

REVIEW OF TOXICITY BIOMONITORING REPORT

Environmental Toxicology, NPDES Permitting Program/OWQ

Biomonitoring Review Report: <u>IDEM/100/29/334/135/2024</u>	Document Date:	04/23/2024
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Discharger: Valero Renewable Fuels Co. LLC NPDES No. IN0063312
 City: Mount Vernon County: Posey State: IN Zip: 47620

I. Background Information: (To be Completed by the Testing Lab.)

A. Test Material:

Effluent/W. Water: Whole Effluent Outfall No(s): 001A
 Grab/Composite: 24-hr Composite Date(s) Effluent Collected: 02/05/2024 02/07/2024 02/09/2024
 Concentrations Used: Control, 6.25%, 12.5%, 25%, 50%, 100% Dilution Factor: 0.5
 Dilution Water: Receiving Water Reconstituted Perrier
 Name of Receiving Water Body: Unknown Ditch to Ohio River
02/06/2024– 02/13/2024
02/06/2024– 02/13/2024

Test Date(s): 4

B. Testing Laboratory: Beckmar Environmental Laboratory

City: Louville State KY Zip 40299

Responsible Person(s):

Study Director/Manager: Rhonda Baker
 Technical Staff: Initials
 Phone No. 502-266-6533

C. Toxicity Test Conducted:

Acute Test:

- | | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | 1. <i>Ceriodaphnia dubia</i> / <i>reticulata</i> |
| <input type="checkbox"/> | 2. <i>Daphnia magna</i> or <i>D. pulex</i> |
| <input checked="" type="checkbox"/> | 3. <i>Pimephales promelas</i> (FH. minnow) |
| <input type="checkbox"/> | 4. Other: _____ |

Short-Term Chronic Test:

- | | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | 1. <i>Ceriodaphnia dubia</i> / <i>reticulata</i>
Survival & Reproduction test |
| <input checked="" type="checkbox"/> | 2. <i>Pimephales promelas</i> (FH. minnow)
Larval Survival & Growth test |
| <input type="checkbox"/> | 3. <i>Selenastrum capricornutum</i> Growth |
| <input type="checkbox"/> | 4. Other: _____ |

D. Chemical Analyses Checklist:

Parameter	Day							Comment
	1	2	3	4	5	6	7	
1. Control:								
D.O. Initial	✓	✓	✓	✓	✓	✓	✓	_____
Final	✓	✓	✓	✓	✓	✓	✓	_____
pH Initial	✓	✓	✓	✓	✓	✓	✓	_____
Final	✓	✓	✓	✓	✓	✓	✓	_____
Alkalinity:	✓	—	✓	—	✓	—	—	_____
Hardness:	✓	—	✓	—	✓	—	—	_____
Conductivity:	✓	—	✓	—	✓	—	—	_____
Chlorine:	—	—	—	—	—	—	—	_____
2. Test Sample:								
D.O. Initial	✓	✓	✓	✓	✓	✓	✓	_____
Final	✓	✓	✓	✓	✓	✓	✓	_____
pH Initial	✓	✓	✓	✓	✓	✓	✓	_____
Final	✓	✓	✓	✓	✓	✓	✓	_____
Alkalinity:	✓	—	✓	—	✓	—	—	_____
Hardness:	✓	—	✓	—	✓	—	—	_____
Conductivity:	✓	—	✓	—	✓	—	—	_____
Chlorine:	N. D.	—	N. D.	—	N. D.	—	—	100% Only

II. *Daphnia* or *Ceriodaphnia* Toxicity Test Information
(To be completed by the testing lab)

A. Data Analyses:

Statistical Test	Method Used	Comment
Normality test:	<u>Kolmogorov D Test</u>	<u>Passed. Indicates Normal Distribution for Reprod.</u>
Homogeneity test:	<u>Bartlett's Test</u>	<u>Passed. Indicates Equal Variances for Reprod.</u>
Significance test:		
1. Parametric	<u>Dunnett's Test</u>	<u>Passed. No Significant Difference for Reprod.</u>
2. Non-Parametric:	<u>Steels Many-One Rank Test</u>	_____
3. Are the Critical Values of Significance Provided?		<u>Yes.</u>
4. Other:	_____	

B. Toxicity Test Results:

1. Acute:

LC₅₀ (48-hr): >100% Effluent (<1 TUa)

2. Chronic:

NOEL:	Survival	<u>100% (1 TUc)</u>	Reproduction	<u>100% (1 TUc)</u>	Growth	_____
LOEL:	Survival	_____	Reproduction	_____	Growth	_____
Chronic Value:	Survival	_____	Reproduction	_____	Growth	_____

C. Permit Limits Requirement:

1. Acute:

LC₅₀ (48-hr): 100% Effluent (1 TUa)

2. Chronic:

NOEL:	Survival	<u>100% (1 TUc)</u>	Reproduction	<u>100% (1 TUc)</u>	Growth	_____
LOEL:	Survival	_____	Reproduction	_____	Growth	_____

D. Reference Toxicant Data:

- Reference Toxicant: Sodium chloride (NaCl)
- Test Date: January 10, 2024
- Results: IC₂₅ = 1.1346 g/L NaCl.
- Acceptable Range: Within Laboratory Control Limits.

E. Permit Limits Compliance: (To be completed by IDEM Staff only)

<input checked="" type="checkbox"/>	Pass (LC ₅₀ [48-hr])	<u>(1 TUa)</u>	<input type="checkbox"/>	Fail (LC ₅₀ [48-hr])	_____
<input checked="" type="checkbox"/>	Pass (NOEL/Survival)	<u>(1 TUc)</u>	<input type="checkbox"/>	Fail (NOEL/Survival)	_____
<input checked="" type="checkbox"/>	Pass (NOEL/Reprod.)	<u>(1 TUc)</u>	<input type="checkbox"/>	Fail (NOEL/Reprod.)	_____
<input type="checkbox"/>	Pass (NOEL/Growth)	_____	<input type="checkbox"/>	Fail (NOEL/Growth)	_____

Is the Test Acceptable? Yes No Reason _____

III. Fathead Minnow (*Pimephales*) Toxicity Test Information
(To be Completed by the Testing Lab.)

A. Data Analyses:

Statistical Test	Method Used	Comment
Normality test:	<u>Shapiro-Wilks Test</u>	<u>Passed. Indicates Normal Distribution for Growth.</u>
Homogeneity test:	<u>Bartlett's Test</u>	<u>Passed. Indicates Equal Variances for Growth.</u>
Significance test:		
1. Parametric	<u>Dunnett's Test</u>	<u>Passed. No Significant Difference for Growth.</u>
2. Non-Parametric:	<u>Steels Many-One Rank Test</u>	_____
3. Are the Critical Values of Significance Provided?		<u>Yes.</u>
4. Other:	_____	

B. Toxicity Test Results:

1. **Acute:**

LC₅₀ (96-hr): >100% Effluent (<1 TUa)

2. **Chronic:**

NOEL:	Survival	<u>100% (1 TUc)</u>	Reproduction	_____	Growth	<u>100% (1 TUc)</u>
LOEL:	Survival	_____	Reproduction	_____	Growth	_____
Chronic Value:	Survival	_____	Reproduction	_____	Growth	_____

C. Permit Limits Requirement:

1. **Acute:**

LC₅₀ (96-hr): 100% Effluent (<1 TUa)

2. **Chronic:**

NOEL:	Survival	<u>100% (1 TUc)</u>	Reproduction	_____	Growth	<u>100% (1 TUc)</u>
LOEL:	Survival	_____	Reproduction	_____	Growth	_____

D. Reference Toxicant Data:

- Reference Toxicant: Sodium chloride (NaCl)
- Test Date: January 10, 2024
- Results: IC₂₅ = 2.9419 g/L NaCl.
- Acceptable Range: Within Laboratory Control Limits

E. Permit Limits Compliance: (To be Completed by IDEM Staff Only)

<input checked="" type="checkbox"/>	Pass (LC ₅₀)	<u>(1 TUa)</u>	<input type="checkbox"/>	Fail (LC ₅₀)	_____
<input checked="" type="checkbox"/>	Pass (NOEL/Survival)	<u>(1 TUc)</u>	<input type="checkbox"/>	Fail (NOEL/Survival)	_____
<input type="checkbox"/>	Pass (NOEL/Reprod.)	_____	<input type="checkbox"/>	Fail (NOEL/Reprod.)	_____
<input checked="" type="checkbox"/>	Pass (NOEL/Growth)	<u>(1 TUc)</u>	<input type="checkbox"/>	Fail (NOEL/Growth)	_____

Is the Test Acceptable? Yes No Reason _____

V. GLP and QA/QC Compliance:
(To be completed by IDEM Staff Only)

A. Does the Biomonitoring Report provide?

- | | | | | |
|---|-----|-------------------------------------|----|--------------------------|
| 1. GLP Compliance Statement: | Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
| 2. QA/QC Compliance Statement: | Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
| 3. Were the required GLPs followed? | Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
| 4. If not, the Report lacks what major information: | | | | |
-
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B. Laboratory Raw Data Sheets:

- | | | | | |
|--|-----|-------------------------------------|----|--------------------------|
| 1. Does the Report enclose raw data sheets? | Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
| 2. Does the raw data sheets provide essential information? | Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
| 3. If not, the Report lacks what major information: | | | | |
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VI. Comments and Recommendations:
(To be Completed by IDEM Staff Only)

- In February 2024 in the Quarterly testing whole effluent from **Valero Renewable Fuels Co. (RFC)**, Mount Vernon, Indiana did not demonstrate any acute or chronic toxicity to *Ceriodaphnia dubia* or to Fathead minnow, *Pimephales promelas*. The 48-hr and the 96-hr LC₅₀ to both the test species was **>100% effluent (<1 TUa)**, respectively and acceptable. Likewise, the NOEC for *Ceriodaphnia dubia* Survival and Reproduction and for *Pimephales promelas* Survival and Growth was **100% effluent (1 TUc)** and acceptable as compared to **100% effluent (1 TUc)** WET compliance limit in the facility NPDES permit.

Reviewed by:

Signature:  Date: 06/18/2024
 Syed GhiasUddin Title: Environmental Toxicologist
 NPDES Permits Branch, OWQ

Electronic copy:

Jerry Dittmer, BC, NPDES Permits Branch, OWQ
 Richard Hamilton, SC, NPDES Permits Branch, OWQ