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1
2
3

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Charles McDowell
El Dorado Chemical Company
4500 North West Avenue
El Dorado, Arkansas 71730

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JOB DESCRIPTION

Acute Biomonitoring 006

JOB NUMBER

192-7958-1

Eurofins Arkansas
8600 Kanis Rd
Little Rock AR 72204

See page two for job notes and contact information.

myEOL

Eurofins Arkansas

Job Notes

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Authorization

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Authorized for release by
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Re: 48 HR Renewal Biomonitoring utilizing *Pimephales promelas* (Fathead Minnow) and *Daphnia pulex* - Outfall 006
Client NPDES Permit No. AR0000752
Control No. 274805-1

This report is the analytical results and supporting information for the samples submitted to Eurofins Arkansas. The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the Lab Manager or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" EPA-821-R-02-012, Fifth Edition, October 2002. Test results are summarized below:

Acute *Pimephales promelas* (Fathead minnow) Survival Test. The permit requirement is NOEC not less than 100%. The following were concluded from the test:

	NOEC	LOEC	LC50
Survival:	100	>100	>100

The sample therefore PASSED the Fathead minnow test.

Acute *Daphnia pulex* Survival Test. The permit requirement is NOEC not less than 100%. The following were concluded from the test:

	NOEC	LOEC	LC50
Survival:	100	>100	>100

The sample therefore PASSED the *Daphnia pulex* test.

Table of Contents

I. Introduction and Summary

Biomonitoring testing of 48-hour renewal definitive toxicity tests using *Daphnia pulex* and *Pimephales promelas* were performed.

The *Daphnia pulex* test was conducted from December 16, 2023 at 1456 to December 18, 2023 at 1403.

The *Pimephales promelas* test was conducted from December 16, 2023 at 1544 to December 18, 2023 at 1500.

The tests were performed in accordance with EPA-821-R-02-012. Statistical analyses were performed on the observed data.

The tests were conducted in temperature and light cycle controlled environmental chamber. The test temperature was 25 degrees C +/- 1 degree for the *Daphnia pulex* and 25 degrees C +/- 1 degree for the *Pimephales promelas.*

II. Control Acceptance Criteria

ORGANISM	CRITERIA	RESULTS	PASS/FAIL
Daphnia pulex	Control Survival >= 90%	100	PASS
Daphnia pulex	Control Dilution CV <= 40%	0.00	PASS
Daphnia pulex	Critical Dilution CV <= 40%	5.73	PASS
Pimephales promelas	Control Survival >= 90%	90.0	PASS
Pimephales promelas	Control Dilution CV <= 40	6.21	PASS
Pimephales promelas	Critical Dilution CV <= 40	12.1	PASS

III. Outlined Report

A. Introduction

Permit Number: AR0000752

Test Requirements: 48-hour renewal definitive toxicity test using:

Daphnia pulex

Pimephales promelas

B. Effluent Samples:

Sampling Point: NA

Chemical Data:

Analysis	Result
Dissolved oxygen (mg/l)	8.8
pH (standard units)	7.5
Alkalinity (mg/l as CaCO3)	47
Hardness (mg/l as CaCO3)	100
Conductivity (umhos/cm)	620
Residual Chlorine (mg/l)	<0.05
Ammonia (mg/l)	20

C. Dilution Water Samples: Soft Water
Chemical Data:

Analysis	192-7415A-1
Dissolved oxygen (mg/l)	7.8
pH (standard units)	7.5
Alkalinity (mg/l as CaCO3)	31
Hardness (mg/l as CaCO3)	44
Conductivity (umhos/cm)	170
Residual Chlorine (mg/l)	<0.05
Ammonia (mg/l)	NA

D. Test Methods
Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (Fifth Ed.), EPA-821-R-02-012, 48-hour acute definitive test.

Endpoints:
Death; the criteria employed to establish death are:
No movement
No reaction to gentle prodding

Criteria	*Pimephales promelas*	*Daphnia pulex*
Type and Volume of Test Chamber	500 ml disposable beaker	30 ml disposable beaker
Volume of Sample	250 ml	25 ml
Organisms per chamber	8	8
Replicates per dilution	5	5
Test Temperature	25 deg. C	25 deg. C
Test Initiated	December 16, 2023 at 1544	December 16, 2023 at 1456
Test Terminated	December 18, 2023 at 1500	December 18, 2023 at 1403
Feeding	None required	None required
Age of Test Organisms	4 days	<24 hours

E. Test Organisms
Daphnia pulex
Pimephales promelas

F. Quality Assurance - Toxicity Tests

Reference Toxicant: Sodium Chloride

Date of test:

Daphnia pulex: November 01, 2023 at 1412 to November 03, 2023 at 1350

Pimephales promelas: November 01, 2023 at 1147 to November 03, 2023 at 1047

Synthetic moderately hard dilution water used

Organism	LC50	Warning Limits
Daphnia pulex	2.38 g/l	1.91-2.51 g/l
Pimephales promelas	9.42 g/l	6.71-9.15 g/l

G. Organism History

Daphnia pulex

Date: December 16, 2023 at 1456

Age: <24 hours

Source: In-house culture

Pimephales promelas (Fathead minnow)

Date: December 16, 2023 at 1544

Age: 4 days

Source: In-house culture

IV. Results Summary

Daphnia pulex and *Pimephales promelas* are exposed in a static renewal system to different concentrations of effluent and dilution water. Effluent dilutions for this test were 32%, 45%, 56%, 75%, 100%. The low-flow concentration was 100%. Test results were based on survival.

Daphnia pulex

The *Daphnia pulex* test was conducted from December 16, 2023 at 1456 to December 18, 2023 at 1403.
Statistical analyses:

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
32%	100	97.5
45%	100	95.0
56%	100	97.5
75%	100	95.0
100%	100	97.5

Pimephales promelas

The *Pimephales promelas* test was conducted from December 16, 2023 at 1544 to December 18, 2023 at 1500.

Concentration	24 hour % Survival	48 hour % Survival
Control	95.0	90.0
32%	92.5	92.5
45%	95.0	95.0
56%	97.5	97.5
75%	100	100
100%	92.5	92.5

Appendix (Data)

Daphnia pulex
Survival Data

Number of organisms per chamber: 8
Volume of test chamber: 30 ml

Age of organisms: <24 hours
Volume of test solution: 25 ml

Effluent Concentration		Number of Survivors 24 Hours	Number of Survivors 48 Hours	% Survival	CV %
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
32%	rep. A	8	8	97.5	5.73
	rep. B	8	8		
	rep. C	8	7		
	rep. D	8	8		
	rep. E	8	8		
45%	rep. A	8	7	95.0	7.21
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	7		
56%	rep. A	8	8	97.5	5.73
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	7		
	rep. E	8	8		
75%	rep. A	8	7	95.0	7.21
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	7		
100%	rep. A	8	8	97.5	5.73
	rep. B	8	7		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix (Data)

Pimephales promelas
Survival Data

Number of organisms per chamber: 8
Volume of test chamber: 500 ml

Age of organisms: 4 days
Volume of test solution: 250 ml

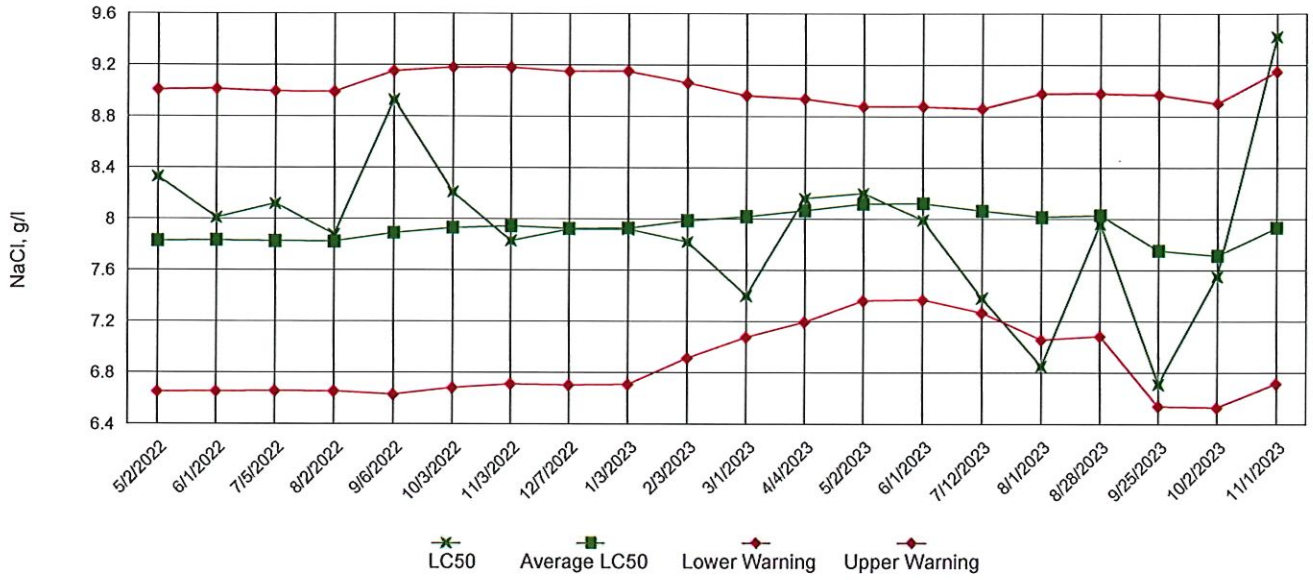
Effluent Concentration		Number of Survivors 24 Hours	Number of Survivors 48 Hours	% Survival	CV %
Control	rep. A	7	7	90.0	6.21
	rep. B	7	7		
	rep. C	8	7		
	rep. D	8	7		
	rep. E	8	8		
32%	rep. A	7	7	92.5	7.40
	rep. B	7	7		
	rep. C	8	8		
	rep. D	7	7		
	rep. E	8	8		
45%	rep. A	8	8	95.0	7.21
	rep. B	7	7		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	7	7		
56%	rep. A	8	8	97.5	5.73
	rep. B	8	8		
	rep. C	7	7		
	rep. D	8	8		
	rep. E	8	8		
75%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
100%	rep. A	8	8	92.5	12.1
	rep. B	6	6		
	rep. C	8	8		
	rep. D	7	7		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix (Reference Toxicant)

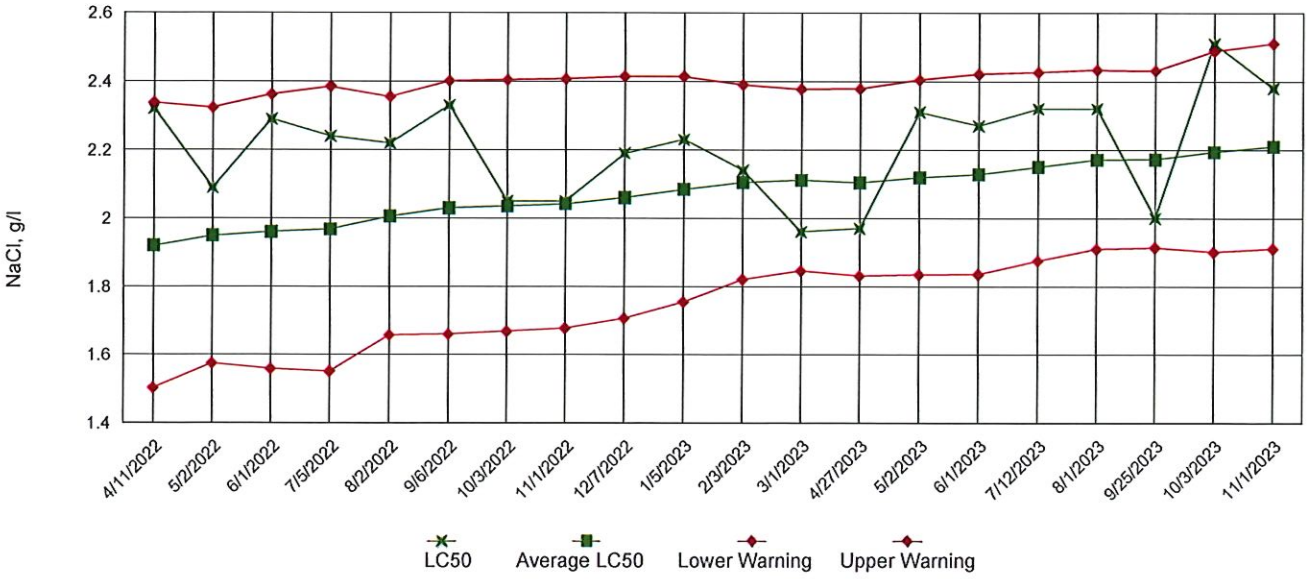
Acute Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data



Acute Reference Toxicant, *Daphnia pulex*

LC50 Survival Data



Appendix (Water Chemistry)

Chemical Data for
Pimephales promelas
and
Daphnia pulex

Day 1		Control	32%	45%	56%	75%	100%
DO, mg/l	Initial	7.8	7.6	8.1	7.9	8.0	8.8
DO, mg/l	Final 1*	7.2	7.4	7.7	7.4	7.5	7.3
DO, mg/l	Final 2*	7.5	7.7	7.6	6.8	7.4	7.5
pH, su	Initial	7.5	7.4	7.5	7.5	7.5	7.5
pH, su	Final 1*	7.7	7.8	7.8	7.8	7.8	7.8
pH, su	Final 2*	7.6	7.6	7.6	7.6	7.6	7.6
Alkalinity, mg/l		31	NA	NA	NA	NA	47
Hardness, mg/l		44	NA	NA	NA	NA	100
Conductivity, umho/cm		170	310	360	420	510	620
Residual Chlorine, mg/l		<0.05	NA	NA	NA	NA	<0.05

Day 2		Control	32%	45%	56%	75%	100%
DO, mg/l	Initial	8.0	8.1	7.8	8.0	7.7	7.9
DO, mg/l	Final 1*	7.2	7.2	7.0	7.1	7.0	7.0
DO, mg/l	Final 2*	7.5	7.3	7.2	7.4	7.5	7.4
pH, su	Initial	7.5	7.6	7.6	7.7	7.7	7.7
pH, su	Final 1*	8.0	7.9	7.8	7.8	7.8	7.7
pH, su	Final 2*	7.8	7.6	7.6	7.6	7.6	7.5
Conductivity, umho/cm		170	300	370	410	500	620

*1 data from *Pimephales promelas*
*2 data from *Daphnia pulex*

CETIS Summary Report

Report Date: 03 Jan-24 11:53 (p 1 of 1)
Test Code/ID: 274805_FH / 02-7890-2711

Fathead Minnow 48-h Acute Survival Test — **Eurofins Arkansas**

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	PMSD	TU
18-9666-7665	48h Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	11.8%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU
12-5095-0552	48h Survival Rate	Linear Interpolation (ICPIN)	LC50	>100	---	---	<1

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
12-5095-0552	48h Survival Rate	Control Resp	0.9	0.9	>>	Yes	Passes Criteria
18-9666-7665	48h Survival Rate	Control Resp	0.9	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	5	0.9000	0.8306	0.9694	0.8750	1.0000	0.0250	0.0559	6.21%	0.00%
32		5	0.9250	0.8400	1.0100	0.8750	1.0000	0.0306	0.0685	7.40%	-2.78%
45		5	0.9500	0.8650	1.0350	0.8750	1.0000	0.0306	0.0685	7.21%	-5.56%
56		5	0.9750	0.9056	1.0440	0.8750	1.0000	0.0250	0.0559	5.73%	-8.33%
75		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
100		5	0.9250	0.7862	1.0640	0.7500	1.0000	0.0500	0.1118	12.09%	-2.78%

48h Survival Rate Detail — MD5: 7918FF30884281E3BF6D9639C9AABED0

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	0.8750	0.8750	0.8750	0.8750	1.0000
32		0.8750	0.8750	1.0000	0.8750	1.0000
45		1.0000	0.8750	1.0000	1.0000	0.8750
56		1.0000	1.0000	0.8750	1.0000	1.0000
75		1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	0.7500	1.0000	0.8750	1.0000

CETIS Analytical Report

Fathead Minnow 48-h Acute Survival Test — **Eurofins Arkansas**

Analysis ID:	18-9666-7665	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	03 Jan-24 13:28	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	03 Jan-24 0:00	**MD5 Hash:**	7918FF30884281E3BF6D9639C9AABED0	**Editor ID:**	009-867-880-7

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.1064	11.82%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Dilution Water		32	8	30	16	2	CDF	0.9446	Non-Significant Effect
		45	8	32.5	16	2	CDF	0.9870	Non-Significant Effect
		56	8	35	16	2	CDF	0.9979	Non-Significant Effect
		75	8	37.5	16	1	CDF	0.9998	Non-Significant Effect
		100	8	30.5	16	2	CDF	0.9573	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	0.9	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.071846	0.0143692	5	1.485	0.2316	Non-Significant Effect
Error	0.232204	0.0096752	24			
Total	0.30405		29			

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	0.9597	0.9031	0.3051	Normal Distribution

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	5	0.9000	0.8306	0.9694	0.8750	0.8750	1.0000	0.0250	6.21%	0.00%
32		5	0.9250	0.8400	1.0000	0.8750	0.8750	1.0000	0.0306	7.40%	-2.78%
45		5	0.9500	0.8650	1.0000	1.0000	0.8750	1.0000	0.0306	7.21%	-5.56%
56		5	0.9750	0.9056	1.0000	1.0000	0.8750	1.0000	0.0250	5.73%	-8.33%
75		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-11.11%
100		5	0.9250	0.7862	1.0000	1.0000	0.7500	1.0000	0.0500	12.09%	-2.78%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	5	1.2460	1.1440	1.3480	1.2090	1.2090	1.3930	0.0367	6.59%	0.00%
32		5	1.2830	1.1580	1.4080	1.2090	1.2090	1.3930	0.0450	7.84%	-2.95%
45		5	1.3200	1.1950	1.4450	1.3930	1.2090	1.3930	0.0450	7.62%	-5.90%
56		5	1.3560	1.2540	1.4580	1.3930	1.2090	1.3930	0.0367	6.06%	-8.84%
75		5	1.3930	1.3930	1.3930	1.3930	1.3930	1.3930	0.0000	0.00%	-11.79%
100		5	1.2870	1.0940	1.4810	1.3930	1.0470	1.3930	0.0697	12.12%	-3.29%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	0.8750	0.8750	0.8750	0.8750	1.0000
32		0.8750	0.8750	1.0000	0.8750	1.0000
45		1.0000	0.8750	1.0000	1.0000	0.8750
56		1.0000	1.0000	0.8750	1.0000	1.0000
75		1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	0.7500	1.0000	0.8750	1.0000

CETIS Analytical Report

Fathead Minnow 48-h Acute Survival Test — **Eurofins Arkansas**

Analysis ID:	18-9666-7665	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	03 Jan-24 13:28	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	03 Jan-24 0:00	**MD5 Hash:**	7918FF30884281E3BF6D9639C9AABED0	**Editor ID:**	009-867-880-7

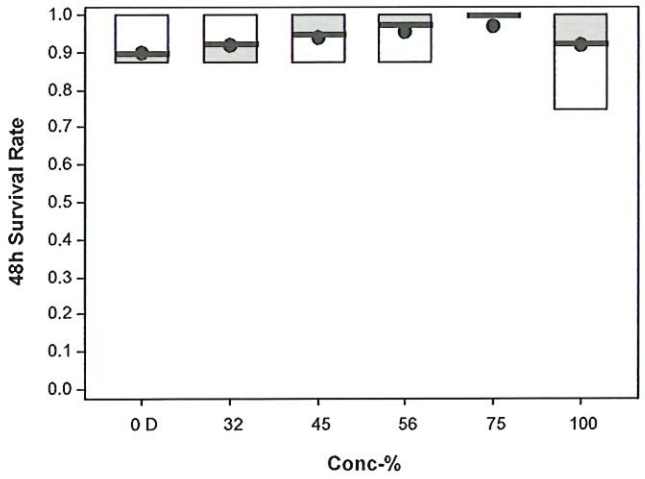
Angular (Corrected) Transformed Detail

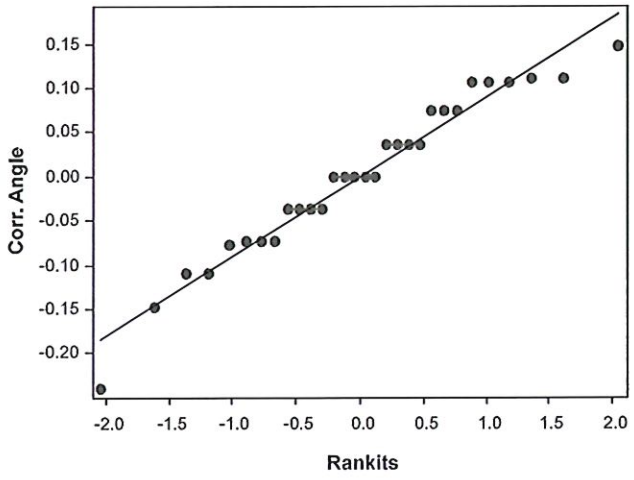
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	1.2090	1.2090	1.2090	1.2090	1.3930
32		1.2090	1.2090	1.3930	1.2090	1.3930
45		1.3930	1.2090	1.3930	1.3930	1.2090
56		1.3930	1.3930	1.2090	1.3930	1.3930
75		1.3930	1.3930	1.3930	1.3930	1.3930
100		1.3930	1.0470	1.3930	1.2090	1.3930

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	7/8	7/8	7/8	7/8	8/8
32		7/8	7/8	8/8	7/8	8/8
45		8/8	7/8	8/8	8/8	7/8
56		8/8	8/8	7/8	8/8	8/8
75		8/8	8/8	8/8	8/8	8/8
100		8/8	6/8	8/8	7/8	8/8

Graphics





CETIS Analytical Report

Fathead Minnow 48-h Acute Survival Test — **Eurofins Arkansas**

Analysis ID:	12-5095-0552	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	03 Jan-24 13:29	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	03 Jan-24 0:00	**MD5 Hash:**	7918FF30884281E3BF6D9639C9AABED0	**Editor ID:**	009-867-880-7

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	34581	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.9	0.9	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC50	>100	---	---	<1	---	---

48h Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	D	5	0.9000	0.8750	0.8750	1.0000	6.21%	0.00%	36/40	0.9500	0.00%
32		5	0.9250	0.8750	0.8750	1.0000	7.40%	-2.78%	37/40	0.9500	0.00%
45		5	0.9500	1.0000	0.8750	1.0000	7.21%	-5.56%	38/40	0.9500	0.00%
56		5	0.9750	1.0000	0.8750	1.0000	5.73%	-8.33%	39/40	0.9500	0.00%
75		5	1.0000	1.0000	1.0000	1.0000	0.00%	-11.11%	40/40	0.9500	0.00%
100		5	0.9250	1.0000	0.7500	1.0000	12.09%	-2.78%	37/40	0.9250	2.63%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	0.8750	0.8750	0.8750	0.8750	1.0000
32		0.8750	0.8750	1.0000	0.8750	1.0000
45		1.0000	0.8750	1.0000	1.0000	0.8750
56		1.0000	1.0000	0.8750	1.0000	1.0000
75		1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	0.7500	1.0000	0.8750	1.0000

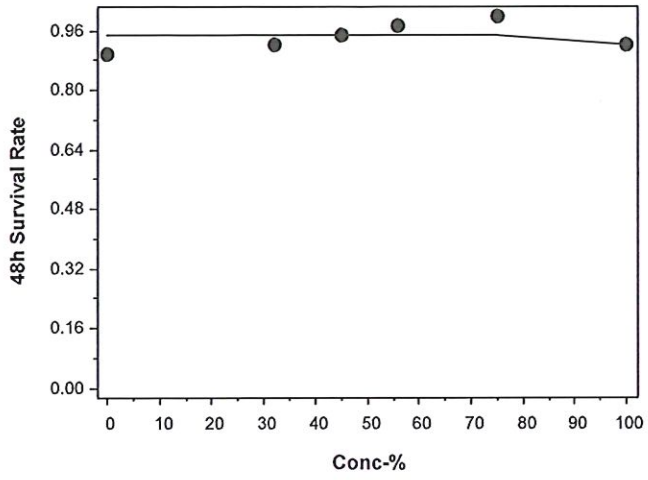
48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	7/8	7/8	7/8	7/8	8/8
32		7/8	7/8	8/8	7/8	8/8
45		8/8	7/8	8/8	8/8	7/8
56		8/8	8/8	7/8	8/8	8/8
75		8/8	8/8	8/8	8/8	8/8
100		8/8	6/8	8/8	7/8	8/8

Fathead Minnow 48-h Acute Survival Test — **Eurofins Arkansas**

Analysis ID:	12-5095-0552	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	03 Jan-24 13:29	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	03 Jan-24 0:00	**MD5 Hash:**	7918FF30884281E3BF6D9639C9AABED0	**Editor ID:**	009-867-880-7

Graphics



CETIS Summary Report

Report Date: 03 Jan-24 12:03 (p 1 of 1)
Test Code/ID: 274805_DP / 04-5167-9838

Daphnia pulex 48-h Acute Survival Test — **Eurofins Arkansas**

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	PMSD	TU
18-2883-1470	48h Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	8.46%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU
19-4838-5543	48h Survival Rate	Linear Interpolation (ICPIN)	LC50	>100	---	---	<1

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
18-2883-1470	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Criteria
19-4838-5543	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	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
32		5	0.9750	0.9056	1.0440	0.8750	1.0000	0.0250	0.0559	5.73%	2.50%
45		5	0.9750	0.9056	1.0440	0.8750	1.0000	0.0250	0.0559	5.73%	2.50%
56		5	0.9750	0.9056	1.0440	0.8750	1.0000	0.0250	0.0559	5.73%	2.50%
75		5	0.9500	0.8650	1.0350	0.8750	1.0000	0.0306	0.0685	7.21%	5.00%
100		5	0.9750	0.9056	1.0440	0.8750	1.0000	0.0250	0.0559	5.73%	2.50%

48h Survival Rate Detail — MD5: 0F82CAF46F9522996B67AEC8B30CCECD

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	1.0000	1.0000	1.0000	1.0000	1.0000
32		1.0000	1.0000	0.8750	1.0000	1.0000
45		0.8750	1.0000	1.0000	1.0000	1.0000
56		1.0000	1.0000	1.0000	0.8750	1.0000
75		0.8750	1.0000	1.0000	1.0000	0.8750
100		1.0000	0.8750	1.0000	1.0000	1.0000

CETIS Analytical Report

Daphnia pulex 48-h Acute Survival Test — **Eurofins Arkansas**

Analysis ID:	18-2883-1470	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	03 Jan-24 13:16	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	03 Jan-24 0:00	**MD5 Hash:**	0F82CAF46F9522996B67AEC8B30CCECD	**Editor ID:**	009-867-880-7

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.08462	8.46%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Dilution Water		32	8	25	16	1	CDF	0.6353	Non-Significant Effect
		45	8	25	16	1	CDF	0.6353	Non-Significant Effect
		56	8	25	16	1	CDF	0.6353	Non-Significant Effect
		75	8	22.5	16	1	CDF	0.3937	Non-Significant Effect
		100	8	25	16	1	CDF	0.6353	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.9	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0134919	0.0026984	5	0.4364	0.8187	Non-Significant Effect
Error	0.148411	0.0061838	24			
Total	0.161903		29			

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	0.7084	0.9031	<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	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
32		5	0.9750	0.9056	1.0000	1.0000	0.8750	1.0000	0.0250	5.73%	2.50%
45		5	0.9750	0.9056	1.0000	1.0000	0.8750	1.0000	0.0250	5.73%	2.50%
56		5	0.9750	0.9056	1.0000	1.0000	0.8750	1.0000	0.0250	5.73%	2.50%
75		5	0.9500	0.8650	1.0000	1.0000	0.8750	1.0000	0.0306	7.21%	5.00%
100		5	0.9750	0.9056	1.0000	1.0000	0.8750	1.0000	0.0250	5.73%	2.50%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	5	1.3930	1.3930	1.3930	1.3930	1.3930	1.3930	0.0000	0.00%	0.00%
32		5	1.3560	1.2540	1.4580	1.3930	1.2090	1.3930	0.0367	6.06%	2.64%
45		5	1.3560	1.2540	1.4580	1.3930	1.2090	1.3930	0.0367	6.06%	2.64%
56		5	1.3560	1.2540	1.4580	1.3930	1.2090	1.3930	0.0367	6.06%	2.64%
75		5	1.3200	1.1950	1.4450	1.3930	1.2090	1.3930	0.0450	7.62%	5.27%
100		5	1.3560	1.2540	1.4580	1.3930	1.2090	1.3930	0.0367	6.06%	2.64%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	1.0000	1.0000	1.0000	1.0000	1.0000
32		1.0000	1.0000	0.8750	1.0000	1.0000
45		0.8750	1.0000	1.0000	1.0000	1.0000
56		1.0000	1.0000	1.0000	0.8750	1.0000
75		0.8750	1.0000	1.0000	1.0000	0.8750
100		1.0000	0.8750	1.0000	1.0000	1.0000

CETIS Analytical Report

Report Date: 03 Jan-24 12:03 (p 2 of 2)
Test Code/ID: 274805_DP / 04-5167-9838

Daphnia pulex 48-h Acute Survival Test — **Eurofins Arkansas**

Analysis ID:	18-2883-1470	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	03 Jan-24 13:16	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	03 Jan-24 0:00	**MD5 Hash:**	0F82CAF46F9522996B67AEC8B30CCECD	**Editor ID:**	009-867-880-7

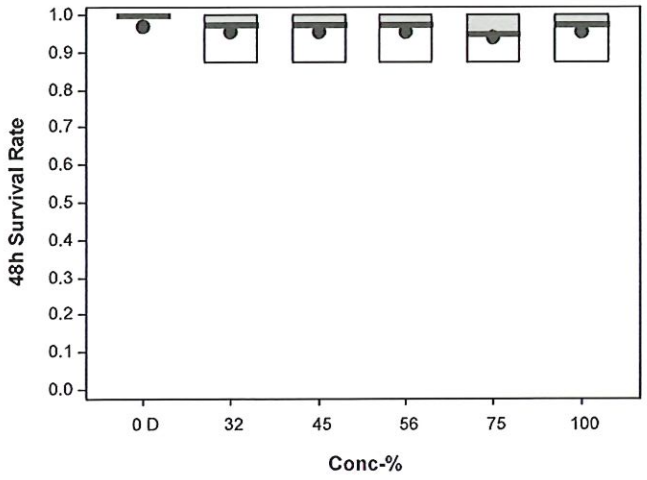
Angular (Corrected) Transformed Detail

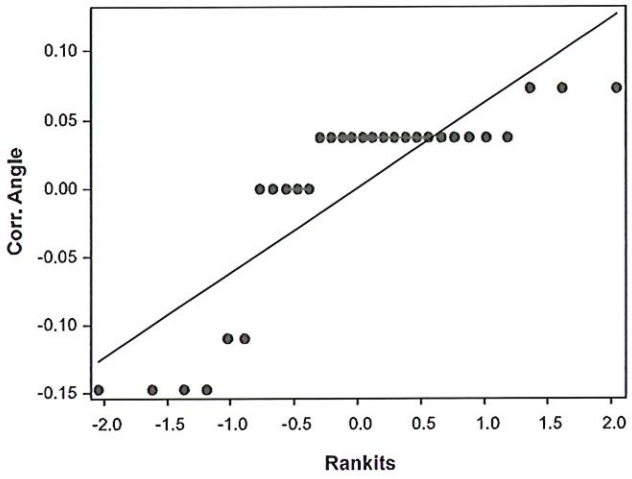
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	1.3930	1.3930	1.3930	1.3930	1.3930
32		1.3930	1.3930	1.2090	1.3930	1.3930
45		1.2090	1.3930	1.3930	1.3930	1.3930
56		1.3930	1.3930	1.3930	1.2090	1.3930
75		1.2090	1.3930	1.3930	1.3930	1.2090
100		1.3930	1.2090	1.3930	1.3930	1.3930

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	8/8	8/8	8/8	8/8	8/8
32		8/8	8/8	7/8	8/8	8/8
45		7/8	8/8	8/8	8/8	8/8
56		8/8	8/8	8/8	7/8	8/8
75		7/8	8/8	8/8	8/8	7/8
100		8/8	7/8	8/8	8/8	8/8

Graphics





CETIS Analytical Report

Report Date: 03 Jan-24 12:03 (p 1 of 2)
Test Code/ID: 274805_DP / 04-5167-9838

Daphnia pulex 48-h Acute Survival Test — **Eurofins Arkansas**

Analysis ID:	19-4838-5543	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	03 Jan-24 13:20	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	03 Jan-24 0:00	**MD5 Hash:**	0F82CAF46F9522996B67AEC8B30CCECD	**Editor ID:**	009-867-880-7

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	976839	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.9	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC50	>100	---	---	<1	---	---

48h Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	D	5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	40/40	1.0000	0.00%
32		5	0.9750	1.0000	0.8750	1.0000	5.73%	2.50%	39/40	0.9750	2.50%
45		5	0.9750	1.0000	0.8750	1.0000	5.73%	2.50%	39/40	0.9750	2.50%
56		5	0.9750	1.0000	0.8750	1.0000	5.73%	2.50%	39/40	0.9750	2.50%
75		5	0.9500	1.0000	0.8750	1.0000	7.21%	5.00%	38/40	0.9625	3.75%
100		5	0.9750	1.0000	0.8750	1.0000	5.73%	2.50%	39/40	0.9625	3.75%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	1.0000	1.0000	1.0000	1.0000	1.0000
32		1.0000	1.0000	0.8750	1.0000	1.0000
45		0.8750	1.0000	1.0000	1.0000	1.0000
56		1.0000	1.0000	1.0000	0.8750	1.0000
75		0.8750	1.0000	1.0000	1.0000	0.8750
100		1.0000	0.8750	1.0000	1.0000	1.0000

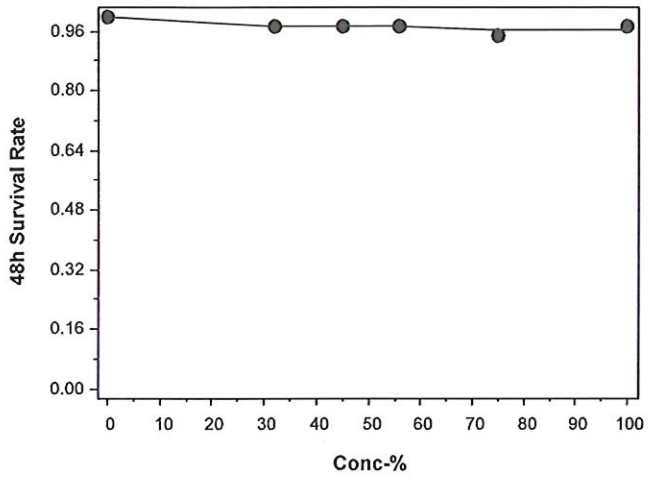
48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	D	8/8	8/8	8/8	8/8	8/8
32		8/8	8/8	7/8	8/8	8/8
45		7/8	8/8	8/8	8/8	8/8
56		8/8	8/8	8/8	7/8	8/8
75		7/8	8/8	8/8	8/8	7/8
100		8/8	7/8	8/8	8/8	8/8

Daphnia pulex 48-h Acute Survival Test — **Eurofins Arkansas**

Analysis ID:	19-4838-5543	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETIS v2.1.5
Analyzed:	03 Jan-24 13:20	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	03 Jan-24 0:00	**MD5 Hash:**	0F82CAF46F9522996B67AEC8B30CCECD	**Editor ID:**	009-867-880-7

Graphics



Eurofins Arkansas
8600 Kanis Rd
Little Rock AR 72204
Phone 501-224-5060 Fax 501-224-5075

Chain of Custody Record

eurofins Envi

192-7958 COC

Client Information	Sampler: Sydney Hallum	Lab PM: Overbey John	Carrier Tracking No(s):	COC No: 192-1811-406 1
Client Contact: Ms Sydney Hallum	Phone: 501-438-1551	E-Mail: john overbey@et.eurofinsus com	State of Origin:	Page: Page 1 of 1
Company: El Dorado Chemical Company	PWSID:			Job #:
Address: 4500 North West Avenue	Due Date Requested:			
City: El Dorado	TAT Requested (days): Normal			
State Zip: AR 71730	Compliance Project: Δ Yes Δ No			
Phone:	PO #: 23120416			
Email: shallum@lsbindustries com	WO #:			
Project Name: Acute Biomonitoring	Project #: 19200532			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify)
Other:

LIMS: 274805
TALS: 7958

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2000 - 48 HR, 2021 - 48 DPR	Total Number of containers	Special Instructions/Note.
			Preservation Code:				N		
006	12-15-23	10:55pm	C	Water			X	3	
-	12-16-23	8:55am	C	Water					

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I II III IV Other (specify)

Special Instructions/QC Requirements

Empty Kit Relinquished by	Date	Time	Method of Shipment

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	Sydney Hallum	12-16-23 9:53am	EDC	Gilbert Henderson	12.16.23 9:55 am	
2	Gilbert Henderson	12/16/23 12:10	pa			
3				V62	12/16/23 1216	

Custody Seals Intact: Δ Yes Δ No
Custody Seal No:
Cooler Temperature(s) °C and Other Remarks: 0.1

Ver: 06/08/2021