

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
RAINBOW TROUT ACUTE TOXICITY TEST DATA SUMMARY

Client CanTest
Lab Project No. 04-1424-016
Lab Work Order No. 0600246

Lab Analysts LOC SRS, J.M. RIE
Test Type 96-h LC50
Test Initiation Date 13-Jun-06

SAMPLE

Identification 606090042 V2
Amount Received 2 x 20L
Date Collected 8-Jun-06
Date Received 9-Jun-06
Other -

DILUTION/CONTROL WATER (initial water quality)

Fresh Water (dechlorinated) ✓
Temperature (°C) 15.0
pH 7.3
Dissolved Oxygen (mg/L) 10.2
Conductivity (µS/cm) 35
Hardness (mg/L as CaCO₃) 12
Alkalinity (mg/L as CaCO₃) 10
Other -

TEST SPECIES INFORMATION

Source Rainbow Springs
Collection Date/Batch 053106
Control Fish Size (mean, SD and range measured at end of test)
Date Measured 17-Jun-06
Fork Length (mm) 31 ± 2 (27-34)
Wet Weight (g) 0.30 ± 0.05 (0.22-0.38)
Reference Toxicant SDS
Current Reference Toxicant Result
Reference Toxicant Test Date June 13/06
Duration of Acclimation (days) 13
96-h LC50 (and 95% CL) 18 (15 ad 22)
Reference Toxicant Warning Limits (mean ± 2SD) and CV
29 ± 13 mg/L SDS CV: 22%

TEST CONDITIONS

Dissolved Oxygen Range (mg/L) 9.5-10.2
Temperature Range (°C) 14-15
pH Range 6.7-8.2
Conductivity Range (µS/cm) 35-1661
Aeration Provided? (give rate) 6.5 L/min/L
Photoperiod (L:D h) 16:8
No. Organisms/Volume 10/10L
Loading Density (g/L) 0.3
Acclimation Before Testing (days) 13
Mortality In Previous Week of Acclimation (%) 0.2
Other -

TEST RESULTS

The estimated LC50 value is greater than 100% (N).

Data Verified By

B. Rieck

Date Verified

6-July-2005

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
RAINBOW TROUT ACUTE TOXICITY TEST DATA

WHOLE SAMPLE WATER QUALITY

Temp. (°C)	pH	After 30-min Pre-aeration
17		14
7.8		7.9
10.8		10.2
1669		1669

1. Document pH adjustment procedure (if used) under "Comments".

Client Can test
 Lab Project No. 04-1414-016
 Lab Work Order No. 0600246
 Trial Batch No. and 7-d Acclimation Mortality 059106/0.2%
 No. Fish/Volume 6/16L
 Sample ID (17) 606090042
 Date/Time Collected 8 June-06 / 14
 Test Initiation Date/Time 13 June-06 / 1300

Total Pre-Aeration Time 30 min

Concentration	Number of Survivors (1 to 96 hours)						Dissolved Oxygen (mg/L)						Temperature (°C)						pH						Conductivity (µS/cm)	
	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96		
1- Control				10	10	10	10	10.2	10.0	10.0	10.0	10.0	15	15	15	15	15	7.3	6.9	6.7	6.9	6.7	7.3	6.7		
6-25				10	10	10	10	10.2	10.0	10.0	10.0	10.0	14	15	15	15	15	7.9	7.2	7.0	7.0	7.1	7.9	7.1		
12-5				10	10	10	10	10.2	10.0	9.8	10.0	10.0	14	15	15	15	15	7.9	7.4	7.3	7.2	7.2	7.9	7.2		
25				10	10	10	10	10.2	10.0	10.0	10.0	10.0	14	15	15	15	15	7.9	7.7	7.6	7.6	7.5	7.9	7.5		
50				10	10	10	10	10.2	10.0	10.2	10.0	10.0	14	15	15	15	15	7.9	8.1	8.0	7.9	7.9	7.9	8.1		
100				10	10	10	10	10.2	10.0	10.2	10.2	10.2	14	15	15	15	15	7.9	8.1	8.2	8.1	8.1	7.9	8.1		
Technician Initials																										

WQ Instruments Used: Temperature/Conductivity/Hg thermometer pH II-A-030301/02 DO II-A-14 Conductivity II-A-030306
 Sample Description: Colourless, clear liquid
 Comments: II-A-030306/1661

Test Set Up By 106 Data Verified By B. Auster Date Verified 7-6-06

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
RAINBOW TROUT ACUTE TOXICITY TEST DATA SUMMARY

Client CanTest
Lab Project No. 04-1424-016
Lab Work Order No. 0600246

Lab Analysts LOC. SRS. J.-J. RIE
Test Type 96-h LC50
Test Initiation Date 13-Jun-06

SAMPLE

Identification 606090043 VAS (BSP)
Amount Received 2 x 20L
Date Collected 8-Jun-06
Date Received 9-Jun-06
Other -

DILUTION/CONTROL WATER (Initial water quality)

Fresh Water (dechlorinated)
Temperature (°C) 15.0
pH 7.3
Dissolved Oxygen (mg/L) 10.2
Conductivity (µS/cm) 35
Hardness (mg/L as CaCO₃) 12
Alkalinity (mg/L as CaCO₃) 10
Other -

TEST SPECIES INFORMATION

Source Rainbow Springs
Collection Date/Batch 053106
Control Fish Size (mean, SD and range measured at end of test)
Date Measured 17-Jun-06
Fork Length (mm) 31 ± 3 (24-34)
Wet Weight (g) 0.29 ± 0.07 (0.2-0.41)
Reference Toxicant SDS
Current Reference Toxicant Result
Reference Toxicant Test Date June 13/06
Duration of Acclimation (days) 13
96-h LC50 (and 95% CL) 18 (15 and 22)
Reference Toxicant Warning Limits (mean ± 2SD) and CV
29 ± 13 mg/L SDS CV = 22%

TEST CONDITIONS

Dissolved Oxygen Range (mg/L) 9.8-10.2
Temperature Range (°C) 14-15
pH Range 6.2-7.7
Conductivity Range (µS/cm) 35-264
Aeration Provided? (give rate) 6.5 L/min/L
Photoperiod (L:D h) 16:8
No. Organisms/Volume 10/10L
Loading Density (g/L) 0.29
Acclimation Before Testing (days) Run 13
Mortality in Previous Week of Acclimation (%) 0.2
Other -

TEST RESULTS

The estimated LC50 value is greater than 100% (N).

Data Verified By B. Neel

Date Verified 6-Jul-06

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
RAINBOW TROUT ACUTE TOXICITY TEST DATA

WHOLE SAMPLE WATER QUALITY

	Initial	pH Adjustment ¹	After 30-min Pre-aeration
Temp. (°C)	14		14
pH	8.1		7.7
DO (mg/L)	10.4		10.1
Concl. (µS/cm)	258		258

¹ Document pH adjustments procedure (if used) under "Comments".

Client Centest
 Lab Project No. 04-1424-016
 Lab Work Order No. 6600246
 Treat Batch No. and 7-d Acclimation Mortality 05304/0.2
 No. Fish/Volume 10/10L
 Sample ID (VLSBSP) (006090043)
 Date/Time Collected 8-June (WA)
 Test Initiation Date/Time 13-June-06 @ 13:00

Total Pre-Aeration Time 30 min

Concentration	Dissolved Oxygen (mg/L)						Temperature (°C)						pH						Conductivity (µS/cm)	
	0	24	48	72	96	96	0	24	48	72	96	96	0	24	48	72	96	96	0	96
7-(V)(V)																				
Control	10.2	10.0	9.8	10.0	10.0	10.0	15	15	15	15	15	7.3	7.1	6.3	6.7	6.2	72.9	96	0	96
6.25	10.2	10.0	9.6	10.0	9.9	10.0	15	15	15	15	15	7.6	7.2	6.5	6.7	6.2	72.9	96	0	96
12.5	10.2	10.0	9.8	10.0	9.8	10.0	15	15	15	15	15	7.6	7.1	6.6	6.7	6.3	72.9	96	0	96
25	10.2	10.0	9.6	10.0	10.1	10.0	15	15	15	15	15	7.6	7.1	6.7	6.8	6.3	72.9	96	0	96
50	10.2	10.0	9.4	9.8	9.8	9.8	15	15	15	15	15	7.7	7.1	6.8	6.8	6.6	72.9	96	0	96
100	10.2	10.0	9.8	9.8	9.9	9.9	15	15	15	15	15	7.7	7.4	7.2	7.1	6.9	72.9	96	0	96
Technician Initials																				

WQ Instruments Used: Temperature Clibrizel Hg Fluorescence pH I-A-010301/02 DO II-A-14 Conductivity used 11-1-050306 at 96hr

Sample Description Clear colour (SS) clog vid

Comments During II-A-0504

Test Set Up By DL Date Verified By B. Hunt Date Verified 5-June-06

Cantest Ltd.
Burnaby
609110239 (V2)

Rainbow Trout Bioassay
96-h LC50 %v/v: >100%

Vizon SciTec Inc.

3650 Westbrook Mall
 Vancouver, BC
 Canada V6S 2L2
 tel: (604) 224-4331
 fax: (604) 224-0540
 web: <http://vizonscitec.com>

Vizon Sample #: 060912J-01				Report #: 2-11-200-040-06-045			
Sample Taken:	Sep. 7, 2006	Sample pH:	8.1				
Sample Collected By:	Anvil Range	Sample Dissolved Oxygen:	10.3 mg/L				
Sample Received:	Sep. 12, 2006	Sample Temperature:	14.8 °C				
Start Date/Time:	Sep. 13, 2006 3:22 PM	Sample Conductance:	1999 µmho/cm				

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	60	15.4	14.5	7.8	7.9	10.0	10.2	0	0	0	0	0
10	322	15.4	14.6	8.0	7.9	10.0	9.6	0	0	0	0	0
32	816	15.3	14.8	8.2	8.0	10.0	9.7	0	0	0	0	0
56	1261	15.1	14.7	8.2	8.1	10.1	9.8	0	0	0	0	0
100	1997	14.8	14.5	8.2	8.0	10.2	9.8	0	0	0	0	0

Comments:

All fish appeared and behaved normally during the test. PO#: 57.

Test Conditions:

Organisms per Replicate:	10	Preaeration Time:	56 min.
Test Volume:	22 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.35 g/L		

Test Organism: Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.77 ± 0.23 g	Length (Mean + SD):	4.3 ± 0.4 cm
Weight (Range):	0.28– 1.49 g	Length (Range):	3.1– 5.4 cm

Reference Toxicant: Phenol

Test was conducted on: 08/30/2006
 Test gave a 96-h LC50 of 9.65 (8.34, 10.9) mg/L

Dilution Water: Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 23 mg CaCO₃/L Other parameters available on request

Test Method:

Biological Test Method: Reference Method for Determining Acute Lethality of Effluent to Rainbow Trout, EPS 1/RM/13, Second Edition, December 2000.

Analyst

Verified By



Cantest Ltd.
Burnaby
 609110240 - (V25BSP)
 Rainbow Trout Bioassay
 96-h LC50 %v/v: >100%

Vizon SciTec Inc.
 3650 Westbrook Mall
 Vancouver, BC
 Canada V6S 2L2
 tel: (604) 224-4331
 fax: (604) 224-0540
 web: <http://vizonscitec.com>

Vizon Sample #: 060912J-02				Report #: 2-11-200-040-06-044			
Sample Taken:	Sep. 7, 2006	Sample pH:	7.9				
Sample Collected By:	Anvil Range	Sample Dissolved Oxygen:	10.5 mg/L				
Sample Received:	Sep. 12, 2006	Sample Temperature:	14.2 °C				
Start Date/Time:	Sep. 13, 2006 12:34 PM	Sample Conductance:	692 µmho/cm				

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	58	14.6	14.4	7.8	7.9	10.2	10.9	0	0	0	0	0
10	143	14.6	14.4	7.8	7.9	10.2	10.9	0	0	0	0	0
32	291	14.5	14.5	7.8	7.6	10.1	10.8	0	0	0	0	0
56	435	14.4	14.5	7.8	7.5	10.2	10.8	0	0	0	0	0
100	692	14.2	14.6	7.8	7.3	10.3	10.9	0	0	0	0	0

Comments:

All fish appeared and behaved normally during the test. PO#: 57.

Test Conditions:

Organisms per Replicate:	10	Preaeration Time:	101 min.
Test Volume:	22 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.35 g/L		

Test Organism: Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.77 ± 0.23 g	Length (Mean + SD):	4.3 ± 0.4 cm
Weight (Range):	0.28– 1.49 g	Length (Range):	3.1– 5.4 cm

Reference Toxicant: Phenol

Test was conducted on: 08/30/2006
 Test gave a 96-h LC50 of 9.65 (8.34, 10.9) mg/L

Dilution Water: Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 23 mg CaCO₃/L Other parameters available on request

Test Method:

Biological Test Method: Reference Method for Determining Acute Lethality of Effluent to Rainbow Trout, EPS 1/RM/13, Second Edition, December 2000.

Analyst

Verified By



Cantest Ltd.
Burnaby
 V2 (701040242)

Rainbow Trout Bioassay
96-h LC50 %v/v: >100%

CANTEST Ltd.

3650 Wesbrook Mall
 Vancouver, BC
 Canada V6S 2L2
 tel: 604 224 4331
 fax: 604 224 0540
 web: http://cantest.com

Resample for December 2006

Cantest Sample #: 070105K-01 Report #: 2-11-200-040-07-001

Sample Taken:	Jan. 2, 2007	Sample pH:	7.9
Sample Collected By:	L. McKinnon/R. Meers	Sample Dissolved Oxygen:	11.4 mg/L
Sample Received:	Jan. 5, 2007	Sample Temperature:	16.2 °C
Start Date/Time:	Jan. 5, 2007 2:54 PM	Sample Conductance:	1962 µmho/cm

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	76	14.7	15.9	7.6	7.5	10.0	9.6	0	0	0	0	0
10	319	14.7	15.8	8.0	7.9	9.8	9.8	0	0	0	0	0
18	482	14.6	15.8	8.0	8.0	9.8	9.6	0	0	0	0	0
32	784	14.0	15.8	8.0	8.2	10.0	9.8	0	0	0	0	0
56	784	14.2	15.9	8.0	8.4	10.2	9.6	0	0	0	0	0
100	1989	14.3	15.8	8.0	8.3	10.2	9.8	0	0	0	0	0

Comments:

All fish appeared and behaved normally during the test.

Test Conditions:

Organisms per Replicate:	10	Preaeration Time:	101 min.
Test Volume:	15 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.37 g/L		

Test Organism: Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.55 ± 0.1 g	Length (Mean + SD):	4 ± 0.2 cm
Weight (Range):	0.3– 0.8 g	Length (Range):	3.3– 4.4 cm

Reference Toxicant: Phenol

Test was conducted on: 01/08/2007
 Test gave a 96-h LC50 of 10.62 (7, 13) mg/L

Dilution Water: Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 19 mg CaCO₃/L Other parameters available on request

Test Method:

Biological Test Method: Reference Method for Determining Acute Lethality of Effluent to Rainbow Trout, EPS 1/RM/13, Second Edition, December 2000.

Analyst

Verified By

