

Client: 2001117	Sample: 20011446	Test: 20013618
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Method *Daphnia* 48h Static Acute Test (five treatments plus a control)
Reference: Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*, 1990. Environ. Can., EPS 1/RM/14. (amended 1996+2000)
Client: Syntroleum Corporation

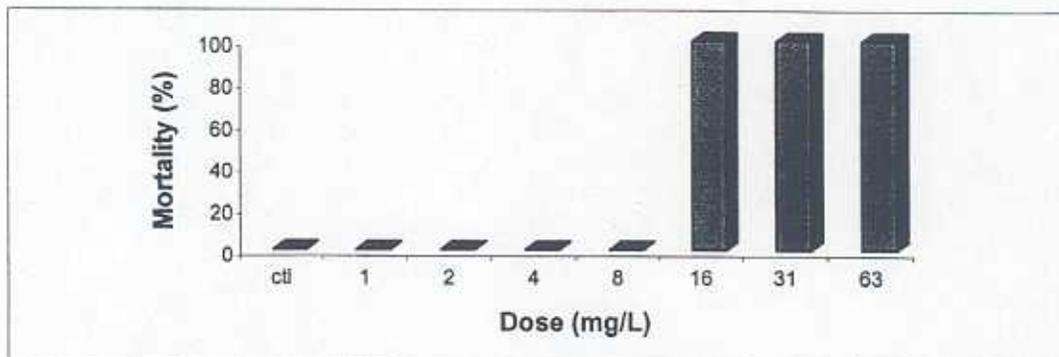
Sample:
 description: Syntroleum Diesel Fuel / S-2 (RPU 10920)
 collected: not given at not given by na
 received: 2001/11/16 at 1200 by D.Guterson

Test:
 started: 2001/12/20 at 1300 by D.Guterson
 ended: 2001/12/22 at 1230 by D.Guterson
 reported: 2001/12/26 by M.Murray

Result:

Endpoint	Value (mg/L)	Confidence Limits (95%)		Method Calculated
		lower	upper	
LC50	11	8	16	linear interpolation estimate
LC25	10			estimate
NOEC	8			estimate
LOEC	16			estimate

Notes: LC25 & LC50, concentrations lethal to 25% and 50% of the test population
 NOEC, highest concentration tested that had no significant observed effect
 LOEC, lowest concentration tested that had an observed significant effect



Test Data

Client:	2001117	Sample:	20011446	Test:	20013618
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Day	Time	Technician	Comment/Observation
0	1300	D.Guterson	Test daphnai appear normal
1	1300	D.Guterson	1-7F,2-3F,4-6F,8-2F/2I,16-4F/3I,31-10F/1I,63-10I/6F
2	1230	D.Guterson	1-3F,2-5F,4-4I,8-6I

Dose (mg/L)	ctl	1	2	4	8	16	31	63
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day	pH (units)							
0	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
1								
2	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3

	EC (uS/cm)							
0	431	422	420	428	420	424	424	417
1								
2	434	437	431	420	435	430	435	444

	DO (mg/L)							
0	7.8	7.9	7.9	8.0	7.9	8.0	8.0	8.1
1								
2	7.8	7.9	7.9	7.9	8.1	8.0	8.1	7.9

	Temperature (°C)							
0	20	20	20	20	20	20	20	20
1								
2	20	20	20	20	20	20	20	21

Number Alive - day 1 (F, floating; I, immobile; B, stuck on bubble; D, caught in debris)

10	10	10	10	10	10	10	10	10
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Number Alive - day 2

10	10	10	10	10	0	0	0	0
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Mortality (%)

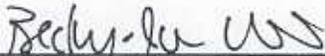
0	0	0	0	0	100	100	100	100
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Comments: organism: <24 h old *Daphnia magna* from in-house cultures from culture jar: C3
 Cultures time to first brood (d): 8 brood size (neonates per brood): 22
 No adjustments were made to sample pH and hardness before testing. The sample was not aerated before testing. Lab dilution water hardness was (mg CaCO₃/L): 168 water pail: B
 The test was conducted in 385 mL plastic vessels containing 150 mL of test solution and ten daphnids (loading density of 15 mL per daphnid or neonate).

There were no protocol deviations during the conduct of this test.

Notes: EC, electrical conductivity; DO, dissolved oxygen; nd, not done

The test data and results are verified correct.


 Authorized by: B/Unis, B.Sc., Quality Assurance Officer

Warning Chart

Quality Assurance Information

Test Method: *Daphnia* Static Acute Test (LC50, five or more treatments plus a control)
Reference: Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*, 1990. Environment Canada, EPS 1/RM/14. including May 1996 and December 2000 amendments.

Test Organism		Test Design	
test species	<i>Daphnia magna</i>	vol. of test vessel (mL)	500
culture source	in-house	test volume (mL)	150
days to first brood	11	replicates per treatment	1
mean brood size	26	neonates per replicate	10
ephippia in stock culture	no	volume per neonate (mL)	15
age of test organisms	< 24 hours old	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.

Reddy, J. U 2002/01/18

Warning Chart (mortality LC50 at 48 h)

Toxicant: sodium chloride (NaCl)
Current Test: started: 2002/01/16 ended: 2002/01/18
Result (48 h LC50): 5.2 (4.7-5.6) g NaCl/L 95% confidence limits are in brackets
Historical Mean: 5.3 **std.dev:** 0.5 **CV(%):** 10
Chart Limits: **warning:** 4.3 6.3 **control:** 3.8 6.8
 95% , two standard deviations 99%, three standard deviations

