HydroQual
Laboratories Ltd.

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

Test Report

Client: 2001117	Sample: 20011446	Test: 20013618

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

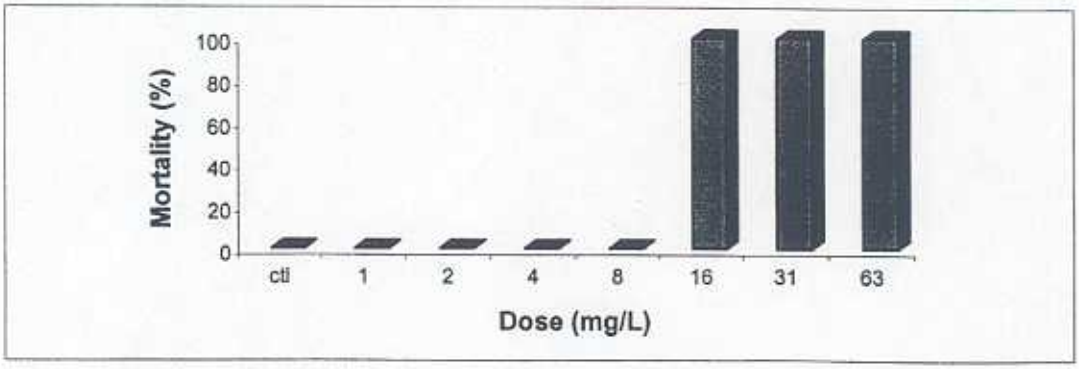
Sample:
description: Syntroleum Diesel Fuel / S-2 (RPU 10920)
collected: not given at not given by na
received: 2001/11/16 at 1200 by D.Guterson

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%) lower	upper	Method Calculated
LC50	11	8	16	linear interpolation
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



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Test Data

Client:	2001117	Sample:	20011446	Test:	20013618

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
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
				Number Alive - day 2				
	10	10	10	10	10	0	0	0
				Mortality (%)				
	0	0	0	0	0	100	100	100

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 $CaCO_3$/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. Becky-Jo Unis
Authorized by: B. Unis, B.Sc., Quality Assurance Officer

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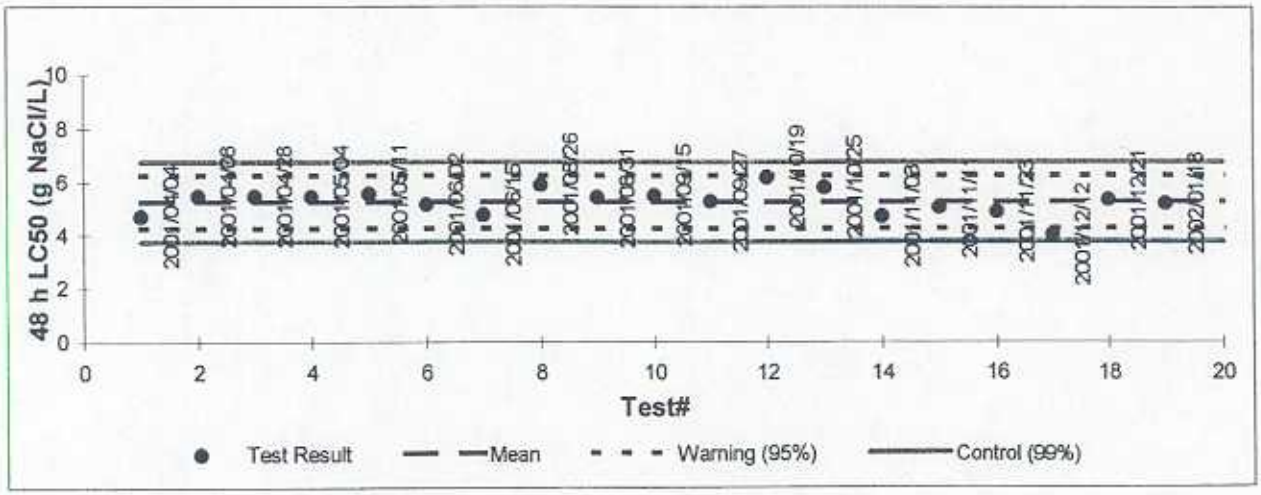
Warning Chart

Quality Assurance Information

Test Method: *Daphnia* Stactic 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	*Daphnia magna*	**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

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