Appendix C

Effluent Characterization and Water Quality Monitoring

Appendix C
Effluent Characterization

Date	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	
24-Jul	159-4	73° 01' 29.4" N	84° 28' 32.8" W	G	767	26	< 0.010	0.0004		< 0.0001	0.014	1.38	0.88	
24-Jul	159-4A	73° 01' 32.3" N	84° 28' 33.5" W	C	56	12	0.340	< 0.0001		< 0.0001	< 0.005	0.04	< 0.01	
24-Jul	159-4B	73° 01' 33.2" N	84° 28' 20.9" W	G	13	13	0.190	< 0.0001		< 0.0001	< 0.005	< 0.12	< 0.01	
18-Sep	159-4	73° 01' 29.4" N	84° 28' 32.8" W	G	1240	46	0.160	< 0.0001	0.05	< 0.0001	< 0.0001	2.84	0.98	
18-Sep	159-4A	73° 01' 32.3" N	84° 28' 33.5" W	C	1220	48	0.120	0.0002	0.07	< 0.0001	0.310	1.39	0.95	
18-Sep	159-4B	73° 01' 33.2" N	84° 28' 20.9" W	G	69	31	0.380	< 0.0001	0.21	< 0.0001	< 0.005	< 0.11	< 0.10	

Appendix C
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
24-Jul	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	767	26	< 0.010	0.0004		< 0.0001	0.014	1.38	0.88	7.65	0.001
24-Jul	159-4A	E	73° 01' 32.3" N	84° 28' 33.5" W	56	12	0.340	< 0.0001		< 0.0001	< 0.005	0.04	< 0.01	8.07	< 0.001
24-Jul	159-4B	R	73° 01' 33.2" N	84° 28' 20.9" W	13	13	0.190	< 0.0001		< 0.0001	< 0.005	< 0.12	< 0.01	8.29	< 0.001
18-Sep	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	1240	46	0.160	< 0.0001	0.05	< 0.0001	< 0.0001	2.84	0.98	9.20	0.002
18-Sep	159-4A	E	73° 01' 32.3" N	84° 28' 33.5" W	1220	48	0.120	0.0002	0.07	< 0.0001	0.310	1.39	0.95	9.03	0.001
18-Sep	159-4B	R	73° 01' 33.2" N	84° 28' 20.9" W	69	31	0.380	< 0.0001	0.21	< 0.0001	< 0.005	< 0.11	< 0.10	9.00	< 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	
24-Jul	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	0.011		0.009	0.01	0.290	0.02	0.4	8.8	9.8	
24-Jul	159-4A	E	73° 01' 32.3" N	84° 28' 33.5" W	0.002		0.001	< 0.005	0.030	< 0.01	3.0	9.9	8.99	
24-Jul	159-4B	R	73° 01' 33.2" N	84° 28' 20.9" W	< 0.001		< 0.001	< 0.005	< 0.010	< 0.01	2.8	7.2	9.08	
18-Sep	159-4	E	73° 01' 29.4" N	84° 28' 32.8" W	0.026		< 0.001	0.016	0.090	0.06	0.8	0.1	9.4	
18-Sep	159-4A	E	73° 01' 32.3" N	84° 28' 33.5" W	0.024		< 0.001	0.015	0.080	0.06	0.4	0.3	9.05	
18-Sep	159-4B	R	73° 01' 33.2" N	84° 28' 20.9" W	0.001		< 0.001	< 0.005	< 0.010	< 0.01	4.8	1.3	9.21	

Appendix C
2004 MMER Report

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 :	2004
Date of Report :	31/03/2004

Appendix C
2004 MMER Report

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)
									Low	High	
Jan.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND	ND
Feb.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND	ND
Apr.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND	ND
May	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND	ND
June	<.001	0.0220	NMR	0.0210	0.0150	0.4940	0.8300	<.01	7.46	8.01	66057
July	0.0012	0.0150	NMR	0.0160	0.0116	0.3300	0.6000	0.0300	7.52	8.14	187006
Aug.	0.0010	0.0160	NMR	0.0140	0.0100	0.2900	1.1500	0.0250	7.69	7.93	51283
Sept.	0.0020	0.0310	NMR	0.0010	0.0173	0.2700	1.1000	0.0500	8.13	9.54	245535
Oct.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND	ND
Nov.	ND	ND	NMR	ND	ND	ND	ND	ND	ND	ND	ND
Dec.	ND	ND	NMR	ND	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 TEST 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)
24-Jul-04	No	Yes
19-Sep-04	No	Yes

Non-compliance Information

If effluent was non-compliant with the aurthorized limits set out in Schedule 4, 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.

Appendix D

D-1 Sublethal Toxicity Report Summary

D-2 Acute Lethality and Sublethal Toxicity Reports

Appendix D-1
Sublethal Toxicity Testing Summary

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
24-Jul-04	159-4	73-01-29 N	84-28-33 W	G	Pimephales promelas	Growth				> 100			
24-Jul-04	159-4	73-01-29 N	84-28-33 W	G	Pimephales promelas	Survival	> 100						
24-Jul-04	159-4	73-01-29 N	84-28-33 W	G	Ceriodaphnia dubia	Survival	> 100						
24-Jul-04	159-4	73-01-29 N	84-28-33 W	G	Ceriodaphnia dubia	Reproduction				57.7	38.7	65.8	
24-Jul-04	159-4	73-01-29 N	84-28-33 W	G	Lemna Minor	Growth (Weight)				59.9	23	78.7	
24-Jul-04	159-4	73-01-29 N	84-28-33 W	G	Lemna Minor	Growth (Frond Production)				15.6	0.4	81.8	
24-Jul-04	159-4	73-01-29 N	84-28-33 W	G	Selenstrum Capricornutum	Growth				3.9	2.3	6.6	
19-Sep-04	159-4	73-01-29 N	84-28-33 W	G	Pimephales promelas	Growth				> 100			
19-Sep-04	159-4	73-01-29 N	84-28-33 W	G	Pimephales promelas	Survival	> 100						
19-Sep-04	159-4	73-01-29 N	84-28-33 W	G	Ceriodaphnia dubia	Survival	*						A statistically valid LC50 could not be determined by Non-Linear Interpolation based on the mortality response in the effluent. Probit analysis yielded an LC50 result of 80.4%with unreasonable 95% confidence limits.
19-Sep-04	159-4	73-01-29 N	84-28-33 W	G	Ceriodaphnia dubia	Reproduction				21.8	8.7	28.5	
19-Sep-04	159-4	73-01-29 N	84-28-33 W	G	Lemna Minor	Growth (Weight)				> 97			
19-Sep-04	159-4	73-01-29 N	84-28-33 W	G	Lemna Minor	Growth (Frond Production)				48.1	30.6	85.2	
19-Sep-04	159-4	73-01-29 N	84-28-33 W	G	Selenstrum Capricornutum	Growth				16.3	15.1	16.5	

Stantec Consulting Ltd.
11B Nicholas Beaver Road RR
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stantec.com

REPORT SUMMARY
ACUTE LETHALITY

Workorder No: 205735

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	2004-07-24	2004-07-27	Dm Single Concentration	80
	2004-07-24	2004-07-27	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).

Stantec Consulting Ltd.
(18 Nicholas Beaver Road
Guelph ON N1H 6H9
Tel (5 3) 763-4413 Fax (5
stantec.com

TOXICITY TEST REPORT
Daphnia magna

Work Order : 205735
Sample Number : 9946

SAMPLE IDENTIFICATION

Company :	Nanisivik Mine (a Division of CanZinco Ltd.)	Time Collected :	11:30
Location :	Nanisivik NU	Date Collected :	2004-07-24
Substance :	159-4	Date Received :	2004-07-27
Sampling Method :	Grab	Date Tested :	2004-07-27
Sampled By :	M. Markle	Temp. on arrival :	18.5° C
Sample Description:	Clear, yellow, odourless.		

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

TEST RESULTS

**** 80 % mortality at 100% effluent concentration. ****

The results reported relate only to the sample tested.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Daphnia Batch # :	Dm04-14		
Date Tested (y/m/d) :	2004-07-19	Historical Mean LC50 :	5.7 g/L
LC50 (95% Confidence Limits) :	5.2 g/L (4.0 - 6.3)	Warning Limits (+ 2SD) :	4.3 - 7.6 g/L
Statistical Method :	Non-linear Interpolation	Analyst(s):	J. Pickett

Daphnia magna CULTURE HEALTH DATA

Time to First Brood (days) :	8.2	Avg. # Young Per Brood :	40.2
Culture Mortality (prev. 7 d) (%):	3.0		

TEST CONDITIONS

Sample Treatment :	None	# Replicates :	3
pH Adjustment :	None	# Animals / Replicate :	10
Test Aeration :	None	Total # Animals / Test Level :	30
Daphnia Batch #	Dm04-14	*Daphnia* Loading Rate :	15.0 mL/organism

Date: 2004-09-16

Approved by: _____
Keith Holtze, Director, Laboratory Operations

Certified by the Canadian Association of Environmental Analytical Laboratories (CAEAL)
Accredited by Standards Council of Canada (SCC)

Daphnia magna TOXICITY TEST REPORT

Work Order: 205735
Sample Number: 9946

	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:	19.5	7.6	9.8	110	1526	690	None	0:30

0 hours

Date & Time: 2004-07-27 10:25
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*	Hardness
100A	0	0	7.5	9.2	1526	20.0	105	690
100B	0	0	7.5	9.2	1526	20.0		
100C	0	0	7.5	9.2	1526	20.0		
Control A	0	0	8.6	8.5	395	21.5		
Control B	0	0	8.6	8.5	395	21.5		
Control C				8.5	395	[illegible]	100	180

Notes

24 hours

Date & Time: 2004-07-28 10:25
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100A	0				–	21.0
100B	0				-	21.0
100C	0	4				21.0
Control A	0	0			-	21.0
Control B	0	0				21.0
Control C						21.0

Notes

48 hours

Date & Time: 2004-07-29 10:25
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100A	6	4	7.4	8.3	1517	21.0
100B	9	1	7.4	8.3	1525	21.0
100C	9	1	7.4	8.3	1511	21.0
Control A	0	0	8.5	8.6	400	21.0
Control B	0	0	8.5	8.7	398	21.0
Control C	-	-	8.5	8.6	399	21.0

Notes:

* = of control organisms showing stress
Daphnia Batch #: Dm04-14

Number immobile does not include number of mortalities

- = not measured
adjusted for actual temp. & barometric pressure

Test Data Reviewed By: [illegible]
Date: 2004-08-04

Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
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stantec.com

Work Order : 205735
Sample Number : 9946

SAMPLE IDENTIFICATION

Company :	Nanisivik Mine (a Division of CanZinco Ltd.)	Time Collected :	11:30
Location :	Nanisivik NU	Date Collected :	2004-07-24
Substance :	159-4	Date Received :	2004-07-27
Sampling Method :	Grab	Date Tested :	2004-07-27
Sampled By :	M. Markle	Temp. on arrival :	18.5°C
Sample Description :	Clear, yellow, 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 # :	T04-09		
Date Tested (y/m/d) :	2004-07-23	Historical Mean LC50 :	10.5 mg/L
LC50 (95% Confidence Limits) :	10.5 mg/L (7.5 - 12.5)	Warning Limits (± 2SD) .	8.5 - 12.9 mg/L
Statistical Method :	Non-linear Interpolation	Analyst(s) :	JG/TB/AK

TEST FISH

Control Fish Sample Size :	10	Cumulative prev. 7d stock tank mortality:	0 %
Mean Fish Weight (g) (± 2 SD) :	0.53 (± 0.27)	Mean Fish Fork Length (mm) (± 2 SD) :	38.2 (± 5.2)
Range of Weights (g) :	0.34 - 0.78	Range of Fork Lengths (mm) :	35 - 43
Fish Loading Rate (g/L) :	0.26		

TEST CONDITIONS

Sample Treatment :	None	Volume Tested (L) :	20
pH Adjustment :	None	# Replicates	
Test Aeration :	Yes	# Animals Per Replicate :	10
Aeration Rate (mL/min/L) :	6.5 ± 1	Total # Animals Per Test Level :	10
Trout Batch # :	T04-09		

Date: 2004-09-16

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

Work Order: 205735
Sample Number 9946

	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:	14.0	7.5	9.7	–	1515	
Chemistry after 30min air:	14.0	7.5	9.7	100	1515	

0 hours

Date & Time 2004-07-27
Technician: AK

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*
100	0	0	7.5	9.7	1515	14.0	100
Control			8.2	9.8	564	14.0	101

Notes

24 hours

Date & Time 2004-07-28 13:30
Technician: AK

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	15.0
Control						15.0

Notes:

48 hours

Date & Time 2004-07-29 13:30
Technician: TB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	14.5
Control						14.5

Notes:

72 hours

Date & Time 2004-07-30 13:30
Technician: DR

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	14.5
Control						14.5

Notes:

96 hours

Date & Time 2004-07-31 13:30
Technician: AK

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	7.1	8.8	1498	15.0
Control		0	8.3	8.4	549	15.0

Notes:

# of control organisms showing stress 0
Trout Batch #: T04-09

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

Test Data Reviewed By: DC
Date: 2004-08-03

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[illegible] Nicholas Beaver Road RR
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Tel: (519) [illegible] Fax: (519)
stantec.com

Work Order : 205735
Sample Number : 9946

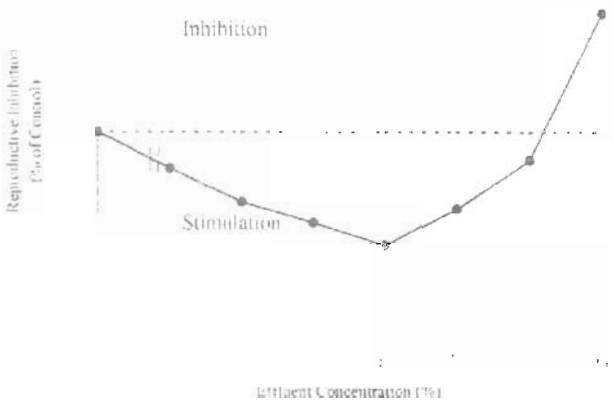
Sample Identification

Company	Nanisivik Mine (a Division of CanZinco Ltd.)		
Location :	Nanisivik NT	Date Collected :	2004-07-24
Substance :	159-4	Time Collected :	11:30
Sampling Method :	Grab	Date Received :	2004-07-27
Sampled By :	M. Markle	Time Received :	08:00
Shipped By:	First Air/Air + ATS/Rd	Date Tested :	2004-07-27
Temp. on arrival :	10.5°C	Lab Storage:	4±2 °C
Sample Description	Clear, yellow, odourless.		

Test Results

Effect	Value	95% Confidence Limits	Statistical Method
LC50 (Survival)	>100%	.	.
IC25 (Reproduction)	57.7%	38.7-65.8	Linear Interpolation (Toxstat 3.5) b

Ceriodaphnia dubia Reproductive Inhibition



Work Order Number: 205735
Sample Number: 9916

Test Conditions

Test Organism	*Ceriodaphnia dubia*	Control/Dilution Water[c]	:	Undiluted Well Water
Source	Stantec stock	Test Type	:	Static renewal
Life Stage	Neonate (<24 h)	Test Volume Per Replicate	:	15 mL
Mean Young Produced (previous 7 days)	≥15.0	Test Vessel	:	15 mL polystyrene vial
# Young in Previous Brood	≥6.0	Depth of test solution	:	4.5 cm
pH Adjustment	None	# Replicates	:	10
Sample Filtration	None	# Organisms per Replicate	:	1
Hardness Adjustment	None	Renewal Method[d]		transfer
Test Aeration	None	Renewal Period	:	24 h intervals
Photoperiod (h) light/dark	16/8	Feeding Rate	:	0.2 mL YCT and algae
		Feeding Frequency	:	once daily

Control/Dilution Water: Well water with trace NaCl (29.6 mg/L).

Renewal Method: Three subsamples were used for testing. Subsample 1 was used for day 0, 1 and 2 renewals, subsample 2 was used for day 3 and 4 renewals, and subsample 3 was used for the day 5 and 6 renewals. Organisms were transferred to new solution daily using a wide bore pipet.

Test Protocol: Biological Test Method: Test of Reproduction and Survival using the Cladoceran *Ceriodaphnia dubia*. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/21 (including November 1997 amendments)

Test Organisms: No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test. No ephippia were present in cultures. All organisms were within 12 hours of the same age. Test neonates were obtained from single broods from culture organisms. All test organisms were from the same culture.

Comments

Test conducted using three subsamples from a single sampling. There were no unusual conditions or deviations from the test protocol. The results reported relate only to the sample tested.

Work Order Number: 205735
Sample Number: 9946

Reference Toxicant Data

Substance	Sodium Chloride
Test Date	2004-07-13
IC25 Reproduction (g/L)	1.50
Lower 95% Confidence Limit	1.40
Upper 95% Confidence Limit	1.53
Test Duration	7 days
Historical Mean IC25 (g/L)	1.17
Upper Warning Limit (+2SD)	1.87
Lower Warning Limit (-2 SD)	0.75
Statistical Method	Linear Interpolation (Toxstat 3.5)[b]
Ceriodaphnia Batch Number	Cd04-07
Test Conducted By	N. Kreager/J. Grove

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

References

[a] Stephan, C. E. 1977. Methods for calculating an LC50. P. 65-84 In: P.L. Mayer and J. L. Hamelink (eds.), Aquatic Toxicology and Hazard Evaluation. Amer. Soc. Testing and Materials, Philadelphia PA. ASTM STP 634.

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

Date: 2004-09-16

Approved By: K Holtze

Keith Holtze, Director, Laboratory Operations

Ceriodaphnia dubia Survival and Reproduction

Work Order Number : 205735
Sample Number : 9946
Industry : Nanisivik Mine (a Division of CanZinco Ltd.)
Time Start : 14:30
Start Date : 2004-07-27
Completion Date : 2004-08-03

C. dubia Batch Number : CD04-0
Previous 7d culture mortality (%) : 0.0%

Concentration: Control	Day	Replicate 1	2	3	4	5	6	7	8	9	10	% Mortality	Mean # Young	Init SW
2004-07-28	1	0	0	0	0	0	0	0	0	0	0	0	0	SS
2004-07-29	2			0	0	0	0	0	0	0	0	0	0	SW
2004-07-30	3			0	0	0	0	0	0	0	0	0	0	JG
2004-07-31	4			3	0	2	4	5	3	5	5	0	3.6	HS
2004-08-01	5	..	.	4	2	4	0	3	7	0	0	0	3.3	HR
2004-08-02	6			8	0	0	0	0	0	7	2	0	3.8	TG
2004-08-03	7			0	10	13	0	11	12	9	10	0	5.6	JG
Total neonates		16	21	16	12	19	4	19	22	12	17			

Mean # young: 16.5
Total adult mortality: 0

Concentration: 1.5%	Day	Replicate 1	2	3	4	5	6	7	8	9	10	% Mortality	Mean # Young
	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	
	3	0	0	0	0	0	0	0	0	0	0	0	
	4	3	5	1	3	1	2	3	4	6	6	0	
	5	9	9	5	7	0	7	0	7	7	8	0	
	6	6	10	11	0	0	0	0	0	11	0	0	
	7	6	0	0	0	0	7	14	10	0	6	0	
Total neonates		15	24	20	10	14	16	19	21	24	20		

Mean # young: 19.3
Total adult mortality: 0

Concentration: 3%	Day	Replicate 1	2	3	4	5	6	7	8	9	10	% Mortality	Mean # Young
	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0		
	4	4	4	5	3	4	3	1	4	5	4		
	5	4	8	10	6	4	5	4	8	10	9		
	6	9	12	11	9	0	0	6	0	10	8		
	7	13	0	0	0	13	9	15	12	0	1		
Total neonates		21	25	26	18	21	16	21	24	25	22		

Mean # young: 21.9
Total adult mortality: 1

Concentration: 6%	Day	Replicate 1	2	3	4	5	6	7	8	9	10	% Mortality	Mean # Young
	1	0	0	0	0	0	0	0			0		
	2	0	0	0	0	0	0	0	0		0		
	3	0	0	0	0	0	0	0	0		8		
	4	4	5	4	5	4	5	6					
	5	4	3	9	9	4	9	10					
	6	0	13	10	0	0	0	0	0	10	9	0	4.2
	7	12	0	0	12	8	8	12	11	0	0	0	6.3
Total neonates		20	21	23	26	16	22	28	22	28	28		

Mean # young: 23.6
Total adult mortality: 0

x = mortality
* = accidental death

Test Data Reviewed By: [illegible]
Date: 2004-08-05

Concentration	Day	Replicate										% Mortality	Mean # Young
		1	2	3	4	5	6	7	8	9	10		
13%	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0
	4	3	6	5	5	6	6	3	4	7	5	0	5
	5	8	8	6	8	9	9	10	8	11	10	0	8.5
	6	0	0	0	0	0	0	11	0	15	0	0	2.6
	7	13	11	11	12	14	12	0	11	0	10	0	9.3
Total neonates		25	25	22	25	27	27	24	23	33	25		
												Mean # young:	23.4
												Total adult mortality:	0

Concentration	Day	Replicate										% Mortality	Mean # Young
		1	2	3	4	5	6	7	8	9	10		
25%	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0.6
	4	3	4	5	3	3	4	5	6	6	0	0	3.7
	5	8	7	8	7	9	7	8	8	11	9	10	8.2
					9	8	9	6	9	14	13	10	3.8
		11	7	9	10	9	9	11	11	9	9	10	6.1
Total neonates		20	20	24	29	29	11	24	25	31	28		
												Mean # young:	22.4
												Total adult mortality:	1

Concentration	Day	Replicate										% Mortality	Mean # Young
		1	2	3	4	5	6	7	8	9	10		
50%	1	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0	0
			5	0	0	3	4	2	3	0	7	10	2.1
			8	0	8	8	6	9	9	8	9	10	7.2
			0	0	0	0	1	0	0	10	11	10	3.2
		10	0	0	8	9	11	6	10	0	0	10	5.4
Total neonates		20	33	0	16	24	33	17	22	18	27		
												Mean # young:	18.5
												Total adult mortality:	1

Concentration	Day	Replicate										% Mortality	Mean # Young
		1	2	3	4	5	6	7	8	9	10		
100%	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0			
	3	0	0	0	0	0	0	0	0	0			
	4	1	4	0	0	0	0	1	0	0			
	5	5	0	1	0	0	1	0	1	0	0	0	0.8
	6	0	3	0	0	0	0	0	0	0	11	0	1.3
	7	0	9	10	11	0	0	1	8	0	0	0	3.9
Total neonates		6	15	11	11	0	1	2	9	0	12		
												Mean # young:	
												Total adult mortality:	

mortality
accidental death

Test Data Reviewed By: [signature]
Date: 10-4-03

Ceriodaphnia dubia Survival and Reproduction
Water Chemistry Data

Work Order Number : 20573-
Sample Number : 9946

Initial Parameters:	Temp. (°C)	D.O. (mg/L)	pH	Cond. (µS/cm)	Hardness (mg/L as $CaCO_3$)
	25.0	9.3	7.4	1503	690

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Initial Temp. (°C):	25.0	25.0	24.0	25.0	25.0	25.0	25.0
Initial D.O. (mg/L):	9.3	8.7	9.2	9.0	9.1	9.1	9.1
% Sat. of 100% Effluent*	117	107	114	113	113	113	110
Precaration (initial) + 20 (solution time)	20	20	20	20	20	20	20

		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	Initial	JG	SW	JG	NK/TG	NK/TG	AK(TG)	AK(TG)
	Final	SW	JG	NK/TG	NK/TG	TG	AK(TG)	NK(EW)
Control	**0%**							
Temp. (°C)	Initial	25.0	25.0	24.5	24.0	25.0	24.5	24.0
	Final	25.0	25.0	25.0	25.0	24.5	24.5	24.0
D.O. (% Sat.*	Initial	100	99	100	98	99	100	100
D.O. (mg/L)	Initial	8.1	7.9	8.1	7.9	7.9	8.1	8.0
	Final	7.6	7.8	7.7	7.3	7.7	7.5	7.9
pH	Initial	8.4	8.4	8.3	8.4	8.3	8.3	8.3
	Final	8.4	8.4	8.4	8.3	8.3	8.4	8.4
Conductivity	Initial	488	493	565	516	490	581	522
Low	**1.5%**							
Temp. (°C)	Initial	25.0	25.0	24.5	24.0	25.0	24.5	24.0
	Final	25.0	25.0	25.0	25.0	24.5	24.5	24.0
D.O. (mg/L)	Initial	8.1	8.1	8.1	8.0	7.8	8.0	7.9
	Final	7.6	7.8	7.5	7.5	7.7	7.6	7.5
pH	Initial	8.4	8.4	8.4	8.3	8.3	8.4	8.4
	Final	8.4	8.4	8.4	8.4	8.4	8.4	8.3
Conductivity	Initial	561	519	584	553	553	606	570
Middle	**25%**							
Temp. (°C)	Initial	25.0	25.0	24.5	24.0	25.0	24.5	24.0
	Final	25.0	25.0	25.0	25.0	24.5	24.5	24.0
D.O. (mg/L)	Initial	8.3	8.2	8.1	8.0	7.8	8.0	8.1
	Final	7.6	7.9	7.5	7.4	7.6	7.2	7.2
pH	Initial	8.2	8.3	8.3	8.3	8.2	8.3	8.2
	Final	8.3	8.3	8.4	8.2	8.1	8.1	8.0
Conductivity	Initial	775	778	828	790	770	848	795
High	**100%**							
Temp. (°C)	Initial	25.0	25.0	24.5	24.0	25.0	24.5	24.0
	Final	25.0	25.0	25.0	25.0	24.5	24.5	24.0
D.O. (mg/L)	Initial	8.0	8.1	8.2	8.4	8.1	8.1	8.4
	Final	7.6	8.0	7.3	7.1	7.2	6.8	6.5
pH	Initial	7.6	7.6	7.6	7.6	7.6	7.6	7.6
	Final	7.7	7.5	7.5	7.5	7.4	7.2	6.8
Conductivity	Initial	1510	516	1516	1514	1516	1519	1512

% saturation adjusted for actual temperature and barometric pressure

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stantec.com

Work Order : 205735
Sample Number : 9946

Sample Identification

Company :	Nanisivik Mine (a Division of CanZinco Ltd.)		
Location :	Nanisivik NU	Date Collected :	2004-07-24
Substance :	159-4	Time Collected :	11:30
Sampling Method :	Grab	Date Received :	2004-07-27
Sampled By :	M. Markle	Time Received :	08:00
Shipped By:	First Air/Air + ATS/Rd	Date Tested :	2004-07-27
Temp. on arrival :	10.5°C	Lab Storage:	4±2 °C
Sample Description:	Clear, yellow, odourless		

Test Results

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Growth)	>100%		
LC50 (Survival)	>100%		

Fathead Minnow Growth Inhibition