

Result Summary

Client: NOR239
Reference: 08-0415-01-TRD

Client: Bodycote Testing Group; operation Edmonton

Sample: 606892-2
AC Carbon Organic

Collection: collected on not given at not given by not given

Receipt: received on 2008/03/13 at 0920 by S. Hynes

Containers: received 1 X 1L jar at NA °C, in good condition with no seals and no initials

Description: type: Polymer, collection method: not given

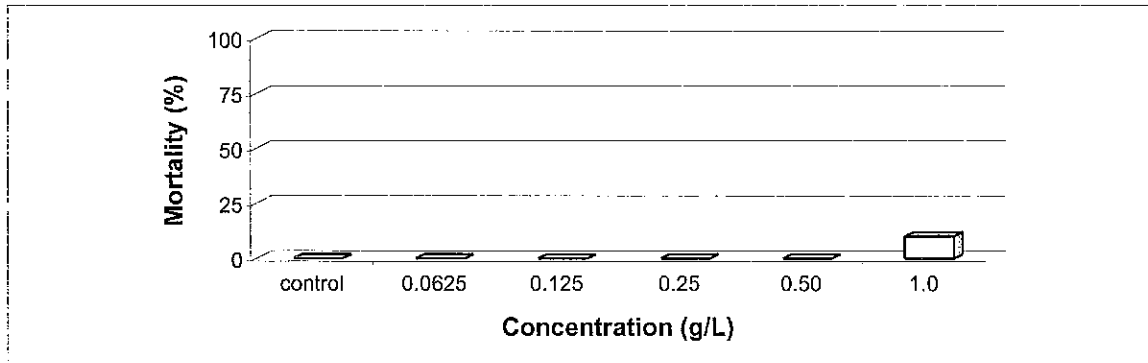
Test: started on 2008/03/20 ; ended on 2008/03/24

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Result:

	Endpoint (96-hour)	Value (g/L)	Confidence Limits (95%)		Method Calculated
			lower	upper	
Acute:	LC50	> 1.0			could not be calculated
(mortality)	LC25	> 1.0			could not be calculated

Notes: LC25 & LC50, concentrations lethal to 25% and 50% of the test population




Authorized by S. Krishnappa, B.Sc., Quality Coordinator
The test data and results are verified correct.

Test Conditions

Client: NOR239
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Method: Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, 2000. Environment Canada, EPS 1/RM/13. Second Edition.

Test type: Trout 96-h Static Acute Test (HQ 4.4.4.1)

Species: *Oncorhynchus mykiss*

Organism source: Sun Valley Trout Farms (Batch 20080130TR)

Acclimation: 50 days (must be ≥ 2 weeks)

Stock mortality: 1.6% (seven days preceding testing)

Sample initial chemistry: pH: ; EC: 0 ($\mu\text{S}/\text{cm}$); DO: (mg/L); temperature: 0 °C
hardness (mg CaCO_3/L): 0; colour: 0; odour: 0

Sample holding time: NA

Sample storage: 4 \pm 2°C in darkness

Test vessel: The test was conducted in 22 L plastic pails with polyethylene liners

Test volume: 20 Litres (depth of solution in each test vessel $\geq 15\text{cm}$)

Sample pre-treatment: All test solutions and controls were pre-aerated for 30 minutes

Dissolved oxygen in 100 % sample was 9.8 mg/L after pre-aeration

The sample was not filtered or pH adjusted prior to or during testing

Loading density: 0.283 g/Litre (must be ≤ 0.5 g/Litre)

Control/dilution water: Dechlorinated City of Calgary water acclimated to test conditions

Test concentrations: 5 effluent concentrations (0.0625, 0.125, 0.25, 0.5 1.0 g/L (v/v) plus a negative control)

Test replicates: One replicate per treatment; 10 fish per replicate

Feeding: Fish are not fed 24 hours before test initiation and no feeding during test

Measurements: pH, conductivity, dissolved oxygen and temperature measured daily

Aeration: All treatments aerated at 6.5 \pm 1 mL/min/L by oil-free compressed air passed through airline tubes connected to disposable air stones

Lighting: Overhead full spectrum fluorescent lights; 100-500 lux at surface

Photoperiod: 16h light:8h dark

Test temperature: 15 \pm 1°C

Endpoint: Mortality, 96-h LC50 (with 95% confidence limits)

Test validity: The control had 100% survival (must $\geq 90\%$)

Reference toxicant: 96-h test with Phenol ($\text{C}_6\text{H}_6\text{O}$) initiated February 25, 2008; current results (96-h LC50 and 95% confidence limits) = 0.90 (0.82-0.99) log (mg/L Phenol)

Note: Outlined sections are protocol deviations explained on the comment page; v/v, volume per volume

Test Data

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Test Log:

Date	Day	Time	Technician	Comment/Observation
2008/03/20	0	1115	E. Blais/T. McDonald	test fish loaded at 1115 h
2008/03/21	1	1100	T. McDonald/D. Lalonde	all test fish appear normal
2008/03/22	2	1100	T. McDonald/D. Lalonde	all test fish appear normal
2008/03/23	3	1025	T. McDonald/D. Lalonde	all test fish appear normal
2008/03/24	4	1015	E. Blais/T. McDonald	all test fish appear normal

Chemistry:

Conc. (g/L)	control	0.0625	0.125	0.25	0.50	1.0		

Day

pH (units)

0	7.9	7.8	7.8	7.8	7.7	7.7		
1	8.0	8.1	8.2	8.2	8.2	8.2		
2	8.5	8.5	8.4	8.4	8.4	8.4		
3	8.2	8.3	8.3	8.3	8.3	8.4		
4	8.5	8.5	8.5	8.6	8.5	8.6		

 Conductivity ($\mu\text{S/cm}$)

0	480	476	466	475	474	475		
1	485	485	473	473	473	468		
2	483	480	475	474	476	474		
3	498	475	484	475	477	458		
4	493	481	472	480	480	464		

Dissolved Oxygen (mg/L)

0	9.5	9.5	9.6	9.8	9.8	9.8		
1	9.8	9.7	9.7	9.8	9.7	9.7		
2	9.6	9.8	9.6	9.8	10.0	9.9		
3	9.3	8.9	8.9	9.0	8.8	8.8		
4	8.8	8.8	8.9	8.9	8.9	8.9		

 Temperature ($^{\circ}\text{C}$)

0	15	14	14	14	14	14		
1	14	15	14	14	14	14		
2	14	15	15	15	14	15		
3	15	15	15	15	15	15		
4	16	16	15	15	15	15		

Test Data

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Number Alive:

Conc. (g/L)	control	0.0625	0.125	0.25	0.50	1.0		
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Day

0	10	10	10	10	10	10		
1	10	10	10	10	10	10		
2	10	10	10	10	10	10		
3	9*	9*	10	10	10	9		
4	9	8*	10	10	10	9		

*see test results comments

Mortality (%)

4	0	0	0	0	0	10		
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Biology Summary Tables:

Control Fish	Length (cm)	Wet Weight(g)
1	3.5	0.4
2	4.0	0.7
3	4.0	0.6
4	4.1	0.5
5	3.7	0.5
6	3.7	0.4
7	4.0	0.6
8	4.5	0.8
9	4.3	0.8
10	3.6	0.4

Conc. (%)	Group Wet Weight (g)
control	5.7
0.0625	5.8
0.125	6.0
0.25	6.4
0.50	6.2
1.0	5.2

average	3.9	0.6
sd	0.3	0.2
cv(%)	8.0	27.1

Notes: nd, not done; na, not applicable;
 sd, standard deviation; cv(%), coefficient of variation

Comments/Statistics

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Test Result Comments:

Fish eaten in control and 6% concentrations, not included in mortality calculations.

Data Analysis:

Endpoints for mortality could not be calculated. No effect occurred.

Protocol Deviations:

Test fish in CTL and 6% concentrations were eaten by other test fish. This does not count towards mortality.