Equality of Variance Test	3.335	7.353	0.0757	Equal Variances
Variances	Variance Ratio F Test	2.029	3.432	0.1318	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.5142	3.878	0.1963	Normal Distribution
Distribution	D'Agostino Kurtosis Test	1.533	2.576	0.1252	Normal Distribution
Distribution	D'Agostino Skewness Test	0.64	2.576	0.5221	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	2.761	9.21	0.2515	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1165	0.1617	0.1803	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9678	0.9236	0.3054	Normal Distribution

## Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	20	27.65	23.8	31.5	25.5	15	42	1.841	29.78%	0.00%
100		20	30.55	27.84	33.26	30.5	21	44	1.293	18.92%	-10.49%

## 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	20	33	25	37	29	37	26	15	17	21
		42	21	18	39	35	23	32	23	37	23
100		27	21	24	36	36	34	34	35	44	35
		33	29	22	35	28	32	25	29	26	26



# CETIS Analytical Report

Report Date: 22 Jun-17 15:46 (p 2 of 2)

Test Code: AET0617.107 | 13-9228-7267

## Ceriodaphnia 7-d Survival and Reproduction Test

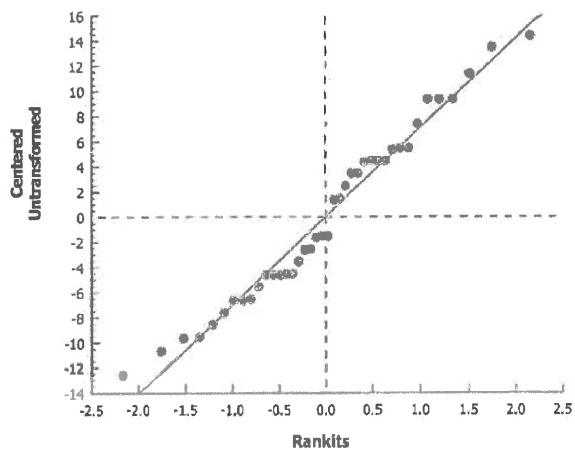
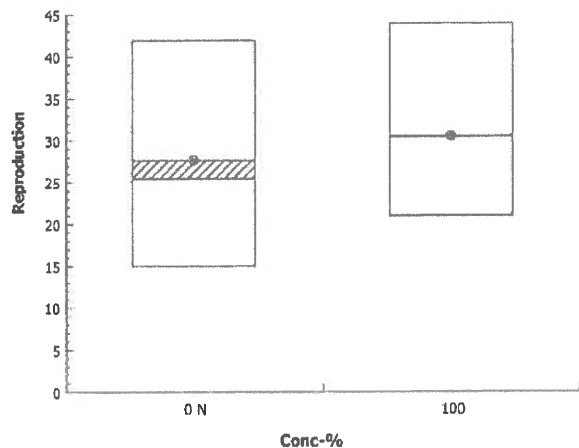
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 02-2386-2829  
Analyzed: 22 Jun-17 15:45

Endpoint: Reproduction  
Analysis: Parametric Bioequivalence-Two Sample

CETIS Version: CETISv1.9.2  
Official Results: Yes

### Graphics



## CETIS Analytical Report

Report Date: 22 Jun-17 15:46 (p 1 of 2)

Test Code: AET0617.107 | 13-9228-7267

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay &amp; Consulting Labs, Inc.

Analysis ID: 00-3031-5338	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 22 Jun-17 15:45	Analysis: Single 2x2 Contingency Table	Official Results: Yes
Batch ID: 17-1616-6513	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 07 Jun-17 15:20	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Jun-17 14:20	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 01-9328-2304	Code: AET0617.107	Client: American Environmental Testing Labs.
Sample Date: 07 Jun-17 07:15	Material: Sample Water	Project: 88023
Receipt Date: 07 Jun-17 14:10	Source: Bioassay Report	
Sample Age: 8h (4.5 °C)	Station: 88023.05	

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	1.0000	Exact	1.0000	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		20	0	20	1	0	0.0%

## 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	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

## 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	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

# CETIS Analytical Report

Report Date: 22 Jun-17 15:46 (p 2 of 2)  
Test Code: AET0617.107 | 13-9228-7267

## Ceriodaphnia 7-d Survival and Reproduction Test

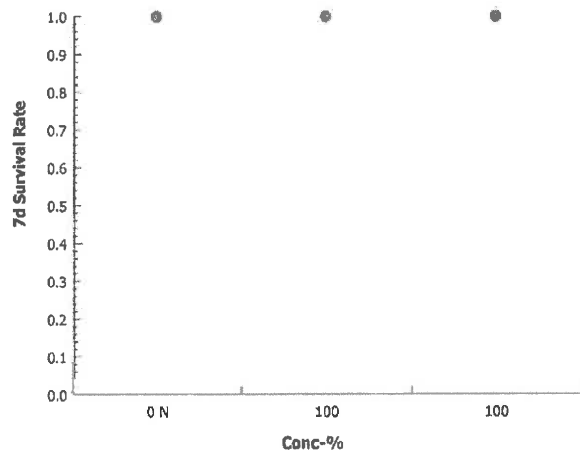
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-3031-5338  
Analyzed: 22 Jun-17 15:45

Endpoint: 7d Survival Rate  
Analysis: Single 2x2 Contingency Table

CETIS Version: CETISv1.9.2  
Official Results: Yes

### Graphics



# CETIS Measurement Report

Report Date: 22 Jun-17 15:46 (p 1 of 2)  
Test Code: AET0617.107 | 13-9228-7267

## Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 17-1616-6513	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 07 Jun-17 15:20	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Jun-17 14:20	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 01-9328-2304	Code: AET0617.107	Client: American Environmental Testing Labs.
Sample Date: 07 Jun-17 07:15	Material: Sample Water	Project: 88023
Receipt Date: 07 Jun-17 14:10	Source: Bioassay Report	
Sample Age: 8h (4.5 °C)	Station: 88023.05	

### Alkalinity (CaCO3)-mg/L

Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	62	62	62	62	62	0	0	0.0%	0
100		8	146	146	146	146	146	0	0	0.0%	0
Overall		16	104	80.89	127.1	62	146	10.84	43.38	41.71%	0 (0%)

### Conductivity-µmhos

Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	336.2	329.5	343	329	354	2.852	8.067	2.4%	0
100		8	879.9	876.8	883	874	885	1.302	3.682	0.42%	0
Overall		16	608.1	458.4	757.7	329	885	70.2	280.8	46.18%	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	7.587	7.283	7.892	7.3	8.4	0.1288	0.3642	4.8%	0
100		8	7.312	6.881	7.744	6.6	8.3	0.1827	0.5167	7.07%	0
Overall		16	7.45	7.208	7.692	6.6	8.4	0.1137	0.4546	6.10%	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	97	97	97	97	97	0	0	0.0%	0
100		8	178	178	178	178	178	0	0	0.0%	0
Overall		16	137.5	115.2	159.8	97	178	10.46	41.83	30.42%	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	7.677	8.023	7.5	8.2	0.07319	0.207	2.64%	0
100		8	7.575	7.263	7.887	7.1	8	0.1319	0.3732	4.93%	0
Overall		16	7.713	7.54	7.885	7.1	8.2	0.08107	0.3243	4.21%	0 (0%)

### Temperature-°C

Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24.11	23.85	24.38	24	24.9	0.1125	0.3182	1.32%	0
100		8	24.04	23.98	24.1	24	24.2	0.02629	0.07436	0.31%	0
Overall		16	24.08	23.95	24.2	24	24.9	0.05664	0.2266	0.94%	0 (0%)

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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	62	62	62	62	62	62	62	62
100		146	146	146	146	146	146	146	146
Conductivity-µmhos									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	341	329	333	330	333	334	336	354
100		885	877	884	879	882	880	874	878
Dissolved Oxygen-mg/L									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	7.5	7.7	7.4	8.4	7.7	7.4	7.3	7.3
100		7.2	7.6	7	8.3	7	7.6	6.6	7.2
Hardness (CaCO3)-mg/L									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	97	97	97	97	97	97	97	97
100		178	178	178	178	178	178	178	178
pH-Units									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	7.9	7.7	7.5	7.9	8.2	8	7.8	7.8
100		7.5	7.4	7.4	8	8	8	7.2	7.1
Temperature-°C									
Conc-%	Code	1	2	3	4	5	6	7	8
0	N	24	24	24	24	24.9	24	24	24
100		24	24	24	24.1	24.2	24	24	24

