Work Order Number: 204601
Sample Number: 8088

Test Conditions

Test Organism	: *Lemna minor* L., Strain 7730	Media Preparation Water [b]	: Millipore Super Q™
Organism Origin	: UTCC 492	Control/Dilution Water [c]	: Modified APHA
Source	: In-house culture	Test Type	: Static
Organism Age (days)	: 7	Test Volume Per Replicate	: 100 mL
Test Culture Frond # Increase	: >8	Test Vessel	: 250 mL Erlenmeyer flask
Initial Plant Inoculum	: 6 fronds (2 plants)	Depth of Test Solution	: 4.0 cm
Acclimation Time (h)	: 19:50	# Test Concentrations	: 7
Medium Sterilization	: No	# Control Replicates	: 3
Sample pH Adjustment	: None	# Test Replicates	: 3
Sample Hardness Adjustment	: None	Test Duration	: 7 days
Preaeration(≤100 bubbles/min)	: 20 min	Test Temperature	: 25 ± 2°C
Sample Filtration (µm)	: 1 (Whatman GF/C)	Lighting	: 24 hrs. 4200 – 4800 lux

[b] Media Preparation Water: Water used to prepare the liquid growth medium (Modified APHA). Obtained from the University of Guelph. No chemicals added.

[c] Control/Dilution Water: Millipore Super Q™ enriched with 10 mL/L nutrient stock solutions A, B, and C as described in EPS 1/RM/37.

Test Protocol: Environment Canada. 1999. Biological Test Method: Test for Measuring the Inhibition of Growth using the Freshwater Macrophyte, Lemna minor. Method Development and Application Section. Environmental Technology Centre. Environment Canada. Ottawa, ON. EPS 1/RM/37.

Test Organisms: No unusual appearance or treatment of culture prior to testing. Test culture was axenic.

Comments

Test sample was enriched with 10 mL/L nutrient stock solutions A, B, and C as described in EPS 1/RM/37.
Test dilutions were prepared and then allowed to acclimate for one hour before plants were added.

Control plants showed the required minimum growth of >8 times.

There were no unusual conditions or deviations from the test protocol. The results reported relate only to the sample tested.

Work Order Number: 204601
Sample Number: 8088

Reference Toxicant Data

Substance	: Potassium Chloride
Test Date	: 2003-09-25
IC25 Frond Production (g/L)	: 2.61
Lower 95% Confidence Limit	: 1.48
Upper 95% Confidence Limit	: 3.63
Test Duration	: 7 days
Historical Mean IC25 (g/L)	: 2.29
Upper Warning Limit (+2SD)	: 3.61
Lower Warning Limit (-2 SD)	: 1.48
Statistical Method	: Linear Interpolation (Toxstat 3.5)[a]
Lemna minor Batch Number	: Lm03-09
Test Conducted By	: T.Patey/H.Roshon

Reference toxicant test was conducted under conditions identical to the test.
The first 4 reference toxicant tests were conducted using strain #8434, afterwhich they were conducted using strain #7730.

References

[a] West, Inc. and D. Gulley. 1996. Toxstat Release 3.5. Western Ecosystems Technology. Cheyenne, WY, U.S.A.

Date: 2003-10-07

Approved By: K. Holtze
Keith Holtze, Director, Laboratory Operations

7 Day *Lemna minor* Growth Inhibition Test

Work Order Number: 204601
Sample Number: 8088

Lemna Batch #: Lm03-09
Culture Age (days): 7
Culture Health Increase Factor (in APHA media): 13.2

Light Intensity: 4200-4800 lux
Sample Pre-aeration Time (min): 20
Sample Filtration (µm): 1

Acclimation of plants to APHA medium: Date: 2003-09-15 Time: 16:15
Start Date: 2003-09-16 Time: 12:05 Technician: H. Roshon/ T. Patey
Completion Date: 2003-09-23

Initial sample temperature: 25.0

Initial sample pH: 7.6

Daily Temperature			
Day	Date	Temp (°C)	Initials
0	2003-09-16	25.5	TP
1	2003-09-17	26.0	KO
2	2003-09-18	26.0	HR
3	2003-09-19	25.5	TP
4	2003-09-20	26.0	TP
5	2003-09-21	26.0	TP
6	2003-09-22	26.0	KO
7	2003-09-23	26.0	TP

pH		
Conc. (%)	Day 0	Day 7
Control	8.3	8.5
1.52	8.2	8.5
3.03	8.2	8.5
6.06	8.2	8.5
12.13	8.2	8.3
24.25	8.1	8.1
48.5	8.0	6.3
97.0	7.9	7.0

Frond Counts at Day 7

Technician: K.Olaveson/T.Patey/H.Roshon

Conc. (%)	Rep A				Rep B				Rep C			
	Plant		Frond		Plant		Frond		Plant		Frond	
	# Live	# Dead	# Live	# Dead	# Live	# Dead	# Live	# Dead	# Live	# Dead	# Live	# Dead
Control	15	0	84	0	14	0	73	0	17	0	90	0
1.52	17	0	101	0	12	0	72	0	12	0	85	0
3.03	16	0	87	0	15	0	91	0	20	0	103	0
6.06	16	0	95	0	15	0	87	0	14	0	99	0
12.13	9	0	69	0	9	0	76	0	10	0	95	0
24.25	4	0	68	1	7	0	75	0	5	0	78	0
48.5	2	0	53	0	3	0	60	3	2	0	53	0
97.0	2	0	40	3	3	0	42	1	2	0	43	0

Summary (includes initial plant and frond numbers)

Conc. (%)	Average				Standard Deviation				Observations
	Plant		Frond		Plant		Frond		Frond/root appearance
	# Live	# Dead	# Live	# Dead	# Live	# Dead	# Live	# Dead	
Control	15.3	0.0	82.3	0.0	1.5	0.0	8.6	0.0	fronds healthy, appearance normal
1.52	13.7	0.0	86.0	0.0	2.9	0.0	14.5	0.0	
3.03	17.0	0.0	93.7	0.0	2.6	0.0	8.3	0.0	
6.06	15.0	0.0	93.7	0.0	1.0	0.0	6.1	0.0	
12.13	9.3	0.0	80.0	0.0	0.6	0.0	13.5	0.0	
24.25	5.3	0.0	73.7	0.3	1.5	0.0	5.1	0.6	
48.5	2.3	0.0	55.3	1.0	0.6	0.0	4.0	1.7	large colonies
97.0	2.3	0.0	41.7	1.3	0.6	0.0	1.5	1.5	large colonies, some pale fronds

Notes: Debris observed at bottom of flask in all concentrations except controls.

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Test Data Reviewed By: HR
Date: 2003-10-05

7 Day *Lemna minor* Growth Inhibition Test

Work Order Number: 204601
Sample Number: 8088

Increase in Frond Numbers

Conc. (%)	Rep A	Rep B	Rep C	Average	Standard Deviation	%CV	% Inhibition
Control	78	67	84	76.3	8.6	11.3	0.0
1.52	95	66	79	80.0	14.5	18.2	-4.8
3.03	81	85	97	87.7	8.3	9.5	-14.8
6.06	89	81	93	87.7	6.1	7.0	-14.8
12.13	63	70	89	74.0	13.5	18.2	3.1
24.25	63	69	72	68.0	4.6	6.7	10.9
48.5	47	57	47	50.3	5.8	11.5	34.1
97.0	37	37	37	37.0	0.0	0.0	51.5

Increase in control frond count: 13.7 fold

Lemna minor Weights

Concentration	Replicate	Total Replicate Biomass (mg)	Mean Treatment Biomass (mg)	Standard Deviation	%CV	% Inhibition
Control	A	8.23	7.81	0.73	9.3	0.0
	B	6.97				
	C	8.24				
1.52	A	9.07	7.76	1.29	16.6	0.7
	B	6.50				
	C	7.70				
3.03	A	7.94	8.40	0.52	6.3	-7.5
	B	8.28				
	C	8.97				
6.06	A	8.86	8.17	0.96	11.8	-4.6
	B	7.07				
	C	8.58				
12.13	A	6.39	7.00	0.96	13.8	10.4
	B	6.50				
	C	8.11				
24.25	A	6.39	6.49	0.19	2.9	17.0
	B	6.70				
	C	6.37				
48.5	A	6.44	6.42	0.55	8.6	17.8
	B	6.96				
	C	5.86				
97.0	A	6.13	6.13	0.13	2.0	21.6
	B	6.00				
	C	6.25				

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Test Data Reviewed By: HR
Date: 2003-10-05

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Work Order : 204601
Sample Number : 8088

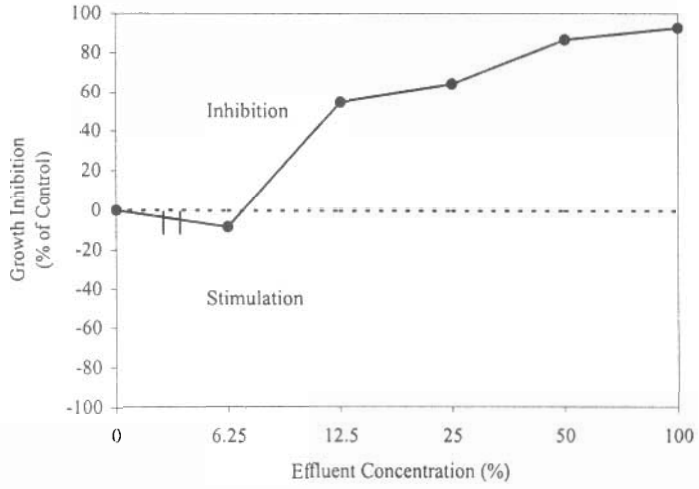
Sample Identification

Company :	Nanisivik Mine (a Division of CanZinco Ltd.)		
Location :	Nanisivik NU	Date Collected :	2003-09-13
Substance :	159-4	Time Collected :	13:00
Sampling Method :	grab	Date Received :	2003-09-16
Sampled By :	M. Markle	Time Received :	08:45
Shipped By:	First Air/Air + ATS/Rd	Date Tested :	2003-09-16
Temp. on arrival :	5.0°C	Lab Storage:	4±2 °C
Sample Description:	Clear, colourless, odourless.		

Test Results*

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Growth)	8.6%	7.8-9.0	Linear Interpolation (Toxstat 3.5) a

Selenastrum capricornutum Growth Inhibition



*Note: The test results have not been adjusted for the 0.9091 dilution factor (see 'Concentrations' section on page 2).

Work Order Number: 204601
Sample Number: 8088

Test Conditions

Test Organism	: *Selenastrum capricornutum*	Control/Dilution Water[c]	: Millipore Milli Q™
Batch Number	: Sel03-09	Test Type	: Static
Organism Origin	: UTCC37	Test Volume Per Replicate	: 220 µL
Source	: In-house culture	Test Vessel	: U-shaped polystyrene microplate
Organism Age (days)	: 4 (in exponential growth)	# Test Concentrations[d]	: 10 + control
Initial Algal Inoculum	: 9909 cells/mL	# Control Replicates	: 10
pH Adjustment	: None	# Test Replicates	: 3
Sample Filtration[b]	: 0.45 µm	Test Duration	: 72 hours
Hardness Adjustment	: None	Lighting	: 24 hrs. 4000±10% lux
Sample Aeration	: None		

[b] Sample Filtration: 5-10 ml sub-sample was filtered through a preconditioned 0.45 µm filter prior to dilution.

[c] Control/Dilution Water: No chemicals added.

[d] Number of Concentrations: A total of ten concentrations were prepared and inoculated with algae. A minimum of five concentrations were enumerated at test completion.

Concentrations: Concentrations are prepared by making up a series of dilutions such as: 0.195, 0.39, 0.78, 1.56, 3.13, 6.25, 12.5, 25, 50, and 100%. The actual concentrations are slightly diluted by the addition of 10 µL of enrichment medium and 10 µL of algal inoculum. Therefore, the concentrations for the above series are actually 0.18, 0.35, 0.71, 1.42, 2.85, 5.68, 11.36, 22.73, 45.45, and 90.91% (a multiplication factor of 0.9091%). This multiplication factor has not been applied to the results.

Test Organisms: No unusual appearance or treatment of culture prior to testing.

Test Protocol: Biological Test Method. Growth Inhibition Test Using the Freshwater Alga *Selenastrum capricornutum*. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS1/RM/25 (including November 1997 amendments).

Work Order Number: 204601
Sample Number: 8088

Comments

No inhibitory gradient was detected in the control group using the Mann-Kendall Trend test (α=0.05).

Negative cell yield indicates no growth. Prior to statistical analyses, any negative numbers for cell yield were replaced with zero values.

There were no unusual conditions or deviations from the test protocol. The results reported relate only to the sample tested.

Reference Toxicant Data

Substance	: Sodium Chloride
Test Date	: 2003-09-22
IC25 Growth (mg/L)	: 123.4
Lower 95% Confidence Limit	: 101.7
Upper 95% Confidence Limit	: 146.1
Test Duration	: 72 hours
Historical Mean IC25 (mg/L)	: 170.6
Upper Warning Limit (+2SD)	: 281.8
Lower Warning Limit (-2 SD)	: 104.5
Statistical Method	: Linear Interpolation (Toxstat 3.5)[a]
Selenastrum Batch Number	: Sel03-09
Test Conducted By	: H.Roshon/T.Patey

Reference toxicant test was conducted under conditions identical to the test.

References

[a] West, Inc. and D. Gulley. 1996. Toxstat Release 3.5. Western Ecosystems Technology. Cheyenne, WY, U.S.A.

Date: 2003-10-07

Approved By: K. Holtze
Keith Holtze, Director, Laboratory Operations

Selenastrum capricornutum Growth Inhibition

Work Order Number :	204601
Sample Number :	8088
Industry :	Nanisivik Mine (a Division of CanZinco Ltd.)
Start Date :	2003-09-16
Start Time :	13:45
Setup Technician :	H.Roshon/T.Patey
Completion Date :	2003-09-19
Takedown Technician :	H.Roshon/T.Patey
Technique :	Hemacytometer

***Selenastrum* Batch # :**	Sel03-09
Initial Cell Innoculum (cells/ml) :	0.9909 x10000
Control Cell Density Increase Factor :	128.102

Test Day	**0 (Start)**	**1**	**2**	**3 (End)**
Date	2003-09-16	2003-09-17	2003-09-18	2003-09-19
Temp. (°C)	24.0	24.0	24.0	24.0

72 Hour Cell Counts (x10 000)

Conc. (%)		1	2	3	4	5	6	7	8	9	10	Mean	St. Dev.	%CV
Control	*Count*	123.50	107.00	116.00	120.50	*	*	147.50	151.00	132.00	118.00	126.94	15.48	12.20
	Yield	122.51	106.01	115.01	119.51	*	*	146.51	150.01	131.01	117.01	125.95	15.48	12.29
0.195	*Count*	-	-	-								-	-	-
	Yield	-	-	-								-	-	-
0.39	*Count*	-	-	-								-	-	-
	Yield	-	-	-								-	-	-
0.78	*Count*	-	-	-								-	-	-
	Yield	-	-	-								-	-	-
1.56	*Count*	-	-	-								-	-	-
	Yield	-	-	-								-	-	-
3.13	*Count*	-	-	-								-	-	-
	Yield	-	-	-								-	-	-
6.25	*Count*	120.50	148.50	142.50								137.17	14.74	10.75
	Yield	119.51	147.51	141.51								136.18	14.74	10.83
12.5	*Count*	50.00	67.50	56.00								57.83	8.89	15.38
	Yield	49.01	66.51	55.01								56.84	8.89	15.64
25	*Count*	52.00	41.00	46.00								46.33	5.51	11.89
	Yield	51.01	40.01	45.01								45.34	5.51	12.15
50	*Count*	21.50	16.00	17.00								18.17	2.93	16.13
	Yield	20.51	15.01	16.01								17.18	2.93	17.06
100	*Count*	10.50	11.00	9.50								10.33	0.76	7.39
	Yield	9.51	10.01	8.51								9.34	0.76	8.18

"-" = not counted

*replicates 5 and 6 used for pH measurement

Sample pH at start of test	7.6
Initial Control pH	8.5
Final Control pH	9.0

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Test Data Reviewed By: HL
Date: 2003-10-05

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REPORT SUMMARY
ACUTE LETHALITY

Workorder No: 204601

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Murray Markle
Nanisivik Mine (a Division of CanZinco Ltd.)
P.O. Box 225
Nanisivik NU
X0A 0X0

RESULTS

Substance	Date Collected	Date Tested	Species / Test	% Mortality at 100% Effluent Concentration
159-4	2003-09-13	2003-09-16	Dm Single Concentration	100
	2003-09-13	2003-09-16	RBT Single Concentration	0

RBT = rainbow trout
Dm = *Daphnia magna*

Test Protocols

Environment Canada.1990. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Environment Canada, Conservation and Protection. Ottawa, Ontario. Reference Method EPS1/RM14 (including Dec.2000 amendments).

Environment Canada.1990. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout. Environment Canada, Conservation and Protection. Ottawa,Ontario. Reference Method EPS1/RM/13 (including Dec.2000 amendments).

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TOXICITY TEST REPORT
Daphnia magna

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Work Order : 204601
Sample Number : 8088

SAMPLE IDENTIFICATION

Company :	Nanisivik Mine (a Division of CanZinco Ltd.)	Time Collected :	13:00
Location :	Nanisivik NU	Date Collected :	2003-09-13
Substance :	159-4	Date Received :	2003-09-16
Sampling Method :	grab	Date Tested :	2003-09-16
Sampled By :	M. Markle	Temp. on arrival :	18.0°C
Sample Description:	Clear, colourless, odourless.		

Test Method : *Daphnia magna* Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments)

TEST RESULTS

**** 100 % mortality at 100% effluent concentration. ****

The results reported relate only to the sample tested.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Daphnia Batch # :	Dm03-18		
Date Tested (y/m/d) :	2003-09-15	Historical Mean LC50 :	5.9 g/L
LC50 (95% Confidence Limits) :	6.1 g/L (5.2 - 7.2)	Warning Limits (± 2SD) :	5.5 - 6.4 g/L
Statistical Method :	Non-linear Interpolation	Technician(s) Performing Test :	J. Pickett

Daphnia magna CULTURE HEALTH DATA

Time to First Brood (days) :	7.4	Avg. # Young Per Brood :	40.6
Culture Mortality (prev. 7 d) (%):	0.6		

TEST CONDITIONS

Sample Treatment :	None	# Replicates :	3
pH Adjustment :	None	# Animals / Replicate :	10
Test Aeration :	None	Total # Animals / Test Level :	30
Daphnia Batch # :	Dm03-18	*Daphnia* Loading Rate :	15.0 mL/organism

Date: 2003-10-07

Approved by: K Holtze
Keith Holtze, Director Laboratory Operations

Daphnia magna TOXICITY TEST REPORT

Work Order: 204601
Sample Number: 8088

	Temp. (°C)	pH	D.O. (mg/L)	O_2 Sat. (%)*	Cond. (µs/cm)	Hardness (mg/L as $CaCO_3$)	Hardness Adjustment	Total Pre-Aeration Time (h) @ 30 mL/min/L
Initial Water Chemistry:	20.5	7.7	9.7	112	2732	>1000	None	0:30

0 hours

Date & Time 2003-09-16 11:10
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*	Hardness
100A	0	0	7.7	9.1	2729	20.5	105	>1000
100B	0	0	7.7	9.1	2729	20.5		
100C	0	0	7.7	9.1	2729	20.5		
Control A	0	0	8.5	8.9	394	19.5		
Control B	0	0	8.5	8.9	394	19.5		
Control C	0	0	8.5	8.9	394	19.5	101	200

Notes:

24 hours

Date & Time 2003-09-17 11:10
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100A	0	8	–	–	–	21.0
100B	0	10	–	–	–	21.0
100C	0	8	–	–	–	21.0
Control A	0	0	–	–	–	21.0
Control B	0	0	–	–	–	21.0
Control C	0	0	–	–	–	21.0

Notes:

48 hours

Date & Time 2003-09-18 11:10
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100A	10	0	7.8	8.4	2741	21.0
100B	10	0	7.9	8.5	2753	21.0
100C	10	0	7.8	8.4	2716	21.0
Control A	0	0	8.6	8.6	403	21.0
Control B	0	0	8.6	8.7	398	21.0
Control C	0	0	8.5	8.6	398	21.0

Notes:

# of control organisms showing stress: 0
Daphnia Batch #: Dm03-18

Number immobile does not include number of mortalities.

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– = not measured
* adjusted for actual temp. & barometric pressure

Test Data Reviewed By: JL
Date: 2003-09-22

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TOXICITY TEST REPORT
Rainbow Trout

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Work Order : 204601
Sample Number : 8088

SAMPLE IDENTIFICATION

Company :	Nanisivik Mine (a Division of CanZinco Ltd.)	Time Collected :	13:00
Location :	Nanisivik NU	Date Collected :	2003-09-13
Substance :	159-4	Date Received :	2003-09-16
Sampling Method :	grab	Date Tested :	2003-09-16
Sampled By :	M. Markle	Temp. on arrival :	18.0°C
Sample Description :	Clear, colourless, odourless.		
Test Method :	Acute Lethality of Liquid Effluents to Fish EPS 1/RM/13, Environment Canada, 1990 (including December, 2000 amendments).		

TEST RESULTS

**** 0 % mortality at 100% effluent concentration. ****
The results reported relate only to the sample tested.

PHENOL REFERENCE TOXICANT DATA

Trout Batch # :	T03-09		
Date Tested (y/m/d) :	2003-09-06	Historical Mean LC50 :	10.1 mg/L
LC50 (95% Confidence Limits) :	11.2 mg/L (10.0 - 12.5)	Warning Limits (± 2SD) :	8.0 - 12.8 mg/L
Statistical Method :	Non-linear Interpolation	Technician(s) Performing Test :	T. Boudreau

TEST FISH

Control Fish Sample Size :	10	Cumulative prev. 7d stock tank mortality:	0.2 %
Mean Fish Weight (g) (± 2 SD) :	0.49 (± 0.29)	Mean Fish Fork Length (mm) (± 2 SD) :	37.7 (± 6.9)
Range of Weights (g) :	0.26 - 0.75	Range of Fork Lengths (mm) :	32 - 44
Fish Loading Rate (g/L) :	0.24		

TEST CONDITIONS

Sample Treatment :	None	Volume Tested (L) :	20
pH Adjustment :	None	# Replicates :	1
Test Aeration :	Yes	# Animals Per Replicate :	10
Aeration Rate (mL/min/L) :	6.5 ± 1	Total # Animals Per Test Level :	10
Trout Batch # :	T03-09		

Date: 2003-10-07

Approved by: K Holtze
Keith Holtze, Director, Laboratory Operations

RAINBOW TROUT TOXICITY TEST REPORT

Work Order: 204601
Sample Number: 8088

	Temp. (°C)	pH	D.O. (mg/L)	O_2 Sat. (%)*	Cond. (umhos)	Total Pre-Aeration Time(h) @ 6.5 mL/min/L
Initial Water Chemistry:	14.5	7.6	9.3	–	2741	
Chemistry after 30min air:	15.0	7.7	9.6	100	2742	0:30

0 hours

Date & Time 2003-09-16 12:30
Technician: TB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*
100	0	0	7.7	9.6	2742	15.0	100
Control	0	0	8.4	9.2	534	16.0	97

Notes:

24 hours

Date & Time 2003-09-17 12:30
Technician: TB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	16.0
Control	0	0	–	–	–	16.0

Notes:

48 hours

Date & Time 2003-09-18 12:30
Technician: TB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	15.5
Control	0	0	–	–	–	15.5

Notes:

72 hours

Date & Time 2003-09-19 12:30
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	15.5
Control	0	0	–	–	–	15.5

Notes:

96 hours

Date & Time 2003-09-20 12:30
Technician: JL

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	7.3	8.4	2712	15.0
Control	0	0	8.3	9.6	486	15.0

Stantec

Notes:

# of control organisms showing stress 0
Trout Batch #: T03-09

"–" = not measured
Number immobile does not include number of mortalities.
* adjusted for actual temp. & barometric pressure

Test Data Reviewed By: JL
Date: 2003-09-23

Appendix D-2
Effluent Characterization

Date (YYYY-MM-DD)	Final Dishcharge Point (Name)	Latitude	Longitude	Grab or Composite? (G or C)	Hardness	Alkalinity	Aluminum	Cadmium	Iron	Mercury	Molybdenum	Ammonia	Nitrate	Comments
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
2003-07-12	159-4	73° 01' 29.4" N	84° 28' 32.8" W	G	363	22	0.02	0.0002	0.22	< 0.0001	0.011	0.69	1.16	
2003-08-09	159-4	73° 01' 29.4" N	84° 28' 32.8" W	G	1210	*	0.03	0.0006	0.1	< 0.0001	0.045	2.13	0.03	* Akalinity Analyses not available due to addition of preservative
2003-08-09	159-4A	73° 01' 32.3" N	84° 28' 33.5" W	C	317	*	0.3	0.0003	0.32	< 0.0001	0.009	0.51	0.3	* Akalinity Analyses not available due to addition of preservative
2003-08-09	159-4B	73° 01' 33.2" N	84° 28' 20.9" W	G	55	*	0.16	0.0002	0.11	< 0.0001	< 0.005	< 0.02	0.16	* Akalinity Analyses not available due to addition of preservative
2003-09-10	159-4	73° 01' 29.4" N	84° 28' 32.8" W	G	1580	46	0.12	0.0007	0.4	< 0.0001	0.045	2.83	6.55	
2003-09-10	159-4A	73° 01' 32.3" N	84° 28' 33.5" W	C	727	32	0.38	0.0003	0.52	< 0.0001	0.016	1.16	2.45	
2003-09-10	159-4B	73° 01' 33.2" N	84° 28' 20.9" W	G	38	30	0.11	0.0001	0.12	< 0.0001	< 0.005	< 0.02	0.11	

Appendix D-2
Water Quality Monitoring

Date (YYYY-MM-DD)	Exposure/Reference Area (Name)	Exposure or Reference? (E or R)	Latitude	Longitude	Hardness	Alkalinity	Aluminum	Cadmium	Iron	Mercury	Molybdenum	Ammonia	Nitrate	pH	Arsenic
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L
12-Jul	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	363	22	0.020	0.0002	0.22	< 0.0001	0.011	0.69	1.16	6.60	
09-Aug	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	1210		0.030	0.0006	0.10	< 0.0001	0.045	2.13	0.03	7.58	0.001
09-Aug	159-4A	E	73° 01' 32.3" N	84° 28' 33.5" W	317		0.300	0.0003	0.32	< 0.0001	0.009	0.51	0.30	7.60	< 0.001
09-Aug	159-4B	R	73° 01' 33.2" N	84° 28' 20.9" W	55		0.160	0.0002	0.11	< 0.0001	< 0.005	< 0.02	0.16	7.95	< 0.001
10-Sep	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	1580	46	0.120	0.0007	0.40	< 0.0001	0.045	2.83	6.55	7.24	0.002
10-Sep	159-4A	E	73° 01' 32.3" N	84° 28' 33.5" W	727	32	0.380	0.0003	0.52	< 0.0001	0.016	1.16	2.45	7.30	0.001
10-Sep	159-4B	R	73° 01' 33.2" N	84° 28' 20.9" W	38	30	0.110	0.0001	0.12	< 0.0001	< 0.005	< 0.02	0.11	6.90	< 0.001

Date (YYYY-MM-DD)	Exposure/Reference Area (Name)	Exposure or Reference? (E or R)	Latitude	Longitude	Copper	Cyanide	Lead	Nickel	Zinc	Radium 226 (Bq/L)	TSS	Temperature	Dissolved Oxygen	Comments
					mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	°C	mg/L	
12-Jul	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W			0.004		0.007		2.0	14.1		
09-Aug	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	0.053		0.014	0.008	0.219	0.04	2.4	6.3		
09-Aug	159-4A	E	73° 01' 32.3" N	84° 28' 33.5" W	0.015		0.005	0.002	0.072	< 0.01	30.0	5.9	9.05	
09-Aug	159-4B	R	73° 01' 33.2" N	84° 28' 20.9" W	0.001		0.001	< 0.001	0.011	< 0.01	15.2	4.8	9.32	
10-Sep	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	0.069		0.021	0.009	0.210	0.09	6.4	3.6		
10-Sep	159-4A	E	73° 01' 32.3" N	84° 28' 33.5" W	0.019		0.007	< 0.005	0.080	0.04	20.2	4.1	9.81	
10-Sep	159-4B	R	73° 01' 33.2" N	84° 28' 20.9" W	< 0.001		0.003	< 0.005	0.010	< 0.01	8.8	4.1	9.06	

Appendix D-2
Sublethal Toxicity Testing

Date (YYYY-MM-DD)	Final Dishcharge Point (Name)	Latitude	Longitude	Grab or Composite? (G or C)	Species Tested (Latin name)	Test Type (Growth, Reproduction, Survival)	LC50	LC50 Lower	LC50 Upper	EC25 or IC25	EC25 or IC25 Lower	EC25 or IC25 Upper	Comments
09-Aug-04	159-4	73-01-29 N	84-28-33 W	G	Pimephales promelas	Growth				> 100			4 day holding time. Power Failure on Aug 14th adding 5 hours of darkness
09-Aug-04	159-4	73-01-29 N	84-28-33 W	G	Pimephales promelas	Survival	> 100						4 day holding time. Power Failure on Aug 14th adding 5 hours of darkness
09-Aug-04	159-4	73-01-29 N	84-28-33 W	G	Ceriodaphnia dubia	Survival	57.6	40.5	94.6				4 day holding time. Power Failure on Aug 14th adding 5 hours of darkness
09-Aug-04	159-4	73-01-29 N	84-28-33 W	G	Ceriodaphnia dubia	Reproduction				9.3	7.4	11.5	4 day holding time. Power Failure on Aug 14th adding 5 hours of darkness
09-Aug-04	159-4	73-01-29 N	84-28-33 W	G	Lemna Minor	Growth (Weight)				> 97			4 day holding time. Power Failure on Aug 14th adding 5 hours of darkness
09-Aug-04	159-4	73-01-29 N	84-28-33 W	G	Lemna Minor	Growth (Frond Production)				> 97			4 day holding time. Power Failure on Aug 14th adding 5 hours of darkness
09-Aug-04	159-4	73-01-29 N	84-28-33 W	G	Selenstrum Capricornutum	Growth				10.4	9.4	10.8	4 day holding time. Power Failure on Aug 14th adding 5 hours of darkness. No inhibitory gradient detected in control grp using MK trend test. Negative cell yield indicates no growth. Prior to statistical analyses, neg #' for cell yield were replaced with zeros
13-Sep-03	159-4	73-01-29 N	84-28-33 W	G	Pimephales promelas	Growth				> 100			Test conducted using three subsamples from a single sampling.
13-Sep-03	159-4	73-01-29 N	84-28-33 W	G	Pimephales promelas	Survival	> 100						Test conducted using three subsamples from a single sampling.
13-Sep-03	159-4	73-01-29 N	84-28-33 W	G	Ceriodaphnia dubia	Survival	30.8	20.2	50.3				Test conducted using three subsamples from a single sampling.
13-Sep-03	159-4	73-01-29 N	84-28-33 W	G	Ceriodaphnia dubia	Reproduction				8.7	6.7	10.5	Test conducted using three subsamples from a single sampling.
13-Sep-03	159-4	73-01-29 N	84-28-33 W	G	Lemna Minor	Growth (Weight)				> 97			Test sample enriched with 10 ml/l nutrient stock solutions A, B and C as described in EPS 1/RM/37. Test dilutions were prepared and then allowed to acclimate for one hour before plants were added. Control plants showed the required minimum growth of >8 times.
13-Sep-03	159-4	73-01-29 N	84-28-33 W	G	Lemna Minor	Growth (Frond Production)				37	20.4	54.3	Test sample enriched with 10 ml/l nutrient stock solutions A, B and C as described in EPS 1/RM/37. Test dilutions were prepared and then allowed to acclimate for one hour before plants were added. Control plants showed the required minimum growth of >8 times.
13-Sep-03	159-4	73-01-29 N	84-28-33 W	G	Selenstrum Capricornutum	Growth				8.6	7.8	9	No inhibitory gradient detected in control grp using MK trend test. Negative cell yield indicates no growth. Prior to statistical analyses, neg #' for cell yield were replaced with zeros

Appendix D-3
2003 MMER Report - Information

INFORMATION TO BE INCLUDED IN ANNUAL REPORT SUMMARY

The following information is to be submitted for each final discharge point.

Mine Name :	Nanisivik
Mine Operator :	CanZinco Ltd.
Address :	PO Box 225
	Nanisivik NU
	X0A 0X0
Telephone :	867-436-7376
E-mail :	mmarkle@nu.breakwater.ca
Location of Final Discharge point :	159-4
Reporting Period :	2003
Date of Report :	31/03/2004

Appendix D-3
2003 MMER Report - Table 1

TABLE 1

MONTHLY MEAN CONCENTRATIONS, pH RANGE AND VOLUME OF EFFLUENT (1)(2)

Month	As (mg/L)	Cu (mg/L)	CN (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TSS (mg/L)	Ra (Bq/L)	pH range	Effluent Volume (m3)
Jan.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND
Feb.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND
Mar.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND
Apr.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND
May	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND
June	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND
July	0.0010	0.0250	NMR	0.0080	<0.005	0.0540	3.3000	0.0470	6.3 -8.0	154812.00
Aug.	0.0020	0.0630	NMR	0.0160	0.0080	0.1820	5.1000	0.1000	7.2-7.9	154656.00
Sept.	0.0020	0.0850	NMR	0.0190	0.0130	0.2580	2.5000	0.0900	6.4-7.7	63660.00
Oct.	0.0030	0.1050	NMR	0.0230	0.0160	0.3230	1.7500	0.1020	6.4-6.6	2678.00
Nov.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND
Dec.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND

(1) Any measurement not taken because there was no deposit from the final discharge point shall be identified by the letters "ND" - (No Deposit)

(2) Any measurement not taken because no measurement was required in accordance with the conditions set out in section 13 of the Regulations shall be identified by the letters "NMR" - (No Measurement Required).

TABLE 2

RESULTS OF ACUTE LETHALITY TESTS AND *DAPHNIA MAGNA* MONITORING TESTS

Date Sample Collected	Effluent Acutely Lethal to Rainbow Trout (yes or no)	Effluent Acutely Lethal to *Daphnia magna* (yes or no)
09/08/2003	No	Yes
13/09/2003	No	Yes

Non-compliance Information

If effluent was non-compliant with the aurthorized limits set out in Schedule4, indicate the cause(s) of non-compliance and remedial measures planned or implemented. Also indicate remedial meaures planned or implemented in response to the failure of acute lethality tests.