

ECOTOXICOLOGY LABORATORY
EP LABORATORIES
PRAIRIE & NORTHERN REGION
5320-122 STREET
EDMONTON, ALBERTA
T6H 3S5

A11-2

**REPORT OF TOXICITY TESTING
USING DAPHNIA MAGNA**

LAB SAMPLE NO. 02-01442

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 daphnia.*

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 DAPHNIA MAGNA**

LAB SAMPLE NO. 02-01442

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 14:55 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# 820.0 Revision 2, for Daphnia Magna Testing in Compliance with May 1996 and December 2000 Amended Methods: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*, July 1990, EPS 1/RM/14. Single Concentration Procedure.

DEVIATION FROM "MUST" REQUIREMENTS: One - See QA/QC Conformance

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

STATISTICS: N/A

TEST CONDITIONS:SPECIES: *Daphnia magna* ≤ 24 h old

DAPHNIA PER TEST VESSEL: 10

TEST VESSEL: 300 mL beaker

TEST VOLUME (mL): 150

PHOTO PERIOD: 16h Light, 8h Dark

LUX: 714

DILUTION WATER: Treated Edmonton City Water

No pH Adjustment and All Tests Initiated Are Reported.

PHYSICOCHEMICAL CONDITIONS:

SAMPLE APPEARANCE: Clear in color.

INITIAL PHYSICOCHEMICAL CONDITIONS: Just Prior to Setup

INITIAL	TEMPERATURE (°C)	DISSOLVED OXYGEN (%saturation)	CONDUCTIVITY (µmhos/cm)	pH	Hardness (CaCO ₃ /L)
100% SAMPLE	20.3	102	846	7.2	220

PREAERATION: (Oil-Free Compressed) at a Rate of 25-50 mL/min/L for 30 Minutes.

TEST PHYSICOCHEMICAL CONDITIONS:

TEST	TEMPERATURE (°C)		DISSOLVED OXYGEN (mg/L)		CONDUCTIVITY (µmhos/cm)		pH		HARDNESS (CaCO ₃ /L)
	0 h	48 h	0 h	48 h	0 h	48 h	0 h	48 h	
CONCENTRATIONS									
CONTROL A	20.4	21.0	8.2	7.9	360	351	8.4	8.4	155
CONTROL B	20.6	20.5	8.3	7.9	357	359	8.4	8.4	155
CONTROL C	20.6	20.5	8.3	7.9	359	355	8.4	8.4	155
100% A	20.5	20.4	8.5	7.9	847	849	7.5	7.6	220
100% B	20.1	20.2	8.5	7.9	858	852	7.3	7.5	220
100% C	19.7	20.2	8.4	7.9	856	859	7.3	7.5	220

TEST DATA:

TEST START DATE/TIME: July 09, 2002 1455 h

REPLICATES = None

TEST CONCENTRATION	CUMULATIVE MORTALITY/SUBLETHAL EFFECT			
	24 h #immobile	48 h #dead/immobile	% MORTALITY	% IMMOBILE
CONTROL A	0	0/0	0.0	0.0
CONTROL B	0	0/0	0.0	0.0
CONTROL C	0	0/0	0.0	0.0
100% A	0	0/0	0.0	0.0
100% B	0	0/0	0.0	0.0
100% C	0	0/0	0.0	0.0

Mean % Mortality = 0/30 = 0.0 %

Mean % Immobilized = 0/30 = 0.0 %

QUALITY ASSURANCE/QUALITY CONTROL:

TEST ORGANISM: (*Daphnia magna*)

Stock neonates used for Testing: H neonates - May 23, 2002

Most Recent Estimate of Time to First Brood: 9.2 Days

Average Neonates per Brood: 16.7

Frequency of ephippia from Adults of Neonates: None

Any special handling during test: None Required

CONFORMANCE: Control Mortality within Acceptable Limits

Ephippia must not be Present in the Culture

Less Than 25% of Brood Stock Mortality in the 7 days prior to a Test

Method "Must" Requirements Followed - Except One: The temperature in the maintenance beakers exceeded 22.0 °C on June 25, 2002 and June 26, 2002. As a result water temperatures were not maintained at 20.0 °C plus or minus 2.0 °C for two weeks prior to testing. The results will be considered valid as no mortality was observed in the control.

QUALITY CONTROL:

Reference Toxicant: Sodium Chloride

Reference Toxicant Test # 02-0022-D

Date of Test: July 16, 2002

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

LC₅₀- 48 h = 6560 ppm

95% Confidence Limits: 6250 - 6960 ppm

HISTORIC GEOMETRIC MEAN:

LC₅₀- 48 h = 6120 ppm

Warning Limits(2SD): 5610 - 6670 ppm

**CONFORMANCE: Control Mortality within Acceptable Limits
Reference Toxicant within Warning Limits
Less Than 25% Brood Stock Mortality in the 7 days Prior to Test
Method "Must" Requirements Followed**

TEST ANALYST(S):	Lisa Mitchelmore	Initial: <u>LM</u>
	Rene Beaulieu	Initial: <u>RB</u>

DATA VALIDATION:	<u>Wendy Antonioli</u>	Initial: <u>WA</u>
	(name)	

Glossary of Terms

°C - degree(s) Celsius

cm - centimeter(s)

d - day(s)

DO - dissolved oxygen (concentration)

EC₅₀ - median effective concentration

g - gram(s)

h - hour(s)

H₂O - water

IC₅₀ - 50% inhibiting concentration

LC₅₀ - 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