HydroQual Laboratories Ltd.

#3, 6125 12th Street SE, Calgary, Alberta Canada T2H 2K1
Tel (403) 253-7121 / Fax (403) 252-9363 www.hydroqual.ca

Test Report

Test Data

Client: NOR239	Sample: 20051122	Test: 20053128

Biology (#, young produced; 0, no young; blank, dead)

Dose (%)	ctl	6.3	13	25	50	100	
replicate	day 1						
1	0	0	0	0	0	0	
2	0	0	0	0	0	0	
3	0	0	0	0	0	0	
4	0	0	0	0	0	0	
5	0	0	0	0	0	0	
6	0	0	0	0	0	0	
7	0	0	0	0	0	0	
8	0	0	0	0	0	0	
9	0	0	0	0	0	0	
10	0	0	0	0	0	0	
	day 2						
1	0	0	0		0	0	
2	0	0	0		0	0	
3	0	0	0	0	0	0	
4	0	0	0	0	0	0	
5	0	0	0	0	0	0	
6	0	0	0	0	0	0	
7	0	0	0	0	0	0	
8	0	0	0	0	0	0	
9	0	0	0	0	0	0	
10	0	0	0	0	0	0	
	day 3						
1	0	0	0			0	
2	0	0	0		0	0	
3	0	0	0	0	0	0	
4	0	0	0		0	1	
5	0	0	0	0	0	0	
6	0	0	0	0	0	0	
7	0	0	0	0	0	0	
8	0	0	0	0	0	0	
9	0	0	0		0	0	
10	0	0	0	0	0	0	
	day 4						
1	4	2	0			2	
2	4	3	2		0	0	
3	3	3	3	0	0	2	
4	3	3	3		0	0	
5	3	2	2	0	0	0	
6	3	0	0	0	0	2	
7	4	2	3	0	0	0	
8	3	2	2	0	0	3	
9	2	3	2		0	2	
10	3	0	0	0		2	

ctl	6.3	13	25	50	100	
day 5						
6	6	0			0	
7	6	6		2	5	
6	0	5	0	3	6	
0	0	6		3	7	
7	5	0	0	0	6	
0	0	0	0	2	0	
7	5	0	0	2	6	
6	5	6	3	0	0	
7	0	5		0	5	
0	6	0	0		6	
day 6						
0	7	4			6	
0	0	0		5	7	
8	6	8	4	6	0	
8	7	7		5	8	
10	0	0	0	3	8	
6	6	6	4	0	6	
8	0	5	0	0	0	
9	0	0	0	0	0	
0	6	0		0	7	
7	0	0	3		0	
day 7						
9	0	6			9	
9	8	8		0	9	
10	8	0	0	8	10	
9	9	0		9	0	
0	10	0	5	9	10	
8	0	8	6	6	9	
10	7	0	4	5	8	
9	8	8	5	6	9	
9	0	9		8	10	
0	9	9	6		10	
day 8						

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Test Report

Summary Tables | Client: NOR239 | Sample: 20051122 | Test: 20053128

Biology

Mortality (%)

Dose (%) / day	ctl	6.3	13	25	50	100	
0	0	0	0	0	0	0	
1	0	0	0	0	0	0	
2	0	0	0	20	0	0	
3	0	0	0	40	10	0	
4	0	0	0	40	20	0	
5	0	0	0	40	20	0	
6	0	0	0	40	20	0	
7	0	0	0	40	20	0	
8							
totals	0	0	0	40	20	0	

Daily Young Production

ctl	6.3	13	25	50	100	
0	0	0	0	0	0	
0	0	0	0	0	0	
0	0	0	0	0	0	
0	0	0	0	0	1	
32	20	17	0	0	13	
46	33	28	3	12	41	
56	32	30	11	19	42	
73	59	48	26	51	84	
207	144	123	40	82	181	

average young per adult

21	14	12	4	8	18	

young production as a percent of controls

100	70	59	19	40	87	

Total Young Produced by Each Adult

replicate						
1	19	15	10	0	0	17
2	20	17	16	0	7	21
3	27	17	16	4	17	18
4	20	19	16	0	17	16
5	20	17	2	5	12	24
6	17	6	14	10	8	17
7	29	14	8	4	7	14
8	27	15	16	8	6	12
9	18	9	16	0	8	24
10	10	15	9	9	0	18

Chemistry

New Solutions

Dose (%)	ctl	6.25	12.5	25	50	100	

Old Solutions

ctl	6.25	12.5	25	50	100	

Average Values

pH	8.4	8.4	8.3	8.3	8.1	7.3	
EC	369	390	418	485	614	861	
DO	7.1	7.1	7.2	7.1	7.2	7.2	
temp	25	25	25	25	25	25	

8.3	8.3	8.2	8.2	8.1	7.5	
373	412	436	501	642	889	
6.7	6.7	6.7	6.8	6.8	6.8	
25	25	25	25	25	25	

Variance (%)

pH	1	1	1	1	1	3	
EC	3	3	2	2	2	2	
DO	3	2	2	2	2	2	
temp	0	0	0	0	0	0	

1	1	1	0	0	2	
2	3	2	2	1	1	
3	3	3	3	2	2	
2	2	2	2	2	2	

The test data and results are verified correct.

Authorized by K.Steele, B.Sc., Quality Assurance Officer

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Test Report

Client: NOR239	Sample: 20051122	Test: 20053129

Method *Lemna* 7d Static Acute Test (five treatments plus a control) (HQ 4.4.2.3)
Reference: Biological Test Method: Test for Measuring the Inhibition of Growth Using the Freshwater Macrophyte, Lemna minor, 1999. Environment Canada, EPS 1/RM/37.

Client: Norwest Labs Operation: Edmonton

Sample:
description: 398418, location 925-10
collected: 2005/07/27 at not given by not given
received: 2005/07/29 at 1100 by L.Fantin

Test:
started: 2005/07/30 at 1330 by K. de Windt
ended: 2005/08/06 at 1130 by B. Denny
reported: 2005/08/15 by G. Diaz

Result:

	Endpoint	Value	Confidence Limits		Units	Method Calculated
Chronic:	IC25	<6.1			%	Linear Interpolation
(frond #)	IC50	24	could not be calculated		%	Linear Interpolation
	NOEC	<6.1			%	Dunnett's
	LOEC	6.1			%	Dunnett's
	MSD	4.6			fronds	Dunnett's
Chronic:	IC25	10	3.5	71	%	Linear Interpolation
(biomass)	IC50	>97			%	Linear Interpolation
	NOEC	6.1			%	estimated
	LOEC	12			%	estimated
	MSD	could not be calculated			mg	estimated

Notes: ICx, concentrations lethal or inhibitory to 'x' percent of the test population; NOEC & LOEC, no and lowest observed effect concentrations; MSD, minimum significant difference

Comments:

No unusual behaviour or appearance or treatment of test organisms was noted prior to testing or during testing. There was not growth stimulation observed during the test. Only three replicates were weighted in the 49% concentration.

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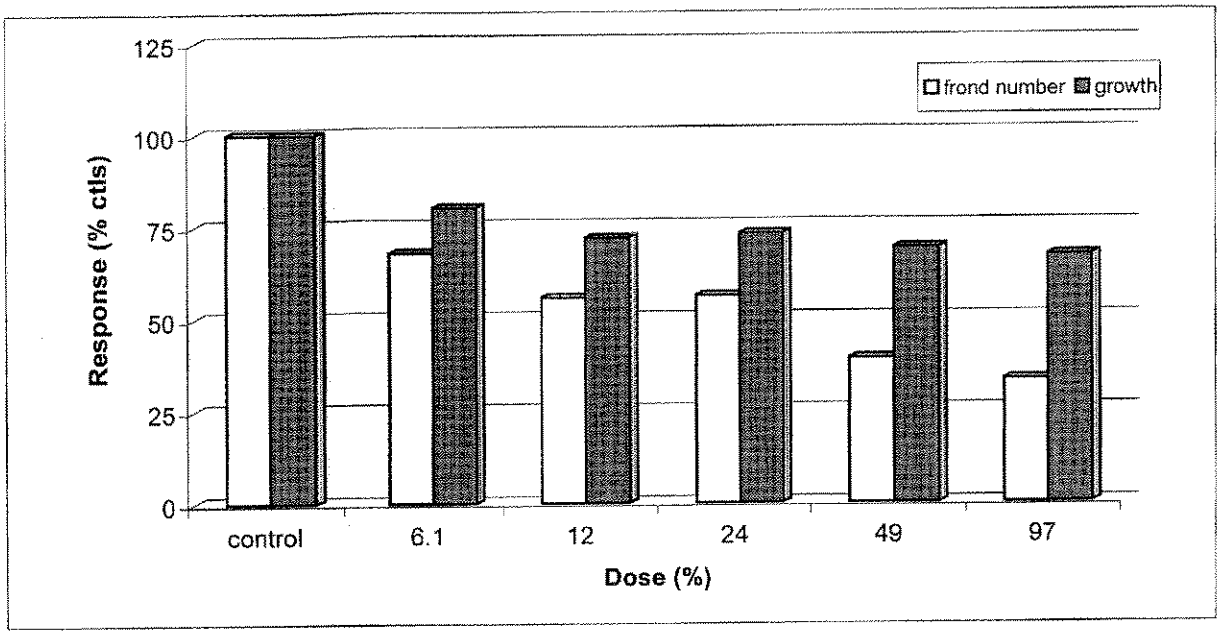
Test Report

Client: NOR239	Sample: 20051122	Test: 20053129



Test Information

Organism: The test organism was Lemna minor from in-house cultures. It was originally obtained from the University of Toronto Culture Collection (492). The fronds were acclimated in test media for 24 h prior to test initiation. The test culture was axenic prior to testing.
The fronds are 9 days old at test initiation.
The mean increase in frond number of culture over last 7 days: 25 fold increase: 8

Test Design: The test was a static test conducted in 200 mL polyethylene plastic containers with clear lids. The test volume was 150 mL. There were four replicates per treatment. The test was initiated with two 3 frond daughter plants per replicate.

Test Media: The test media was deionized water spiked with nutrients (Environment Canada EPS 1/RM/37, 1999). No other chemicals were added to the test media. The media aerated for two hours and pH adjusted to 8.3±0.1 with 6N HCl or NaOH. The test media was not filtered. The control and dilution water was test media.

					Temperature (°C)		
Date	Day	Time	Technicians	Rotate	Control	24%	97%
2005/07/30	0	1330	K. de Windt	na	25	25	25
2005/07/31	1	0850	M. Luong	yes	25	25	25
2005/08/01	2	0900	M. Luong	yes	25	25	25
2005/08/02	3	0900	C.A. Martens	yes	25	25	25
2005/08/03	4	0800	C.A. Martens	yes	25	25	25
2005/08/04	5	0830	C.A. Martens	yes	25	25	25
2005/08/05	6	0820	C.A. Martens	yes	25	25	25
2005/08/06	7	1130	B. Denny	na	24	24	24

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Test Report

Test Data

Client:	NOR239	Sample:	20051122	Test:	20053129

Biology

replicate	Dose (%)						
	control	6.1	12	24	49	97	

Frond Number

day 0

a	6	6	6	6	6	6	
b	6	6	6	6	6	6	
c	6	6	6	6	6	6	
d	6	6	6	6	6	6	

day 7

a	51	34	31	26	25	16	
b	54	36	27	31	16	19	
c	48	30	28	29	20	16	
d	52	39	28	29	19	17	

average	51	35	29	29	20	17	
sd	3	4	2	2	4	1	
cv	5	11	6	7	19	8	
% ctls	100	68	56	56	39	33	

Dry Weights (mg)

day 7

a	3.8	2.8	3.2	2.9	not done	3.0	
b	4.2	3.5	2.6	2.7	2.6	2.3	
c	3.9	2.9	3.2	3.4	3.1	2.6	
d	4.1	3.7	2.6	2.8	2.6	2.9	

average	4.0	3.2	2.9	2.9	2.8	2.7	
sd	0.2	0.4	0.3	0.3	0.3	0.3	
cv	5	13	11	11	12	11	
%ctls	100	80	72	73	69	67	

Chemistry

day 0

pH	8.2	8.1	8.1	8.1	8.2	8.2	
EC	951	908	945	10.5	1209	1556	
DO	7.3	7.2	7.3	7.3	7.3	7.3	
temp	23	23	23	23	23	23	

day 7

pH	8.4	8.8	8.8	9.0	8.9	8.8	
EC	915	931	965	1076	1340	1624	
DO	7.3	8.3	8.2	9	8.4	8.3	
temp	24	24	24	24	24	24	

Notes: pH, units; EC, electrical conductance (uS/cm); DO, dissolved oxygen (mg/L); temp, temperature (°C); sd, standard deviation; cv, coefficient of variance; %ctls, percent of controls

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Test Report

Test Data

Client:	NOR239	Sample:	20051122	Test:	20053129

Comments (day 7)

Dose	
control	light green, long roots
6.1	light green, long roots
12	light green, medium roots, slight gib, slight chl
24	light green, medium roots,slight chl
49	light green, short roots, slight chl
97	light green, short roots, slight chl

Notes: chl, chlorotic; nec, necrotic; asf, abnormally sized fronds; gib, gibbosity; cd, colony destroyed; rd, roots destroyed; lb, loss of bouyancy

Comments

The effluent was spiked with nutrients (Environment Canada EPS 1/RM/37, 1999).
The sample was not pH adjusted or filtered prior to testing.
The sample was pre-aerated for at least 20 minutes with oil free filtered compressed air from a 1 mL glass pipette attached to an air pump at a rate of 2-3 bubbles per second.
Date of effluent preparation: 2005/07/30

The light levels (lux) were measured at the sample surface, at three locations on the testing bench, during testing:
left: 4465 center: 4750 right: 4465

The mean number of fronds in the controls have increased b 9 fold.

The test data and results are verified correct. K. Steele

Authorized by K.Steele, B.Sc., Quality Assurance Officer

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Test Report

Client:	NOR239	Sample:	20051122	Test:	20053130

Method: 72h Algal Growth Inhibition Test (HQ 4.4.2.7)
reference: Biological Test Method: Growth Inhibition Test Using the Freshwater Alga *Selenastrum capricornutum*, 1992. Environment Canada, EPS 1/RM/25. (ammended November 1997)

Client: Norwest Labs Operation: Edmonton

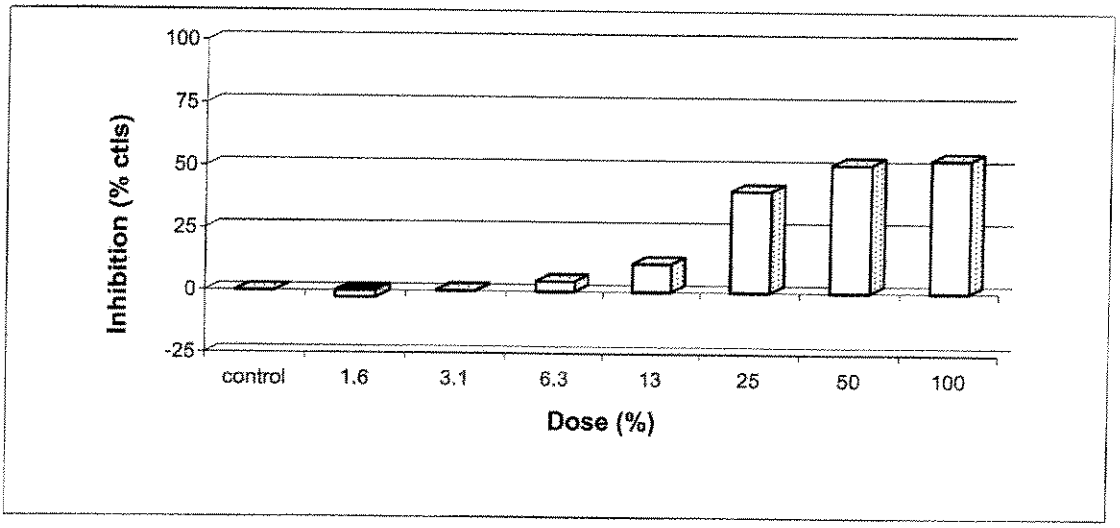
Sample:
description: 398418, location 925-10
collected: 2005/07/27 at not given by not given
received: 2005/07/29 at 1100 by L.Fantin

Test:
started: 2005/07/29 at 1430 by K. de Windt
ended: 2005/08/01 at 1315 by K. de Windt
reported: 2005/08/15 by G. Diaz

Result:

Endpoint	Value	Confidence Limits		Units	Method Calculated
IC25	17	15	19	%	Linear Interpolation
IC50	44	35	53	%	Linear Interpolation
NOEC	13			%	estimated
LOEC	25			%	estimated

Notes: ICx, concentrations inhibiting growth by 'x' percent relative to controls; NOEC & LOEC, no and lowest observed effect concentrations; MSD, minimum significant difference; cv, coefficient of variance (%); sd, standard deviation



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Test Report

Test Data

Client:	NOR239	Sample:	20051122	Test:	20053130

Sample Pretreatment:

pH adjustment	not required	preaeration	not required
turbidity	100 mL filtered through a 0.45um membrane filter		
other	sample spiked with nutrients as required by the method; no other chemicals added		

Final Cell Densities ($x10^3$ / mL)

Dose (%)	Plate a	Plate b	Plate c	Average	sd	cv (%)	Percent Controls	Inhibition (%)
control	461	438	427	442	17	4	100	0
1.6	479	450	434	454	23	5	103	-3
3.1	466	435	421	441	23	5	100	0
6.3	430	424	418	424	6	1	96	4
13	410	384	383	392	15	4	89	11
25	266	270	253	263	9	3	59	41
50	215	210	220	215	5	2	49	51
100	201	213	205	206	6	3	47	53

Note: The final cell densities for the controls are an average of 10 replicate well reading per plate. The final cell densities for each dose is an average of 5 replicate well readings per plate.

Comments

The test was conducted in 96 well microplates. Three replicate plates were run (a, b and c). On each plate 220 uL of sample was plated in 5 replicate wells per dose and 10 replicate wells per control.
The test species was *Raphidocelis subcapitata* (formerly *Selenastrum capricornutum*).
The test was started with 7 day old, exponentially growing cells from in-house cultures.
The plates were incubated under continuous light (4,000 lux).

Inoculum (cells/mL)	
a	10400
b	10600
c	11000
mean	10667
cv (%)	3

Daily Temperature	
0	25
1	25
2	25
3	25
mean	25
cv (%)	0

control pH: initial
final

100% pH: initial

Dose (%)	Absorbance (430nm)	Direct Cell Counts (/0.5mL)
ctl-a	0.14	6850
12.5-a	0.12	5700
100-a	0.06	1100
ctl-b	0.13	5550
12.5-b	0.11	4750
100-b	0.06	1300
ctl-c	0.13	5100
12.5-c	0.11	4750
100-c	0.06	1350

Final cell densities were determined from the absorbance at 430 nm calibrated against cell counts.
The conversion factor for absorbance to cells per millilitre was 3398 with a cv of 34 %
Control growth was a 41 fold increase over the inoculum with a cv of 4 %
No significant stimulatory or inhibitory trends were detected by Mann-Kendall Trend analysis (p=0.05).

The test data and results are verified correct.

K. Steele

Authorized by K.Steele, B.Sc., Quality Assurance Officer

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Test Report

Client:	NOR239	Sample:	20051122	Test:	20053131

Method: 7 d Fathead Minnow Survival and Growth Test (five treatments plus a control) (HQ 4.4.4.6)
reference: Biological Test Method: Test of Larval Growth and Survival Using Fathead Minnow, 1992. Environment Canada, EPS 1/RM/22. (ammended 1997)

Client: Norwest Labs Operation: Edmonton

Sample:
description: 398418, location 925-10
collected: 2005/07/27 at not given by not given
received: 2005/07/29 at 1100 by L.Fantin

Test:
started: 2005/07/29 at 1330 by A. Corbett
ended: 2005/08/05 at 1350 by L. Fantin
reported: 2005/08/15 by G. Diaz

Result:

	Endpoint	Value	Confidence Limits	Units	Method Calculated
Acute: (mortality)	LC25	>100		%	estimated
	LC50	>100		%	estimated
	NOEC	100		%	estimated
	LOEC	>100		%	estimated
	MSD	could not be calculated		fish	
Chronic: (growth)	IC25	>100		%	estimated
	IC50	>100		%	estimated
	NOEC	100		%	estimated
	LOEC	>100		%	estimated
	MSD	could not be calculated		mg	

Notes: LCx & ICx, concentrations lethal or inhibitory to 'x' percent of the test population; NOEC & LOEC, no and lowest observed effect concentrations

Comments: The EC guidance document on the importation of test organisms (1999) has been followed. No unusual behaviour or appearance or treatment of test organisms was noted prior to shipping, upon arrival or preceding the test. Test organisms were received in good condition, with inflated swim bladders. No acclimation of test organisms was required. The mortality of the test organisms was <2%upon arrival, and before test initiation.

Our liability is limited to the cost of the test requested. No liability is assumed for the application and or interpretation of the test results.

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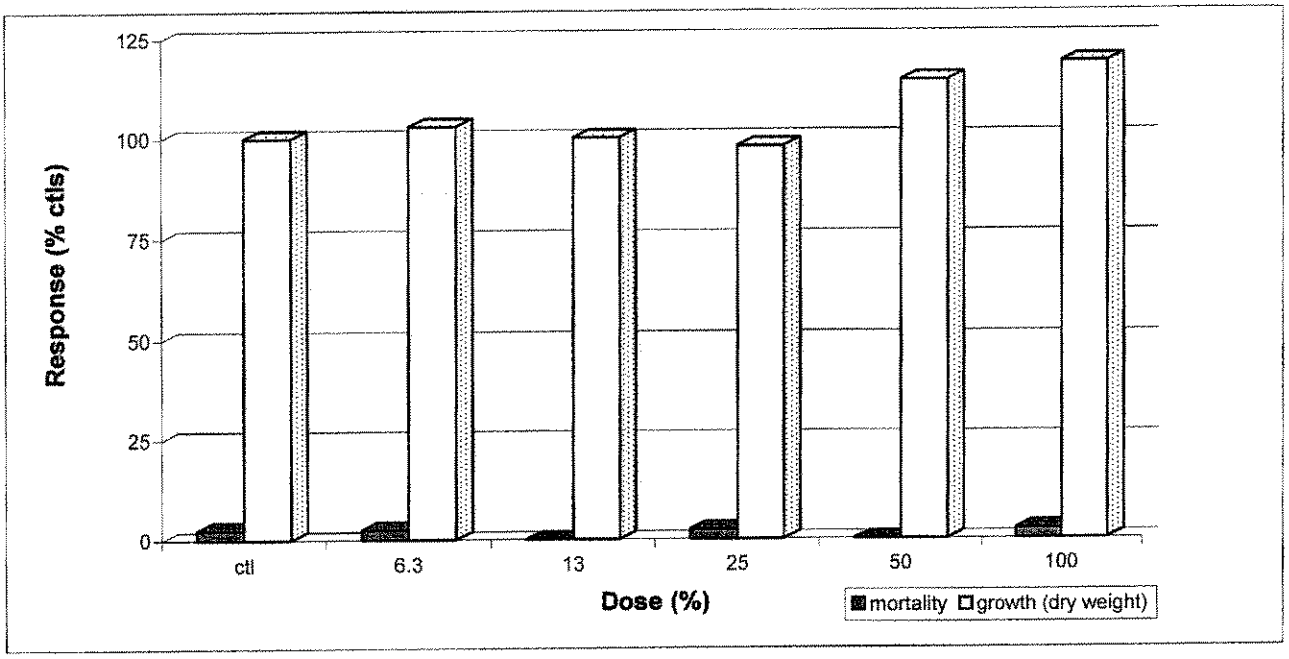
Test Report

Client:	NOR239	Sample:	20051122	Test:	20053131



Test Design

Organism: *Pimephales promelas* Source: Aquatox Inc. Age: < 24 hour post hatch
Breeding stock mortality was less than five percent during the week prior to test initiation.
The tests were conducted in 500 mL plastic vessels with 250 mL volumes (depth of 6.5 cm).
The sample was diluted with dechlorinated City of Calgary water acclimated to the test conditions.

Sample Information

The test was conducted with three samples. Samples a, b, and c were for days 0 to 2, 3 to 4, and 5 to 7.
The sample was not preaerated, filtered or pH adjusted prior to testing or during testing.
The dissolved oxygen concentration (mg/L) was 7.8 The sample pH was 7.2

Test Log

Date	Day	Time	Technicians	Comments
2005/07/29	0	1330	A. Corbett	Test organisms appear normal.
2005/07/30	1	1200	M. Luong	Test organisms appear normal.
2005/07/31	2	1230	M. Luong	Test organisms appear normal.
2005/08/01	3	1200	M. Luong	Test organisms appear normal.
2005/08/02	4	1350	A.Corbett	Test organisms appear normal.
2005/08/03	5	1330	A. Corbett	Test organisms appear normal.
2005/08/04	6	1400	L. Fantin	Test organisms appear normal.
2005/08/05	7	1350	L. Fantin	Test organisms appear normal.

The test data and results are verified correct. K. Steele

Authorized by K.Steele, B.Sc., Quality Assurance Officer

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Test Report

Test Data

Client: NOR239	Sample: 20051122	Test: 20053131

Chemistry

pH (units)

day	New Solutions dose (%) ctl	6.3	13	25	50	100		Old Solutions ctl	6.3	13	25	50	100	
0	8.3	8.3	8.2	8.2	8.1	7.2								
1	8.4	8.3	8.3	8.2	8.1	7.4		8.4	8.4	8.4	8.3	8.3	7.6	
2	8.3	8.3	8.3	8.2	8.1	7.3		8.2	8.2	8.1	8.1	8.0	7.2	
3	8.3	8.3	8.3	8.2	8.1	7.3		8.2	8.2	8.1	8.1	7.9	7.3	
4	8.3	8.3	8.3	8.2	8.1	7.2		8.2	8.1	8.1	8.1	8.0	7.3	
5	8.3	8.3	8.3	8.2	8.1	7.3		8.2	8.1	8.1	8.0	8.0	7.4	
6	8.4	8.4	8.4	8.3	8.2	7.6		8.1	8.0	7.9	7.8	7.6	7.6	
7								8.2	8.1	8.1	8.1	7.9	7.7	
8														

conductance (uS/cm)

0	444	458	490	547	673	921								
1	409	421	455	520	634	870		398	408	429	483	593	845	
2	468	439	458	521	631	863		432	427	444	495	616	884	
3	400	417	450	505	623	852		410	415	462	515	601	887	
4	420	418	440	500	626	850		412	432	460	516	600	880	
5	418	418	423	500	620	852		420	455	480	486	550	910	
6	432	446	479	538	667	896		433	473	507	572	520	722	
7								457	465	501	555	693	934	
8														

dissolved oxygen (mg/L)

0	7.6	7.6	7.6	7.6	7.7	7.8								
1	7.6	7.7	7.7	7.7	7.7	7.7		7.3	7.3	7.3	7.4	7.5	7.5	
2	7.6	7.6	7.6	7.7	7.7	7.7		6.8	6.8	6.7	6.8	6.8	6.8	
3	7.4	7.4	7.5	7.5	7.6	7.7		6.8	6.8	6.8	6.8	6.8	6.8	
4	7.4	7.4	7.4	7.4	7.4	7.4		6.9	6.6	6.6	6.7	6.7	6.9	
5	7.4	7.3	7.3	7.3	7.6	7.3		6.8	6.8	6.8	6.7	6.4	6.5	
6	7.3	7.4	7.3	7.4	7.4	7.4		6.2	6.1	6.1	6.0	6.4	6.1	
7								6.6	6.7	6.7	6.7	6.7	6.8	
8														

temperature (°C)

0	25	25	25	25	25	25								
1	25	25	25	25	25	25		25	25	25	25	25	25	
2	25	25	25	25	25	25		25	25	25	25	25	25	
3	25	25	25	25	25	25		25	25	25	25	25	25	
4	25	25	25	25	25	25		25	25	25	25	25	25	
5	25	25	25	25	25	25		25	25	25	25	25	25	
6	25	25	25	25	25	25		25	25	25	25	25	25	
7														
8														

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Test Report

Test Data

Client: NOR239	Sample: 20051122	Test: 20053131

Biology (number alive)

dose (%)	ctl	6.3	13	25	50	100
replicate	day 1					
a	10	10	10	10	10	10
b	10	10	10	10	10	10
c	10	10	10	10	10	10
d	10	10	10	10	10	10
	day 2					
a	10	10	10	10	10	10
b	10	10	10	10	10	10
c	10	10	10	10	10	9
d	9	10	10	10	10	10
	day 3					
a	10	10	10	10	10	10
b	10	9	10	10	10	10
c	10	10	10	10	10	9
d	9	10	10	10	10	10
	day 4					
a	10	10	10	10	10	10
b	10	9	10	10	10	10
c	10	10	10	10	10	9
d	9	10	10	10	10	10

ctl	6.3	13	25	50	100
day 5					
10	10	10	10	10	10
10	9	9	10	10	10
10	10	10	10	10	9
9	10	10	10	10	10
day 6					
10	10	10	10	10	10
10	9	10	9	10	10
10	10	10	10	10	9
9	10	10	10	10	10
day 7					
10	10	10	10	10	10
10	9	10	9	10	10
10	10	10	10	10	9
9	10	10	10	10	10
dry weights (mg)					
5.8	6.1	5.3	6.4	7.2	7.4
5.6	5.6	6.1	5.3	7.1	8.1
6.0	5.8	6.3	5.5	6.0	5.1
5.4	6.0	5.8	5.2	6.5	6.8

Summary Tables

	Mortality (%)					
a	0	0	0	0	0	0
b	0	10	0	10	0	0
c	0	0	0	0	0	10
d	10	0	0	0	0	0
mean	3	3	0	3	0	3
sd	5	5	0	5	0	5
cv(%)	200	200	0	200	0	200

Growth Data (mg per fish)					
0.6	0.6	0.5	0.6	0.7	0.7
0.6	0.6	0.6	0.6	0.7	0.8
0.6	0.6	0.6	0.6	0.6	0.6
0.6	0.6	0.6	0.5	0.6	0.7
0.6	0.6	0.6	0.6	0.7	0.7
0.0	0.0	0.0	0.1	0.1	0.1
3	3	7	9	9	14
Growth as a Percent of Controls					
100	103	100	98	114	119

Chemistry

dose (%)	ctl	6.3	13	25	50	100
	New Solutions					
pH	8.3	8.3	8.3	8.2	8.1	7.3
EC	427	431	456	519	639	872
DO	7.5	7.5	7.5	7.5	7.6	7.6
temp	25	25	25	25	25	25
	Variance (%)					
pH	1	0	1	0	0	2
EC	5	4	5	4	3	3
DO	2	2	2	2	2	3
temp	0	0	0	0	0	0

ctl	6.3	13	25	50	100
Old Solutions					
Average Values					
8.2	8.2	8.1	8.1	8.0	7.4
423	439	469	517	596	866
6.8	6.7	6.7	6.7	6.8	6.8
25	25	25	25	25	25
Variance (%)					
1	2	2	2	3	3
5	6	6	7	9	8
5	5	5	6	5	6
0	0	0	0	0	0

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Quality Assurance Information

Test Method: *Daphnia* Static Acute Test (LC50, five or more treatments plus a control)
HydroQual Test Method Manual, section: 4.4.3.1

Reference: Biological Test Method: Reference Method for Determining the Acute Lethality of Effluents to *Daphnia magna,* 1990. Environment Canada, EPS 1/RM/14. including May 1996 and December 2000 ammendments.

Test Organism	
test species	*Daphnia magna*
culture source	in-house
original culture source	Environment Canada
days to first brood	9
mean brood size	26
ephippia in stock culture	no
age of test organisms	<24 hours old
culture mortality (%)	6.7

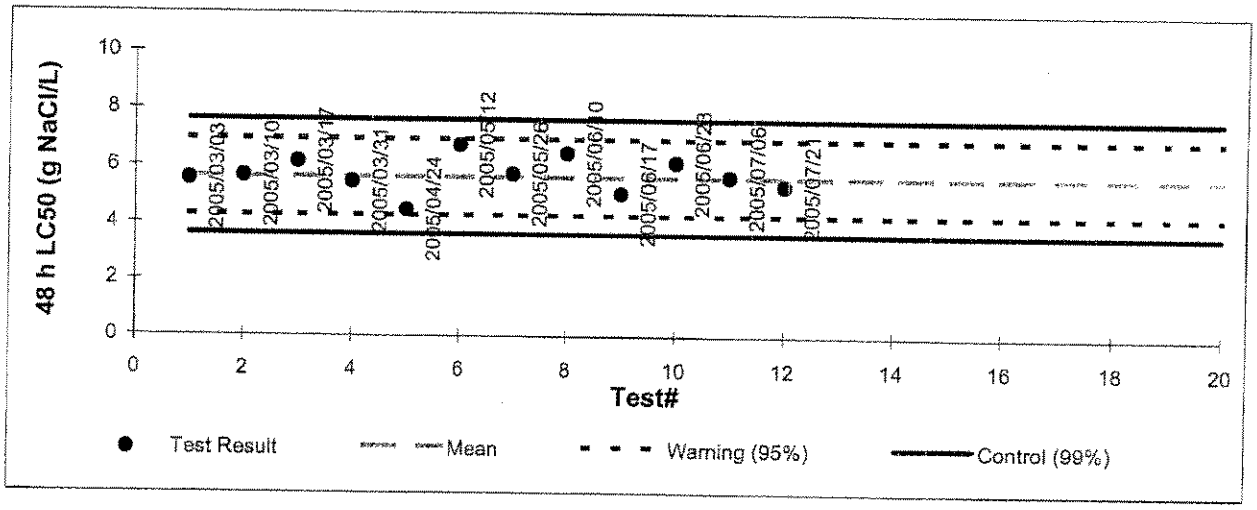
Test Design	
vol. of test vessel (mL)	500
toxicant	sodium chloride
test volume (mL)	150
replicates per treatment	1
neonates per replicate	10
volume per neonate (mL)	15
samples preaerated	no
hardness adjustment	no
temperature (°C)	20
photoperiod	16h light:8h dark
light level (water surface)	400-800 lux
control/dilution water	dechlorinated tap water

Quality Assurance Unit:
The test data and result are verified correct.

K. Steele 2005/07/25
Authorized by K. Steele

Warning Chart (mortality LC50 at 48 h)

Toxicant:	Sodium Chloride (NaCl)					
Current Test:	**started :** 2005/07/19		**ended:** 2005/07/21			
Result (48 h LC50):	5.4	(4.9-5.8)	g NaCl/L	95% confidence limits are in brackets		
Historical Mean:	5.6	**std. dev:**	0.7	**cv (%):**	12	
Chart Limits:	**warning:**	4.3	7.0	**control:**	3.6	7.6
	95% , two standard deviations			99%, three standard deviations		



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Quality Assurance Information

Test Method: Trout 96h Static Acute Test. (LC50, five or more treatments plus a control)
HydroQual Test Method Manual, section: 4.4.4.1

Reference: Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, 1990. Environment Canada, EPS 1/RM/13. including May 1996 and December 2000 amendments.

Test Organism		Test Design	
test species	*Oncorhyncus mykiss*	**vol. of test vessel (L)**	22
culture source	Rainbow Springs Trout Farms	**test volume depth**	>15 cm
temperature (°C)	15 ± 1	**replicates per treatment**	1
dissolved oxygen	saturated	**fingerlings per replicate**	10
stock mortality (last 7d)	<2%	**loading (g fish/L)**	<0.5
batch number	20050714TR	**temperature (°C)**	15 ± 1
		photoperiod	16h light: 8h dark
		light level (water surface)	100-500 lux
		control/dilution water	dechlorinated tap water

Qualty Assurance Unit:
The test data and result are verified correct.

K. Steele 2005/08/12
Authorized by K. Steele

Warning Chart (mortality LC50 at 96 h)

Toxicant: Phenol (C_6H_5OH)

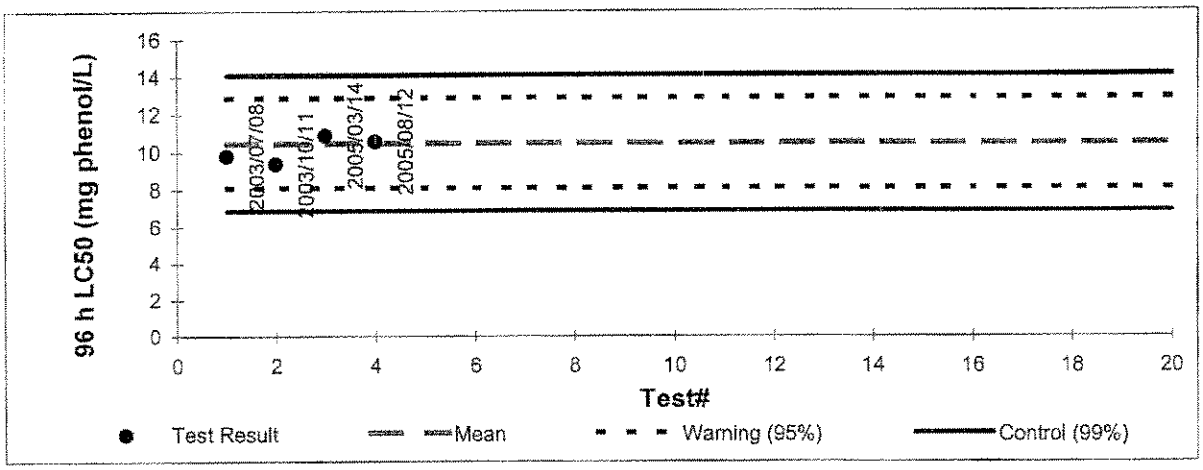
Current Test: **started:** 2005/08/08 **ended:** 2005/08/12

Result (96 h LC50): 10.6 (8.0-16.0) mg/L 95% confidence limits are in brackets

Historical Mean: 10.5 **std.dev:** 1.2 **CV(%):** 11

Chart Limits: **warning:** 8.1 12.9 **control:** 6.9 14.1

95% , two standard deviations 99%, three standard deviations



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Quality Assurance Information

Test Method: *Ceriodaphnia* Survival and Reproduction Test (5 treatments plus a control)
HydroQual Test Method Manual, section: 4.4.3.2

Reference: Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia*, 1992. Environment Canada, EPS 1/RM/21 including November, 1997 amendments.

Test Organism

test species	*Ceriodaphnia dubia*
culture source	in-house
original culture source	Environment Canada
ephippia in stock culture	none
mortality in culture	2
culture fecundity	18(mean young/adult)
young produced in previous brood	7
food type	YAT:Algae
frequency of feeding	daily
condition prior to test initiation	normal
age of test organisms	<24 hours

*note: there are 2 subcultures within this culture source, separated by one week in age.

The test is set with organisms from one subculture. The number of young a culture has is monitored daily. If young are not used that day, they are discarded, therefore organisms in tests are <24h.

Test Design

test type	static renewal
toxicant	sodium chloride (NaCl)
test vessel	30 mL plastic cup
test volume (mL)	15
replicates per treatment	10
organisms per replicate	1
feeding	daily
temperature (°C)	24-26
photoperiod	16 hours light: 8 hours dark
light level (surface)	100-600 lux
hardness adjustment	no

Control/Dilution Water

source	equal volumes of Bow River water and moderately hard reconstituted water (50:50)
pH (units)	8.1
conductance (uS/cm)	352
dissolved oxygen (mg/L)	7.1
NH_4^+ (mg/L)	<0.1
hardness (mg $CaCO_3$/L)	120
alkalinity (mg $CaCO_3$/L)	119
total residual chlorine (mg/L)	<0.01

moderately hard reconstituted water prepared as per EPS 1/RM/21

Quality Assurance Unit:
The test data and results are verified correct. Kirsti Steele 2005/07/25
Authorized by: K. Steele

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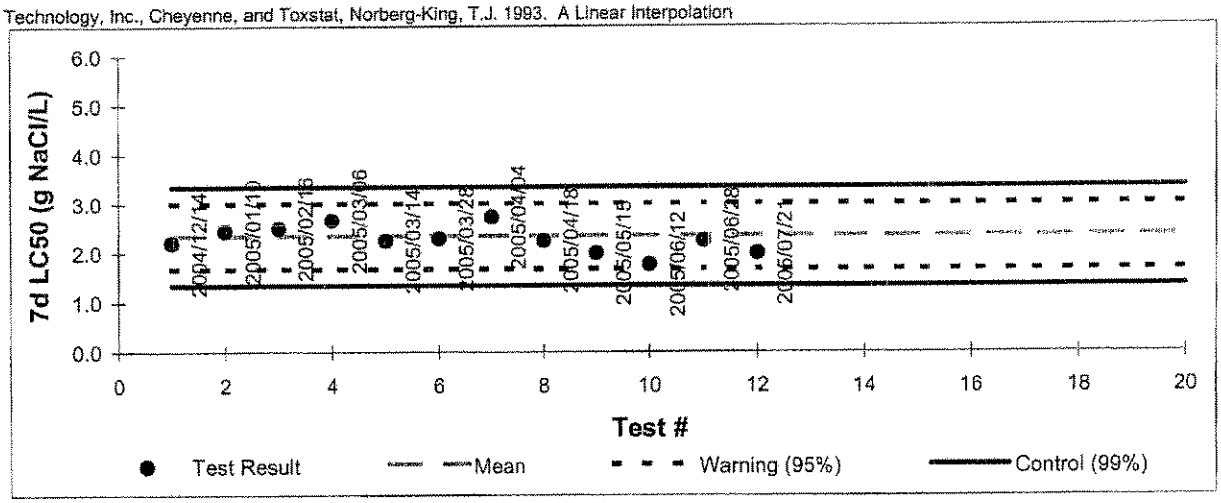
Quality Assurance Information

Ceriodaphnia dubia Warning Chart (Mortality: LC50 at 7 days)

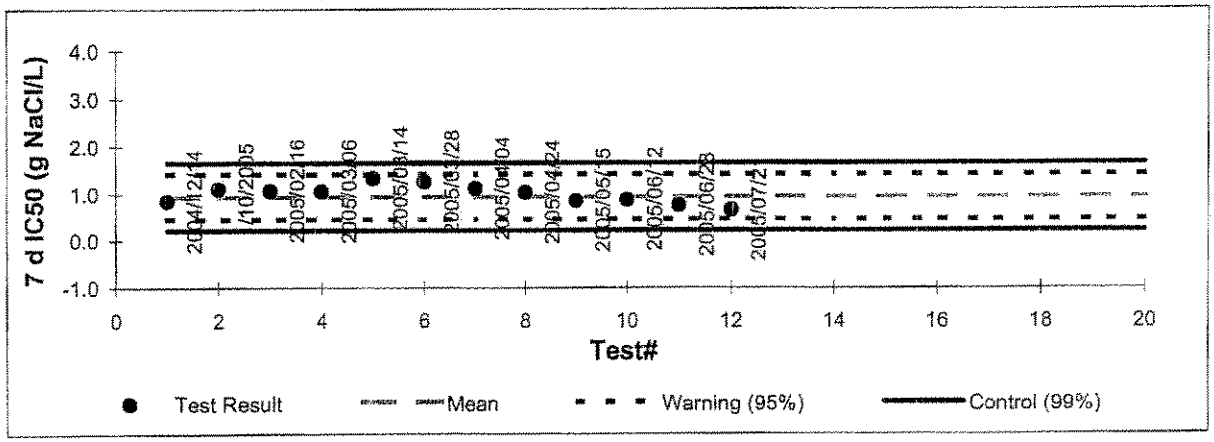
Toxicant:	Sodium Chloride (NaCl)					
Current Test:	**started:**	2005/07/15	**ended:**	2005/07/21		
Result (7 d LC50):	2.0	(0.8-2.5)	g NaCl/L	95% confidence limits are in brackets		
Historical Mean:	2.3	**std dev:**	0.3	**CV (%):**	14	
Chart Limits:	**warning:**	1.7	3.0	**control:**	1.3	3.3
	95% , two standard deviations			99%, three standard deviations		

Statistical analysis perfomed by ICPIN, West, Inc. and D. D. Gulley, 1994. Toxstat 3.4. Western Eco-Systems Technology, Inc., Cheyenne, and Toxstat, Norberg-King, T.J. 1993. A Linear Interpolation



Ceriodaphnia dubia Warning Chart (Reproduction: IC50 at 7 days)

Toxicant:	Sodium Chloride (NaCl)					
Current Test:	**started:**	2005/07/15	**ended:**	2005/07/21		
Result (7d IC50):	0.7	(0.4-0.8)	g NaCl/L	95% confidence limits are in brackets		
Historical Mean:	0.9	**std dev:**	0.2	**CV (%):**	26	
Chart Limits:	**warning:**	0.5	1.4	**control:**	0.2	1.7
	95% , two standard deviations			99%, three standard deviations		



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Reference Toxicant
Ceriodaphnia Culture Log

Adults live	7 d ago	day used
	42	41

day prior to use		row/replicate	1	2	3	4	5	6	7	8	9	10	11	12
			A2	A4	B1	B2	C2							
7	number of young													
	number of adults													
6	number of young		A2	A4	B1	B2	C2							
	number of adults													
5	number of young		A2	A4	B1	B2	C2							
	number of adults													
4	number of young		A2	A4	B1	B2	C2							
	number of adults		8	7	10	12	0							
			2	2	2	2	2							
3	number of young		A2	A4	B1	B2	C2							
	number of adults		0	0	0	0	8							
			2	2	2	2	2							
2	number of young		A2	A4	B1	B2	C2							
	number of adults		12	14	12	18	12							
			2	2	2	2	2							
DAY USED	number of young		A2	A4	B1	B2	C2							
2005/07/15	number of adults		16	14	12	12	12							
			2	2	2	2	2							
totals			A2	A4	B1	B2	C2							
			18	17.5	17	21	16							

number of young produced per organism in the last brood before use: 7

mean number of surviving young per adult over the last seven days: 18

culture mortality over the last seven days: 2

water type was equal mixture of moderately hard reconstituted water and Bow River Water (50:50)

less than 24 h organisms were used in the test with the reference toxicant

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Ceriodaphnia Culture Log

Adults	7 d ago	day used
live	42	42

Sample 20051122

day prior to use		row/replicate	#2 1	2	#3 3	4	5	6	7	8	9	10	11
			D1	E1	A1	B1	B2						
7	number of young												
	number of adults												
			D1	E1	A1	B1	B2						
6	number of young												
	number of adults												
			D1	E1	A1	B1	B2						
5	number of young												
	number of adults												
			D1	E1	A1	B1	B2						
4	number of young												
	number of adults												
			D1	E1	A1	B1	B2						
3	number of young		12	8	10	0	0						
	number of adults		2	2	2	2	2						
			D1	E1	A1	B1	B2						
2	number of young		12	8	12	13	12						
	number of adults		2	2	2	2	2						
			D1	E1	A1	B1	B2						
DAY USED	number of young		13	14	14	12	13						
2005/07/29	number of adults		2	2	2	2	2						
			D1	E1	A1	B1	B2						
totals			19	15	18	13	13						

number of young produced per organism in the last brood before use: 7

mean number of surviving young per adult over the last seven days: 15

culture mortality over the last seven days: 0

water type was equal mixture of moderately hard reconstitued water and Bow River Water (50:50)

less than 24 h organisms were used in the test on the sample

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Quality Assurance Information

Test Method: 7 days Lemna Minor Survival and Growth Test (five treatments plus a control)
HydroQual Test Method Manual, section: 4.4.2.3

Reference: Biological Test Method: Test for Measuring the Inhibition of Growth Using the Freshwater Macrophyte, *Lemna minor*, 1999. Environment Canada, EPS 1/RM/37.

Test Organism

test species	*Lemna minor*
culture source	in-house
original source	UTCC - 492
culture vessels	250 mL Erlenmeyer flask
water source	deionized water
growth medium	Hoagland's E+ medium
cultivation method	as per test conditons
temp of breeding aquaria	25 ± 2°C
organism age	7-10 days old acclimated to test media for 18 to 24 hours
mean increase in frond #	32
(fold increase)	11

Test Design

test type	static
toxicant	potassium chloride
water source	deionized reverse osmosis water with nutrients as per EPS 1/RM/37
test vessel	8 oz polystyrene cups
test volume (ml)	150
test cover	clear plastic lids
replicates per treatment	4
organisms per replicate	two 3 frond plants
temperature (°C)	25 ± 2°C
photoperiod	24 hours light
light level (surface)	4, 500 ± 300 lux
light source	cool white fluorescent
hardness adjustment	no

Control/Dilution Water

water source deionized reverse osmosis water and nutirents as per EPS 1/RM/37

Quality Assurance Unit:
The test data and result are verified correct.

Linda Steele 2005/08/04
Authorized by: K. Steele

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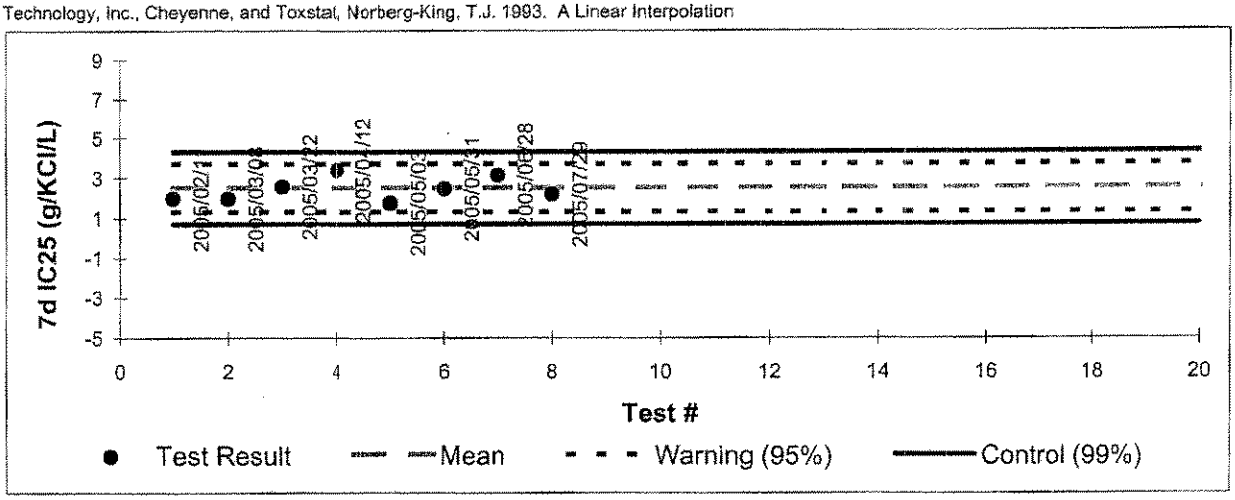
Quality Assurance Information

Lemna minor Warning Chart (Growth: frond number IC25 at 7 days)

Toxicant:	potassium chloride (KCl)					
Current Test:	**started:**	2005/07/22	**ended:**	2005/07/29		
Result (7d IC25):	2.2	(1.5-3.0)	g KCl/L	95% confidence limits are in brackets		
Historical Mean:	2.5	**std dev:**	0.6	**CV (%):**	24	
Chart Limits:	**warning:**	1.3	3.7	**control:**	0.7	4.3
	95% , two standard deviations			99%, three standard deviations		

Statistical analysis perfomed by ICPIN, West, Inc. and D. D. Gulley, 1994. Toxstat 3.4. Western Eco-Systems Technology, Inc., Cheyenne, and Toxstat, Norberg-King, T.J. 1993. A Linear Interpolation



Lemna minor Warning Chart (Growth: biomass IC25 at 7 days)

Toxicant:	potassium chloride (KCl)					
Current Test:	**started:**	2005/07/22	**ended:**	2005/07/29		
Result (7d IC25):	5.0	(0.7-15.1)	g KCl/L	95% confidence limits are in brackets		
Historical Mean:	5.1	**std dev:**	1.5	**CV (%):**	30	
Chart Limits:	**warning:**	2.0	8.1	**control:**	0.5	9.6
	95% , two standard deviations			99%, three standard deviations