HydroQual Laboratories Ltd.

Daphnia (single concentration) Test Report

Result Summary

Client: TAH102
Reference: 08-0909-01-DAS

Client: Tahera Diamond Corporation; operation Jericho

Sample: Jer_West Cell Retest

Collection: collected on 2008/06/12 at 930 by not given
Receipt: received on 2008/06/13 at 1345 by A. Crawford
Containers: received 1 x 20L pail at 10 °C, in good condition with no seals and no initials
Description: type: water, collection method: grab

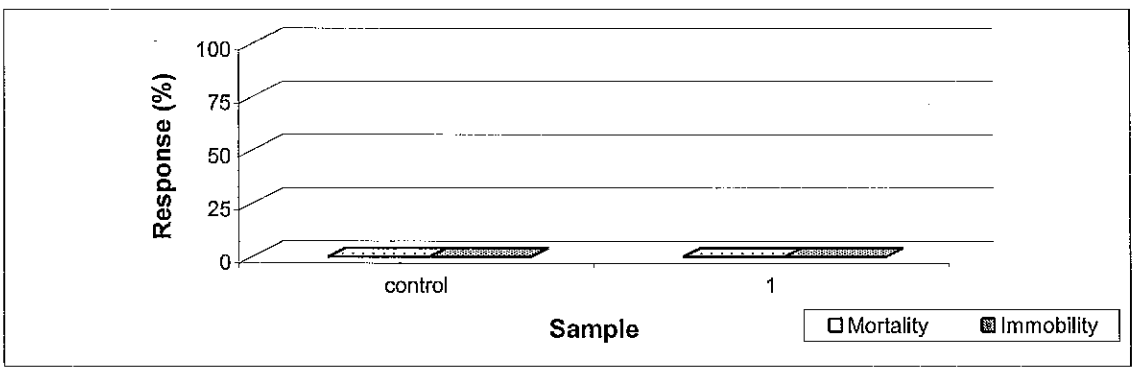
Test: started on 2008/06/17 ; ended on 2008/06/19

Contents

Result:

Sample	Client Code	Average Mortality (%)	Average Immobility (%)	Comment
control	lab control	0	0	
1	Jer_West Cell Rete	0	0	not toxic as tested

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



L. Henson for

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

HydroQual Laboratories Ltd., #4, 6125 12th Street SE, Calgary, Alberta, Canada T2H 2K1
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Test Conditions

Client: TAH102
Reference: 08-0909-01-DAS

Method: Biological Test method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*, 2000. Environ. Can., EPS 1/RM/14. Second Edition.

Test type: *Daphnia* 48-h Static Acute Test (HQ 4.4.3.1)
Species: *Daphnia magna*
Age: < 24 hours old
Organism source: in-house culture
Stock mortality: 0%
Culture brood data: 10 days to first brood
16 neonates per average brood

Sample initial chemistry: pH: 7.5; EC: 276 (µS/cm); DO: 8.2 (mg/L); temperature: 18 °C
hardness (mg CaC03/L): 58; colour: colourless; odour: odourless
Sample holding time: 5 days (must be ≤ 5 days)
Sample storage: 4 ± 2°C in darkness

Test vessel: 385 mL plastic vessels
Test volume: 150 mL
Sample pre-treatment: The sample was not filtered or pH adjusted prior to or during testing
The sample was pre-aerated for 0 minutes (rate of 37.5 ± 12.5 mL/min.L^{-1})
The hardness of the sample was not adjusted (mg $CaCO_3$/L) prior to or during testing
Loading density: One daphnid/15 mL (must ≤ 1 organism/15 mL)
Control water: Dechlorinated City of Calgary water acclimated to test conditions
The hardness of the control/dilution water was 123 mg $CaCO_3$/L
Test concentrations: Undiluted sample plus a negative control
Test replicates: Three replicates per treatment, 10 daphnids per replicate
Feeding: None
Aeration: None
Measurements: pH, conductivity, dissolved oxygen and temperature at test initiation and termination
Lighting: Overhead full spectrum fluorescent lights; 400-800 lux at surface
Photoperiod: 16h light:8h dark
Test temperature: 20 ± 2°C

Note: Outlined sections are protocol deviations explained on the comment page

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Test Conditions

Client: TAH102
Reference: 08-0909-01-DAS

Endpoint: Mortality, % mortality at 48-h
Immobility, % immobility at 48-h

Test validity: The control had 100% survival (must ≥ 90%)
Control had 0% abnormal behaviour (must < 10%), e.g. immobility

Reference toxicant: 48-h test with NaCl initiated June 2 , 2008; current results
(48-h LC50 and 95% confidence limits) = 0.72 (0.69-0.74) log (g/L NaCl)

Note: Outlined sections are protocol deviations explained on the comment page

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Test Data

Client: TAH102
Reference: 08-0909-01-DAS

Test Log:

Date	Day	Time	Technician	Comment/Observation
2008/06/17	0	1345	T. McDonald	test *Daphnia* appear normal
2008/06/18	1	0940	T. McDonald	test *Daphnia* appear normal
2008/06/19	2	1245	T. McDonald	test *Daphnia* appear normal

Chemistry:

Sample	control			1		
replicate	a	b	c	a	b	c
Day	pH (units)					
0	8.1	8.2	8.2	8.1	8.0	7.9
2	7.9	8.0	8.0	7.9	7.8	7.7
	Conductivity (µS/cm)					
0	400	362	357	290	285	284
2	355	349	360	285	285	283
	Dissolved Oxygen (mg/L)					
0	7.7	7.7	7.7	8.0	8.1	8.0
2	8.4	8.4	8.0	8.0	7.6	7.7
	Temperature (°C)					
0	22	22	22	22	22	22
2	20	20	20	20	21	21

Biology:

Sample	control			1		
replicate	a	b	c	a	b	c
Day	Number Alive and Behavior (behavior is in brackets)					
1	10	10	10	10	10	10
2	10	10	10	10	10	10

Notes: F, floating; I, immobile; B, stuck on bubble; D, caught in debris

	Mortality (%)					
2	0	0	0	0	0	0
	Immobility (%)					
2	0	0	0	0	0	0

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Comments/Statistics

Client: TAH102
Reference: 08-0909-01-DAS

Test Result Comments:
None

Data Analysis:
None

Protocol Deviations:
None

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Quality Assurance Information

Test Method: *Daphnia* Static Acute Test (LC50, five or more treatments plus a control)
HydroQual Test Method Manual, section: 4.4.3.1

Reference: Biological Test Method: Reference Method for Determining the Acute Lethality of Effluents to *Daphnia magna*, 1990. Environment Canada, EPS 1/RM/14. including May 1996 and December 2000 ammendments.

Test Organism:

test species:	*Daphnia magna*
culture source:	in-house
original culture source:	Environment Canada
days to first brood:	10
mean brood size:	16
ephippia in stock culture:	no
age of test organisms:	<24 hours old
culture mortality (%):	7%

Test Design:

vol. of test vessel (mL):	500
toxicant:	sodium chloride
test volume (mL):	150
replicates per treatment:	1
neonates per replicate:	10
volume per neonate (mL):	15
samples preaerated:	no
hardness adjustment:	no
temperature (°C):	20
photoperiod:	16h light:8h dark
light level (water surface):	400-800 lux
control/dilution water:	dechlorinated tap water

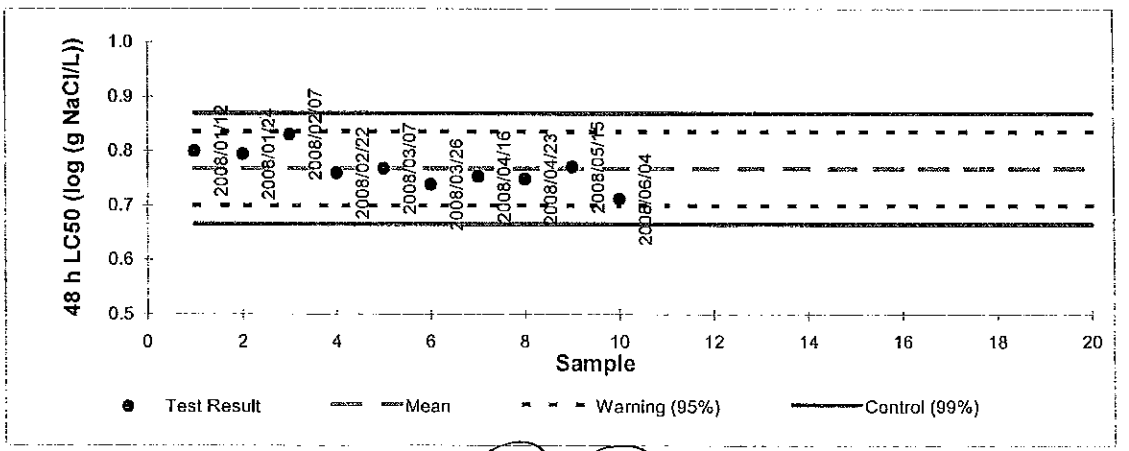
Current Test

toxicant	Sodium Chloride (NaCl)				
started on	2008/06/02	ended on	2008/06/04		
Result (LC50 @ 48h)	0.72	log (g NaCl/L); geometric mean			
Confidence Limits (95%)	lower	0.69	upper	0.74	

Historical Values

mean	0.77	sd	0.03	cv(%):	4
	lower	upper			
warning limits (±2 sd)	0.70	0.84	(95% confidence limits)		
control limits (±3 sd)	0.67	0.87	(99% confidence limits)		

notes: sd, standard deviation; cv, coefficient of variance



Quality Assurance Unit:

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

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HydroQual Laboratories Ltd.

Trout (single concentration) Test Report

Client: TAH102
Reference: 08-0909-01-TRS

Result Summary

Client: Tahera Diamond Corporation; operation Jericho

Sample: Jer_West Cell Retest

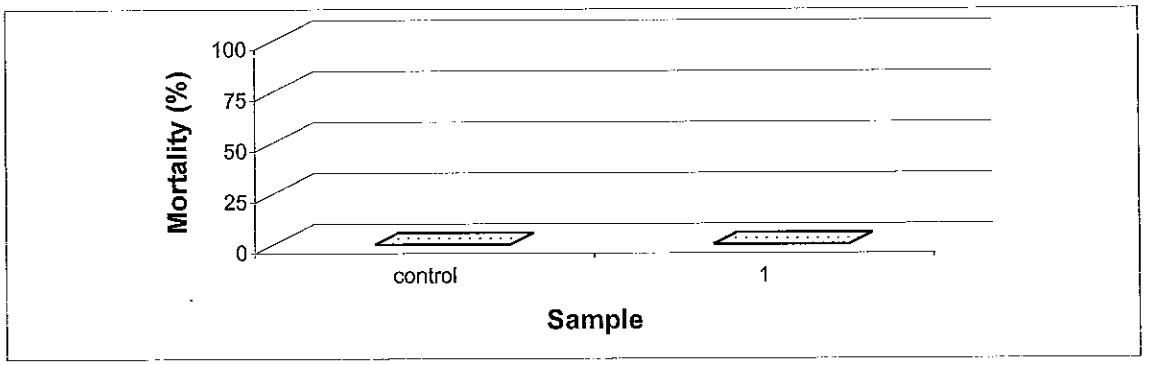
Collection: collected on 2008/06/12 at 930 by not given
Receipt: received on 2008/06/13 at 1345 by A. Crawford
Containers: received 1 x 20L pail at 10 °C, in good condition with no seals and no initials
Description: type: water, collection method: grab

Test: started on 2008/06/16 ; ended on 2008/06/20

Contents

Result:

Sample	Client Code	Mortality (%)	Comment
control	lab control	0	
1	Jer_West Cell Retest	0	not toxic as tested



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HydroQual Laboratories Ltd.

Trout (single concentration) Test Report

Test Conditions

Client: TAH102
Reference: 08-0909-01-TRS

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 20080513TR)
Acclimation: 34 days
Stock mortality: 0.69% (seven days preceeding testing)

Sample initial chemistry: pH: 7.5; EC: 276 (µS/cm); DO: 8.2 (mg/L); temperature: 18 °C
hardness (mg CaC03/L): 58; colour: colourless; odour: odourless
Sample holding time: 4 days (must be ≤ 5 days)
Sample storage: 4 ± 2°C in darkness

Test vessel: The test was conducted in 22 L plastic pails with polyethylene liners
Test volume: 19 Litres (depth of solution in each test vessel ≥15cm)
Sample pre-treatment: All test solutions and controls were pre-aerated for 30 minutes
Dissolved oxygen in full strength sample was 8.3 mg/L after pre-aeration
The sample was not filtered or pH adjusted prior to or during testing
Loading density: 0.332 g/Litre (must be ≤ 0.5 g/Litre)
Control water: Dechlorinated City of Calgary water acclimated to test conditions
Test concentrations: Undiluted sample 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 ±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 ± 1°C

Endpoint: Mortality, % mortality at 96-h
Test validity: The control had 100% survival (must ≥ 90%)

Reference toxicant: 96-h test with Phenol (C_6H_5OH) initiated May 29, 2008; current results (96-h LC50 and 95% confidence limits) = 0.98 (0.90-1.06) log (mg/L Phenol)

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

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HydroQual Laboratories Ltd.

Trout (single concentration) Test Report

Test Data

Client: TAH102
Reference: 08-0909-01-TRS

Test Log:

Date	Day	Time	Technician	Comment/Observation
2008/06/16	0	1030	T. McDonald/ N. Turner	test fish loaded at 1030 h
2008/06/17	1	0930	E. Vinish/ N. Turner	all test fish appear normal
2008/06/18	2	0930	N. Turner	all test fish appear normal
2008/06/19	3	0915	N. Turner/ D. Lalonde	all test fish appear normal
2008/06/20	4	0830	E. Vinish/ N. Turner	all test fish appear normal

Chemistry:

Sample	control	1						

pH (units)

Day								
0	7.8	7.8						
1	8.3	8.1						
2	7.7	7.5						
3	7.8	7.5						
4	8.0	7.8						

Conductivity (µS/cm)

0	365	285						
1	364	280						
2	352	277						
3	360	278						
4	355	276						

Dissolved Oxygen (mg/L)

0	8.2	8.3						
1	8.6	8.8						
2	7.5	7.7						
3	7.8	8.1						
4	8.6	8.7						

Temperature (°C)

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

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HydroQual Laboratories Ltd.

Trout (single concentration) Test Report

Test Data

Client: TAH102
Reference: 08-0909-01-TRS

Number Alive:

Sample	control	1						

Day								
0	10	10						
1	10	10						
2	10	10						
3	10	10						
4	10	10						

Mortality (%)

4	0	0						

Biology Summary Tables:

Control Fish	Length (cm)	Wet Weight(g)
1	4.5	0.9
2	4.5	0.9
3	4.1	0.6
4	3.9	0.6
5	4.3	0.6
6	3.7	0.5
7	4.0	0.6
8	4.0	0.6
9	3.7	0.5
10	3.6	0.5

average	4.0	0.6
sd	0.3	0.1
cv(%)	8.0	23.7

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

Sample	Group Wet Weight (g)
control	6.3
1	5.6

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Comments/Statistics

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Reference: 08-0909-01-TRS

Test Result Comments:
None

Data Analysis:
None

Protocol Deviations:
None

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HydroQual Laboratories Ltd.

Warning Chart
Trout

Test Method: Trout 96h Static Acute Test. (LC50, five or more treatments plus a control)
HydroQual Test Method Manual, section: 4.4.4.1
Reference: Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, 1990. Environment Canada, EPS 1/RM/13. including May 1996 and December 2000 amendments.

Test Organism:		**Test Design:**	
test species:	*Oncorhyncus mykiss*	vol. of test vessel (L):	22
culture source:	Sun Valley	test volume depth:	>15 cm
temperature (°C):	15 ± 1	replicates per treatment:	1
dissolved oxygen:	saturated	fingerlings per replicate:	10
stock mortality (last 7d):	0.80%	loading (g fish/L):	<0.5
batch number:	20080513TR	temperature (°C):	15 ± 1
		photoperiod:	16h light: 8h dark
		light level (water surface):	100-500 lux
		control/dilution water:	dechlorinated tap water

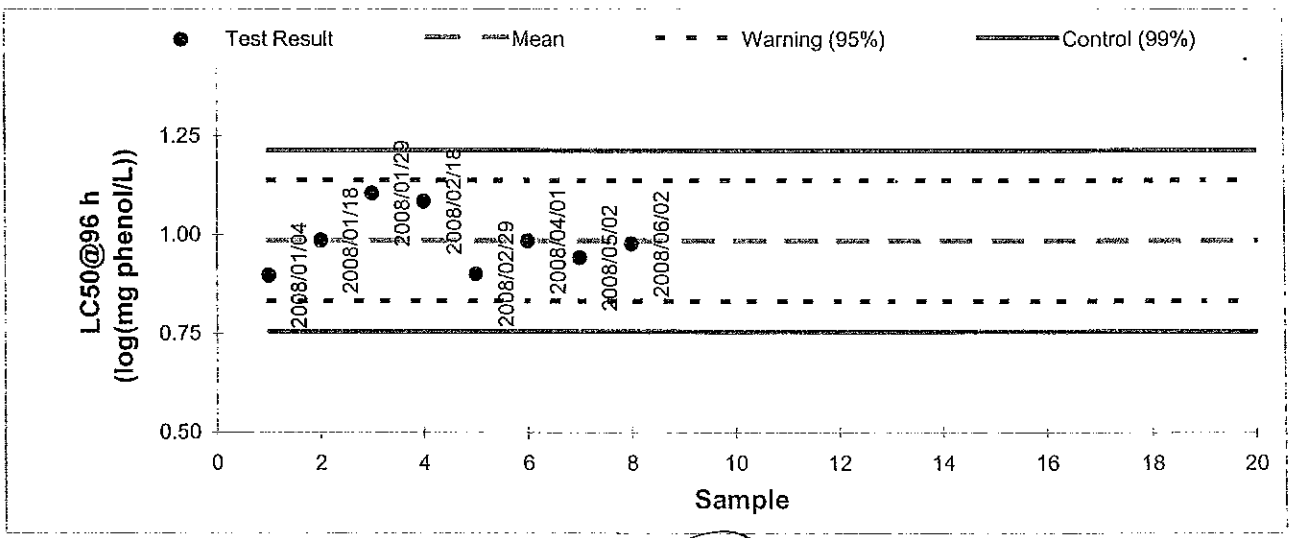
Current Test

toxicant	phenol (C_6H_5OH)				
started on	2008/05/29	ended on	2008/06/02		
Result (LC50 @ 96h)	0.98	log (mg phenol/L); geometric mean			
Confidence Limits (95%)	lower	0.90	upper	1.06	

Historical Values

mean	0.99	sd	0.08	cv(%):	8
	lower	upper			
warning limits (±2 sd)	0.83	1.14	(95% confidence limits)		
control limits (±3 sd)	0.76	1.21	(99% confidence limits)		

notes: sd, standard deviation; cv, coefficient of variance



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