Sample Number : 9-1-C

SAMPLE IDENTIFICATION

Company :	Department of Earth Sciences, University of Waterloo		
Location :	Waterloo ON	Date Collected :	2006-08-14
Substance :	9-1-C	Date Received :	2006-08-15
Sampled By :	M. Fraser	Time Received :	8:30
Temp. on arrival :	15.0°C	Date Tested :	2006-08-15
Sample Description :	Clear, colourless, moderate odour		
Test Method :	Test of Reproduction and Survival using the Cladoceran Ceriodaphnia dubia. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/21 (as amended November 1997).		

TEST RESULTS

Effect	Value	95 % Confidence Limits	Statistical Method
LC50 (Survival)	62.2%	50-100%	Nonlinear Interpolation (Stephan)[a]
IC25 (Reproduction)	26.8%	19.0-30.6%	Linear Interpolation (Toxstat 3.5)[b]

The results reported relate only to the sample tested.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2006-08-21	Statistical Method :	Linear Interpolation (Toxstat 3.5)[b]
Organism Batch :	Cd06-08	Historical Mean IC25 :	1.28 g/L
Test Duration :	6 days	Warning Limits (± 2SD) :	0.88 - 1.89
IC25 Survival :	1.34 g/L	Analyst(s) :	SM/NK
95% Confidence Limits :	0.68-1.52		

TEST CONDITIONS

Test Organism :	*Ceriodaphnia dubia*	Sample Filtration :	None
Organism Batch :	Cd06-08	Test Aeration :	None
Source :	Stantec In-house Culture	Control/Dilution Water :	Well water with 29.6 mg/L NaCl
Age (on Test Day 0) :	≤24 h (within 12 h of same age)	Test Volume per Replicate :	15 mL
Culture Mortality :	0 % (during previous 7 days)	Test Vessel :	25mL glass vial
Mean Young Produced :	≥ 15.0 (during previous 7 days)	Depth of Test Solution :	5.0 cm
Young Produced :	≥ 6.0 (previous brood)	Organisms per Replicate :	1
Ephippia in Culture :	None	Number of Replicates :	10
pH Adjustment :	None	Daily Renewal Method :	Transferred to fresh solutions
Hardness Adjustment :	None	Test Method Deviation(s) :	None

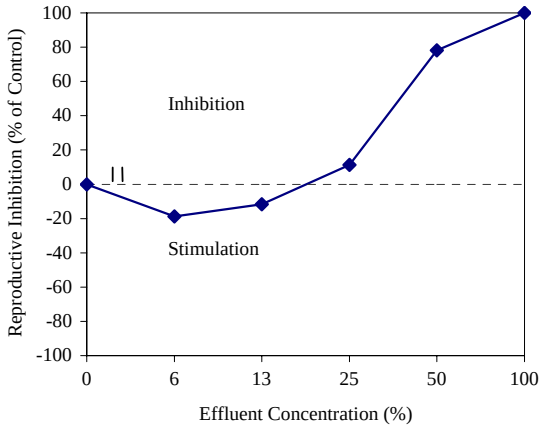
COMMENTS

All test validity criteria as specified in the test method cited above were met.
No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.

Sample Number : 9-1-C

SUMMARY OF TEST DATA

***Ceriodaphnia dubia* Reproductive Inhibition**



Total Neonates per Test Organism at Test Completion

	Effluent Concentration (%)					
Replicate	**Control**	**6**	**13**	**25**	**50**	**100**
1	28	32	31	18	8	0
2	34	38	29	29	0	0
3	19	19	33	10	0	0
4	37	39	45	32	15	0
5	35	33	26	30	6	0
6	35	36	39	31	7	0
7	36	36	32	30	7	0
8	33	39	33	35	4	0
9	0	43	38	31	6	0
10	36	33	21	14	11	0
Mean	29.3	34.8	32.7	26.0	6.4	0.0

Cumulative Daily Test Organism Mortality (%)

		Effluent Concentration (%)					
Date	**Test Day**	Control	6	13	25	50	100
2006-08-16	1	0	0	0	0	0	50
2006-08-17	2	10	0	0	0	0	100
2006-08-18	3	10	0	0	0	10	100
2006-08-19	4	10	0	0	0	20	100
2006-08-20	5	10	10	0	10	20	100
2006-08-21	6	20	10	0	10	20	100
Total Mortality (%)		20	10	0	10	20	100

REFERENCES

[a] Stephan, C. E. 1977. Methods for calculating an LC50. pp 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 : _____ Approved By : _____

Senior Laboratory Technician

Sample Number : 9-1-C

Ceriodaphnia dubia Survival and Reproduction

Test Initiation Date : 2006-08-15
Initiation Time : 12:40
Test Completion Date : 2006-08-21

Concentration (%)		Replicate										Mean	Analyst(s)
Control	**Day**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Young**	
2006-08-16	**1**	0	0	0	0	0	0	0	0	0	0	0	EW
2006-08-17	**2**	0	0	0	0	0	0	0	0	0 x	0	0	EW
2006-08-18	**3**	0	0	0	0	0	0	0	0	0	0	0	EW
2006-08-19	**4**	5	6	5	7	6	7	7	8	0	6	5.7	EW
2006-08-20	**5**	11	12	14	14	12	11	11	16	0	15	11.6	EW
2006-08-21	**6**	12	16	0 x	16	17	17	18	9	0	15	12	EW

Concentration (%)		Replicate										Mean
25	**Day**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Young**
2006-08-16	**1**	0	0	0	0	0	0	0	0	0	0	0
2006-08-17	**2**	0	0	0	0	0	0	0	0	0	0	0
2006-08-18	**3**	0	0	0	0	0	0	0	0	0	0	0
2006-08-19	**4**	3	5	6	6	6	5	2	6	6	4	4.9
2006-08-20	**5**	7	11	4	x 13	11	13	12	13	13	10	10.7
2006-08-21	**6**	8	13	0	13	13	13	16	16	12	0	10.4

Concentration (%)		Replicate										Mean
6	**Day**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Young**
2006-08-16	**1**	0	0	0	0	0	0	0	0	0	0	0
2006-08-17	**2**	0	0	0	0	0	0	0	0	0	0	0
2006-08-18	**3**	0	0	0	0	0	0	0	0	0	0	0
2006-08-19	**4**	6	5	5	6	4	6	6	6	6	3	5.3
2006-08-20	**5**	11	14	14	x 13	12	12	13	13	15	13	13
2006-08-21	**6**	15	19	0	20	17	18	17	20	22	17	16.5

Concentration (%)		Replicate										Mean
50	**Day**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Young**
2006-08-16	**1**	0	0	0	0	0	0	0	0	0	0	0
2006-08-17	**2**	0	0	0	0	0	0	0	0	0	0	0
2006-08-18	**3**	0	0 x	0	0	0	0	0	0	0	0	0
2006-08-19	**4**	4	0	0 x	0	1	1	3	0	1	0	1
2006-08-20	**5**	4	0	0	6	5	0	4	4	5	4	3.2
2006-08-21	**6**	0	0	0	9	0	6	0	0	0	7	2.2

Concentration (%)		Replicate										Mean
13	**Day**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Young**
2006-08-16	**1**	0	0	0	0	0	0	0	0	0	0	0
2006-08-17	**2**	0	0	0	0	0	0	0	0	0	0	0
2006-08-18	**3**	0	0	0	0	0	0	0	0	0	0	0
2006-08-19	**4**	6	3	5	7	0	6	6	4	6	4	4.7
2006-08-20	**5**	11	11	14	15	11	16	11	13	13	8	12.3
2006-08-21	**6**	14	15	14	23	15	17	15	16	19	9	15.7

Concentration (%)		Replicate										Mean
100	**Day**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Young**
2006-08-16	**1**	0 x	0 x	0 x	0	0 x	0	0	0	0	0 x	0
2006-08-17	**2**	0	0	0	0 x	0	0 x	0 x	0 x	0 x	0	0
2006-08-18	**3**	0	0	0	0	0	0	0	0	0	0	0
2006-08-19	**4**	0	0	0	0	0	0	0	0	0	0	0
2006-08-20	**5**	0	0	0	0	0	0	0	0	0	0	0
2006-08-21	**6**	0	0	0	0	0	0	0	0	0	0	0

Data Reviewed By :_____

"x" = adult mortality
"*" = accidental adult mortality

Date :_____

Sample Number : 9-1-C

***Ceriodaphnia dubia* Water Chemistry Data**

	Initial Chemistry:	Temp. (°C)	DO (mg/L)	pH	Conductivity (µmhos/cm)	Hardness (mg/L as $CaCO_3$)
		25.5	3.2	7.8	382.0	230

		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Effluent Sub-sample Used		1	2	3	4	5	6
Temperature (°C)		25.5	25.5	24.5	25.5	25.5	25.5
Dissolved Oxygen (mg/L)		3.2	3.5	4.2	3.8	3.3	3.6
Dissolved Oxygen % Sat.[1]		41	44	52	47	42	46
Pre-aeration Time (min)[2]		0	0	0	0	0	0
Analyst(s)	Initial	EW	EW	MF	EW	CF	EW
	Final	EW	MF	EW	EW	EW	EW
Control (0%)							
Temp. (°C)	Initial	24.5	25.0	25.0	25.0	25.0	24.0
	Final	25.0	25.0	25.0	24.0	24.0	25.0
DO % Sat.[1]	Initial	97	100	99	99	100	96
DO (mg/L)	Initial	7.8	8.0	7.9	7.9	8.0	7.7
	Final	7.0	6.9	6.0	6.6	6.3	5.8
pH	Initial	8.3	8.2	8.2	8.3	8.3	8.1
	Final	8.3	8.4	8.2	8.3	8.2	8.1
Cond. (µmhos/cm)	Initial	588	596	598	609	598	568
6 %							
Temp. (°C)	Initial	24.5	25.0	25.0	25.0	25.0	24.0
	Final	25.0	25.0	25.0	24.0	24.0	25.0
DO (mg/L)	Initial	7.8	8.0	8.0	7.7	7.9	7.8
	Final	6.7	6.6	5.8	6.6	6.1	6.3
pH	Initial	8.2	8.2	8.2	8.2	8.1	8.2
	Final	8.3	8.3	8.2	8.3	8.2	8.2
Cond. (µmhos/cm)	Initial	580	564	574	582	573	543
25 %							
Temp. (°C)	Initial	24.5	25.0	25.0	25.0	25.0	24.0
	Final	25.0	25.0	25.0	24.0	24.0	25.0
DO (mg/L)	Initial	7.2	7.6	7.8	7.6	7.4	7.4
	Final	6.9	6.7	6.0	6.9	6.0	6.4
pH	Initial	8.1	8.1	8.2	8.1	8.1	8.1
	Final	8.3	8.3	8.2	8.4	8.2	8.2
Cond. (µmhos/cm)	Initial	557	530	539	542	534	515
100 %							
Temp. (°C)	Initial	24.5	25.0	25.0	25.0	25.0	24.0
	Final	25.0	25.0	25.0	24.0	24.0	25.0
DO (mg/L)	Initial	4.2	4.6	5.9	4.5	4.1	4.3
	Final	7.0	6.5	–	–	–	–
pH	Initial	7.7	7.8	7.9	7.7	7.7	7.7
	Final	8.3	8.2	–	–	–	–
Cond. (µmhos/cm)	Initial	383	383	383	383	384	381

"–" = not measured

[1] % saturation (adjusted for actual temperature and barometric pressure)

[2] ≤100 bubbles/minute