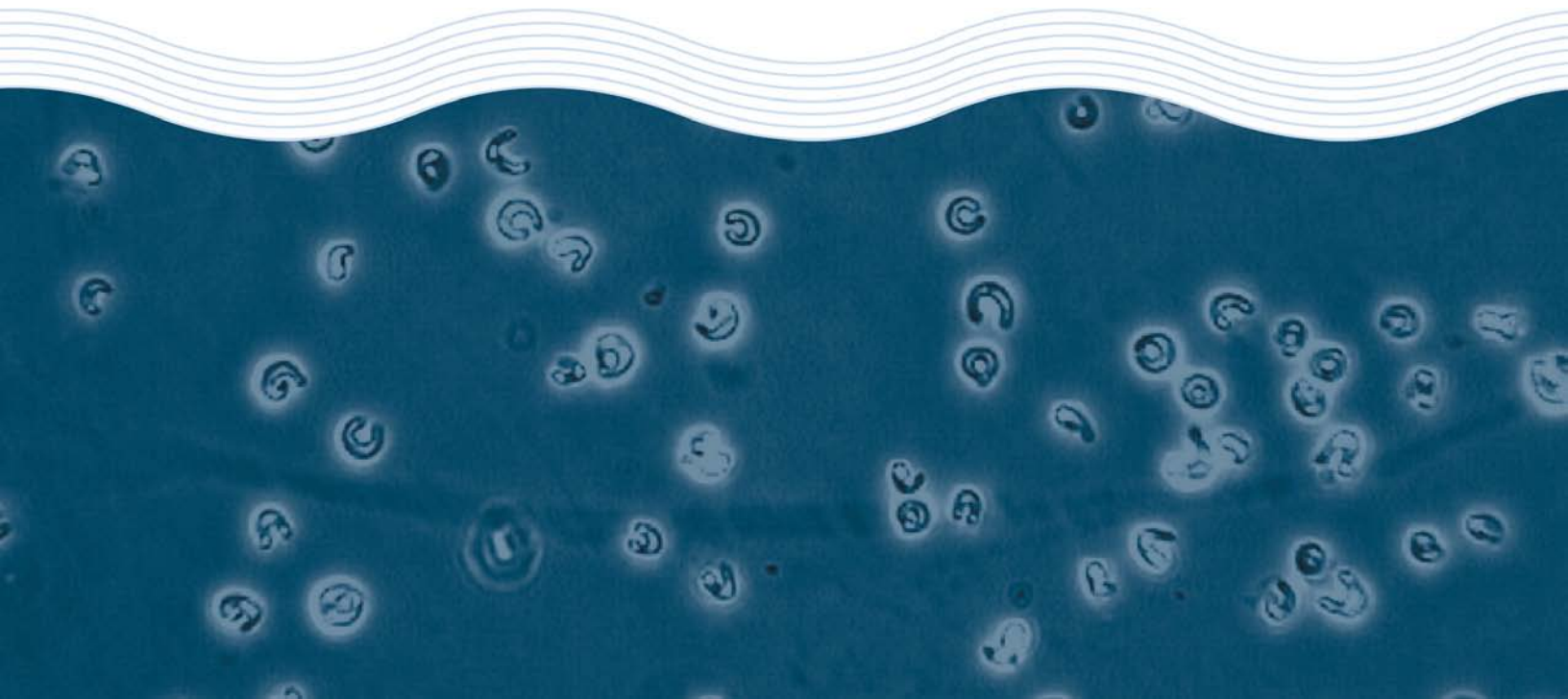


# **Toxicity Assessment of Slickgone EW Dispersant**

**Spill Tech Pty Ltd**

**Test Report**

**August 2012**



# **Toxicity Assessment of Slickgone EW Dispersant**

**Spill Tech Pty Ltd**

**Test Report**

**August 2012**

## Toxicity Test Report: TR0933/1

(page 1 of 2)

This document is issued in accordance with NATA's accreditation requirements

<b>Client:</b>	Spill Tech Pty Ltd PO Box 1451 Noosaville DC, QLD 4566	<b>ESA Job #:</b>	PR0933
<b>Attention:</b>	Mr John Eddy	<b>Date Sampled:</b>	Not supplied
<b>Client Ref:</b>	Not supplied	<b>Date Received:</b>	6 August 2012
		<b>Sampled By:</b>	Client
		<b>ESA Quote #:</b>	PL0933_q01

<b>Lab ID No.:</b>	<b>Sample Name:</b>	<b>Sample Description:</b>
5579	Slickgone EW	Chemical received at room temperature in apparent good condition.

<b>Test Performed:</b>	72-hr marine algal growth test using <i>Nitzschia closterium</i>
<b>Test Protocol:</b>	ESA SOP 110 (ESA 2011), based on Stauber <i>et al.</i> (1994)
<b>Test Temperature:</b>	The test was performed at 21±1°C.
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding sample 5579 into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control and Colour Control were tested concurrently with the prepared sample.
<b>Source of Test Organisms:</b>	In-house culture, originally sourced from CSIRO Microalgae Supply Service, TAS
<b>Test Initiated:</b>	7 August 2012 at 1200h

Sample 5579: <i>Slickgone EW</i>	<i>Vacant</i>	<i>Vacant</i>
Concentration (mg/L)	Cell Yield (Mean number of cells/mL x10 <sup>4</sup> ± SD)	
FSW Control	101.8 ± 8.4	
Colour Control	100.4 ± 6.1	
15.6	116.5 ± 3.0	
31.3	102.6 ± 6.3	
62.5	39.0 ± 2.7 *	
125	0.0 ± 0.0	
250	0.0 ± 0.0	
500	0.0 ± 0.0	
1000	0.0 ± 0.0	
72-hr IC10 = 33.5 (28.0-37.5) mg/L		
72-hr IC50 = 54.9 (52.7-56.8) mg/L		
NOEC = 31.3 mg/L		
LOEC = 62.5 mg/L		

\*Significantly lower cell yield compared with the FSW Control (Bonferroni t Test, 1-tailed, P=0.05)

## Toxicity Test Report: TR0933/1

(page 2 of 2)

QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean cell density	$\geq 16.0 \times 10^4$ cells/mL	$102.8 \times 10^4$ cells/mL	Yes
Control coefficient of variation	<20%	8.3%	Yes
Reference Toxicant within cusum chart limits	1.0-19.5 $\mu$ g Cu/L	10.8 $\mu$ g Cu/L	Yes

Test Report Authorised by:



Dr Rick Krassoi, Director on 25 March 2013

Results are based on the samples in the condition as received by ESA.

**NATA Accredited Laboratory Number: 14709**

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**Citations:**

ESA (2011) SOP 110 – *Marine Algal Growth Test*. Issue No. 8. Ecotox Services Australasia, Sydney NSW

Stauber, J.L., Tsai, J., Vaughan, G.T., Peterson, S.M. and Brockbank, C.I. (1994) Algae as indicators of toxicity of the effluent from bleached eucalypt kraft pulp mills. National Pulp Mills Research Program, Technical Report No. 3. CSIRO, Canberra, ACT

## Toxicity Test Report: TR0933/2

(page 1 of 2)

This document is issued in accordance with NATA's accreditation requirements

<b>Client:</b>	Spill Tech Pty Ltd PO Box 1451 Noosaville DC, QLD 4566	<b>ESA Job #:</b>	PR0933
<b>Attention:</b>	Mr John Eddy	<b>Date Sampled:</b>	Not supplied
<b>Client Ref:</b>	Not supplied	<b>Date Received:</b>	6 August 2012
		<b>Sampled By:</b>	Client
		<b>ESA Quote #:</b>	PL0933_q01

<b>Lab ID No.:</b>	<b>Sample Name:</b>	<b>Sample Description:</b>
5579	Slickgone EW	Chemical received at room temperature in apparent good condition.

\*Ammonia analysis is not covered by Ecotox Services Australasia's scope of accreditation

<b>Test Performed:</b>	72-hr macroalgal germination success test using <i>Hormosira banksii</i>
<b>Test Protocol:</b>	ESA SOP 116 (ESA 2010), based on Kevekordes and Clayton (1996) and Gunthorpe <i>et al.</i> (1997)
<b>Test Temperature:</b>	The test was performed at 18±1°C.
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding sample 5579 into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared sample.
<b>Source of Test Organisms:</b>	Field collected from Bilgola, NSW.
<b>Test Initiated:</b>	16 August 2012 at 1440h

Sample 5579: <i>Slickgone EW</i>		Vacant	Vacant
Concentration (mg/L)	% Germination (Mean ± SD)		
FSW Control	96.0 ± 2.2		
15.9	88.5 ± 2.5 *		
31.3	92.0 ± 2.9		
62.5	88.3 ± 5.8 *		
125	60.8 ± 5.4 *		
250	1.0 ± 1.2 *		
500	0.0 ± 0.0		
1000	0.0 ± 0.0		
<b>72-hr EC10 = 100.3 (94.0-105.7)mg/L</b>			
<b>72-hr EC50 = 139.4 (134.5-144.4)mg/L</b>			
<b>NOEC = 31.3mg/L</b>			
<b>LOEC = 62.5mg/L</b>			

\*Significantly lower percentage of germinated zygotes compared with the FSW Control (Dunnett's Test, 1-tailed, P=0.05)



## Toxicity Test Report: TR0933/2

(page 2 of 2)

QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean % germination	≥70.0%	96.0%	Yes
Reference Toxicant within cusum chart limits	45.0-499.0µg Cu/L	55.6µg Cu/L	Yes

Test Report Authorised by:



Dr Rick Krassoi, Director on 25 March 2013

Results are based on the samples in the condition as received by ESA.

### NATA Accredited Laboratory Number: 14709

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### Citations:

ESA (2010) *SOP 116 – Macroalgal Germination Success Test*. Issue No. 11. Ecotox Services Australasia, Sydney.

Gunthorpe L, Nottage M, Palmer D, and Wu R (1997) *Testing for Sublethal Toxicity Using Gametes of Hormosira banksii: protocol*. National Pulp Mills Research Program Technical Report No. 22, CSIRO, Canberra.

Kevekordes K and Clayton MN (1996) Using developing embryos of *Hormosira banksii* (Phaeophyta) as a marine bioassay system. *International Journal of Plant Science*, 157: 582-585.

## Toxicity Test Report: TR0933/3

(page 1 of 2)

<b>Client:</b>	Spill Tech Pty Ltd PO Box 1451 Noosaville DC, QLD 4566	<b>ESA Job #:</b>	PR0933
<b>Attention:</b>	Mr John Eddy	<b>Date Sampled:</b>	Not supplied
<b>Client Ref:</b>	Not supplied	<b>Date Received:</b>	6 August 2012
		<b>Sampled By:</b>	Client
		<b>ESA Quote #:</b>	PL0933_q01

<b>Lab ID No.:</b>	<b>Sample Name:</b>	<b>Sample Description:</b>
5579	Slickgone EW	Chemical received at room temperature in apparent good condition.

<b>Test Performed:</b>	48-hr acute survival test using the copepod <i>Parvocalanus crassirostris</i>
<b>Test Protocol:</b>	ESA SOP 124 (ESA 2012), based on Rose et al. (2006)
<b>Test Temperature:</b>	The test was performed at 27±2°C.
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding sample 5579 into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared sample.
<b>Source of Test Organisms:</b>	In house culture
<b>Test Initiated:</b>	4 December 2012 at 1330 h


Sample 5579: <i>Slickgone EW</i>		<i>Vacant</i>	<i>Vacant</i>
Concentration (mg/L)	% Survival (Mean ± SD)		
FSW Control	95.0 ± 10.0		
15.6	95.0 ± 10.0		
31.3	0.0 ± 0.0		
63	0.0 ± 0.0		
125	0.0 ± 0.0		
250	0.0 ± 0.0		
500	0.0 ± 0.0		
1000	0.0 ± 0.0		
<b>48-hr IC10 = 16.7 (12.6-22.6)mg/L</b>			
<b>48-hr EC50 = 22.1 (15.6-31.3)mg/L</b>			
<b>NOEC = 15.6mg/L</b>			
<b>LOEC = 31.3mg/L</b>			

QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean % survival	≥80.0%	95.0%	Yes
Reference Toxicant within cusum chart limits	Not available <sup>1</sup>	11.5µg Cu/L	n/a

<sup>1</sup>Reference toxicant cusum chart limits not available due to limited testing with this species

**Toxicity Test Report: TR0933/3**

**(page 2 of 2)**

Test Report Authorised by:  Dr Rick Krassoi, Director on 25 March 2013

Results are based on the samples in the condition as received by ESA. This document shall not be reproduced except in full.

**Citations:**

ESA (2012) *SOP 124 – Acute toxicity test using the copepod *Gladioferens imparipes**. Issue No. 2. Ecotox Services Australasia, Sydney, New South Wales.

Rose A, Carruthers A-M, Stauber J, Lim R and Blockwell S. (2006). Development of an acute toxicity test with the marine copepod *Acartia sinjiensis*. *Australasian Journal of Ecotoxicology*, 12: 73-81.



**Statistical Printouts for the  
*Nitzschia* Growth Inhibition Tests**

**Microalgal Growth inhibition Test-Cell Yield**

Start Date: 7/08/2012 12:00    Test ID: PR0933/02    Sample ID: Slickgone EW  
 End Date: 10/08/2012 12:00    Lab ID: 5579    Sample Type: CP-Chemical product  
 Sample Date:    Protocol: ESA 110    Test Species: NC-Nitzschia closterium

Comments:

Conc-mg/L	1	2	3	4	5	6	7	8
FSW Control	93.12	96.92	109.12	102.92	92.32	95.52	112.72	111.52
Colour Control	100.12	91.92	105.52	103.92				
15.6	114.32	114.12	116.92	120.52				
31.3	97.72	97.12	109.92	105.72				
62.5	35.12	38.92	40.92	40.92				
125	0.00	0.00	0.00	0.00				
250	0.00	0.00	0.00	0.00				
500	0.00	0.00	0.00	0.00				
1000	0.00	0.00	0.00	0.00				

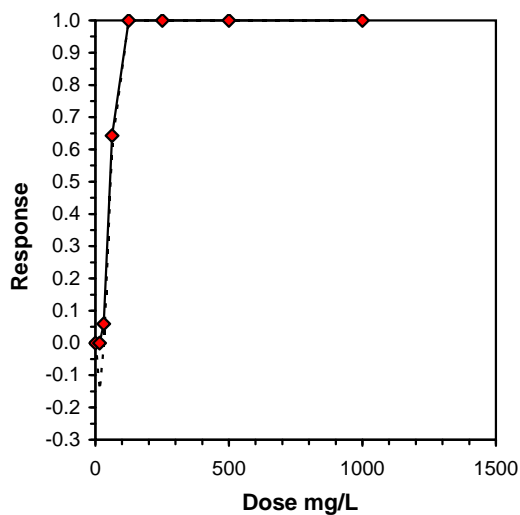
Conc-mg/L	Transform: Untransformed							t-Stat	1-Tailed Critical	MSD	Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N				Mean	N-Mean
FSW Control	101.77	1.0139	101.77	92.32	112.72	8.280	8	*			109.12	1.0000
Colour Control	100.37	1.0000	100.37	91.92	105.52	6.049	4					
15.6	116.47	1.1604	116.47	114.12	120.52	2.564	4	-3.728	2.328	9.18	109.12	1.0000
31.3	102.62	1.0224	102.62	97.12	109.92	6.090	4	-0.216	2.328	9.18	102.62	0.9404
*62.5	38.97	0.3882	38.97	35.12	40.92	7.017	4	15.927	2.328	9.18	38.97	0.3571
125	0.00	0.0000	0.00	0.00	0.00	0.000	4				0.00	0.0000
250	0.00	0.0000	0.00	0.00	0.00	0.000	4				0.00	0.0000
500	0.00	0.0000	0.00	0.00	0.00	0.000	4				0.00	0.0000
1000	0.00	0.0000	0.00	0.00	0.00	0.000	4				0.00	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.96735	0.905	0.262263	-0.75507
Bartlett's Test indicates equal variances (p = 0.14)	5.502227	11.34487		
The control means are not significantly different (p = 0.78)	0.293292	2.228139		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Bonferroni t Test	31.3	62.5	44.22952		9.180644	0.090212	4952.187	41.46	3.6E-11	3, 16
Treatments vs FSW Control										

**Linear Interpolation (200 Resamples)**

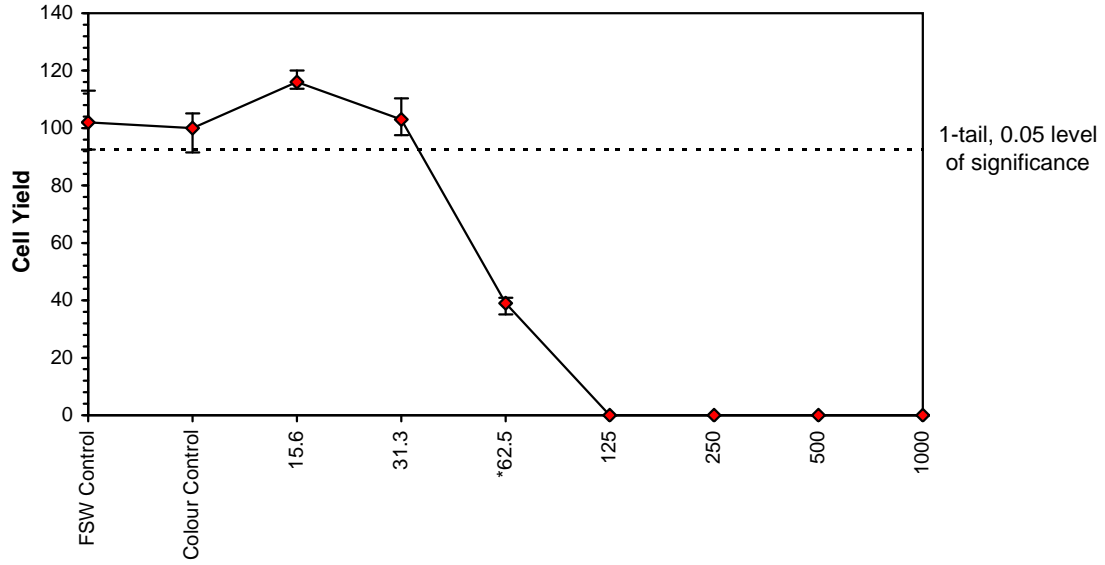
Point	mg/L	SD	95% CL(Exp)		Skew
IC05	28.778	3.390	19.711	36.132	-0.2210
IC10	33.463	1.501	28.069	37.505	-0.6570
IC15	36.137	1.270	32.327	39.924	-0.1295
IC20	38.811	1.164	35.304	42.277	-0.1297
IC25	41.486	1.062	38.083	44.698	-0.1305
IC40	49.509	0.799	47.212	51.934	-0.1478
IC50	54.857	0.683	52.712	56.790	-0.1887



**Microalgal Growth inhibition Test-Cell Yield**

Start Date: 7/08/2012 12:00    Test ID: PR0933/02    Sample ID: Slickgone EW  
End Date: 10/08/2012 12:00    Lab ID: 5579    Sample Type: CP-Chemical product  
Sample Date:    Protocol: ESA 110    Test Species: NC-Nitzschia closterium  
Comments:

**Dose-Response Plot**



**Microalgal Growth inhibition Test-Cell Yield**

Start Date: 7/08/2012 12:00	Test ID: PR0933/02	Sample ID: Slickgone EW
End Date: 10/08/2012 12:00	Lab ID: 5579	Sample Type: CP-Chemical product
Sample Date:	Protocol: ESA 110	Test Species: NC-Nitzschia closterium

Comments:

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Mean	Min	Max	SD	CV%	N
FSW Control	Cell Yield	101.77	92.32	112.72	8.43	2.85	8
Colour Control		100.37	91.92	105.52	6.07	2.46	4
15.6		116.47	114.12	120.52	2.99	1.48	4
31.3		102.62	97.12	109.92	6.25	2.44	4
62.5		38.97	35.12	40.92	2.73	4.24	4
125		0.00	0.00	0.00	0.00		4
250		0.00	0.00	0.00	0.00		4
500		0.00	0.00	0.00	0.00		4
1000		0.00	0.00	0.00	0.00		4
FSW Control	pH	8.10	8.10	8.10	0.00	0.00	1
Colour Control		0.00	0.00	0.00	0.00		0
15.6		8.10	8.10	8.10	0.00	0.00	1
31.3		8.10	8.10	8.10	0.00	0.00	1
62.5		8.10	8.10	8.10	0.00	0.00	1
125		8.10	8.10	8.10	0.00	0.00	1
250		8.10	8.10	8.10	0.00	0.00	1
500		8.10	8.10	8.10	0.00	0.00	1
1000		8.10	8.10	8.10	0.00	0.00	1
FSW Control	Salinity ppt	35.50	35.50	35.50	0.00	0.00	1
Colour Control		0.00	0.00	0.00	0.00		0
15.6		35.90	35.90	35.90	0.00	0.00	1
31.3		35.80	35.80	35.80	0.00	0.00	1
62.5		36.00	36.00	36.00	0.00	0.00	1
125		36.00	36.00	36.00	0.00	0.00	1
250		36.00	36.00	36.00	0.00	0.00	1
500		36.00	36.00	36.00	0.00	0.00	1
1000		36.00	36.00	36.00	0.00	0.00	1

**Statistical Printouts for the Acute  
*Hormosira* Cell Germination Test**



**Macroalgal Germination Success Test-Proportion Germinated**

Start Date:	16/08/2012 14:40	Test ID:	PR0933/01	Sample ID:	Slickgone EW
End Date:	19/08/2012 14:40	Lab ID:	5579	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 116	Test Species:	HB-Hormosira banksii

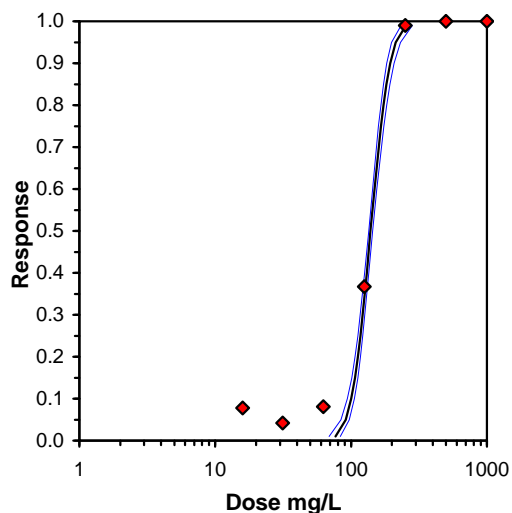
Conc-mg/L	1	2	3	4
FSW Control	0.9900	0.9400	0.9500	0.9600
15.9	0.8600	0.8800	0.8800	0.9200
31.3	0.9100	0.8900	0.9600	0.9200
62.5	0.8800	0.8200	0.8700	0.9600
125	0.5500	0.5900	0.6100	0.6800
250	0.0000	0.0000	0.0200	0.0200
500	0.0000	0.0000	0.0000	0.0000
1000	0.0000	0.0000	0.0000	0.0000

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root					t-Stat	1-Tailed Critical	MSD	Number Resp	Total Number
			Mean	Min	Max	CV%	N					
FSW Control	0.9600	1.0000	1.3772	1.3233	1.4706	4.726	4				16	400
*15.9	0.8850	0.9219	1.2264	1.1873	1.2840	3.338	4	3.289	2.410	0.1105	46	400
31.3	0.9200	0.9583	1.2881	1.2327	1.3694	4.523	4	1.943	2.410	0.1105	32	400
*62.5	0.8825	0.9193	1.2303	1.1326	1.3694	8.111	4	3.204	2.410	0.1105	47	400
*125	0.6075	0.6328	0.8943	0.8355	0.9695	6.280	4	10.530	2.410	0.1105	157	400
*250	0.0100	0.0104	0.0960	0.0500	0.1419	55.279	4	27.940	2.410	0.1105	396	400
500	0.0000	0.0000	0.0500	0.0500	0.0500	0.000	4				400	400
1000	0.0000	0.0000	0.0500	0.0500	0.0500	0.000	4				400	400

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.93263	0.916	0.771834	0.115608
Bartlett's Test indicates equal variances (p = 0.77)	2.535648	15.08627		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	31.3	62.5	44.22952		0.052657	0.054682	0.924701	0.004205	1.8E-15	5, 18

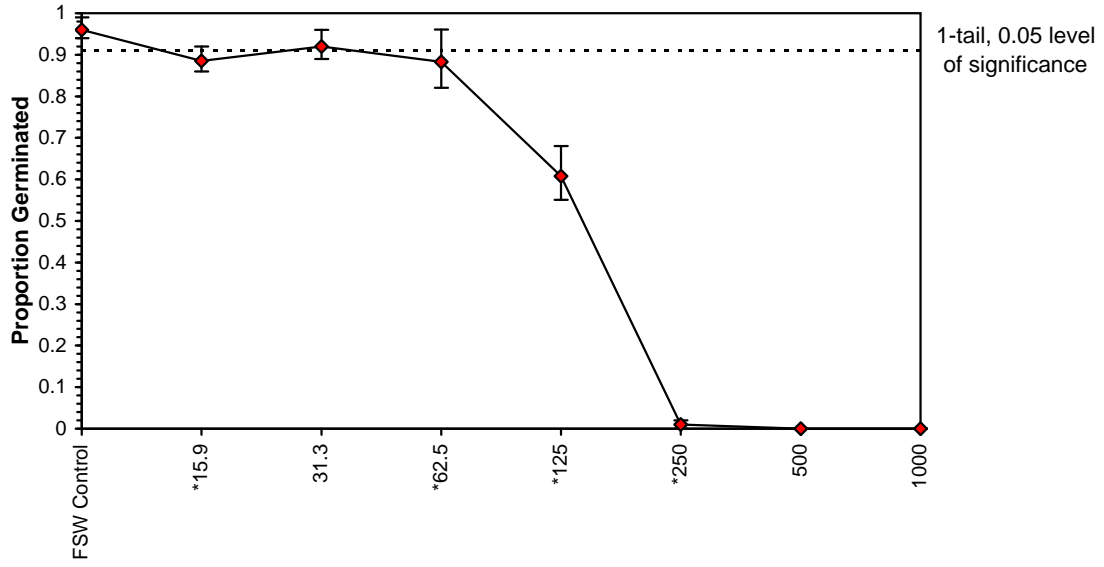
Parameter	Value	SE	95% Fiducial Limits		Maximum Likelihood-Probit						
					Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	8.977125	0.666281	7.671215	10.28304	0.04	8.153138	11.0705	0.15	2.144202	0.111394	8
Intercept	-14.2488	1.425799	-17.0433	-11.4542							
TSCR	0.087787	0.007102	0.073867	0.101708							
Point	Probits	mg/L	95% Fiducial Limits								
EC01	2.674	76.74682	68.9987	83.23453							
EC05	3.355	91.40604	84.44023	97.20901							
EC10	3.718	100.3332	93.95426	105.6888							
EC15	3.964	106.8438	100.9073	111.8955							
EC20	4.158	112.3183	106.7394	117.1523							
EC25	4.326	117.2379	111.9502	121.9245							
EC40	4.747	130.6113	125.8224	135.2732							
EC50	5.000	139.3805	134.5684	144.4407							
EC60	5.253	148.7386	143.5514	154.6281							
EC75	5.674	165.7053	159.081	173.993							
EC80	5.842	172.9633	165.5108	182.5424							
EC85	6.036	181.8255	173.2406	193.1438							
EC90	6.282	193.6242	183.3713	207.4861							
EC95	6.645	212.5344	199.3232	230.9149							
EC99	7.326	253.1302	232.7394	282.6516							



**Macroalgal Germination Success Test-Proportion Germinated**

Start Date: 16/08/2012 14:40 Test ID: PR0933/01 Sample ID: Slickgone EW  
End Date: 19/08/2012 14:40 Lab ID: 5579 Sample Type: CP-Chemical product  
Sample Date: Protocol: ESA 116 Test Species: HB-Hormosira banksii  
Comments:

**Dose-Response Plot**



**Macroalgal Germination Success Test-Proportion Germinated**

Start Date: 16/08/2012 14:40	Test ID: PR0933/01	Sample ID: Slickgone EW
End Date: 19/08/2012 14:40	Lab ID: 5579	Sample Type: CP-Chemical product
Sample Date:	Protocol: ESA 116	Test Species: HB-Hormosira banksii

Comments:

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Mean	Min	Max	SD	CV%	N
FSW Control	Germination, %	96.00	94.00	99.00	2.16	1.53	4
15.9		88.50	86.00	92.00	2.52	1.79	4
31.3		92.00	89.00	96.00	2.94	1.86	4
62.5		88.25	82.00	96.00	5.80	2.73	4
125		60.75	55.00	68.00	5.44	3.84	4
250		1.00	0.00	2.00	1.15	107.46	4
500		0.00	0.00	0.00	0.00		4
1000		0.00	0.00	0.00	0.00		4
FSW Control	pH	8.20	8.20	8.20	0.00	0.00	1
15.9		8.20	8.20	8.20	0.00	0.00	1
31.3		8.20	8.20	8.20	0.00	0.00	1
62.5		8.20	8.20	8.20	0.00	0.00	1
125		8.20	8.20	8.20	0.00	0.00	1
250		8.20	8.20	8.20	0.00	0.00	1
500		8.20	8.20	8.20	0.00	0.00	1
1000		8.20	8.20	8.20	0.00	0.00	1
FSW Control	Salinity ppt	36.00	36.00	36.00	0.00	0.00	1
15.9		36.10	36.10	36.10	0.00	0.00	1
31.3		35.50	35.50	35.50	0.00	0.00	1
62.5		34.40	34.40	34.40	0.00	0.00	1
125		36.10	36.10	36.10	0.00	0.00	1
250		36.20	36.20	36.20	0.00	0.00	1
500		36.20	36.20	36.20	0.00	0.00	1
1000		36.20	36.20	36.20	0.00	0.00	1
FSW Control	DO %	105.80	105.80	105.80	0.00	0.00	1
15.9		105.80	105.80	105.80	0.00	0.00	1
31.3		104.20	104.20	104.20	0.00	0.00	1
62.5		104.40	104.40	104.40	0.00	0.00	1
125		104.80	104.80	104.80	0.00	0.00	1
250		104.50	104.50	104.50	0.00	0.00	1
500		105.30	105.30	105.30	0.00	0.00	1
1000		104.00	104.00	104.00	0.00	0.00	1

# **Statistical Printouts for the Juvenile Copepod Tests**

**Marine Copepod Acute Test-48-hr Survival**

Start Date: 4/12/2012 13:30	Test ID: PR0933/01	Sample ID: Slickgone EW
End Date: 6/12/2012 14:00	Lab ID: 5579	Sample Type: CP-Chemical product
Sample Date:	Protocol: ESA 124	Test Species: PC-Parvocalanus crassirostris

Conc-mg/L	1	2	3	4
Diluent Control	1.0000	1.0000	0.8000	1.0000
15.6	1.0000	1.0000	1.0000	0.8000
31.3	0.0000	0.0000	0.0000	0.0000
62.3	0.0000	0.0000	0.0000	0.0000
125	0.0000	0.0000	0.0000	0.0000
250	0.0000	0.0000	0.0000	0.0000
500	0.0000	0.0000	0.0000	0.0000
1000	0.0000	0.0000	0.0000	0.0000

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				Rank Sum	1-Tailed Critical	Number Resp	Total Number	
			Mean	Min	Max	CV%					N
Diluent Control	0.9500	1.0000	1.2857	1.1071	1.3453	9.261	4	18.00	11.00	1	20
15.6	0.9500	1.0000	1.2857	1.1071	1.3453	9.261	4			1	20
31.3	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			20	20
62.3	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			20	20
125	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			20	20
250	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			20	20
500	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			20	20
1000	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			20	20

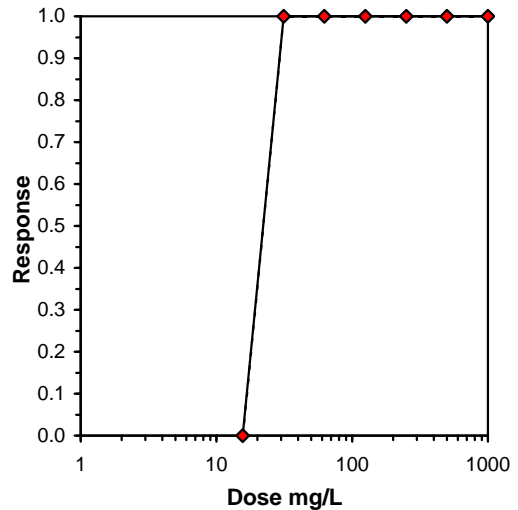
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.566231	0.818	-1.44016	0
F-Test indicates equal variances (p = 1.00)	1	47.46723		

**Hypothesis Test (1-tail, 0.05)**

Wilcoxon Two-Sample Test indicates no significant differences  
Treatments vs Diluent Control

**Graphical Method**

Trim Level	EC50
0.0%	22.097
	22.097

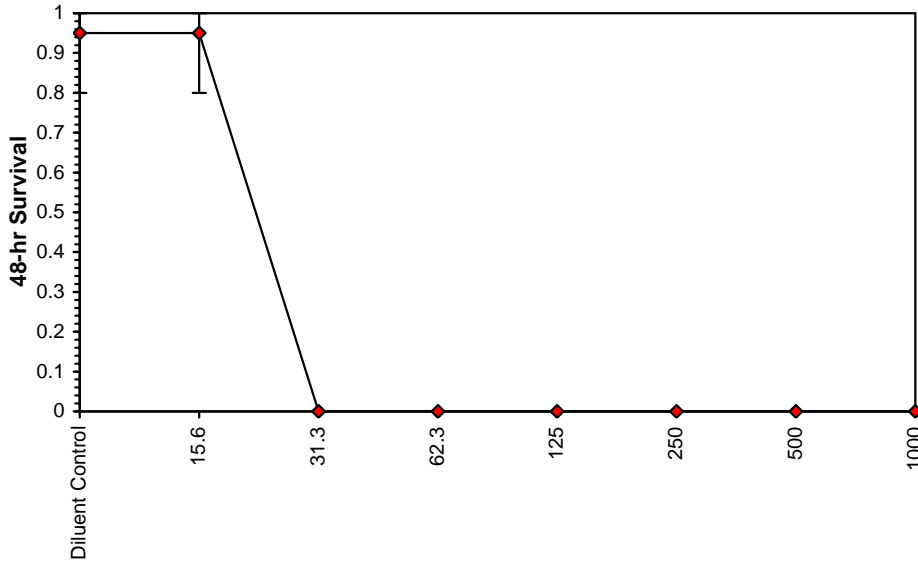




**Marine Copepod Acute Test-48-hr Survival**

Start Date: 4/12/2012 13:30    Test ID: PR0933/01    Sample ID: Slickgone EW  
End Date: 6/12/2012 14:00    Lab ID: 5579    Sample Type: CP-Chemical product  
Sample Date:    Protocol: ESA 124    Test Species: PC-Parvocalanus crassirostris  
Comments:

**Dose-Response Plot**



**Marine Copepod Acute Test-48-hr Survival**

Start Date: 4/12/2012 13:30	Test ID: PR0933/01	Sample ID: Slickgone EW
End Date: 6/12/2012 14:00	Lab ID: 5579	Sample Type: CP-Chemical product
Sample Date:	Protocol: ESA 124	Test Species: PC-Parvocalanus crassirostris
Comments:		

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Auxiliary Data Summary					
		Mean	Min	Max	SD	CV%	N
Diluent Control	% Survival	95.00	80.00	100.00	10.00	3.33	4
15.6		95.00	80.00	100.00	10.00	3.33	4
31.3		0.00	0.00	0.00	0.00		4
62.3		0.00	0.00	0.00	0.00		4
125		0.00	0.00	0.00	0.00		4
250		0.00	0.00	0.00	0.00		4
500		0.00	0.00	0.00	0.00		4
1000		0.00	0.00	0.00	0.00		4
Diluent Control	pH	8.20	8.20	8.20	0.00	0.00	1
15.6		8.20	8.20	8.20	0.00	0.00	1
31.3		8.20	8.20	8.20	0.00	0.00	1
62.3		8.20	8.20	8.20	0.00	0.00	1
125		8.20	8.20	8.20	0.00	0.00	1
250		8.10	8.10	8.10	0.00	0.00	1
500		8.10	8.10	8.10	0.00	0.00	1
1000		8.10	8.10	8.10	0.00	0.00	1
Diluent Control	DO %	100.50	100.50	100.50	0.00	0.00	1
15.6		99.40	99.40	99.40	0.00	0.00	1
31.3		97.50	97.50	97.50	0.00	0.00	1
62.3		97.20	97.20	97.20	0.00	0.00	1
125		96.90	96.90	96.90	0.00	0.00	1
250		96.70	96.70	96.70	0.00	0.00	1
500		96.80	96.80	96.80	0.00	0.00	1
1000		96.50	96.50	96.50	0.00	0.00	1
Diluent Control	Salinity ppt	35.20	35.20	35.20	0.00	0.00	1
15.6		35.20	35.20	35.20	0.00	0.00	1
31.3		35.90	35.90	35.90	0.00	0.00	1
62.3		35.70	35.70	35.70	0.00	0.00	1
125		35.10	35.10	35.10	0.00	0.00	1
250		36.00	36.00	36.00	0.00	0.00	1
500		36.30	36.30	36.30	0.00	0.00	1
1000		36.10	36.10	36.10	0.00	0.00	1

**Marine Copepod Acute Test-48-hr Survival**

Start Date: 4/12/2012 13:30	Test ID: PR0933/01	Sample ID: Slickgone EW
End Date: 6/12/2012 14:00	Lab ID: 5579	Sample Type: CP-Chemical product
Sample Date:	Protocol: ESA 124	Test Species: PC-Parvocalanus crassirostris

Conc-mg/L	1	2	3	4
Diluent Control	1.0000	1.0000	0.8000	1.0000
15.6	1.0000	1.0000	1.0000	0.8000
31.3	0.0000	0.0000	0.0000	0.0000
62.3	0.0000	0.0000	0.0000	0.0000
125	0.0000	0.0000	0.0000	0.0000
250	0.0000	0.0000	0.0000	0.0000
500	0.0000	0.0000	0.0000	0.0000
1000	0.0000	0.0000	0.0000	0.0000

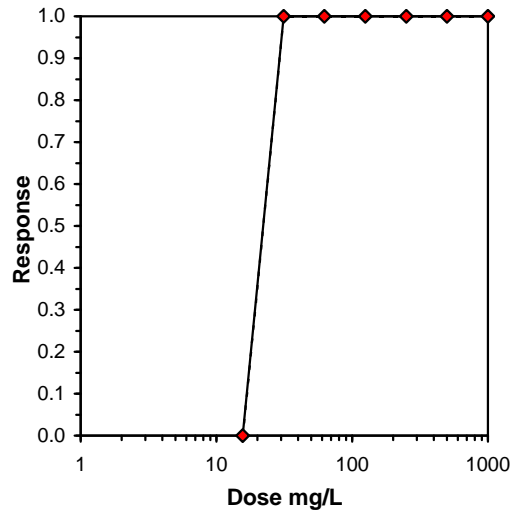
Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root					Rank Sum	1-Tailed Critical	Isotonic	
			Mean	Min	Max	CV%	N			Mean	N-Mean
Diluent Control	0.9500	1.0000	1.2857	1.1071	1.3453	9.261	4	18.00	11.00	0.9500	1.0000
15.6	0.9500	1.0000	1.2857	1.1071	1.3453	9.261	4			0.9500	1.0000
31.3	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			0.0000	0.0000
62.3	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			0.0000	0.0000
125	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			0.0000	0.0000
250	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			0.0000	0.0000
500	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			0.0000	0.0000
1000	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4			0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.566231	0.818	-1.44016	0
F-Test indicates equal variances (p = 1.00)	1	47.46723		

**Hypothesis Test (1-tail, 0.05)**

Wilcoxon Two-Sample Test indicates no significant differences  
Treatments vs Diluent Control

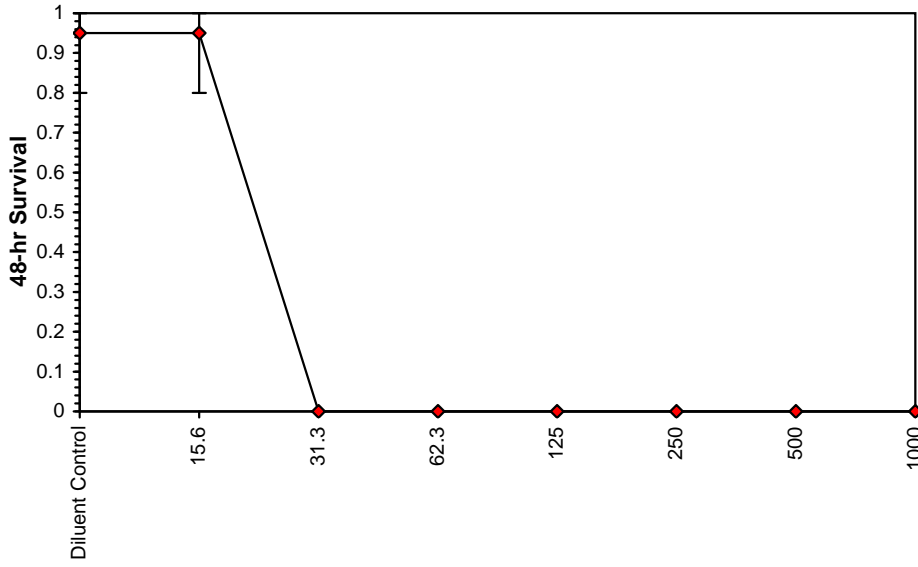
Log-Logit Interpolation (200 Resamples)					
Point	mg/L	SD	95% CL(Exp)		Skew
IC05	16.267	2.825	5.288	21.949	-1.6759
IC10	16.699	1.487	12.598	22.602	1.1325
IC15	17.032	1.347	15.231	22.979	1.9628
IC20	17.312	1.339	15.530	23.252	1.9763
IC25	17.559	1.329	15.795	23.471	1.9811
IC40	18.206	1.296	16.490	23.986	1.9812
IC50	18.612	1.271	16.928	24.282	1.9781



**Marine Copepod Acute Test-48-hr Survival**

Start Date: 4/12/2012 13:30    Test ID: PR0933/01    Sample ID: Slickgone EW  
End Date: 6/12/2012 14:00    Lab ID: 5579    Sample Type: CP-Chemical product  
Sample Date:    Protocol: ESA 124    Test Species: PC-Parvocalanus crassirostris  
Comments:

**Dose-Response Plot**



**Marine Copepod Acute Test-48-hr Survival**

Start Date: 4/12/2012 13:30	Test ID: PR0933/01	Sample ID: Slickgone EW
End Date: 6/12/2012 14:00	Lab ID: 5579	Sample Type: CP-Chemical product
Sample Date:	Protocol: ESA 124	Test Species: PC-Parvocalanus crassirostris

Comments:

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Auxiliary Data Summary					
		Mean	Min	Max	SD	CV%	N
Diluent Control	% Survival	95.00	80.00	100.00	10.00	3.33	4
15.6		95.00	80.00	100.00	10.00	3.33	4
31.3		0.00	0.00	0.00	0.00		4
62.3		0.00	0.00	0.00	0.00		4
125		0.00	0.00	0.00	0.00		4
250		0.00	0.00	0.00	0.00		4
500		0.00	0.00	0.00	0.00		4
1000		0.00	0.00	0.00	0.00		4
Diluent Control	pH	8.20	8.20	8.20	0.00	0.00	1
15.6		8.20	8.20	8.20	0.00	0.00	1
31.3		8.20	8.20	8.20	0.00	0.00	1
62.3		8.20	8.20	8.20	0.00	0.00	1
125		8.20	8.20	8.20	0.00	0.00	1
250		8.10	8.10	8.10	0.00	0.00	1
500		8.10	8.10	8.10	0.00	0.00	1
1000		8.10	8.10	8.10	0.00	0.00	1
Diluent Control	DO %	100.50	100.50	100.50	0.00	0.00	1
15.6		99.40	99.40	99.40	0.00	0.00	1
31.3		97.50	97.50	97.50	0.00	0.00	1
62.3		97.20	97.20	97.20	0.00	0.00	1
125		96.90	96.90	96.90	0.00	0.00	1
250		96.70	96.70	96.70	0.00	0.00	1
500		96.80	96.80	96.80	0.00	0.00	1
1000		96.50	96.50	96.50	0.00	0.00	1
Diluent Control	Salinity ppt	35.20	35.20	35.20	0.00	0.00	1
15.6		35.20	35.20	35.20	0.00	0.00	1
31.3		35.90	35.90	35.90	0.00	0.00	1
62.3		35.70	35.70	35.70	0.00	0.00	1
125		35.10	35.10	35.10	0.00	0.00	1
250		36.00	36.00	36.00	0.00	0.00	1
500		36.30	36.30	36.30	0.00	0.00	1
1000		36.10	36.10	36.10	0.00	0.00	1