REVIEW OF TOXICITY BIOMONITORING REPORT
Environmental Toxicology, NPDES Permitting Program/OWQ

Biomonitoring Review Report: IDEM/100/29/334/136/2024	Document Date:	04/1222024

Discharger: Evonik Corporation Laboratories (Formerly Evonik Degussa) NPDES No. IN0002861
City: Lafayette County: Tippecanoe State: IN Zip: 47909

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

A. Test Material:

Effluent/W. Water: Whole Effluent Outfall No(s): 001
Grab/Composite: 24-hr Composite **Date(s) Effluent Collected:** 04/07/2024 04/09/2024 04/11/2024
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: Wabash River **Test Date(s):** 04/09/2024– 04/15/2024

B. Testing Laboratory: BIOMONITOR INC. 8802 West Washington St
City: Indianapolis State IN Zip 46231
Responsible Person(s):

Study Director/Manager: Michael Britton
Technical Staff: Initials
Phone No. 317-297-7713

C. Toxicity Test Conducted:

Acute Test:

[✓] 1. ***Ceriodaphnia dubia / reticulata***
[ ] 2. ***Daphnia magna*** or ***D. pulex***
[ ] 3. ***Pimephales promelas*** (FH. minnow)
[ ] 4. Other: _____

Short-Term Chronic Test:

[✓] 1. ***Ceriodaphnia dubia / reticulate*** Survival & Reproduction test
[ ] 2. ***Pimephales promelas*** (FH. minnow) Larval Survival & Growth test
[ ] 3. ***Selenastrum capricornutum*** Growth
[ ] 4. Other: _____

D. Chemical Analyses Checklist:

Parameter	Day 1	2	3	4	5	6	7	Comment
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:	✓	—	✓	—	✓	—	—	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:	Chi-Square Test	Passed. Indicates Normal Distribution for Reprod.
Homogeneity test:	Hartley Test	Passed. Indicates Equal Variances for Reprod.
Significance test:		
1. Parametric	Dunnett's Test	Passed. No Significant Difference for Reproduction
2. Non-Parametric:	Steel Many-One Rank Test	
	Fisher's Exact Test	Passed. No Significant Difference for Survival.

3. Are the Critical Values of Significance Provided? Yes
4. Other: _____

B. Toxicity Test Results:

1. **Acute:**
   LC_{50} (48-hr): > 100% Effluent (<1TUa)

2. **Chronic:**

NOEL:	**Survival**	100% (1 TUc)	**Reproduction**	50% (2 TUc) IC^{25} = 85%(.2 TUc)	**Growth**	_____
LOEL:	**Survival**	_____	**Reproduction**	_____	**Growth**	_____
Chronic Value:	**Survival**	_____	**Reproduction**	_____	**Growth**	_____

C. Permit Limits Requirement:

1. **Acute:**
   LC_{50} (48-hr): 17.9% Effluent (5.6 TU_a)

2. **Chronic:**

NOEL:	**Survival**	4.2% effluent (24.9 TU_c)	**Reproduction**	4.2% effluent (24.9 TU_c)	**Growth**	_____
LOEL:	**Survival**	_____	**Reproduction**	_____	**Growth**	_____

D. Reference Toxicant Data:

1. **Reference Toxicant:** Copper chloride, Reagent Grade, from Carolina Biological
2. **Test Date:** March 19 - 27. 2024
3. **Results:** 48-hr LC_{50} = 80 µg/L, NOEL (Reprod.) =40 µg/L, LOEL (Reprod.) = 80 µg/L as Cu.
4. **Acceptable Range:** Within Laboratory Control Limits

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

✓	**Pass (LC_{50})**	(1 TUa)	☐	**Fail (LC_{50})**	_____
✓	**Pass (NOEL/Survival)**	(1 TUc)	☐	**Fail (NOEL/Survival)**	_____
✓	**Pass (NOEL/Reprod.)**	(2 TUc)	☐	**Fail (NOEL/Reprod.)**	_____
☐	**Pass (NOEL/Growth)**	_____	☐	**Fail (NOEL/Growth)**	_____

Is the Test Acceptable? **Yes** ✓ **No** ___ **Reason** Passed for Surv/Reprod.

III. Fathead Minnow (*Pimephales promelas*) Toxicity Test Information

(To be completed by the testing lab)

A. Data Analyses:

Statistical Test	Method Used	Comment
Normality test:	Chi-Square Test	
Homogeneity test:	Hartley Test	
Significance test:		
1. Parametric:	Dunnett's Test	
2. Non-Parametric:	Fisher's Exact Test	

3. Are the Critical Values of Significance Provided? _____
4. Other: _____

B. Toxicity Test Results:

1. Acute:

LC_{50} (48-hr): _____

2. Chronic:

NOEL:	**Survival**	_____	**Reproduction**	_____	**Growth**	_____
LOEL:	**Survival**	_____	**Reproduction**	_____	**Growth**	_____
Chronic Value:	**Survival**	_____	**Reproduction**	_____	**Growth**	_____

C. Permit Limits Requirement:

1. Acute:

LC_{50} (48-hr): _____

2. Chronic:

NOEL:	**Survival**	_____	**Reproduction**	_____	**Growth**	_____
LOEL:	**Survival**	_____	**Reproduction**	_____	**Growth**	_____

D. Reference Toxicant Data:

1. **Reference Toxicant:** _____
2. **Test Date:** _____
3. **Results:** _____
4. **Acceptable Range:** _____

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

☐	**Pass (LC_{50} [48-hr])**	_____	☐	**Fail (LC_{50} [48-hr])**	_____
☐	**Pass (NOEL/Survival)**	_____	☐	**Fail (NOEL/Survival)**	_____
☐	**Pass (NOEL/Reprod.)**	_____	☐	**Fail (NOEL/Reprod.)**	_____
☐	**Pass (NOEL/Growth)**	_____	☐	**Fail (NOEL/Growth)**	_____

Is the Test Acceptable? Yes ___ **No** ___ **Reason** _____

IV. GLP and QA/QC Compliance:

(To be completed by IDEM Staff Only)

A. Does the Biomonitoring Report provide?

1. **GLP Compliance Statement:** **Yes** ✓ **No** ___
2. **QA/QC Compliance Statement:** **Yes** ✓ **No** ___
3. **Were the required GLPs followed?** **Yes** ✓ **No** ___
4. **If not, the Report lacks what major information:**

B. Laboratory Raw Data Sheets:

1. **Does the Report enclose raw data sheets?** **Yes** ✓ **No** ___
2. **Does the raw data sheets provide essential information?** **Yes** ✓ **No** ___
3. **If not, the Report lacks what major information:**

V. Comments and Recommendations:

(To be Completed by IDEM Staff Only)

1. In April 2024 in the Quarterly testing whole effluent from **Evonik Corporayion Tippecanoe Laboratories, Lafayette, IN** did not show any acute or chronic toxicity to *Ceriodaphnia dubia* tested as the most sensitive test organism. The 48-hr LC_{50} to the test species was **100% effluent (<1 TUa) as compared to 17.9% Effluent (5.6 TU_a)** and acceptable. Likewise, the NOEL for *Ceriodaphnia* Survival and Reproduction was **100% effluent (1 TUc)** and **50% effluent (2 TUc)** respectively, and acceptable as compared to 4.**2% effluent (24.9 TU_c)** 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 Permitting Branch, OWQ
Richard Hamilton, SC, NPDES Permitting Branch, OWQ