

# DRAFT

**North American Tungsten  
CanTung Mine Tungsten NWT  
4-28-1 Grab**

**Rainbow Trout Bioassay  
96-h LC50 %v/v: >100%**

**CANTEST Ltd.**

4606 Canada Way  
Burnaby, BC  
Canada V5G 1K5  
tel: 604 734-7276  
fax: 604 731-2386  
web: <http://cantest.com>

Cantest Sample # : 801080168 Report # : 2-11-200-053-08-001

Sample Taken:	Jan. 6, 2008 11:46 AM	Sample pH:	7.7
Sample Collected By:	C. Werbicki	Sample Dissolved Oxygen:	10.1 mg/L
Sample Received:	Jan. 8, 2008	Sample Temperature:	13.9 °C
Start Date/Time:	Jan. 9, 2008 6:10 PM	Sample Conductance:	1162 µmho/cm

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	86	14.1	16.0	7.6	7.1	10.3	8.9	0	0	0	0	0
100	1171	14.3	16.0	7.7	8.4	10.1	8.9	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	18 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.29 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.53 ± 0.11 g	Length (Mean + SD):	4 ± 0.3 cm
Weight (Range):	0.29– 0.87 g	Length (Range):	3.3– 4.7 cm

**Reference Toxicant:** Phenol

Test was conducted on: 01/02/2008  
Test gave a 96-h LC50 of 11.1 (9.93, 12.35) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 25 mg CaCO<sub>3</sub>/L Other parameters available on request

**Test Method:**

Biological Test Method: Reference Method for Determining Acute Lethality of Effluent to Rainbow Trout, EPS 1/RM/13, Second Edition, December 2000. Results contained in this report refer only to the testing of samples as submitted.

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Cantest Sample # : 803040253 G# 90304075 Report # : 2-11-200-053-08-006

Sample Taken:	Mar. 2, 2008 10:30 AM	Sample pH:	7.7
Sample Collected By:	C. Werbicki	Sample Dissolved Oxygen:	9.6 mg/L
Sample Received:	Mar. 5, 2008	Sample Temperature:	15.6 °C
Start Date/Time:	Mar. 6, 2008 3:48 PM	Sample Conductance:	1107 µmho/cm

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	64	15.4	15.6	7.6	7.5	9.9	9.5	0	0	0	0	0
100	1101	15.1	15.6	7.8	8.4	9.5	9.6	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	12 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.48 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.58 ± 0.15 g	Length (Mean + SD):	4 ± 0.3 cm
Weight (Range):	0.32– 1.16 g	Length (Range):	3.4– 4.7 cm

**Reference Toxicant:** Phenol

Test was conducted on: 03/05/2008  
Test gave a 96-h LC50 of 13 (10, 22) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 22 mg CaCO<sub>3</sub>/L Other parameters available on request

**Test Method:**

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Cantest Sample # : 804080382 G# 90408092						Report # : 2-11-200-053-08-008					
Sample Taken:	Apr. 6, 2008 12:30 PM	Sample pH:	7.7								
Sample Collected By:	C. Werbicki	Sample Dissolved Oxygen:	10.2 mg/L								
Sample Received:	Apr. 8, 2008	Sample Temperature:	13.7 °C								
Start Date/Time:	Apr. 9, 2008 1:42 PM	Sample Conductance:	1048 µmho/cm								

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	77	14.6	15.8	7.5	7.3	9.8	9.6	0	0	0	0	0
100	1097	15.5	15.8	7.7	7.9	9.2	9.7	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	13 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.45 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.59 ± 0.17 g	Length (Mean + SD):	4.1 ± 0.4 cm
Weight (Range):	0.31– 1.22 g	Length (Range):	3.3– 5.2 cm

**Reference Toxicant:** Phenol

Test was conducted on: 04/02/2008  
Test gave a 96-h LC50 of 11.14 (9.63, 13.24) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 24 mg CaCO<sub>3</sub>/L      Other parameters available on request

**Test Method:**

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Cantest Sample # : 805130333 G# 90513100 Report # : 2-11-200-053-08-010

Sample Taken:	May 11, 2008 11:45 AM	Sample pH:	7.6
Sample Collected By:	C. Werbicki	Sample Dissolved Oxygen:	9.9 mg/L
Sample Received:	May 13, 2008	Sample Temperature:	14.7 °C
Start Date/Time:	May 14, 2008 2:17 PM	Sample Conductance:	1130 µmho/cm

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	67	14.9	18.3	7.4	6.5	10.1	9.4	0	0	0	0	0
100	1129	15.0	18.4	7.4	8.1	10.1	9.4	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test. Due to very high outside temperatures the final temperatures were above the recommended range of 14-16°C.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	20 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.48 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.96 ± 0.15 g	Length (Mean + SD):	4.4 ± 0.3 cm
Weight (Range):	0.79– 1.22 g	Length (Range):	4– 5 cm

**Reference Toxicant:** Phenol

Test was conducted on: 04/30/2008  
Test gave a 96-h LC50 of 10.8 (9.42, 12.11) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 18 mg CaCO<sub>3</sub>/L Other parameters available on request

**Test Method:**

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Cantest Sample # : 806170416 G# 90617090						Report # : 2-11-200-053-08-012					
Sample Taken:	Jun. 15, 2008 9:20 AM	Sample pH:	7.7								
Sample Collected By:	J. P.	Sample Dissolved Oxygen:	10.0 mg/L								
Sample Received:	Jun. 17, 2008	Sample Temperature:	14.8 °C								
Start Date/Time:	Jun. 18, 2008 11:50 AM	Sample Conductance:	1153 µmho/cm								

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	62	14.7	16.1	8.0	7.6	10.2	9.9	0	0	0	0	0
100	1164	14.7	16.1	7.8	8.1	10.0	9.9	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test. The final temperatures were slightly outside the recommended temperature range of 14-16 °C.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	20 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.28 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.56 ± 0.08 g	Length (Mean + SD):	4.1 ± 0.2 cm
Weight (Range):	0.42– 0.68 g	Length (Range):	3.7– 4.3 cm

**Reference Toxicant:** Phenol

Test was conducted on: 06/04/2008  
Test gave a 96-h LC50 of 11.4 (10.37, 12.53) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 16 mg CaCO<sub>3</sub>/L Other parameters available on request

**Test Method:**

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Cantest Sample # : 807160073 G# 90716031 Report # : 2-11-200-053-08-015

Sample Taken:	Jul. 13, 2008 11:00 AM	Sample pH:	7.4
Sample Collected By:	J. P.	Sample Dissolved Oxygen:	9.4 mg/L
Sample Received:	Jul. 15, 2008	Sample Temperature:	14.9 °C
Start Date/Time:	Jul. 16, 2008 11:30 AM	Sample Conductance:	1041 µmho/cm

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	58	14.3	15.7	8.4	7.4	10.4	9.8	0	0	0	0	0
100	1030	14.9	15.7	7.5	7.8	9.8	9.5	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	21 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.36 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.76 ± 0.15 g	Length (Mean + SD):	4.4 ± 0.3 cm
Weight (Range):	0.53– 1.08 g	Length (Range):	3.9– 4.8 cm

**Reference Toxicant:** Phenol

Test was conducted on: 07/02/2008  
Test gave a 96-h LC50 of 13.9 (10, 22) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 18 mg CaCO<sub>3</sub>/L Other parameters available on request

**Test Method:**

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Cantest Sample # : 808120479 G# 90812135 Report # : 2-11-200-053-08-016

Sample Taken:	Aug. 10, 2008 11:30 AM	Sample pH:	7.9
Sample Collected By:	C. Werbicki	Sample Dissolved Oxygen:	9.4 mg/L
Sample Received:	Aug. 12, 2008	Sample Temperature:	15.1 °C
Start Date/Time:	Aug. 13, 2008 12:40 PM	Sample Conductance:	1125 µmho/cm

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	64	14.9	15.5	8.5	6.7	10.1	10.1	0	0	0	0	0
100	1115	15.0	15.2	8.0	8.3	9.8	10.5	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	13 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.38 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.49 ± 0.09 g	Length (Mean + SD):	3.7 ± 0.2 cm
Weight (Range):	0.38– 0.65 g	Length (Range):	3.1– 4 cm

**Reference Toxicant:** Phenol

Test was conducted on: 08/06/2008  
Test gave a 96-h LC50 of 10.8 (9.42, 12.11) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 16 mg CaCO<sub>3</sub>/L Other parameters available on request

**Test Method:**

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Cantest Sample # : 809300290 G# 90930063 Report # : 2-11-200-053-08-017

Sample Taken:	Sep. 28, 2008 2:15 PM	Sample pH:	7.7
Sample Collected By:	V. Benwood	Sample Dissolved Oxygen:	9.3 mg/L
Sample Received:	Sep. 30, 2008	Sample Temperature:	14.4 °C
Start Date/Time:	Oct. 1, 2008 10:58 AM	Sample Conductance:	1150 µmho/cm

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	37	14.2	14.3	7.3	7.5	9.9	10.3	0	0	0	0	0
100	1131	14.5	14.3	7.7	8.3	9.7	10.2	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	15 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.24 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.36 ± 0.13 g	Length (Mean + SD):	3.7 ± 0.4 cm
Weight (Range):	0.23– 0.61 g	Length (Range):	3.3– 4.4 cm

**Reference Toxicant:** Phenol

Test was conducted on: 09/25/2008  
Test gave a 96-h LC50 of 8.92 (7.74, 10.09) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 20 mg CaCO<sub>3</sub>/L Other parameters available on request

**Test Method:**

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Cantest Sample # : 810150210 G# 91015036						Report # : 2-11-200-053-08-019					
Sample Taken:	Oct. 12, 2008 4:00 PM	Sample pH:	7.7								
Sample Collected By:	V. Benwood	Sample Dissolved Oxygen:	10.4 mg/L								
Sample Received:	Oct. 14, 2008	Sample Temperature:	13.9 °C								
Start Date/Time:	Oct. 16, 2008 12:22 PM	Sample Conductance:	1138 µmho/cm								

Conc. (%v/v)	Cond. (µmho/cm)	Temp.		pH		D.O.		Percent Mortality				Number of Mortalities
		Initial (°C)	Final (°C)	Initial	Final	Initial (mg/L)	Final (mg/L)	24 hr	48 hr	72 hr	96 hr	
0	42	14.3	14.7	7.5	7.7	10.2	10.0	0	0	0	0	0
100	1130	14.0	14.8	7.7	7.9	10.4	9.9	0	0	0	0	0

**Comments:**

All fish appeared and behaved normally during the test.

**Test Conditions:**

Organisms per Replicate:	10	Preaeration Time:	30 min.
Test Volume:	19 L	Rate of aeration:	6.5 ml/min/L
Loading Density:	0.22 g/L		

**Test Organism:** Rainbow Trout (*Oncorhynchus mykiss*)

Weight (Mean + SD):	0.41 ± 0.09 g	Length (Mean + SD):	3.6 ± 0.2 cm
Weight (Range):	0.27– 0.55 g	Length (Range):	3.1– 4 cm

**Reference Toxicant:** Phenol

Test was conducted on: 10/08/2008  
Test gave a 96-h LC50 of 8.6 (7.42, 9.83) mg/L

**Dilution Water:** Vancouver Tapwater hardened and dechlorinated

EDTA Hardness: 20 mg CaCO<sub>3</sub>/L      Other parameters available on request

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