

# REVIEW OF TOXICITY BIOMONITORING REPORT

## Environmental Toxicology, NPDES Permitting Program/OWQ

Biomonitoring Review Report: <b>IDEM/100/29/334/130/2024</b>	Document Date:	11/24/2024
--	----------------	------------

**Discharger:** Arconic Corp. Lafayette LLC      NPDES No. IN0001210  
**City:** Lafayette      County: Tippecanoe      State: IN      Zip: 47903

### 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: 03/27/2024 03/29/2024 04/01/2024  
 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: Elliott Ditch      Test Date(s): 03/28/2024 - 04/03/2024

**B. Testing Laboratory: Enviro Science Inc.**

City: Stow      State OH      Zip 44224

**Responsible Person(s):**

Study Director/Manager: Alexandria Tite, Aquatic Biologist  
 Technical Staff: Initials  
 Phone No. (330) 688- 0111

**C. Toxicity Test Conducted:**

**Acute Test:**

- |                                     |  |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | 1. <i>Ceriodaphnia dubia / reticulata</i>  |
| <input type="checkbox"/>            | 2. <i>Daphnia magna</i> or <i>D. pulex</i> |
| <input 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 / reticulata</i><br>Survival & Reproduction test   |
| <input type="checkbox"/>            | 2. <i>Pimephales promelas</i> (FH. minnow)<br>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	
<b>1. Control:</b>								
D.O. Initial	✓	✓	✓	✓	✓	✓	✓	_____
Final	✓	✓	✓	✓	✓	✓	✓	_____
pH Initial	✓	✓	✓	✓	✓	✓	✓	_____
Final	✓	✓	✓	✓	✓	✓	✓	_____
Alkalinity:	✓	—	✓	—	✓	—	—	_____
Hardness:	✓	—	✓	—	✓	—	—	_____
Conductivity:	✓	—	✓	—	✓	—	—	_____
Chlorine:	—	—	—	—	—	—	—	_____
<b>2. Test Sample:</b>								
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:	<u>Shapiro Wilk's Testt</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 Reproduction</u>
2. Non-Parametric:	<u>Steel Many-One Rank Test</u>	
	<u>Fisher's Exact Test</u>	<u>Passed. No Significant Difference for Survival.</u>
3. Are the Critical Values of Significance Provided?		<u>Yes</u>
4. Other:	_____	

**B. Toxicity Test Results:**

**1. Acute:**

LC<sub>50</sub> (48-hr): > 100% Effluent (<1TUa)

**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:**

LC<sub>50</sub> (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: March 24, 2024
- Results: 48-hr LC<sub>50</sub> = 2.121 g/L, NaCl, IC<sub>25</sub> (Reprod.) = 0.788 g/L Na Cl
- Acceptable Range: Within Laboratory Control Limits

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

<input checked="" type="checkbox"/>	Pass (LC <sub>50</sub> )	<u>(1 TUa)</u>	<input type="checkbox"/>	Fail (LC <sub>50</sub> )	_____
<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 \_\_\_\_\_



**IV. 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: | _____ |                                     |    |                          |

**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:        | _____ |                                     |    |                          |

**V. Comments and Recommendations:**  
(To be Completed by IDEM Staff Only)

- In March 2024 in the Semi-annual testing whole effluent from **Arconic Corporation Lafayette LLC** did not show any acute toxicity to *Ceriodaphnia dubia* tested as the most sensitive species. The 48-hr LC<sub>50</sub> to the test species was **>100% effluent <(1 TUa)**. Likewise, in the chronic toxicity test the NOEL for *Ceriodaphnia* Survival and Reproduction was **100% effluent (1 TUc)** and acceptable as compared to **100% effluent (1.0 TUc)** WET compliance limit in the facility NPDES permit.

Reviewed by:

Signature: \_\_\_\_\_

Syed GhiasUddin  
NPDES Permits Branch, OWQ

Date: \_\_\_\_\_

Title: Environmental Toxicologist

Electronic copy:

Jerry Dittmer, BC, NPDES Permitting Branch, OWQ  
Richard Hamilton Gardner, SC, NPDES Permitting Branch, OWQ