020822LUP Toxicity Part 1 - ILAE

Att-1

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NWB/ Mining
Bulk Sampling
NWB1LUP0008

REPORT OF TOXICITY TESTING USING RAINBOW TROUT

LAB SAMPLE NO. 02-01441

COMPANY/LOCATION: Echo Bay Mines, Lupin

RESULTS TO: **Anne Wilson**
Environment Canada
EPB / Northern Division
Suite 301
5204 - 50th (Franklin) Avenue
Yellowknife, Northwest Territories
X1A 1E2

PURPOSE: To examine the test material to determine its toxicity to fish.

RESULT: Not Acutely Lethal. No Mortality at 100% Concentration

REPORT AUTHORIZATION: **Head, Ecotoxicology Laboratory**

SIGNATURE/DATE: Garth Elliott, August 02, 2002

Garth Elliott

cc. **Gordon Manners, EPB, TSD.**

REPORT OF TOXICITY TESTING USING RAINBOW TROUT

LAB SAMPLE NO. 02-01441

COMPANY/LOCATION: Echo Bay Mines, Lupin

SAMPLE COLLECTED BY:	**Mackenzie Sawyer**
DATE/TIME SAMPLED:	**July 08, 2002 07:00 h**
DATE/TIME RECEIVED:	**July 09, 2002 10:55 h**
DATE/TIME TEST START:	**July 09, 2002 14:15 h**
SAMPLE TYPE:	**liquid**
SAMPLE POINT:	**Pond 2, site 102 - Final Tailings Containment Site**
SAMPLING METHOD:	**Grab**
SAMPLE CONTAINER:	**6 X 10 L white plastic pails ~ 60 L total volume**
TRANSPORTATION INFORMATION:	**Sample arrived via courier**
STORAGE INFORMATION:	**None Required**

METHOD: **EP Laboratories SOP# 810.0 Revision 3, for Trout Testing in Compliance with May 1996 and December 2000 Amended Methods: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, July 1990, EPS 1/RM/13. Single Concentration Procedure.**

DEVIATION FROM "MUST" REQUIREMENTS: One - see QA/QC

RESULT: Not Acutely Lethal. No Mortality at 100% Concentration

STATISTICS: **N/A**

TEST CONDITIONS:

SPECIES: ***Oncorhynchus mykiss***

FISH PER TEST VESSEL: 10

TEST VESSEL: 83 L plastic containers

TEST VOLUME (L): 64 **SAMPLE DEPTH (cm): 35**

PHOTO PERIOD: 16h Light, 8h Dark

DILUTION WATER: Treated Edmonton City Water

Fish Not Fed 24 h Prior to Test

No pH Adjustment and All Tests Initiated Are Reported.

Aeration Continuous Throughout Test at : 6.5 ± 1.0 ml/min/L. Measured with a Rotometer.

PHYSICOCHEMICAL CONDITIONS:

SAMPLE APPEARANCE: Clear

INITIAL PHYSICOCHEMICAL CONDITIONS: **Just Prior to Setup**

INITIAL	TEMPERATURE (° C)	DISSOLVED OXYGEN (%saturation)	CONDUCTIVITY (µmhos/cm)	pH
100% SAMPLE	14.9	97.9	862	7.3

PREAERATION: (Oil-Free Compressed) at a Rate of 6.5 ± 1.0 ml/min/L for 30 Minutes.

TEST PHYSICOCHEMICAL CONDITIONS:

TEST	TEMPERATURE (°C)					DISSOLVED OXYGEN (mg/L)		CONDUCTIVITY (µmhos/cm)		pH		LUX
CONCENTRATIONS	0 h	24 h	48 h	72 h	96 h	0 h	96 h	0 h	96 h	0 h	96 h	0 h
CONTROL	14.8	14.9	14.9	14.9	14.6	9.2	9.0	352	346	8.2	8.4	214
100%	14.8	15.1	15.0	14.9	14.9	9.2	8.9	865	859	7.4	7.5	126

TEST DATA:

TEST START DATE/TIME: July 09, 2002 14:15 h

REPLICATES = None

	CUMULATIVE MORTALITY/SUBLETHAL EFFECT				
TEST CONCENTRATION	24 h	48 h	72 h	96 h	% MORTALITY
CONTROL	0	0	0	0	0.0
100%	0	0	0	0	0.0

TROUT LENGTHS AND WEIGHTS:

See attached table.

QUALITY ASSURANCE/QUALITY CONTROL:

TEST ORGANISM: (Oncorhynchus mykiss) **Rainbow Trout Fingerlings**

Source: Ackenberry Trout Farm

Lot# ABTF061202 Tank# 3 Arrival Date: June 12, 2002

Mortality of Trout Stock 7 Days Prior to Test: 0.0 %

Acclimation for >= 2 Weeks at Temp: 15°C ± 2°C

Approximate No. Of Trout Acclimated: 403

Flow of Water Through Tank (L/g of trout per day): 14.9

Litres in Tank per 10g of Trout: 10.8

CONFORMANCE: Control Mortality within Acceptable Limits
Less Than 2% Fish Stock Mortality in 7 Days Prior to Test
Method "Must" Requirements Followed Except One - the fish holding temperature on June 28, 2002 increased to 19.8°C, outside the range of 15.0°C +/- 2.0°C. Since no mortality was observed in the control, the test is considered valid.

QUALITY CONTROL:

Reference Toxicant: Phenol

Reference Toxicant Test # 02-0010-T

Date of Test: July 22, 2002

Reference Toxicant Analyst: W.A., R.B.

LC_{50}- 96 h = 10.4 ppm

95% Confidence Limits: 9.23 - 11.8 ppm

HISTORIC GEOMETRIC MEAN:

LC_{50}- 96 h = 11.4 ppm

Warning Limits(2SD): 10.0 - 12.9 ppm

CONFORMANCE: Control Mortality within Acceptable Limits
Reference Toxicant within Warning Limits
Less Than 2% Fish Stock Mortality in the 7 days Prior to Test
Method "Must" Requirements followed

TEST ANALYST(S): **Wendy Antoniolli** **Initial:** WA

Nancy Kruper **Initial:** Att for Nancy Kruper.

DATA VALIDATION: Lisa Mitchelmore **Initial:** lm
(name)

LAB SAMPLE NO: 02-01441

Trout Lengths and Weights

Single Concentration

	CONTROL LENGTH (cm)	CONTROL LENGTH (cm)	CONTROL WEIGHT (g)	CONTROL WEIGHT (g)	100% LENGTH (cm)	100% LENGTH (cm)	100% WEIGHT (g)	100% WEIGHT (g)
1	3.4		0.36		4.1		0.70	
2	3.2		0.27		3.6		0.41	
3	3.3		0.37		3.4		0.36	
4	3.5		0.39		3.5		0.40	
5	3.6		0.38		3.6		0.39	
6	3.2		0.28		3.3		0.28	
7	3.4		0.34		3.4		0.35	
8	3.4		0.37		3.5		0.38	
9	3.7		0.40		3.7		0.43	
10	3.5		0.41		3.0		0.21	
AVERAGE	3.4		0.36		3.5		0.39	
STD DEV.	0.2		0.05		0.3		0.13	
RANGE	3.2 - 3.7		0.27 - 0.41		3.0 - 4.1		0.21 - 0.70	
VOL (L)			64				64	
TOT WT (g)			3.57				3.91	
LOADING DENSITY (g/L)			0.06				0.06	

Attachment #1

Glossary of Terms

°C - degree(s) Celsius
cm - centimeter(s)
d - day(s)
DO - dissolved oxygen (concentration)
EC_{50} - median effective concentration
g - gram(s)
h - hour(s)
H_20 - water
IC_{50} - 50% inhibiting concentration
LC_{50} - median lethal concentration
L - litre(s)
mg - milligram(s)
min - minute(s)
mL - millilitre(s)
mm - millimetre(s)
mS - millisiemens
NaCl - sodium chloride
N/A - non applicable
OAS - Osmotic Adjustment Solution
ppm - parts per million
µg - microgram
µL - microlitre
> - greater than
< - less than
≥ - greater than or equal to
≤ - less than or equal to
± - plus or minus
% percentage or percent