Nautilus Environmental
8664 Commerce Court, Burnaby, BC V5A 4N7

WO#: 08146-47

Mr. Dan Parker
C.I. Agent Solutions
11760 Commonwealth Drive
Louisville, Kentucky USA
40299

August 12, 2008

Dear Mr. Parker:

Re: Toxicity testing on the sample identified as C.I. Agent (Collection date unavailable)

Nautilus Environmental is pleased to provide you the results of the 96-h rangefinder Rainbow Trout toxicity test and 48-h *Daphnia magna* rangefinder test on the above sample, received on July 14, 2008. Testing was conducted according to Environment Canada 1/RM/13, (Second Edition, 2000, including May 2007 amendments) and 1/RM/14, (Second Edition, 2000). The results of these tests are provided in the table below and are based on the appended data.

Table A. Results for the 96-h Rainbow Trout test.

Sample ID	Collection Date and Time	96-h rangefinder LC50 (g/L)
C.I. Agent	N/A	>50

Table B. Results for the 48-h *D. magna* test.

Sample ID	Collection Date and Time	48-h rangefinder LC50 (g/L)
C.I. Agent	N/A	>50

Please feel free to contact the undersigned at 604-420-8773 should you have any questions or require any additional information.

Yours truly,

Nautilus Environmental

Andy Diewald, B.Sc.
Lab Supervisor

Rainbow Trout Summary Sheet

Client: CI Agent Solutions Start Date/Time: July 24/08 @ 1630

Work Order No.: 08146 Test Species: *Oncorhynchus mykiss*

Sample Information:

Sample ID: C I Agent
Sample Date: ~~July 14/08~~ July 11/08
Date Received: July 14/08
Sample Volume: 1L 2.0L
Other:

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 10
Alkalinity (mg/L $CaCO_3$): 9

Test Organism Information:

Batch No.: 071008
Source: Fraser Valley Trout Hatchery
Test Volume/No. Fish: 10/10L
Loading Density: 0.24 g/L
Mean Length ± SD (mm): 32 ± 2 Range: 28 - 36
Mean Weight ± SD (g): 0.24 ± 0.07 Range: 0.15 - 0.34

SDS Reference Toxicant Results:

Reference Toxicant ID: RT34
Stock Solution ID: 08503
Date Initiated: July 17/08
96-h LC50 (95% CL): 4.9 (4.3 - 5.7)

Reference Toxicant Mean ± 2 SD: 5.4 ± 2.0
Reference Toxicant CV (%): 18.9%

Test Results: The 96-h Rangefinder LC_{50} > 50 g/L
~~100% survival after 96 hrs @ concentration of 750 g/L~~

Reviewed by: A. Tang Date reviewed: August 12, 2008

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: CI Agent Solutions
Sample I.D. CI Agent
W.O. # 08196
RBT Batch #: 071008
Date Received/Time: July 14/08 @
Date Setup/Time: July 24/08 @ 1630
Sample Setup By:

D.O. meter: DO-1
pH meter: pH-1
Cond. Meter: C-1

Number Fish/Volume: 10/10L
7-d % Mortality: 0.0%
Total Pre-aeration Time (mins): N/A
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ N/A

Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C			
pH			
D.O. (mg/L)			
Cond. (µS/cm)			

Concentration ~~(mg/L)~~ g/L	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					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
0 (ctl)				10	10	10	9	15.2	14.4	14.7	14.5	14.7	10.1	10.2	10.1	9.9	10.6	7.1	7.0	7.1	7.4	8.0	31	36
0.005				10	10	10	10	15.2	14.4	14.7	14.5	14.7	10.2	10.4	10.1	9.8	10.5	7.1	7.1	7.1	7.3	8.0	31	34
0.05				10	10	10	10	15.2	14.4	14.7	14.5	14.7	10.2	10.0	10.0	10.1	10.2	7.1	7.1	7.1	7.4	7.9	32	37
0.5				10	10	10	10	15.2	14.4	14.7	14.5	14.7	10.2	10.0	9.9	9.9	10.1	7.1	7.2	7.2	7.4	7.6	33	60
5				10	10	10	9	15.2	14.4	14.7	14.5	14.7	10.2	10.0	10.1	10.1	10.2	7.2	7.7	7.4	7.6	7.9	34	111
50				10	10	10	6	15.2	14.4	14.7	14.5	14.7	10.2	10.1	10.1	9.8	10.1	8.5	8.2	8.2	8.1	7.9	40	142
Initials																								

Sample Description/Comments: white powder, highly hydrophobic, insoluble in 15°C dechlor. H_2O, formed layer on top.

Fish Description at 96? remaining fish appear normal

Other Observations: Added CI Agent as powder, stirred in 10L dechlorinated H_2O in tanks, waited 10 mins (didn't dissolve), continued

Reviewed by: A. Tang

Date Reviewed: August 12, 2008

Daphnia magna Summary Sheet

Client: C.I. Agent Solutions
Work Order No.: 0814T
Start Date/Time: July 23/08 @ 1500L
Test Species: D. magna
Set up by: AM

Sample Information:

Sample ID: C.I. Agent
Sample Date: N/A
Date Received: July 14/08
Sample Volume: P x 2L powder

Test Organism Information:

Broodstock No.:	070408
Age of young (Day 0):	< 24-h
Avg No. young per brood in previous 7 d:	20
Mortality (%) in previous 7 d:	0
Days to first brood:	12

NaCl Reference Toxicant Results:

Reference Toxicant ID: DM35
Stock Solution ID: 08Na02
Date Initiated: July 9/08
48-h LC50 (95% CL): 4.5 (3.8-5.4) g/L NaCl

Reference Toxicant Mean ± 2 SD: 4.2 ± 1.0 g/L NaCl
Reference Toxicant CV (%): 12

Test Results: The 48-h Rangefinder > 50g/L (50,000 ppm)

Reviewed by: A. Tang
Date reviewed: August 12, 2008

Rangefinder

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: C.I. Agent Solutions
Sample ID: C.I Agent
Work Order No.: 08947

Start Date/Time: July 23/08 @ 1500h
No. Organisms/volume: 10/200mL
Test Organism: D.magna
Set up by: M

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

Concentration ppm	Rep	Number of Live Organisms			No. Immobilized	Temperature (°C)			Dissolved oxygen (mg/L)			pH			Conductivity (µS/cm)	
		0	24	48	48	0	24	48	0	24	48	0	24	48	0	48
Control	A	10	10	10	0	20.2	21.2	21.6	9.1		8.5	79		79	327	355
	B															
	C															
	D															
5	A	10	10	10	0	20.2	21.2	21.6	9.1		8.4	79		80	325	355
	B															
	C															
	D															
50	A	10	10	10	0	20.2	21.2	21.2	9.1		8.3	78		8.1	320	357
	B															
	C															
	D															
500	A	10	10	10	0	20.2	21.2	21.6	9.1		8.2	79		8.1	315	373
	B															
	C															
	D															
5,000	A	10	10	10	2	20.2	21.2	21.6	9.1		8.2	79		8.2	312	367
	B															
	C															
	D															
50,000	A	10	10	10	3	20.2	21.2	21.6	9.1		8.2	79		8.2	310	361
	B															
	C															
	D															
Technician Initials		M	M	M	M	A	A	M	M		M	M		M	M	M

	Hardness*	Alkalinity*
Conc.	*(mg/L as CaCo3)	
Control (MHW)	100	60
Highest conc.	—	

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)			
DO (mg/L)			
pH			
Cond (µS/cm)			

Sample Description: White powder

Comments: used 07045F

Reviewed by: A. Teng Date reviewed: August 12, 2008

Nautilus Environmental

Chain of Custody

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Phone 604.420.8773
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Date July 14/08 Page 1 of 1

Sample Collection by: (1) C.I. Agent Solutions 11760 Commonwealth Dr. Louisville, Kentucky

Report to: (1)
Company
Address
City State Zip
Contact
Phone/Email dan@ciagent.com

Invoice to: (1)
Company
Address
City State Zip 40299
Contact Dan Parker
Phone/Email 502-267-0101 office
502-445-0901 cell

ANALYSES REQUIRED

SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NUMBER OF CONTAINERS	COMMENTS	96h RBT LC50	48h D. magna LC50	RECEIPT TEMPERATURE (°C)
C.I. Agent	N/A		solid	P	1x2L		☐ WO #08146	☐ WO #08147	24°
						rec'd @ 0900L 7/14/08 JLT.			

PROJECT INFORMATION
CLIENT
P.O. NO.
SHIPPED VIA:

SAMPLE RECEIPT
TOTAL NO. OF CONTAINERS 1
REC'D GOOD CONDITION ✓
MATCHES TEST SCHEDULE ✓

SPECIAL INSTRUCTIONS/COMMENTS:
(1) JRE instruction
Conduct rangefinder test only

RELINQUISHED BY (CLIENT)
(Signature) (Time)
(Printed Name) Dan Parker (Date)
(Company) C.I. agent solutions

RECEIVED BY (COURIER)
(Signature) (Time)
(Printed Name) (Date)
(Company)

RELINQUISHED BY (COURIER)
(Signature) (Time)
(Printed Name) (Date)
(Company)

RECEIVED BY (LABORATORY)
(Signature) 0900L (Time)
(Printed Name) John Teahen July 14/08 (Date)
Nautilus Environmental Log-in No.

Additional costs may be required for sample disposal or storage. Net 30 unless otherwise contracted.

DISTRIBUTION: WHITE - Nautilus Environmental, COLOR - Originator

From: Andy Diewald [mailto:andreas@nautilusenvironmental.com]
Sent: Wednesday, August 13, 2008 4:18 PM
To: Dan Parker
Subject: Re: Final Report for sample C.I Agent (rangefinder test performed with rainbow trout and D. magna)

Hi Dan:

The type of test we performed for you were rainbow trout and daphnia magna tests (in accordance with Environment Canada protocols) which in your case, were rangefinder tests. With a rangefinder, a broad range of concentration is setup (5 concentrations plus 1 control) to determine if a definitive LC50 range is required. The end result is to observe survival/mortalities and to estimate what is called a LC50 (an estimated median lethal concentration upon which the sample is lethal to 50% of the test organisms).

So, with your sample we weighed out the CI Agent, the highest concentration was 50 g/L (50,000 parts per million) with a 10x reduction each time (i.e., 5 g, 0.5g etc) and added each individual concentration to respective test vessel containing control water, stirred and allowed to settle for several minutes. Water quality parameters were measured and the respective organism was added (10 per each concentration). Depending on the test type, the fish test ran for 96-h and the D. magna test went for 48-h.

The end result: for both the fish and daphnia tests, even at the highest test concentration, 50 g/L, you did not have any mortalities, therefore the LC50 is greater than the highest concentration tested (i.e., >50 g/L) as reported, which is a pretty large number in most scenarios.

Hopefully this information helps Dan, let me know if you require any other details.

andy

Andy Diewald, B.Sc.
Lab Supervisor
andreas@nautilusenvironmental.com