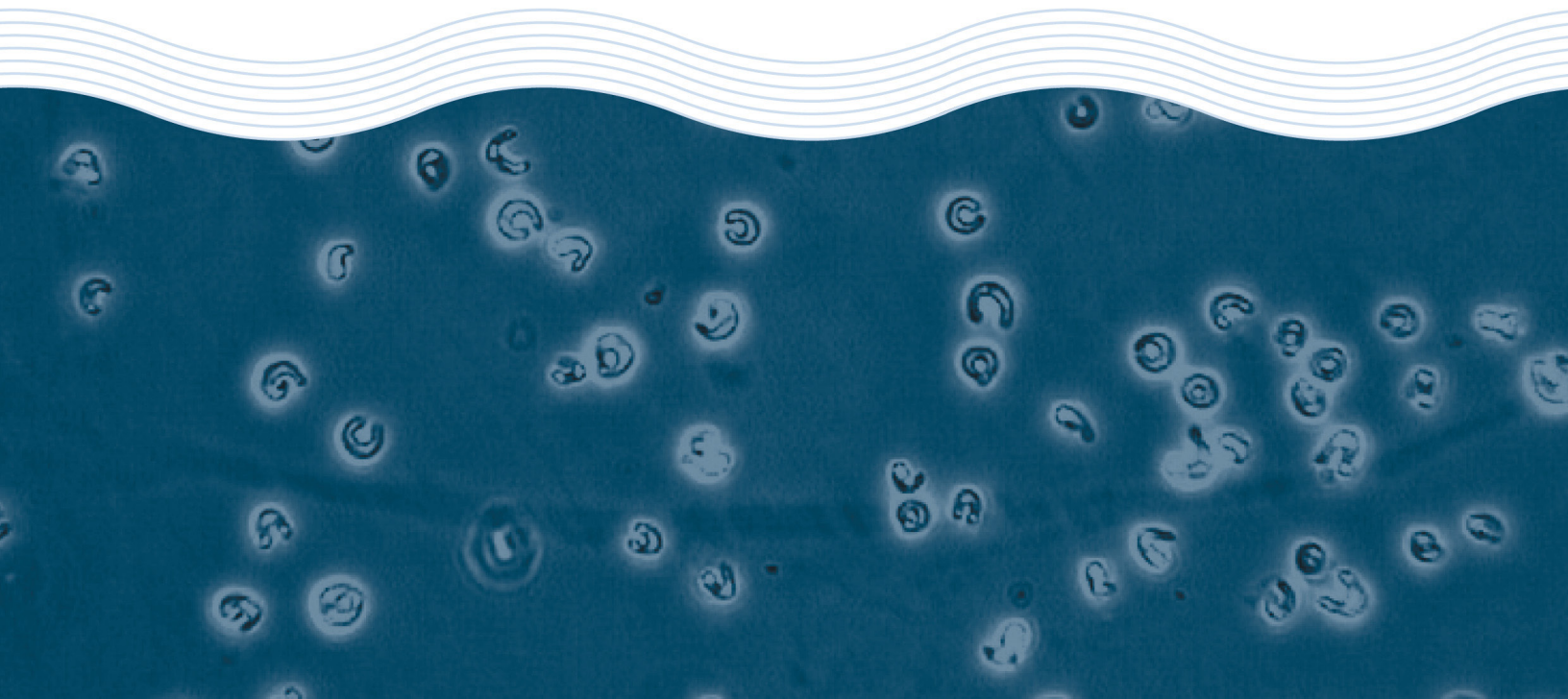


Toxicity Assessment of an Oil Spill Dispersant

EFS Group

Test Report

May 2013



Toxicity Assessment of an Oil Spill Dispersant

EFS Group

Test Report

May 2013

Toxicity Test Report: TR1034/1

(Page 1 of 2)

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|--------------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 72-hr macroalgal germination success test using <i>Hormosira banksii</i> |
| Test Protocol: | ESA SOP 116 (ESA 2010), based on Kevekordes and Clayton (1996) and Gunthorpe <i>et al.</i> (1997) |
| Test Temperature: | The test was performed at 18±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | Field collected from Bilgola, NSW. |
| Test Initiated: | 22 May 2013 at 1405h |

| Sample 6026: Colloidal Concentrate | | Vacant | Vacant |
|------------------------------------|---------------------------|--------|--------|
| Concentration (mg/L) | % Germination (Mean ± SD) | | |
| FSW Control | 92.3 ± 3.0 | | |
| 1.3 | 94.3 ± 3.1 | | |
| 2.5 | 93.5 ± 4.2 | | |
| 5.0 | 95.0 ± 3.2 | | |
| 10.0 | 95.8 ± 2.8 | | |
| 20.0 | 93.5 ± 3.9 | | |
| 72-hr EC10 = >20mg/L | | | |
| 72-hr EC50 = >20mg/L | | | |
| NOEC = 20mg/L | | | |
| LOEC = >20mg/L | | | |

Toxicity Test Report: TR1034/1

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| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|-------------------|--------------|----------------|
| Control mean % germination | ≥70.0% | 92.3% | Yes |
| Reference Toxicant within cusum chart limits | 34.0-594.4µg Cu/L | 139.4µg Cu/L | Yes |

Test Report Authorised by:



Dr Rick Krassoi, Director on 14 June 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: TR1034/2

(Page 1 of 2)

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|--------------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 72-hr marine algal growth test using <i>Isochrysis aff. galbana</i> |
| Test Protocol: | ESA SOP 110 (ESA 2011), based on Stauber <i>et al.</i> (1994) |
| Test Temperature: | The test was performed at 29±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | In-house culture, originally sourced from CSIRO Microalgae Supply Service, TAS |
| Test Initiated: | 4 June 2013 at 1430h |

| Sample 6026: Colloidal Concentrate | Vacant | Vacant |
|---|--|--------|
| Concentration (mg/L) | Cell Yield (Mean number of cells/mL x10 ⁴ ± SD) | |
| FSW Control | 63.5 ± 11.3 | |
| 1.3 | 60.5 ± 8.2 | |
| 2.5 | 68.4 ± 13.7 | |
| 5.0 | 62.7 ± 12.9 | |
| 10.0 | 19.9 ± 4.9 * | |
| 20.0 | 0.0 ± 0.0 | |
| 72-hr IC10 = 5.6mg/L** 72-hr IC50 = 8.6 (7.5-9.1)mg/L NOEC = 5.0mg/L LOEC = 10.0mg/L | | |

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

**95% confidence limits are not reliable

Toxicity Test Report: TR1034/2

(Page 2 of 2)

| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|----------------------------------|-----------------------------|----------------|
| Control mean cell density | $\geq 16.0 \times 10^4$ cells/mL | 64.5×10^4 cells/mL | Yes |
| Control coefficient of variation | <20% | 17.5% | Yes |
| Reference Toxicant within cusum chart limits | 12.4-47.5 μ g Cu/L | 24.1 μ g Cu/L | Yes |

Test Report Authorised by:



Dr Rick Krassoi, Director on 14 June 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: TR1034/3

(Page 1 of 2)

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|--------------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 72-hr marine algal growth test using <i>Nitzschia closterium</i> |
| Test Protocol: | ESA SOP 110 (ESA 2011), based on Stauber <i>et al.</i> (1994) |
| Test Temperature: | The test was performed at 21±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | In-house culture, originally sourced from CSIRO Microalgae Supply Service, TAS |
| Test Initiated: | 4 June 2013 at 1545h |

| Sample 6026: Colloidal Concentrate | | Vacant | Vacant |
|--|--|--------|--------|
| Concentration (mg/L) | Cell Yield (Mean number of cells/mL x10 ⁴ ± SD) | | |
| FSW Control | 67.0 ± 5.9 | | |
| 1.3 | 67.3 ± 5.1 | | |
| 2.5 | 62.4 ± 5.2 | | |
| 5.0 | 61.1 ± 1.7 | | |
| 10.0 | 63.6 ± 5.7 | | |
| 20.0 | 43.7 ± 2.0 * | | |
| 72-hr IC10 = 11.0mg/L** 72-hr IC50 = >20mg/L NOEC = 10.0mg/L LOEC = 20.0mg/L | | | |

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

**95% confidence limits are not reliable

Toxicity Test Report: TR1034/3

(Page 2 of 2)

| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|----------------------------------|-----------------------------|----------------|
| Control mean cell density | $\geq 16.0 \times 10^4$ cells/mL | 68.0×10^4 cells/mL | Yes |
| Control coefficient of variation | <20% | 8.6% | Yes |
| Reference Toxicant within cusum chart limits | 1.2-24.9 μ g Cu/L | 3.0 μ g Cu/L | Yes |

Test Report Authorised by:



Dr Rick Krassoi, Director on 14 June 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: TR1034/4

(Page 1 of 2)

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|--------------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 72-hr sea urchin larval development test using <i>Heliocidaris tuberculata</i> |
| Test Protocol: | ESA SOP 105 (ESA 2010), based on APHA (1998), Simon and Laginestra (1996) and Doyle <i>et al.</i> (2003) |
| Test Temperature: | The test was performed at 20±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | Field collected from South Maroubra, NSW. |
| Test Initiated: | 8 May 2013 at 1440h |

| Sample 6026: Colloidal Concentrate | Vacant | Vacant |
|--|-----------------------------|--------|
| Concentration (mg/L) | % Normal larvae (Mean ± SD) | |
| FSW Control | 97.8 ± 1.0 | |
| 1.3 | 97.0 ± 1.4 | |
| 2.5 | 96.3 ± 1.0 | |
| 5.0 | 94.5 ± 1.3 * | |
| 10.0 | 97.5 ± 1.7 | |
| 20.0 | 0.0 ± 0.0 | |
| 72-hr IC10 = 10.7 (10.5-10.9)mg/L 72-hr EC50 = 13.8 (13.6-14.1)mg/L NOEC = 10.0mg/L LOEC = 20.0mg/L | | |

*Significantly lower percentage of normally developed larvae compared with the FSW Control (Dunnnett's Test, 1-tailed, P=0.05)

Toxicity Test Report: TR1034/4

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| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|-----------------|-------------|----------------|
| Control mean % normal larvae | ≥70.0% | 97.8% | Yes |
| Reference Toxicant within cusum chart limits | 6.3-16.9µg Cu/L | 16.4µg Cu/L | Yes |



Test Report Authorised by:

Dr Rick Krassoi, Director on 14 June 2013

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

NATA Accredited Laboratory Number: 14709

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Citations:

APHA (1998) Method 8810 D. Echinoderm Embryo Development Test. In Standard Methods for the Examination of Water and Wastewater, 20th Ed. American Public Health Association, American Water Works Association and the Water Environment Federation, USA.

Doyle, C.J., Pablo, F., Lim, R.P. and Hyne, R.V. (2003) Assessment of metal toxicity in sediment pore water from Lake Macquarie, Australia. *Arch. Environ. Contam. Toxicology*, 44(3): 343-350.

ESA (2010) *ESA SOP 105 - Sea Urchin Larval Development Test*. Issue No. 9. Ecotox Services Australasia, Sydney NSW.

Simon, J. and Laginestra, E.(1997) Bioassay for testing sublethal toxicity in effluents, using gametes of sea urchin *Heliocidaris tuberculata*. National Pulp Mills Research Program Technical Report No. 20. CSIRO, Canberra, ACT.

Toxicity Test Report: TR1034/5

(Page 1 of 2)

| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|-----------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 48-hr acute survival test using the copepod <i>Parvocalanus crassirostris</i> |
| Test Protocol: | ESA SOP 124 (2012) |
| Test Temperature: | The test was performed at 27±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 40mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | In house culture |
| Test Initiated: | 5 June 2013 at 1500h |


| Sample 6026: Colloidal Concentrate | Vacant | Vacant |
|---|------------------------|--------|
| Concentration (mg/L) | % Survival (Mean ± SD) | |
| FSW Control | 100 ± 0.0 | |
| 2.5 | 100 ± 0.0 | |
| 5.0 | 100 ± 0.0 | |
| 10.0 | 90.0 ± 11.6 | |
| 20.0 | 15.0 ± 10.0 * | |
| 40.0 | 0.0 ± 0.0 | |
| 48-hr EC10 = 10.0 (7.2-11.9)mg/L 48-hr EC50 = 14.7 (12.4-17.2)mg/L NOEC = 10.0mg/L LOEC = 20.0mg/L | | |

*Significantly lower percent survival compared with the FSW Control (Steel's Many-One Rank Test, 1-tailed, P=0.05)

| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|-----------------|------------|----------------|
| Control mean % survival | ≥80.0% | 100% | Yes |
| Reference Toxicant within cusum chart limits | 5.2-31.2µg Cu/L | 12.5µgCu/L | Yes |

Toxicity Test Report: TR1034/5

(Page 2 of 2)

Test Report Authorised by: 

Dr Rick Krassoi, Director on 14 June 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. 1. Ecotox Services Australasia, Sydney, New South Wales.

Toxicity Test Report: TR1034/6

(Page 1 of 2)

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|--------------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 96-hr acute toxicity test using the amphipod <i>Allorchestes compressa</i> |
| Test Protocol: | ESA SOP 108 (ESA 2011), based on USEPA (2002) and Department of Transport and Communications (1990) |
| Test Temperature: | The test was performed at 20±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | In-house culture, originally sourced from Queenscliff, VIC |
| Test Initiated: | 6 June 2013 at 1400h |

| Sample 6026: Colloidal Concentrate | Concentration (mg/L) | % Un-affected (Mean ± SD) | Vacant | Vacant |
|--|----------------------|---------------------------|--------|--------|
| FSW Control | | 100 ± 0.0 | | |
| 1.3 | | 100 ± 0.0 | | |
| 2.5 | | 100 ± 0.0 | | |
| 5.0 | | 100 ± 0.0 | | |
| 10.0 | | 100 ± 0.0 | | |
| 20.0 | | 100 ± 0.0 | | |
| 96-hr EC10 = >20mg/L 96-hr EC50 = >20mg/L NOEC = 20mg/L LOEC = >20mg/L | | | | |

Toxicity Test Report: TR1034/6

(Page 2 of 2)

| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|-----------------|-------------|----------------|
| Control mean % un-affected | ≥90.0% | 100% | Yes |
| Reference Toxicant within cusum chart limits | 0.4-4.9mg SDS/L | 1.3mg SDS/L | Yes |

Test Report Authorised by:



Dr Rick Krassoi, Director on 14 June 2013

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

NATA Accredited Laboratory Number: 14709

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Citations:

Department of Transport and Communications (1990) Guidelines for Acceptance of Oil Spill Dispersants in Australian Waters. Pollution Prevention Section, Department of Transport and Communications, Canberra ACT.

ESA (2011) SOP 108 – *Amphipod Acute Toxicity Test*. Issue No 8. Ecotox Services Australasia, Sydney, NSW.

USEPA (2002) Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. Fifth Edition. United States Environmental Protection Agency, Office of Research and Development, Washington DC, EPA/600/4-90/027F.

Toxicity Test Report: TR1034/7

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|-----------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 96-hr fish imbalance toxicity test using barramundi <i>Lates calcarifer</i> |
| Test Protocol: | ESA SOP 117 (ESA 2012), based on USEPA (2002) |
| Test Temperature: | The test was performed at 25±2°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | Hatchery reared, SA |
| Test Initiated: | 6 June 2013 at 1430h |

| Sample 6026: Colloidal Concentrate | | Vacant | Vacant |
|------------------------------------|---------------------------|--------|--------|
| Concentration (mg/L) | % Un-affected (Mean ± SD) | | |
| FSW Control | 100 ± 0.0 | | |
| 1.3 | 100 ± 0.0 | | |
| 2.5 | 100 ± 0.0 | | |
| 5.0 | 100 ± 0.0 | | |
| 10.0 | 100 ± 0.0 | | |
| 20.0 | 100 ± 0.0 | | |
| 96-hr EC10 = >20mg/L | | | |
| 96-hr EC50 = >20mg/L | | | |
| NOEC = 20mg/L | | | |
| LOEC = >20mg/L | | | |

Toxicity Test Report: TR1034/7

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| QA/QC Parameter | Criterion | This Test | Criterion met? |
|----------------------------|-----------|-----------|----------------|
| Control mean % un-affected | ≥80.0% | 100% | Yes |

Test Report Authorised by:  Dr Rick Krassoi, Director on 14 June 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 117 –*Freshwater and Marine Fish Imbalance Test*. Issue No 9. Ecotox Services Australasia, Sydney, NSW

USEPA (2002) Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. Fifth edition EPA-821-R-02-012. United States Environmental Protection Agency, Office of Research and Development, Washington FC, USA

Toxicity Test Report: TR1034/8

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|--------------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 48-hr larval development test using the Sydney rock oyster <i>Saccostrea glomerata</i> |
| Test Protocol: | ESA SOP 106 (ESA 2011), based on APHA (1998) and Krassoi (1995) |
| Test Temperature: | The test was performed at 25±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | Farm-reared, Wallis Lakes, NSW. |
| Test Initiated: | 4 July 2013 at 1830h |

| Sample 6026: Colloidal Concentrate | | Vacant | Vacant |
|--|-----------------------------------|--------|--------|
| Concentration (mg/L) | % Alive/Normal larvae (Mean ± SD) | | |
| FSW Control | 71.7 ± 4.6 | | |
| 1.3 | 69.4 ± 6.1 | | |
| 2.5 | 72.8 ± 6.1 | | |
| 5.0 | 66.1 ± 12.6 | | |
| 10.0 | 68.9 ± 7.7 | | |
| 20.0 | 26.7 ± 8.1 * | | |
| 48-hr IC10 = 10.6mg/L** | | | |
| 48-hr EC50 = 17.1 (16.0-18.3)mg/L | | | |
| NOEC = 10.0mg/L | | | |
| LOEC = 20.0mg/L | | | |

*Significantly lower percentage of normal surviving larvae when compared with the FSW Control (Dunnett's Test, 1-tailed, P=0.05)

**95% confidence limits are not reliable

Toxicity Test Report: TR1034/8

(Page 2 of 2)

| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|------------------|-------------|----------------|
| FSW Control mean % survival | ≥70% | 83.3% | Yes |
| FSW Control mean % normal | ≥70% | 86.2% | Yes |
| Reference Toxicant within cusum chart limits | 16.4-30.8µg Cu/L | 23.1µg Cu/L | Yes |



Test Report Authorised by:

Dr Rick Krassoi, Director on 10 July 2013

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

NATA Accredited Laboratory Number: 14709

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Citations:

APHA (1998) Standard Methods for the Examination of Water and Wastewater. 20th Ed. American Public Health Association, American Water Works Association and the Water Environment Federation, Washington, DC.

ESA (2011) SOP 106 – *Bivalve Larval Development Test*. Issue No. 10. Ecotox Services Australasia, Sydney, NSW.

Krassoi, R (1995) Salinity adjustment of effluents for use with marine bioassays: effects on the larvae of the doughboy scallop *Chlamys asperrimus* and the Sydney rock oyster *Saccostrea commercialis*. *Australasian Journal of Ecotoxicology*, 1: 143-148.

Toxicity Test Report: TR1034/9

(Page 1 of 2)

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|--------------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 48-hr larval development test using the milky oyster <i>Saccostrea echinata</i> |
| Test Protocol: | ESA SOP 106 (ESA 2011), based on APHA (1998) and Krassoi (1995) |
| Test Temperature: | The test was performed at 29±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | Field collected from Mackay, QLD. |
| Test Initiated: | 4 July 2013 at 1800h |

| Sample 6026: Colloidal Concentrate | | Vacant | Vacant |
|--|-----------------------------|--------|--------|
| Concentration (mg/L) | % Normal larvae (Mean ± SD) | | |
| FSW Control | 83.0 ± 5.0 | | |
| 1.3 | 75.0 ± 3.4 * | | |
| 2.5 | 77.0 ± 4.7 | | |
| 5.0 | 76.0 ± 2.5 * | | |
| 10.0 | 65.3 ± 4.6 * | | |
| 20.0 | 31.8 ± 5.6 * | | |
| 48-hr IC10 = 8.3(6.5-9.7)mg/L 48-hr EC50 = 17.5 (16.1-19.0)mg/L NOEC = <1.3mg/L LOEC = 1.3mg/L | | | |

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

Toxicity Test Report: TR1034/9

(Page 2 of 2)

| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|------------------|-------------|----------------|
| FSW Control mean % normal | ≥70% | 83.0% | Yes |
| Reference Toxicant within cusum chart limits | 12.3-20.5µg Cu/L | 14.4µg Cu/L | Yes |

Test Report Authorised by:



Dr Rick Krassoi, Director on 10 July 2013

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

NATA Accredited Laboratory Number: 14709

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Citations:

APHA (1998) Standard Methods for the Examination of Water and Wastewater. 20th Ed. American Public Health Association, American Water Works Association and the Water Environment Federation, Washington, DC.

ESA (2011) SOP 106 – *Bivalve Larval Development Test*. Issue No. 10. Ecotox Services Australasia, Sydney, NSW.

Krassoi, R (1995) Salinity adjustment of effluents for use with marine bioassays: effects on the larvae of the doughboy scallop *Chlamys asperimus* and the Sydney rock oyster *Saccostrea commercialis*. *Australasian Journal of Ecotoxicology*, 1: 143-148.

Toxicity Test Report: TR1034/10

(Page 1 of 2)

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| | | | |
|--------------------|---|-----------------------|--------------|
| Client: | EFS Group PO Box 1280 Warnambool VIC 3280 | ESA Job #: | PR1034 |
| Attention: | Lorraine Johnson | Date Sampled: | Not supplied |
| Client Ref: | Not supplied | Date Received: | 6 May 2013 |
| | | Sampled By: | Client |
| | | ESA Quote #: | PL1034_q01 |

| | | |
|--------------------|--------------------------|---|
| Lab ID No.: | Sample Name: | Sample Description: |
| 6026 | Colloidal Concentrate | Chemical sample received at room temperature in apparent good condition |

| | |
|--|---|
| Test Performed: | 48-hr larval development test using the mussel <i>Mytilus galloprovincialis</i> |
| Test Protocol: | ESA SOP 106 (ESA 2011), based on APHA (1998) and USEPA (1996) |
| Test Temperature: | The test was performed at 20±1°C. |
| Deviations from Protocol: | Nil |
| Comments on Solution Preparation: | The highest concentration of 20mg/L was achieved by adding a weighed aliquot of sample 6026 'Colloidal Concentrate' to filtered seawater (FSW) to achieve the test concentrations. A FSW control was tested concurrently with the sample. |
| Source of Test Organisms: | Farm-reared, Mercury Passage, TAS |
| Test Initiated: | 1 July 2013 at 1630h |

| Sample 6026: Colloidal Concentrate Concentration (mg/L) | % Normal larvae (Mean ± SD) | Vacant | Vacant |
|--|--------------------------------|--------|--------|
| FSW Control | 82.0 ± 4.7 | | |
| 1.3 | 82.0 ± 2.9 | | |
| 2.5 | 80.0 ± 3.4 | | |
| 5.0 | 79.3 ± 2.9 | | |
| 10.0 | 73.0 ± 5.4 * | | |
| 20.0 | 2.3 ± 2.1 * | | |
| 48-hr EC10 = 10.0 (9.3-10.7)mg/L | | | |
| 48-hr EC50 = 13.2 (12.6-13.9)mg/L | | | |
| NOEC = 5.0mg/L | | | |
| LOEC = 10.0mg/L | | | |

*Significantly lower percentage of normally developed larvae compared with the FSW Control (Dunnett's Test, 1-tailed, P=0.05)

Toxicity Test Report: TR1034/10

(Page 2 of 2)

| QA/QC Parameter | Criterion | This Test | Criterion met? |
|--|-----------------|-------------|----------------|
| FSW Control mean % normal | ≥70% | 82.0% | Yes |
| Reference Toxicant within cusum chart limits | 7.7-15.5µg Cu/L | 10.6µg Cu/L | Yes |

Test Report Authorised by:



Dr Rick Krassoi, Director on 10 July 2013

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

NATA Accredited Laboratory Number: 14709

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Citations:

APHA (1998) *Standard Methods for the Examination of Water and Wastewater*. 20th Ed. American Public Health Association, American Water Works Association and the Water Environment Federation, Washington, DC, USA.

ESA (2011) *Bivalve Larval Development Test*. Issue No. 10. Ecotox Services Australasia, Sydney, NSW

USEPA (1996) *Bivalve acute toxicity test (embryo larval) OPPTS 850.1055. Ecological Effects Test Guidelines*. United States Environmental Protection Agency. Prevention, Pesticides and Toxic Substances. EPA/712/C-96/137.

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

Macroalgal Germination Success Test-Proportion Germinated

| | | |
|------------------------------|--------------------|------------------------------------|
| Start Date: 22/05/2013 14:05 | Test ID: PR1034/10 | Sample ID: Colloidal concentrate |
| End Date: 25/05/2013 14:00 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 116 | Test Species: HB-Hormosira banksii |

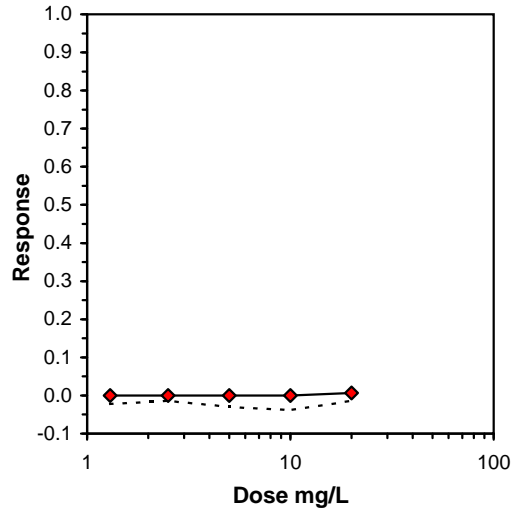
| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 0.9100 | 0.8900 | 0.9600 | 0.9300 |
| 1.3 | 0.9400 | 0.9700 | 0.9000 | 0.9600 |
| 2.5 | 0.9300 | 0.8800 | 0.9500 | 0.9800 |
| 5 | 0.9200 | 0.9600 | 0.9900 | 0.9300 |
| 10 | 0.9400 | 0.9700 | 0.9900 | 0.9300 |
| 20 | 0.8800 | 0.9500 | 0.9700 | 0.9400 |

| Conc-mg/L | Mean | N-Mean | Transform: Arcsin Square Root | | | | | t-Stat | 1-Tailed Critical | MSD | Isotonic | |
|-------------|--------|--------|-------------------------------|--------|--------|-------|---|--------|-------------------|--------|----------|--------|
| | | | Mean | Min | Max | CV% | N | | | | Mean | N-Mean |
| FSW Control | 0.9225 | 1.0000 | 1.2928 | 1.2327 | 1.3694 | 4.532 | 4 | -0.785 | 2.410 | 0.1283 | 0.9415 | 1.0000 |
| 1.3 | 0.9425 | 1.0217 | 1.3346 | 1.2490 | 1.3967 | 4.840 | 4 | -0.577 | 2.410 | 0.1283 | 0.9415 | 1.0000 |
| 2.5 | 0.9350 | 1.0136 | 1.3236 | 1.2171 | 1.4289 | 6.663 | 4 | -0.577 | 2.410 | 0.1283 | 0.9415 | 1.0000 |
| 5 | 0.9500 | 1.0298 | 1.3568 | 1.2840 | 1.4706 | 6.211 | 4 | -1.201 | 2.410 | 0.1283 | 0.9415 | 1.0000 |
| 10 | 0.9575 | 1.0379 | 1.3734 | 1.3030 | 1.4706 | 5.554 | 4 | -1.514 | 2.410 | 0.1283 | 0.9415 | 1.0000 |
| 20 | 0.9350 | 1.0136 | 1.3206 | 1.2171 | 1.3967 | 5.722 | 4 | -0.522 | 2.410 | 0.1283 | 0.9350 | 0.9931 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|----------|----------|
| Shapiro-Wilk's Test indicates normal distribution (p > 0.05) | 0.958961 | 0.916 | 0.091384 | -1.01421 |
| Bartlett's Test indicates equal variances (p = 0.99) | 0.619053 | 15.08627 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|---|------|------|-----|----|----------|----------|----------|----------|----------|-------|
| Dunnett's Test Treatments vs FSW Control | 20 | >20 | | | 0.080879 | 0.087465 | 0.003246 | 0.005669 | 0.720232 | 5, 18 |

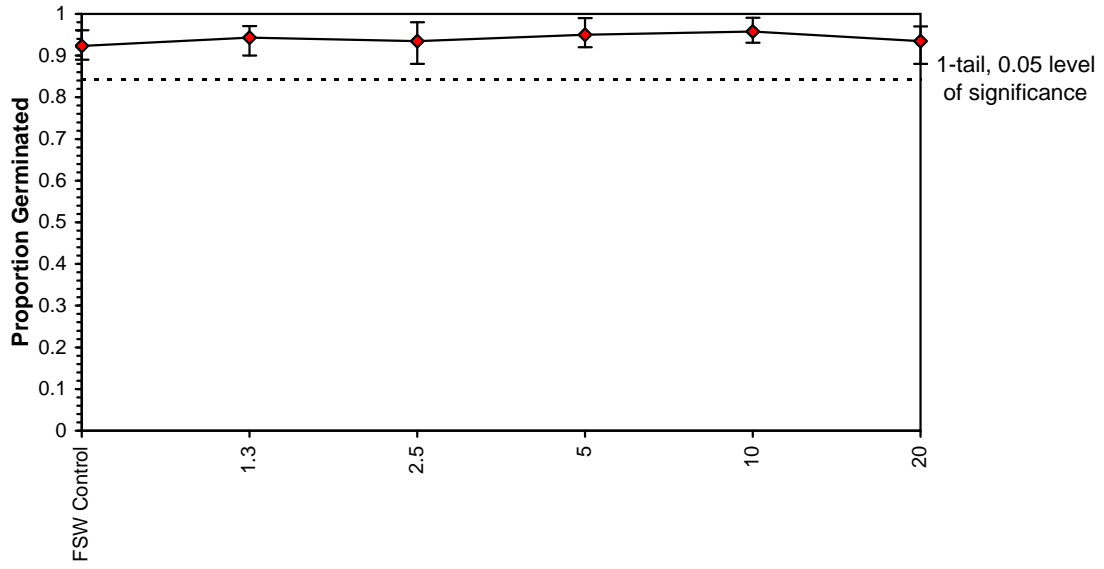
| Log-Logit Interpolation (200 Resamples) | | | | |
|---|------|----|-------------|------|
| Point | mg/L | SD | 95% CL(Exp) | Skew |
| IC05 | >20 | | | |
| IC10 | >20 | | | |
| IC15 | >20 | | | |
| IC20 | >20 | | | |
| IC25 | >20 | | | |
| IC40 | >20 | | | |
| IC50 | >20 | | | |



Macroalgal Germination Success Test-Proportion Germinated

Start Date: 22/05/2013 14:05 Test ID: PR1034/10 Sample ID: Colloidal concentrate
End Date: 25/05/2013 14:00 Lab ID: 6026 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: | 22/05/2013 14:05 | Test ID: | PR1034/10 | Sample ID: | Colloidal concentrate |
| End Date: | 25/05/2013 14:00 | Lab ID: | 6026 | 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, % | 92.25 | 89.00 | 96.00 | 2.99 | 1.87 | 4 |
| 1.3 | | 94.25 | 90.00 | 97.00 | 3.10 | 1.87 | 4 |
| 2.5 | | 93.50 | 88.00 | 98.00 | 4.20 | 2.19 | 4 |
| 5 | | 95.00 | 92.00 | 99.00 | 3.16 | 1.87 | 4 |
| 10 | | 95.75 | 93.00 | 99.00 | 2.75 | 1.73 | 4 |
| 20 | | 93.50 | 88.00 | 97.00 | 3.87 | 2.10 | 4 |
| FSW Control | | pH | 8.40 | 8.50 | 8.50 | 0.00 | 0.00 |
| 1.3 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 2.5 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 5 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 10 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 20 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | | 34.10 | 33.50 | 33.50 | 0.00 | 0.00 |
| 1.3 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 5 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 10 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 20 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| FSW Control | | DO % | 100.40 | 96.80 | 96.80 | 0.00 | 0.00 |
| 1.3 | 99.80 | | 99.80 | 99.80 | 0.00 | 0.00 | 1 |
| 2.5 | 98.00 | | 98.00 | 98.00 | 0.00 | 0.00 | 1 |
| 5 | 97.60 | | 97.60 | 97.60 | 0.00 | 0.00 | 1 |
| 10 | 98.50 | | 98.50 | 98.50 | 0.00 | 0.00 | 1 |
| 20 | 100.70 | | 100.70 | 100.70 | 0.00 | 0.00 | 1 |

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

Microalgal Growth inhibition Test-Growth-Cell Yield

| | | |
|-----------------------------|--------------------|---|
| Start Date: 4/06/2013 14:30 | Test ID: PR1034/02 | Sample ID: Colloidal Concentrate |
| End Date: 7/06/2013 14:30 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 110 | Test Species: IG-isochrysis aff galbana |

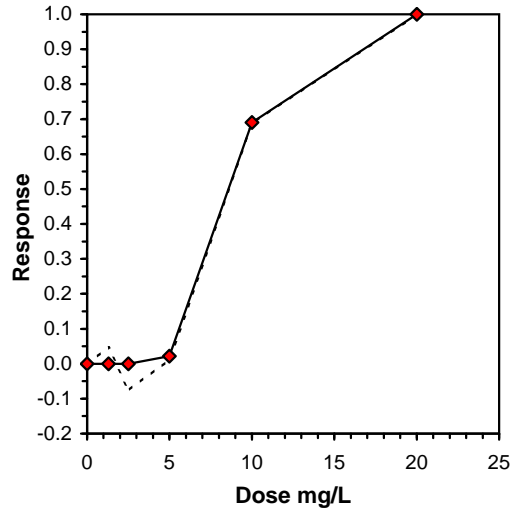
| Conc-mg/L | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|
| FSW Control | 536264 | 750264 | 630264 | 410264 | 642264 | 676264 | 704264 | 730264 |
| 1.3 | 524264 | 664264 | 546264 | 686264 | | | | |
| 2.5 | 664264 | 832264 | 732264 | 506264 | | | | |
| 5 | 660264 | 768264 | 622264 | 458264 | | | | |
| 10 | 266264 | 180264 | 196264 | 152264 | | | | |
| 20 | 0 | 0 | 0 | 0 | | | | |

| Conc-mg/L | Mean | N-Mean | Transform: Untransformed | | | | | N | t-Stat | 1-Tailed | | | Isotonic | |
|-------------|--------|--------|--------------------------|--------|--------|--------|----------|--------|--------|----------|----------|----------|----------|--|
| | | | Mean | Min | Max | CV% | Critical | | | MSD | Mean | N-Mean | | |
| FSW Control | 635014 | 1.0000 | 635014 | 410264 | 750264 | 17.776 | 8 | | | | | 641347.3 | 1.0000 | |
| 1.3 | 605264 | 0.9532 | 605264 | 524264 | 686264 | 13.518 | 4 | 0.449 | 2.433 | 161146.6 | 161146.6 | 641347.3 | 1.0000 | |
| 2.5 | 683764 | 1.0768 | 683764 | 506264 | 832264 | 20.033 | 4 | -0.736 | 2.433 | 161146.6 | 161146.6 | 641347.3 | 1.0000 | |
| 5 | 627264 | 0.9878 | 627264 | 458264 | 768264 | 20.490 | 4 | 0.117 | 2.433 | 161146.6 | 161146.6 | 627264 | 0.9780 | |
| *10 | 198764 | 0.3130 | 198764 | 152264 | 266264 | 24.419 | 4 | 6.588 | 2.433 | 161146.6 | 161146.6 | 198764 | 0.3099 | |
| 20 | 0 | 0.0000 | 0 | 0 | 0 | 0.000 | 4 | | | | | 0 | 0.0000 | |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|----------|----------|
| Shapiro-Wilk's Test indicates normal distribution (p > 0.05) | 0.953148 | 0.916 | -0.67518 | 0.052385 |
| Bartlett's Test indicates equal variances (p = 0.55) | 3.061752 | 13.2767 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|--------------------------------|------|------|----------|----|----------|----------|----------|----------|---------|-------|
| Bonferroni t Test | 5 | 10 | 7.071068 | | 161146.6 | 0.253769 | 1.64E+11 | 1.17E+10 | 1.8E-05 | 4, 19 |

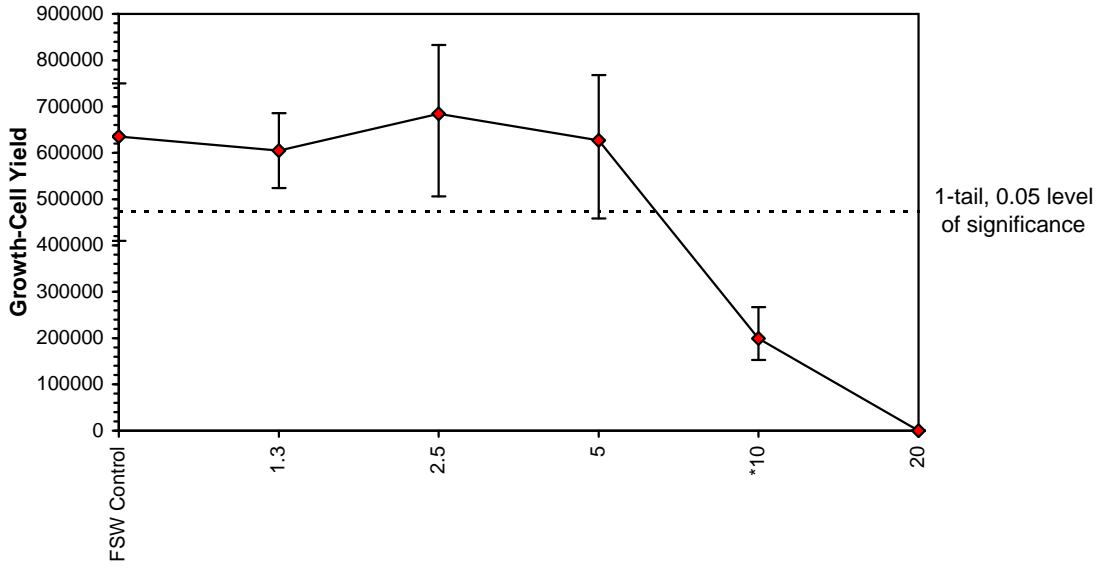
| Linear Interpolation (200 Resamples) | | | | | |
|--------------------------------------|--------|--------|-------------|--------|---------|
| Point | mg/L | SD | 95% CL(Exp) | Skew | |
| IC05 | 5.2098 | 1.5467 | 0.0000 | 5.4882 | -1.0407 |
| IC10 | 5.5840 | 0.8833 | 1.0810 | 5.8779 | -2.2975 |
| IC15 | 5.9582 | 0.6344 | 2.6570 | 6.2675 | -2.5597 |
| IC20 | 6.3324 | 0.5004 | 3.6911 | 6.6572 | -1.8004 |
| IC25 | 6.7066 | 0.4233 | 4.5597 | 7.0468 | -1.3132 |
| IC40 | 7.8291 | 0.3139 | 6.3880 | 8.2555 | -0.7613 |
| IC50 | 8.5775 | 0.2692 | 7.4913 | 9.1214 | -0.2741 |



Microalgal Growth inhibition Test-Growth-Cell Yield

Start Date: 4/06/2013 14:30 Test ID: PR1034/02 Sample ID: Colloidal Concentrate
End Date: 7/06/2013 14:30 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 110 Test Species: IG-isochrysis aff galbana
Comments:

Dose-Response Plot



Microalgal Growth inhibition Test-Growth-Cell Yield

| | | |
|-----------------------------|--------------------|---|
| Start Date: 4/06/2013 14:30 | Test ID: PR1034/02 | Sample ID: Colloidal Concentrate |
| End Date: 7/06/2013 14:30 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 110 | Test Species: IG-isochrysis aff galbana |

Comments:

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|--------------|-------|-------|-------|-------|-------|------|
| FSW Control | Cell Yield | 63.50 | 41.03 | 75.03 | 11.29 | 5.29 | 8 |
| 1.3 | | 60.53 | 52.43 | 68.63 | 8.18 | 4.73 | 4 |
| 2.5 | | 68.38 | 50.63 | 83.23 | 13.70 | 5.41 | 4 |
| 5 | | 62.73 | 45.83 | 76.83 | 12.85 | 5.72 | 4 |
| 10 | | 19.88 | 15.23 | 26.63 | 4.85 | 11.08 | 4 |
| 20 | | 0.00 | 0.00 | 0.00 | 0.00 | | 4 |
| FSW Control | | pH | 8.10 | 8.10 | 8.10 | 0.00 | 0.00 |
| 1.3 | 8.30 | | 8.30 | 8.30 | 0.00 | 0.00 | 1 |
| 2.5 | 8.30 | | 8.30 | 8.30 | 0.00 | 0.00 | 1 |
| 5 | 8.30 | | 8.30 | 8.30 | 0.00 | 0.00 | 1 |
| 10 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 20 | 8.50 | | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 1.3 | | 34.80 | 34.80 | 34.80 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 5 | | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 10 | | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 20 | | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |

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

Microalgal Growth inhibition Test-Growth-Cell Yield

| | | |
|-----------------------------|--------------------|---------------------------------------|
| Start Date: 4/06/2013 15:45 | Test ID: PR1034/03 | Sample ID: Colloidal Concentrate |
| End Date: 7/06/2013 15:45 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 110 | Test Species: NC-Nitzschia closterium |

| Conc-mg/L | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|
| FSW Control | 665003.3 | 761003.3 | 651003.3 | 709003.3 | 607003.3 | 669003.3 | 717003.3 | 583003.3 |
| 1.3 | 733003.3 | 641003.3 | 695003.3 | 621003.3 | | | | |
| 2.5 | 575003.3 | 685003.3 | 649003.3 | 587003.3 | | | | |
| 5 | 589003.3 | 615003.3 | 609003.3 | 629003.3 | | | | |
| 10 | 671003.3 | 613003.3 | 567003.3 | 693003.3 | | | | |
| 20 | 459003.3 | 415003.3 | 427003.3 | 447003.3 | | | | |

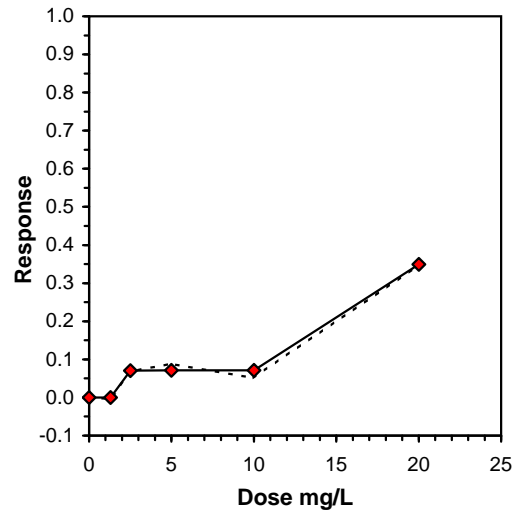
| Conc-mg/L | Mean | N-Mean | Transform: Untransformed | | | | N | t-Stat | 1-Tailed Critical | MSD | Isotonic | |
|-------------|----------|--------|--------------------------|----------|----------|-------|---|--------|-------------------|----------|----------|--------|
| | | | Mean | Min | Max | CV% | | | | | Mean | N-Mean |
| FSW Control | 670253.3 | 1.0000 | 670253.3 | 583003.3 | 761003.3 | 8.724 | 8 | | | 671378.3 | 1.0000 | |
| 1.3 | 672503.3 | 1.0034 | 672503.3 | 621003.3 | 733003.3 | 7.587 | 4 | -0.076 | 2.508 | 74405.21 | 671378.3 | 1.0000 |
| 2.5 | 624003.3 | 0.9310 | 624003.3 | 575003.3 | 685003.3 | 8.335 | 4 | 1.559 | 2.508 | 74405.21 | 624003.3 | 0.9294 |
| 5 | 610503.3 | 0.9109 | 610503.3 | 589003.3 | 629003.3 | 2.720 | 4 | 2.014 | 2.508 | 74405.21 | 623253.3 | 0.9283 |
| 10 | 636003.3 | 0.9489 | 636003.3 | 567003.3 | 693003.3 | 8.970 | 4 | 1.155 | 2.508 | 74405.21 | 623253.3 | 0.9283 |
| *20 | 437003.3 | 0.6520 | 437003.3 | 415003.3 | 459003.3 | 4.515 | 4 | 7.863 | 2.508 | 74405.21 | 437003.3 | 0.6509 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|---------|----------|
| Shapiro-Wilk's Test indicates normal distribution (p > 0.05) | 0.989227 | 0.924 | 0.00305 | -0.47466 |
| Bartlett's Test indicates equal variances (p = 0.25) | 6.67184 | 15.08627 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|--------------------------------|------|------|----------|----|----------|----------|----------|----------|---------|-------|
| Bonferroni t Test | 10 | 20 | 14.14214 | | 74405.21 | 0.111011 | 3.33E+10 | 2.35E+09 | 2.9E-06 | 5, 22 |

Treatments vs FSW Control

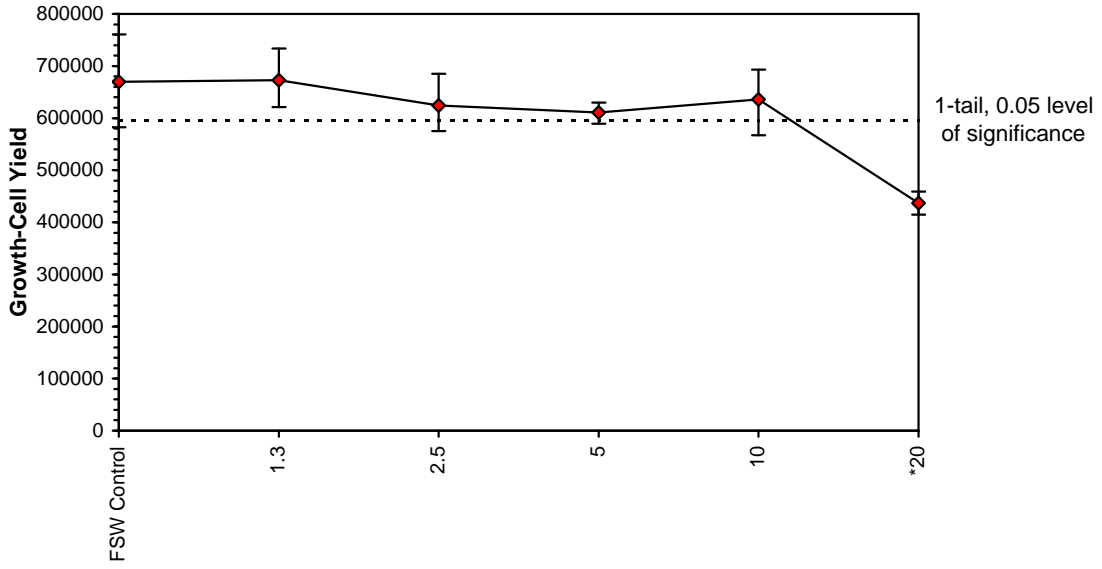
| Linear Interpolation (200 Resamples) | | | | | |
|--------------------------------------|--------|-------|-------------|--------|---------|
| Point | mg/L | SD | 95% CL(Exp) | | Skew |
| IC05 | 2.150 | 2.930 | 0.091 | 16.009 | 1.8750 |
| IC10 | 11.021 | 3.850 | 0.000 | 13.272 | -0.6983 |
| IC15 | 12.823 | 1.332 | 8.703 | 14.777 | -2.8441 |
| IC20 | 14.626 | 0.922 | 11.234 | 16.406 | -0.4553 |
| IC25 | 16.428 | 0.822 | 13.276 | 18.196 | -0.3965 |
| IC40 | >20 | | | | |
| IC50 | >20 | | | | |



Microalgal Growth inhibition Test-Growth-Cell Yield

Start Date: 4/06/2013 15:45 Test ID: PR1034/03 Sample ID: Colloidal Concentrate
End Date: 7/06/2013 15:45 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 110 Test Species: NC-Nitzschia closterium
Comments:

Dose-Response Plot



Microalgal Growth inhibition Test-Growth-Cell Yield

Start Date: 4/06/2013 15:45 Test ID: PR1034/03 Sample ID: Colloidal Concentrate
End Date: 7/06/2013 15:45 Lab ID: 6026 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 | 67.03 | 58.30 | 76.10 | 5.85 | 3.61 | 8 |
| 1.3 | | 67.25 | 62.10 | 73.30 | 5.10 | 3.36 | 4 |
| 2.5 | | 62.40 | 57.50 | 68.50 | 5.20 | 3.65 | 4 |
| 5 | | 61.05 | 58.90 | 62.90 | 1.66 | 2.11 | 4 |
| 10 | | 63.60 | 56.70 | 69.30 | 5.70 | 3.76 | 4 |
| 20 | | 43.70 | 41.50 | 45.90 | 1.97 | 3.21 | 4 |
| FSW Control | pH | 8.10 | 8.10 | 8.10 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.30 | 8.30 | 8.30 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.30 | 8.30 | 8.30 | 0.00 | 0.00 | 1 |
| 5 | | 8.30 | 8.30 | 8.30 | 0.00 | 0.00 | 1 |
| 10 | | 8.40 | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 20 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 1.3 | | 34.80 | 34.80 | 34.80 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 5 | | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 10 | | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 20 | | 34.70 | 34.70 | 34.70 | 0.00 | 0.00 | 1 |

Statistical Printouts for the Sea Urchin Larval Development Test

Sea Urchin Larval Development Test-Proportion Normal

| | | | | | |
|--------------|------------------|-----------|-----------|---------------|-----------------------------|
| Start Date: | 8/05/2013 14:40 | Test ID: | PR1034/12 | Sample ID: | Colloidal concentrate |
| End Date: | 11/05/2013 14:40 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 105 | Test Species: | HT-Heliocidaris tuberculata |

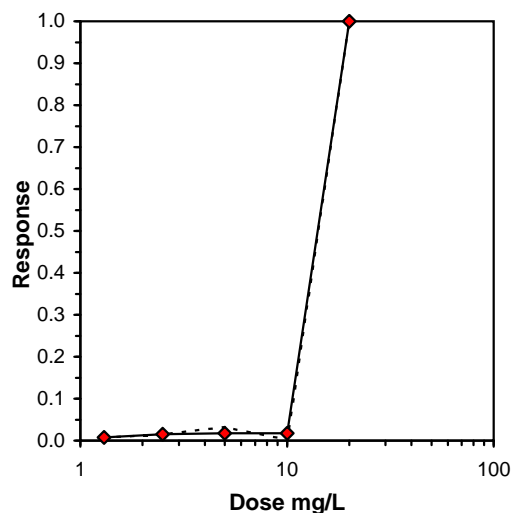
| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 0.9900 | 0.9700 | 0.9700 | 0.9800 |
| 1.3 | 0.9500 | 0.9700 | 0.9800 | 0.9800 |
| 2.5 | 0.9500 | 0.9700 | 0.9700 | 0.9600 |
| 5 | 0.9500 | 0.9400 | 0.9300 | 0.9600 |
| 10 | 1.0000 | 0.9700 | 0.9700 | 0.9600 |
| 20 | 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 | 0.9775 | 1.0000 | 1.4232 | 1.3967 | 1.4706 | 2.463 | 4 | | | | 9 | 400 |
| 1.3 | 0.9700 | 0.9923 | 1.3999 | 1.3453 | 1.4289 | 2.820 | 4 | 0.784 | 2.360 | 0.0701 | 12 | 400 |
| 2.5 | 0.9625 | 0.9847 | 1.3770 | 1.3453 | 1.3967 | 1.799 | 4 | 1.556 | 2.360 | 0.0701 | 15 | 400 |
| *5 | 0.9450 | 0.9668 | 1.3353 | 1.3030 | 1.3694 | 2.140 | 4 | 2.963 | 2.360 | 0.0701 | 22 | 400 |
| 10 | 0.9750 | 0.9974 | 1.4209 | 1.3694 | 1.5208 | 4.772 | 4 | 0.078 | 2.360 | 0.0701 | 10 | 400 |
| 20 | 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) | 0.941503 | 0.905 | 0.871929 | 1.209506 |
| Bartlett's Test indicates equal variances (p = 0.47) | 3.576862 | 13.2767 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|---|------|------|----------|----|----------|----------|----------|----------|----------|-------|
| Dunnett's Test Treatments vs FSW Control | 10 | 20 | 14.14214 | | 0.025002 | 0.025554 | 0.005314 | 0.001763 | 0.052019 | 4, 15 |

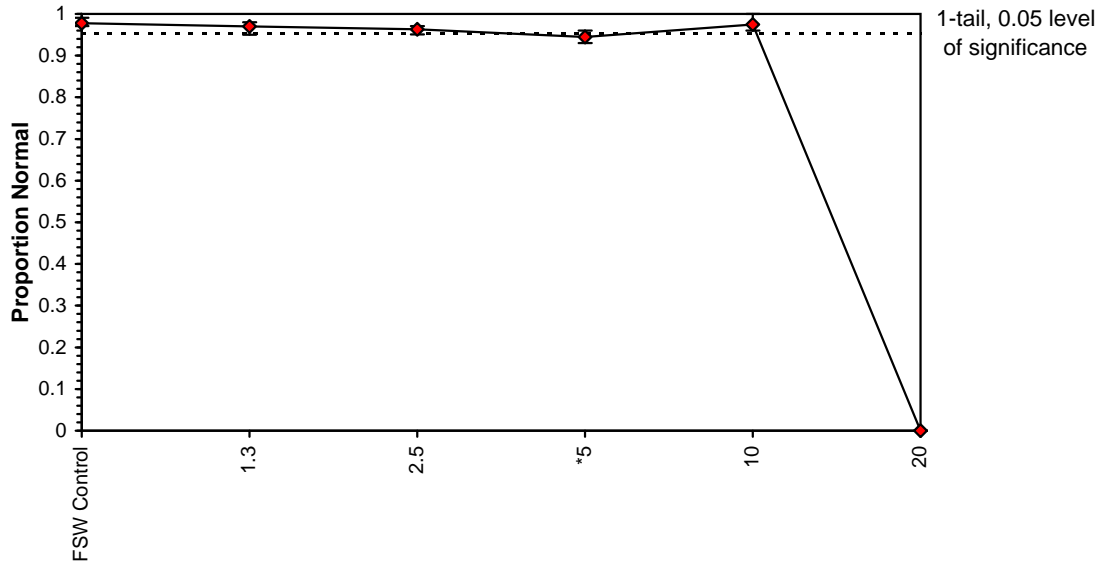
| Trimmed Spearman-Kärber | | | |
|-------------------------|--------|--------|--------|
| Trim Level | EC50 | 95% CL | |
| 0.0% | | | |
| 5.0% | 14.053 | 13.986 | 14.120 |
| 10.0% | 14.053 | 13.986 | 14.120 |
| 20.0% | 14.053 | 13.986 | 14.120 |
| Auto-0.8% | 13.830 | 13.611 | 14.052 |



Sea Urchin Larval Development Test-Proportion Normal

Start Date: 8/05/2013 14:40 Test ID: PR1034/12 Sample ID: Colloidal concentrate
End Date: 11/05/2013 14:40 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 105 Test Species: HT-Heliocidaris tuberculata
Comments:

Dose-Response Plot



Sea Urchin Larval Development Test-Proportion Normal

| | | |
|-----------------------------|--------------------|---|
| Start Date: 8/05/2013 14:40 | Test ID: PR1034/12 | Sample ID: Colloidal concentrate |
| End Date: 11/05/2013 14:40 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 105 | Test Species: HT-Heliocidaris tuberculata |

Comments:

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|--------------|--------|--------|--------|------|------|---|
| FSW Control | % Normal | 97.75 | 97.00 | 99.00 | 0.96 | 1.00 | 4 |
| 1.3 | | 97.00 | 95.00 | 98.00 | 1.41 | 1.23 | 4 |
| 2.5 | | 96.25 | 95.00 | 97.00 | 0.96 | 1.02 | 4 |
| 5 | | 94.50 | 93.00 | 96.00 | 1.29 | 1.20 | 4 |
| 10 | | 97.50 | 96.00 | 100.00 | 1.73 | 1.35 | 4 |
| 20 | | 0.00 | 0.00 | 0.00 | 0.00 | | 4 |
| FSW Control | pH | 8.40 | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| 5 | | 8.40 | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 10 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| 20 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 33.50 | 33.50 | 33.50 | 0.00 | 0.00 | 1 |
| 1.3 | | 33.50 | 33.50 | 33.50 | 0.00 | 0.00 | 1 |
| 2.5 | | 33.50 | 33.50 | 33.50 | 0.00 | 0.00 | 1 |
| 5 | | 33.50 | 33.50 | 33.50 | 0.00 | 0.00 | 1 |
| 10 | | 33.60 | 33.60 | 33.60 | 0.00 | 0.00 | 1 |
| 20 | | 33.60 | 33.60 | 33.60 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | 112.60 | 112.60 | 112.60 | 0.00 | 0.00 | 1 |
| 1.3 | | 96.80 | 96.80 | 96.80 | 0.00 | 0.00 | 1 |
| 2.5 | | 97.00 | 97.00 | 97.00 | 0.00 | 0.00 | 1 |
| 5 | | 98.90 | 98.90 | 98.90 | 0.00 | 0.00 | 1 |
| 10 | | 96.80 | 96.80 | 96.80 | 0.00 | 0.00 | 1 |
| 20 | | 97.40 | 97.40 | 97.40 | 0.00 | 0.00 | 1 |

Sea Urchin Larval Development Test-Proportion Normal

| | | | | | |
|--------------|------------------|-----------|-----------|---------------|-----------------------------|
| Start Date: | 8/05/2013 14:40 | Test ID: | PR1034/12 | Sample ID: | Colloidal concentrate |
| End Date: | 11/05/2013 14:40 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 105 | Test Species: | HT-Heliocidaris tuberculata |

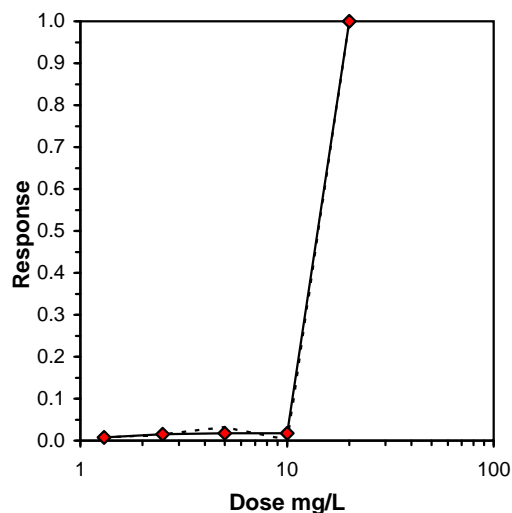
| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 0.9900 | 0.9700 | 0.9700 | 0.9800 |
| 1.3 | 0.9500 | 0.9700 | 0.9800 | 0.9800 |
| 2.5 | 0.9500 | 0.9700 | 0.9700 | 0.9600 |
| 5 | 0.9500 | 0.9400 | 0.9300 | 0.9600 |
| 10 | 1.0000 | 0.9700 | 0.9700 | 0.9600 |
| 20 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Conc-mg/L | Mean | N-Mean | Transform: Arcsin Square Root | | | | | N | t-Stat | 1-Tailed Critical | MSD | Isotonic | |
|-------------|--------|--------|-------------------------------|--------|--------|-------|------|-------|--------|-------------------|--------|----------|--|
| | | | Mean | Min | Max | CV% | Mean | | | | | N-Mean | |
| FSW Control | 0.9775 | 1.0000 | 1.4232 | 1.3967 | 1.4706 | 2.463 | 4 | | | | 0.9775 | 1.0000 | |
| 1.3 | 0.9700 | 0.9923 | 1.3999 | 1.3453 | 1.4289 | 2.820 | 4 | 0.784 | 2.360 | 0.0701 | 0.9700 | 0.9923 | |
| 2.5 | 0.9625 | 0.9847 | 1.3770 | 1.3453 | 1.3967 | 1.799 | 4 | 1.556 | 2.360 | 0.0701 | 0.9625 | 0.9847 | |
| *5 | 0.9450 | 0.9668 | 1.3353 | 1.3030 | 1.3694 | 2.140 | 4 | 2.963 | 2.360 | 0.0701 | 0.9600 | 0.9821 | |
| 10 | 0.9750 | 0.9974 | 1.4209 | 1.3694 | 1.5208 | 4.772 | 4 | 0.078 | 2.360 | 0.0701 | 0.9600 | 0.9821 | |
| 20 | 0.0000 | 0.0000 | 0.0500 | 0.0500 | 0.0500 | 0.000 | 4 | | | | 0.0000 | 0.0000 | |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|----------|----------|
| Shapiro-Wilk's Test indicates normal distribution (p > 0.05) | 0.941503 | 0.905 | 0.871929 | 1.209506 |
| Bartlett's Test indicates equal variances (p = 0.47) | 3.576862 | 13.2767 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|---|------|------|----------|----|----------|----------|----------|----------|----------|-------|
| Dunnett's Test Treatments vs FSW Control | 10 | 20 | 14.14214 | | 0.025002 | 0.025554 | 0.005314 | 0.001763 | 0.052019 | 4, 15 |

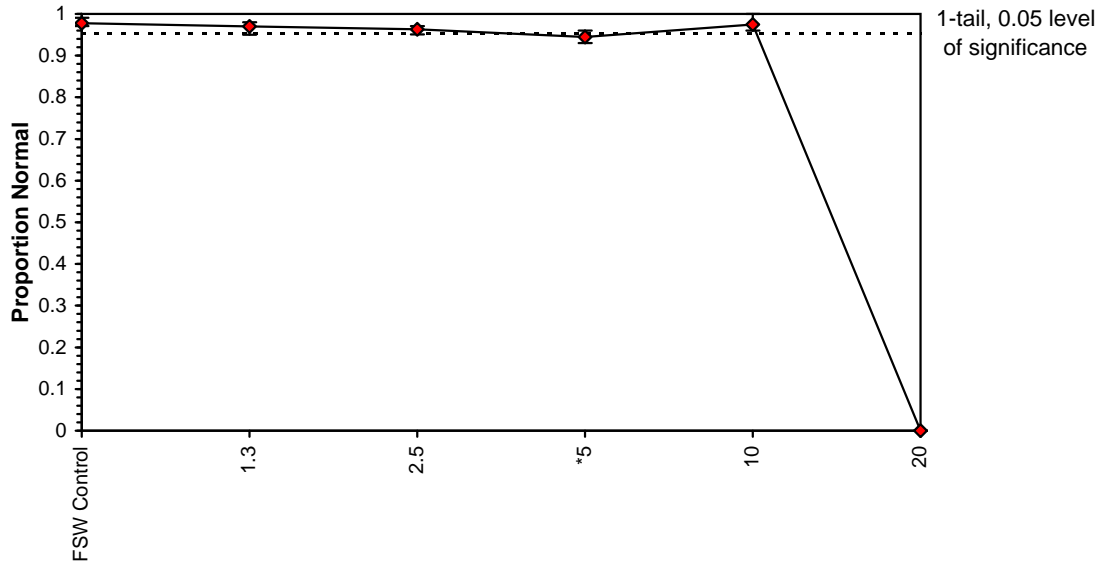
| Log-Logit Interpolation (200 Resamples) | | | | | |
|---|--------|-------|-------------|--------|--------|
| Point | mg/L | SD | 95% CL(Exp) | | Skew |
| IC05 | 10.357 | 0.067 | 10.165 | 10.553 | 0.1595 |
| IC10 | 10.704 | 0.061 | 10.530 | 10.892 | 0.2920 |
| IC15 | 10.950 | 0.058 | 10.791 | 11.131 | 0.3401 |
| IC20 | 11.147 | 0.057 | 10.992 | 11.321 | 0.3629 |
| IC25 | 11.318 | 0.055 | 11.168 | 11.487 | 0.3756 |
| IC40 | 11.750 | 0.053 | 11.607 | 11.912 | 0.3922 |
| IC50 | 12.015 | 0.052 | 11.875 | 12.176 | 0.3967 |



Sea Urchin Larval Development Test-Proportion Normal

Start Date: 8/05/2013 14:40 Test ID: PR1034/12 Sample ID: Colloidal concentrate
End Date: 11/05/2013 14:40 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 105 Test Species: HT-Heliocidaris tuberculata
Comments:

Dose-Response Plot



Sea Urchin Larval Development Test-Proportion Normal

| | | |
|-----------------------------|--------------------|---|
| Start Date: 8/05/2013 14:40 | Test ID: PR1034/12 | Sample ID: Colloidal concentrate |
| End Date: 11/05/2013 14:40 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 105 | Test Species: HT-Heliocidaris tuberculata |

Comments:

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|--------------|--------|--------|--------|------|------|---|
| FSW Control | % Normal | 97.75 | 97.00 | 99.00 | 0.96 | 1.00 | 4 |
| 1.3 | | 97.00 | 95.00 | 98.00 | 1.41 | 1.23 | 4 |
| 2.5 | | 96.25 | 95.00 | 97.00 | 0.96 | 1.02 | 4 |
| 5 | | 94.50 | 93.00 | 96.00 | 1.29 | 1.20 | 4 |
| 10 | | 97.50 | 96.00 | 100.00 | 1.73 | 1.35 | 4 |
| 20 | | 0.00 | 0.00 | 0.00 | 0.00 | | 4 |
| FSW Control | pH | 8.40 | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| 5 | | 8.40 | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 10 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| 20 | | 8.50 | 8.50 | 8.50 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 33.50 | 33.50 | 33.50 | 0.00 | 0.00 | 1 |
| 1.3 | | 33.50 | 33.50 | 33.50 | 0.00 | 0.00 | 1 |
| 2.5 | | 33.50 | 33.50 | 33.50 | 0.00 | 0.00 | 1 |
| 5 | | 33.50 | 33.50 | 33.50 | 0.00 | 0.00 | 1 |
| 10 | | 33.60 | 33.60 | 33.60 | 0.00 | 0.00 | 1 |
| 20 | | 33.60 | 33.60 | 33.60 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | 112.60 | 112.60 | 112.60 | 0.00 | 0.00 | 1 |
| 1.3 | | 96.80 | 96.80 | 96.80 | 0.00 | 0.00 | 1 |
| 2.5 | | 97.00 | 97.00 | 97.00 | 0.00 | 0.00 | 1 |
| 5 | | 98.90 | 98.90 | 98.90 | 0.00 | 0.00 | 1 |
| 10 | | 96.80 | 96.80 | 96.80 | 0.00 | 0.00 | 1 |
| 20 | | 97.40 | 97.40 | 97.40 | 0.00 | 0.00 | 1 |

**Statistical Printouts for the Acute
Glabioferens Toxicity Test**

Marine Copepod Acute Test-48-hr Survival

| | | | | | |
|--------------|-----------------|-----------|-----------|---------------|-------------------------------|
| Start Date: | 5/06/2013 15:00 | Test ID: | PR1034/06 | Sample ID: | Colloidal Concentrate |
| End Date: | 7/06/2013 15:00 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 124 | Test Species: | PC-Parvocalanus crassirostris |

| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 2.5 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 5 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 10 | 1.0000 | 1.0000 | 0.8000 | 0.8000 |
| 20 | 0.2000 | 0.0000 | 0.2000 | 0.2000 |
| 40 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

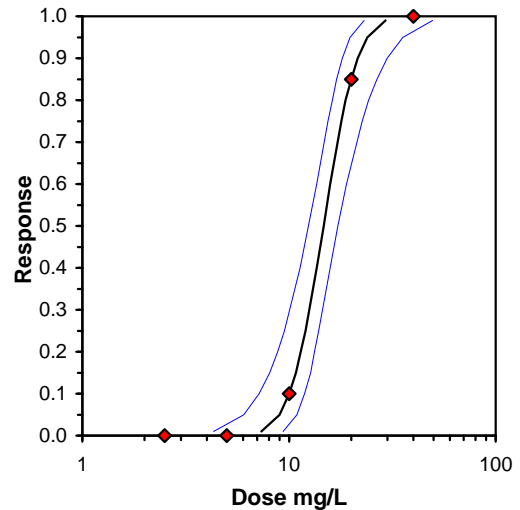
| Conc-mg/L | Mean | N-Mean | Transform: Arcsin Square Root | | | | Rank Sum | 1-Tailed Critical | Number Resp | Total Number |
|-------------|--------|--------|-------------------------------|--------|--------|--------|----------|-------------------|-------------|--------------|
| | | | Mean | Min | Max | CV% | | | | |
| FSW Control | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | | | 0 | 20 |
| 2.5 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 18.00 | 10.00 | 0 | 20 |
| 5 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 18.00 | 10.00 | 0 | 20 |
| 10 | 0.9000 | 0.9000 | 1.2262 | 1.1071 | 1.3453 | 11.212 | 14.00 | 10.00 | 2 | 20 |
| *20 | 0.1500 | 0.1500 | 0.4041 | 0.2255 | 0.4636 | 29.464 | 10.00 | 10.00 | 17 | 20 |
| 40 | 0.0000 | 0.0000 | 0.2255 | 0.2255 | 0.2255 | 0.000 | | | 20 | 20 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|---|-----------|----------|----------|----------|
| Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05) | 0.822172 | 0.905 | -0.78453 | 1.383754 |
| Equality of variance cannot be confirmed | | | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU |
|--------------------------------|------|------|----------|----|
| Steel's Many-One Rank Test | 10 | 20 | 14.14214 | |
| Treatments vs FSW Control | | | | |

| Parameter | Value | SE | 95% Fiducial Limits | Maximum Likelihood-Probit | | | | | | |
|-----------|----------|----------|---------------------|---------------------------|----------|----------|---------|----------|----------|------|
| | | | | Control | Chi-Sq | Critical | P-value | Mu | Sigma | Iter |
| Slope | 7.749416 | 1.644736 | 4.525734 10.9731 | 0 | 0.011116 | 7.814728 | 1 | 1.166306 | 0.129042 | 3 |
| Intercept | -4.03819 | 1.93867 | -7.83798 -0.2384 | | | | | | | |
| TSCR | | | | | | | | | | |

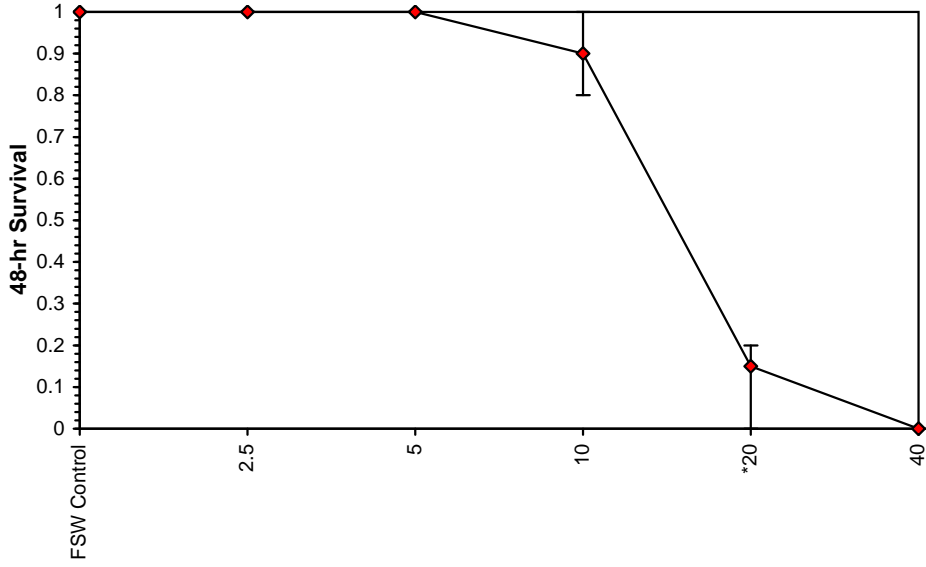
| Point | Probits | mg/L | 95% Fiducial Limits |
|-------|---------|----------|---------------------|
| EC01 | 2.674 | 7.346993 | 4.315509 9.34617 |
| EC05 | 3.355 | 8.996032 | 6.027247 10.9203 |
| EC10 | 3.718 | 10.02149 | 7.173958 11.91182 |
| EC15 | 3.964 | 10.77861 | 8.04739 12.66429 |
| EC20 | 4.158 | 11.42094 | 8.797843 13.32474 |
| EC25 | 4.326 | 12.00242 | 9.478278 13.94651 |
| EC40 | 4.747 | 13.60234 | 11.30648 15.8235 |
| EC50 | 5.000 | 14.66581 | 12.44494 17.24663 |
| EC60 | 5.253 | 15.81243 | 13.57976 18.96148 |
| EC75 | 5.674 | 17.92023 | 15.43078 22.58453 |
| EC80 | 5.842 | 18.83261 | 16.15778 24.32077 |
| EC85 | 6.036 | 19.9549 | 17.00714 26.57829 |
| EC90 | 6.282 | 21.46249 | 18.08815 29.80321 |
| EC95 | 6.645 | 23.90899 | 19.73766 35.46049 |
| EC99 | 7.326 | 29.27539 | 23.07041 49.50775 |



Marine Copepod Acute Test-48-hr Survival

Start Date: 5/06/2013 15:00 Test ID: PR1034/06 Sample ID: Colloidal Concentrate
End Date: 7/06/2013 15:00 Lab ID: 6026 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: 5/06/2013 15:00 | Test ID: PR1034/06 | Sample ID: Colloidal Concentrate |
| End Date: 7/06/2013 15:00 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 124 | Test Species: PC-Parvocalanus crassirostris |

Comments:

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|------------|--------------|--------|--------|--------|-------|------|
| FSW Control | Survival % | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 2.5 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 5 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 10 | | 90.00 | 80.00 | 100.00 | 11.55 | 3.78 | 4 |
| 20 | | 15.00 | 0.00 | 20.00 | 10.00 | 21.08 | 4 |
| 40 | | 0.00 | 0.00 | 0.00 | 0.00 | | 4 |
| FSW Control | | pH | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 |
| 2.5 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 5 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 10 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 20 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| 40 | 8.40 | | 8.40 | 8.40 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | | 118.10 | 118.10 | 118.10 | 0.00 | 0.00 |
| 2.5 | | 112.30 | 112.30 | 112.30 | 0.00 | 0.00 | 1 |
| 5 | | 118.60 | 118.60 | 118.60 | 0.00 | 0.00 | 1 |
| 10 | | 123.90 | 123.90 | 123.90 | 0.00 | 0.00 | 1 |
| 20 | | 108.30 | 108.30 | 108.30 | 0.00 | 0.00 | 1 |
| 40 | | 130.60 | 130.60 | 130.60 | 0.00 | 0.00 | 1 |
| FSW Control | | Salinity ppt | 34.60 | 34.60 | 34.60 | 0.00 | 0.00 |
| 2.5 | 34.70 | | 34.70 | 34.70 | 0.00 | 0.00 | 1 |
| 5 | 34.80 | | 34.80 | 34.80 | 0.00 | 0.00 | 1 |
| 10 | 34.80 | | 34.80 | 34.80 | 0.00 | 0.00 | 1 |
| 20 | 34.80 | | 34.80 | 34.80 | 0.00 | 0.00 | 1 |
| 40 | 34.80 | | 34.80 | 34.80 | 0.00 | 0.00 | 1 |

**Statistical Printouts for the Acute
Allorchestes Toxicity Test**

Amphipod Acute Toxicity Test-96 hr survival

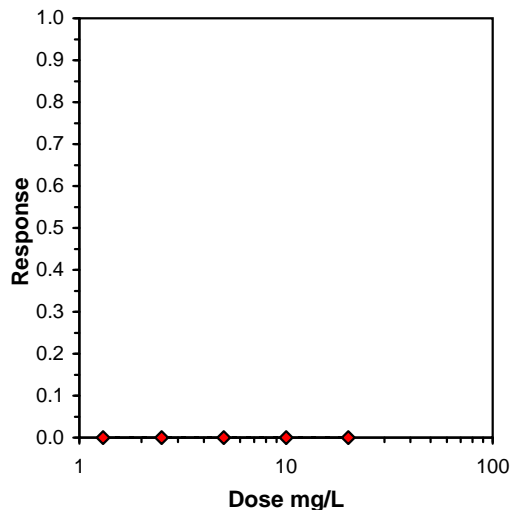
| | | |
|-----------------------------|--------------------|---|
| Start Date: 6/06/2013 14:00 | Test ID: PR1034/07 | Sample ID: Colloidal Concentrate |
| End Date: 10/06/2013 14:00 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 108 | Test Species: AC-Allorchestes compressa |

| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 1.3 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 2.5 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 5 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 10 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 20 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

| Conc-mg/L | Mean | N-Mean | Transform: Arcsin Square Root | | | | | Rank Sum | 1-Tailed Critical | Isotonic | |
|-------------|--------|--------|-------------------------------|--------|--------|-------|---|----------|-------------------|----------|--------|
| | | | Mean | Min | Max | CV% | N | | | Mean | N-Mean |
| FSW Control | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | | | 1.0000 | 1.0000 |
| 1.3 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |
| 2.5 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |
| 5 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |
| 10 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |
| 20 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|------|------|
| Shapiro-Wilk's Test indicates normal distribution ($p > 0.05$) | 1 | 0.916 | | |
| Equality of variance cannot be confirmed | | | | |
| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU |
| Steel's Many-One Rank Test | 20 | >20 | | |
| Treatments vs FSW Control | | | | |

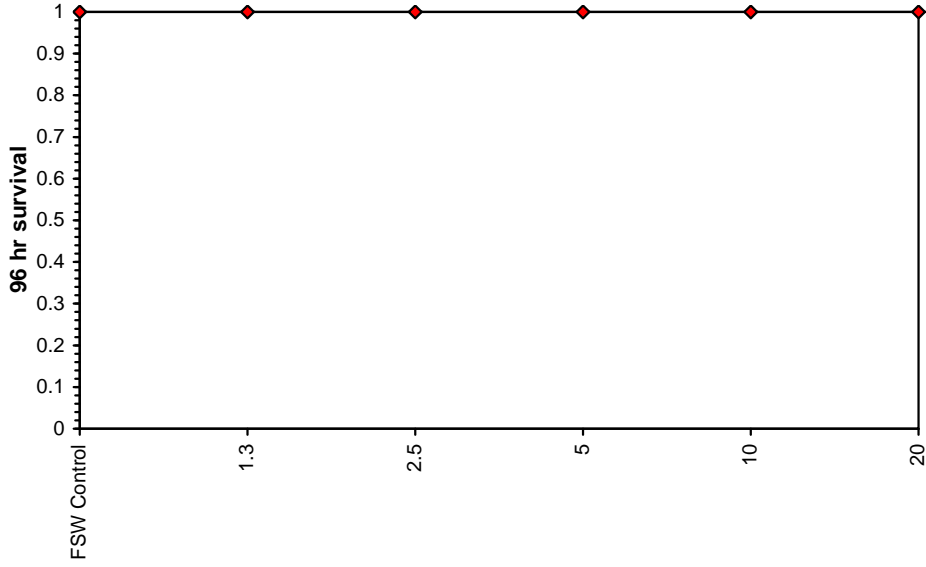
| Log-Logit Interpolation (200 Resamples) | | | | |
|---|------|----|-------------|------|
| Point | mg/L | SD | 95% CL(Exp) | Skew |
| IC05 | >20 | | | |
| IC10 | >20 | | | |
| IC15 | >20 | | | |
| IC20 | >20 | | | |
| IC25 | >20 | | | |
| IC40 | >20 | | | |
| IC50 | >20 | | | |



Amphipod Acute Toxicity Test-96 hr survival

Start Date: 6/06/2013 14:00 Test ID: PR1034/07 Sample ID: Colloidal Concentrate
End Date: 10/06/2013 14:00 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 108 Test Species: AC-Allorchestes compressa
Comments:

Dose-Response Plot



Amphipod Acute Toxicity Test-96 hr survival

| | | | | | |
|--------------|------------------|-----------|-----------|---------------|---------------------------|
| Start Date: | 6/06/2013 14:00 | Test ID: | PR1034/07 | Sample ID: | Colloidal Concentrate |
| End Date: | 10/06/2013 14:00 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 108 | Test Species: | AC-Allorchestes compressa |
| Comments: | | | | | |

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|-------------------|--------|--------|--------|------|------|---|
| FSW Control | % Non-immobilised | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 1.3 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 2.5 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 5 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 10 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 20 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| FSW Control | pH | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 10 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 20 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | 100.60 | 100.60 | 100.60 | 0.00 | 0.00 | 1 |
| 1.3 | | 99.80 | 99.80 | 99.80 | 0.00 | 0.00 | 1 |
| 2.5 | | 99.00 | 99.00 | 99.00 | 0.00 | 0.00 | 1 |
| 5 | | 99.50 | 99.50 | 99.50 | 0.00 | 0.00 | 1 |
| 10 | | 99.20 | 99.20 | 99.20 | 0.00 | 0.00 | 1 |
| 20 | | 98.90 | 98.90 | 98.90 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 34.60 | 34.60 | 34.60 | 0.00 | 0.00 | 1 |
| 1.3 | | 34.60 | 34.60 | 34.60 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.50 | 34.50 | 34.50 | 0.00 | 0.00 | 1 |
| 5 | | 34.50 | 34.50 | 34.50 | 0.00 | 0.00 | 1 |
| 10 | | 34.50 | 34.50 | 34.50 | 0.00 | 0.00 | 1 |
| 20 | | 34.30 | 34.30 | 34.30 | 0.00 | 0.00 | 1 |

Statistical Printouts for the Larval Fish Imbalance Tests

Fish Imbalance Test-96 hr Imbalance

| | | | | | |
|--------------|------------------|-----------|-----------|---------------|-----------------------|
| Start Date: | 15/05/2013 14:30 | Test ID: | PR1034/11 | Sample ID: | Colloidal concentrate |
| End Date: | 19/05/2013 14:30 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 117 | Test Species: | LT-Lates calcarifer |

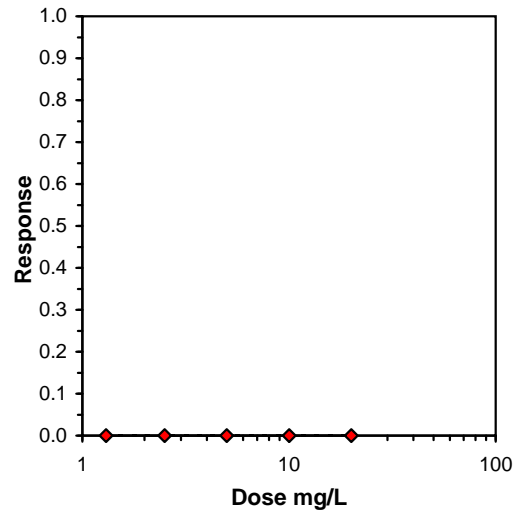
| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 1.3 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 2.5 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 5 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 10 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 20 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

| Conc-mg/L | Mean | N-Mean | Transform: Arcsin Square Root | | | | Rank Sum | 1-Tailed Critical | Isotonic | | |
|-------------|--------|--------|-------------------------------|--------|--------|-------|----------|-------------------|----------|--------|--------|
| | | | Mean | Min | Max | CV% | | | Mean | N-Mean | |
| FSW Control | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | | 1.0000 | 1.0000 | |
| 1.3 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |
| 2.5 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |
| 5 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |
| 10 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |
| 20 | 1.0000 | 1.0000 | 1.3453 | 1.3453 | 1.3453 | 0.000 | 4 | 18.00 | 10.00 | 1.0000 | 1.0000 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|------|------|
| Shapiro-Wilk's Test indicates normal distribution ($p > 0.05$) | 1 | 0.916 | | |
| Equality of variance cannot be confirmed | | | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU |
|--------------------------------|------|------|-----|----|
| Steel's Many-One Rank Test | 20 | >20 | | |
| Treatments vs FSW Control | | | | |

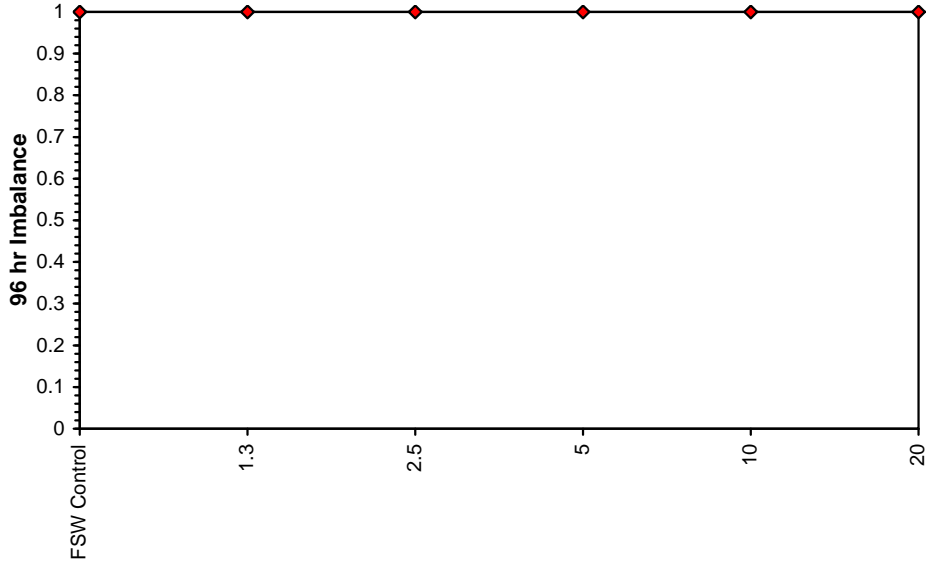
| Log-Logit Interpolation (200 Resamples) | | | | |
|---|------|----|-------------|------|
| Point | mg/L | SD | 95% CL(Exp) | Skew |
| IC05 | >20 | | | |
| IC10 | >20 | | | |
| IC15 | >20 | | | |
| IC20 | >20 | | | |
| IC25 | >20 | | | |
| IC40 | >20 | | | |
| IC50 | >20 | | | |



Fish Imbalance Test-96 hr Imbalance

Start Date: 15/05/2013 14:30 Test ID: PR1034/11 Sample ID: Colloidal concentrate
End Date: 19/05/2013 14:30 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 117 Test Species: LT-Lates calcarifer
Comments:

Dose-Response Plot



Fish Imbalance Test-96 hr Imbalance

| | | | | | |
|--------------|------------------|-----------|-----------|---------------|-----------------------|
| Start Date: | 15/05/2013 14:30 | Test ID: | PR1034/11 | Sample ID: | Colloidal concentrate |
| End Date: | 19/05/2013 14:30 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 117 | Test Species: | LT-Lates calcarifer |
| Comments: | | | | | |

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|---------------|--------|--------|--------|------|------|---|
| FSW Control | % Un-affected | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 1.3 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 2.5 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 5 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 10 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| 20 | | 100.00 | 100.00 | 100.00 | 0.00 | 0.00 | 4 |
| FSW Control | pH | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 10 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 20 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 34.60 | 34.60 | 34.60 | 0.00 | 0.00 | 1 |
| 1.3 | | 34.60 | 34.60 | 34.60 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.50 | 34.50 | 34.50 | 0.00 | 0.00 | 1 |
| 5 | | 34.50 | 34.50 | 34.50 | 0.00 | 0.00 | 1 |
| 10 | | 34.50 | 34.50 | 34.50 | 0.00 | 0.00 | 1 |
| 20 | | 34.30 | 34.30 | 34.30 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | 100.60 | 100.60 | 100.60 | 0.00 | 0.00 | 1 |
| 1.3 | | 99.80 | 99.80 | 99.80 | 0.00 | 0.00 | 1 |
| 2.5 | | 99.00 | 99.00 | 99.00 | 0.00 | 0.00 | 1 |
| 5 | | 99.50 | 99.50 | 99.50 | 0.00 | 0.00 | 1 |
| 10 | | 99.20 | 99.20 | 99.20 | 0.00 | 0.00 | 1 |
| 20 | | 98.90 | 98.90 | 98.90 | 0.00 | 0.00 | 1 |

Statistical Printouts for the Rock Oyster Larval Development Tests

Bivalve Larval Development Test-Proportion Alive/Normal

| | | |
|-----------------------------|--------------------|---------------------------------------|
| Start Date: 4/07/2013 18:30 | Test ID: PR1034/15 | Sample ID: Colloidal Concentrate |
| End Date: 6/07/2013 18:30 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 106 | Test Species: SG-Saccostrea glomerata |

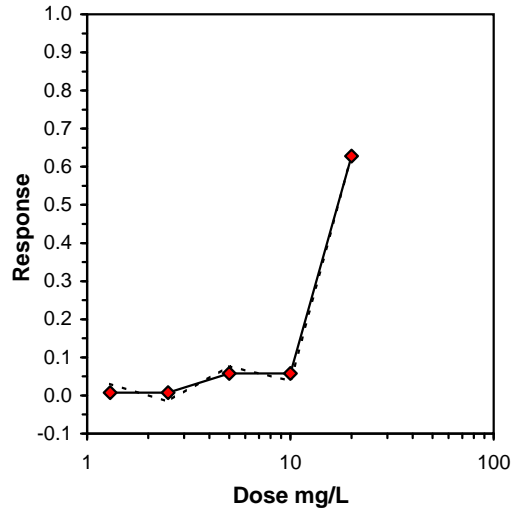
| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 0.7556 | 0.6667 | 0.7556 | 0.6889 |
| 1.3 | 0.7333 | 0.6667 | 0.7556 | 0.6222 |
| 2.5 | 0.8000 | 0.6667 | 0.7556 | 0.6889 |
| 5 | 0.6444 | 0.7556 | 0.4889 | 0.7556 |
| 10 | 0.7111 | 0.5778 | 0.7111 | 0.7556 |
| 20 | 0.1778 | 0.3556 | 0.2222 | 0.3111 |

| 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 | 0.7167 | 1.0000 | 1.0104 | 0.9553 | 1.0536 | 5.031 | 4 | | | | 51 | 180 |
| 1.3 | 0.6944 | 0.9690 | 0.9865 | 0.9089 | 1.0536 | 6.735 | 4 | 0.392 | 2.410 | 0.1471 | 55 | 180 |
| 2.5 | 0.7278 | 1.0155 | 1.0238 | 0.9553 | 1.1071 | 6.797 | 4 | -0.219 | 2.410 | 0.1471 | 49 | 180 |
| 5 | 0.6611 | 0.9225 | 0.9534 | 0.7743 | 1.0536 | 13.894 | 4 | 0.935 | 2.410 | 0.1471 | 61 | 180 |
| 10 | 0.6889 | 0.9612 | 0.9810 | 0.8635 | 1.0536 | 8.341 | 4 | 0.483 | 2.410 | 0.1471 | 56 | 180 |
| *20 | 0.2667 | 0.3721 | 0.5392 | 0.4352 | 0.6389 | 17.210 | 4 | 7.722 | 2.410 | 0.1471 | 132 | 180 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|----------|----------|
| Shapiro-Wilk's Test indicates normal distribution (p > 0.05) | 0.945684 | 0.916 | -0.53457 | -0.39237 |
| Bartlett's Test indicates equal variances (p = 0.70) | 2.967689 | 15.08627 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|---|------|------|----------|----|----------|----------|----------|----------|---------|-------|
| Dunnett's Test Treatments vs FSW Control | 10 | 20 | 14.14214 | | 0.139868 | 0.194937 | 0.138495 | 0.007448 | 1.5E-06 | 5, 18 |

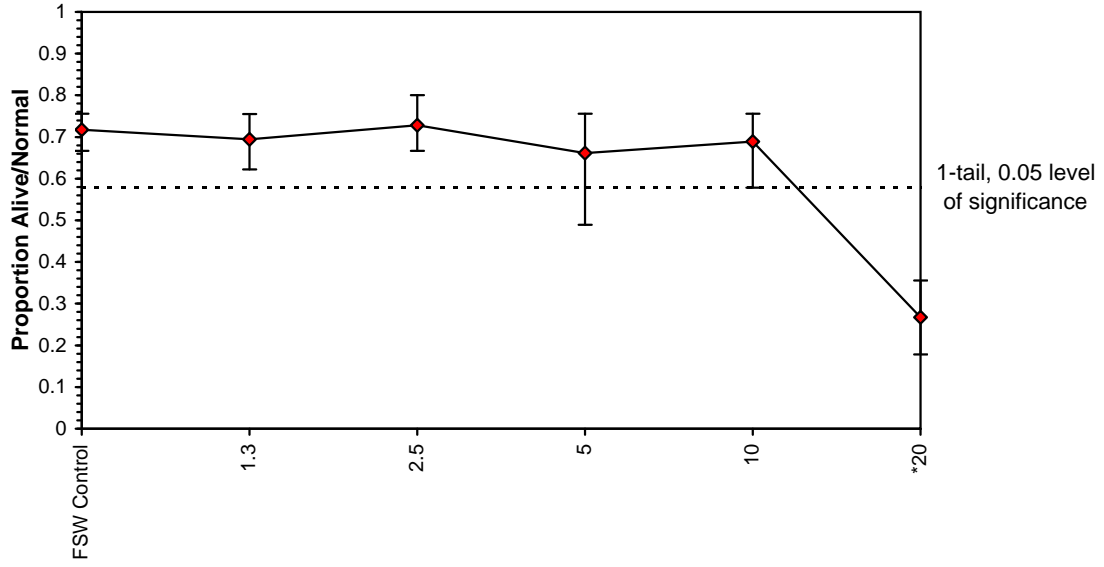
| Trimmed Spearman-Kärber | | | |
|-------------------------|--------|--------|--------|
| Trim Level | EC50 | 95% CL | |
| 0.0% | | | |
| 5.0% | | | |
| 10.0% | | | |
| 20.0% | | | |
| Auto-37.2% | 17.118 | 15.982 | 18.334 |



Bivalve Larval Development Test-Proportion Alive/Normal

Start Date: 4/07/2013 18:30 Test ID: PR1034/15 Sample ID: Colloidal Concentrate
End Date: 6/07/2013 18:30 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 106 Test Species: SG-Saccostrea glomerata
Comments:

Dose-Response Plot



Bivalve Larval Development Test-Proportion Alive/Normal

| | | |
|-----------------------------|--------------------|---------------------------------------|
| Start Date: 4/07/2013 18:30 | Test ID: PR1034/15 | Sample ID: Colloidal Concentrate |
| End Date: 6/07/2013 18:30 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 106 | Test Species: SG-Saccostrea glomerata |

Comments:

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|--------------|-------|-------|-------|-------|-------|---|
| FSW Control | % Normal | 71.67 | 66.67 | 75.56 | 4.58 | 2.99 | 4 |
| 1.3 | | 69.44 | 62.22 | 75.56 | 6.12 | 3.56 | 4 |
| 2.5 | | 72.78 | 66.67 | 80.00 | 6.12 | 3.40 | 4 |
| 5 | | 66.11 | 48.89 | 75.56 | 12.62 | 5.37 | 4 |
| 10 | | 68.89 | 57.78 | 75.56 | 7.70 | 4.03 | 4 |
| 20 | | 26.67 | 17.78 | 35.56 | 8.11 | 10.68 | 4 |
| FSW Control | pH | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 10 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 20 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 33.90 | 33.90 | 33.90 | 0.00 | 0.00 | 1 |
| 1.3 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 5 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 10 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 20 | | 34.30 | 34.30 | 34.30 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | 96.10 | 96.10 | 96.10 | 0.00 | 0.00 | 1 |
| 1.3 | | 99.20 | 99.20 | 99.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 98.60 | 98.60 | 98.60 | 0.00 | 0.00 | 1 |
| 5 | | 98.50 | 98.50 | 98.50 | 0.00 | 0.00 | 1 |
| 10 | | 99.00 | 99.00 | 99.00 | 0.00 | 0.00 | 1 |
| 20 | | 99.70 | 99.70 | 99.70 | 0.00 | 0.00 | 1 |

Bivalve Larval Development Test-Proportion Alive/Normal

| | | | | | |
|--------------|-----------------|-----------|-----------|---------------|-------------------------|
| Start Date: | 4/07/2013 18:30 | Test ID: | PR1034/15 | Sample ID: | Colloidal Concentrate |
| End Date: | 6/07/2013 18:30 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 106 | Test Species: | SG-Saccostrea glomerata |

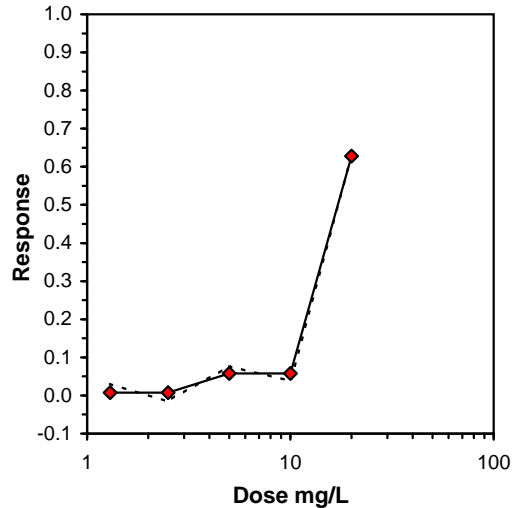
| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 0.7556 | 0.6667 | 0.7556 | 0.6889 |
| 1.3 | 0.7333 | 0.6667 | 0.7556 | 0.6222 |
| 2.5 | 0.8000 | 0.6667 | 0.7556 | 0.6889 |
| 5 | 0.6444 | 0.7556 | 0.4889 | 0.7556 |
| 10 | 0.7111 | 0.5778 | 0.7111 | 0.7556 |
| 20 | 0.1778 | 0.3556 | 0.2222 | 0.3111 |

| Conc-mg/L | Mean | N-Mean | Transform: Arcsin Square Root | | | | | t-Stat | 1-Tailed Critical | MSD | Isotonic | |
|-------------|--------|--------|-------------------------------|--------|--------|--------|---|--------|-------------------|--------|----------|--------|
| | | | Mean | Min | Max | CV% | N | | | | Mean | N-Mean |
| FSW Control | 0.7167 | 1.0000 | 1.0104 | 0.9553 | 1.0536 | 5.031 | 4 | | | 0.7167 | 1.0000 | |
| 1.3 | 0.6944 | 0.9690 | 0.9865 | 0.9089 | 1.0536 | 6.735 | 4 | 0.392 | 2.410 | 0.1471 | 0.7111 | 0.9922 |
| 2.5 | 0.7278 | 1.0155 | 1.0238 | 0.9553 | 1.1071 | 6.797 | 4 | -0.219 | 2.410 | 0.1471 | 0.7111 | 0.9922 |
| 5 | 0.6611 | 0.9225 | 0.9534 | 0.7743 | 1.0536 | 13.894 | 4 | 0.935 | 2.410 | 0.1471 | 0.6750 | 0.9419 |
| 10 | 0.6889 | 0.9612 | 0.9810 | 0.8635 | 1.0536 | 8.341 | 4 | 0.483 | 2.410 | 0.1471 | 0.6750 | 0.9419 |
| *20 | 0.2667 | 0.3721 | 0.5392 | 0.4352 | 0.6389 | 17.210 | 4 | 7.722 | 2.410 | 0.1471 | 0.2667 | 0.3721 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|----------|----------|
| Shapiro-Wilk's Test indicates normal distribution (p > 0.05) | 0.945684 | 0.916 | -0.53457 | -0.39237 |
| Bartlett's Test indicates equal variances (p = 0.70) | 2.967689 | 15.08627 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|---|------|------|----------|----|----------|----------|----------|----------|---------|-------|
| Dunnett's Test Treatments vs FSW Control | 10 | 20 | 14.14214 | | 0.139868 | 0.194937 | 0.138495 | 0.007448 | 1.5E-06 | 5, 18 |

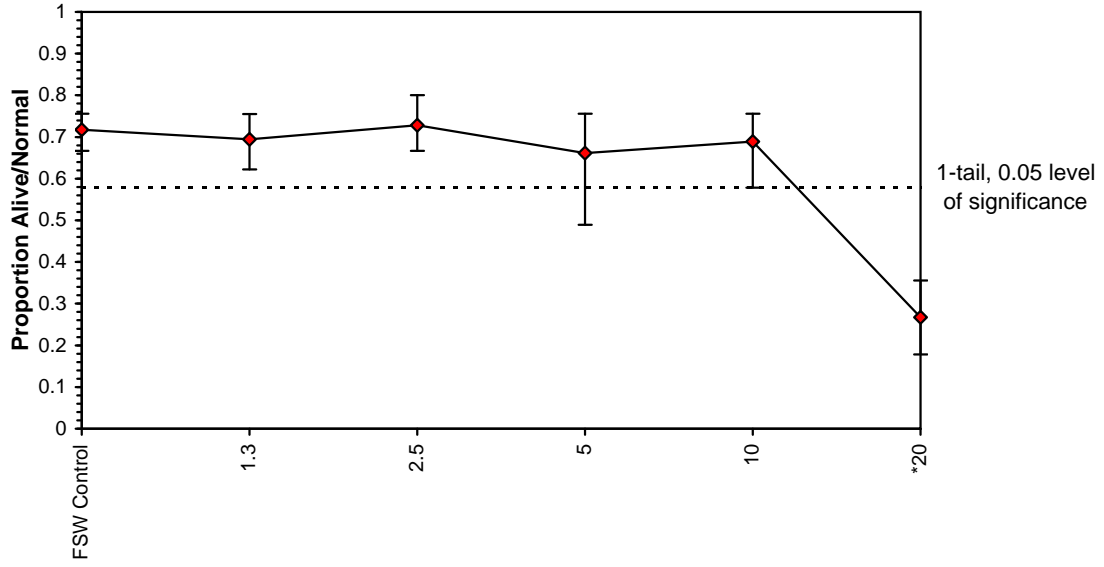
| Log-Logit Interpolation (200 Resamples) | | | | | |
|---|--------|-------|-------------|--------|---------|
| Point | mg/L | SD | 95% CL(Exp) | | Skew |
| IC05 | 4.512 | 3.362 | 0.000 | 14.323 | 0.4218 |
| IC10 | 10.560 | 2.662 | 0.000 | 11.732 | -1.1933 |
| IC15 | 11.237 | 1.401 | 0.915 | 12.402 | -3.7067 |
| IC20 | 11.929 | 0.780 | 9.690 | 13.249 | -4.3947 |
| IC25 | 12.645 | 0.602 | 10.443 | 14.171 | -0.2544 |
| IC40 | 15.018 | 0.727 | 12.507 | 17.050 | 0.1656 |
| IC50 | 16.909 | 0.956 | 13.995 | 19.840 | 0.2820 |



Bivalve Larval Development Test-Proportion Alive/Normal

Start Date: 4/07/2013 18:30 Test ID: PR1034/15 Sample ID: Colloidal Concentrate
End Date: 6/07/2013 18:30 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 106 Test Species: SG-Saccostrea glomerata
Comments:

Dose-Response Plot



Bivalve Larval Development Test-Proportion Alive/Normal

| | | |
|-----------------------------|--------------------|---------------------------------------|
| Start Date: 4/07/2013 18:30 | Test ID: PR1034/15 | Sample ID: Colloidal Concentrate |
| End Date: 6/07/2013 18:30 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 106 | Test Species: SG-Saccostrea glomerata |

Comments:

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|--------------|-------|-------|-------|-------|-------|---|
| FSW Control | % Normal | 71.67 | 66.67 | 75.56 | 4.58 | 2.99 | 4 |
| 1.3 | | 69.44 | 62.22 | 75.56 | 6.12 | 3.56 | 4 |
| 2.5 | | 72.78 | 66.67 | 80.00 | 6.12 | 3.40 | 4 |
| 5 | | 66.11 | 48.89 | 75.56 | 12.62 | 5.37 | 4 |
| 10 | | 68.89 | 57.78 | 75.56 | 7.70 | 4.03 | 4 |
| 20 | | 26.67 | 17.78 | 35.56 | 8.11 | 10.68 | 4 |
| FSW Control | pH | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 10 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 20 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 33.90 | 33.90 | 33.90 | 0.00 | 0.00 | 1 |
| 1.3 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 5 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 10 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 20 | | 34.30 | 34.30 | 34.30 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | 96.10 | 96.10 | 96.10 | 0.00 | 0.00 | 1 |
| 1.3 | | 99.20 | 99.20 | 99.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 98.60 | 98.60 | 98.60 | 0.00 | 0.00 | 1 |
| 5 | | 98.50 | 98.50 | 98.50 | 0.00 | 0.00 | 1 |
| 10 | | 99.00 | 99.00 | 99.00 | 0.00 | 0.00 | 1 |
| 20 | | 99.70 | 99.70 | 99.70 | 0.00 | 0.00 | 1 |

Statistical Printouts for the Milky Oyster Larval Development Tests

Bivalve Larval Development Test-Proportion Normal

| | | | | | |
|--------------|-----------------|-----------|-----------|---------------|------------------------|
| Start Date: | 4/07/2013 18:00 | Test ID: | PR1034/11 | Sample ID: | Colloidal Concentrate |
| End Date: | 6/07/2013 18:00 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 106 | Test Species: | SE-Saccostrea echinata |

| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 0.7700 | 0.8400 | 0.8900 | 0.8200 |
| 1.3 | 0.7600 | 0.7100 | 0.7900 | 0.7400 |
| 2.5 | 0.8200 | 0.7900 | 0.7100 | 0.7600 |
| 5 | 0.7400 | 0.7900 | 0.7700 | 0.7400 |
| 10 | 0.6800 | 0.6000 | 0.6300 | 0.7000 |
| 20 | 0.3400 | 0.3200 | 0.3700 | 0.2400 |

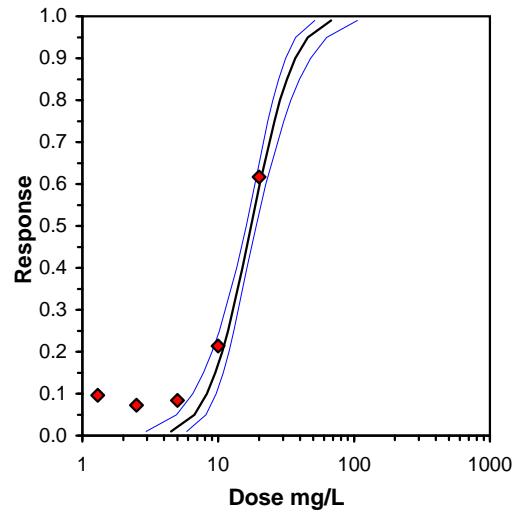
| Conc-mg/L | Mean | N-Mean | Transform: Arcsin Square Root | | | | | t-Stat | 1-Tailed Critical | MSD | Number Resp | Total Number |
|-------------|--------|--------|-------------------------------|--------|--------|--------|---|--------|-------------------|--------|-------------|--------------|
| | | | Mean | Min | Max | CV% | N | | | | | |
| FSW Control | 0.8300 | 1.0000 | 1.1488 | 1.0706 | 1.2327 | 5.845 | 4 | | | | 68 | 400 |
| *1.3 | 0.7500 | 0.9036 | 1.0479 | 1.0021 | 1.0948 | 3.720 | 4 | 2.768 | 2.410 | 0.0879 | 100 | 400 |
| 2.5 | 0.7700 | 0.9277 | 1.0721 | 1.0021 | 1.1326 | 5.180 | 4 | 2.104 | 2.410 | 0.0879 | 92 | 400 |
| *5 | 0.7600 | 0.9157 | 1.0592 | 1.0357 | 1.0948 | 2.724 | 4 | 2.457 | 2.410 | 0.0879 | 96 | 400 |
| *10 | 0.6525 | 0.7861 | 0.9409 | 0.8861 | 0.9912 | 5.107 | 4 | 5.700 | 2.410 | 0.0879 | 139 | 400 |
| *20 | 0.3175 | 0.3825 | 0.5974 | 0.5120 | 0.6539 | 10.198 | 4 | 15.117 | 2.410 | 0.0879 | 273 | 400 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|----------|----------|
| Shapiro-Wilk's Test indicates normal distribution (p > 0.05) | 0.974942 | 0.916 | -0.21476 | -0.61606 |
| Bartlett's Test indicates equal variances (p = 0.81) | 2.27469 | 15.08627 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|---|------|------|-----|----|----------|----------|----------|----------|---------|-------|
| Dunnett's Test Treatments vs FSW Control | <1.3 | 1.3 | | | 0.070476 | 0.084681 | 0.156581 | 0.002661 | 1.6E-10 | 5, 18 |

| Parameter | Value | SE | 95% Fiducial Limits | Maximum Likelihood-Probit | | | | | | | |
|-----------|----------|----------|---------------------|---------------------------|---------|----------|---------|----------|----------|------|--|
| | | | | Control | Chi-Sq | Critical | P-value | Mu | Sigma | Iter | |
| Slope | 3.945162 | 0.478649 | 3.007009 4.883315 | 0.17 | 2.78889 | 7.814728 | 0.43 | 1.241996 | 0.253475 | 7 | |
| Intercept | 0.100124 | 0.583185 | -1.04292 1.243166 | | | | | | | | |
| TSCR | 0.218646 | 0.011126 | 0.196839 0.240453 | | | | | | | | |

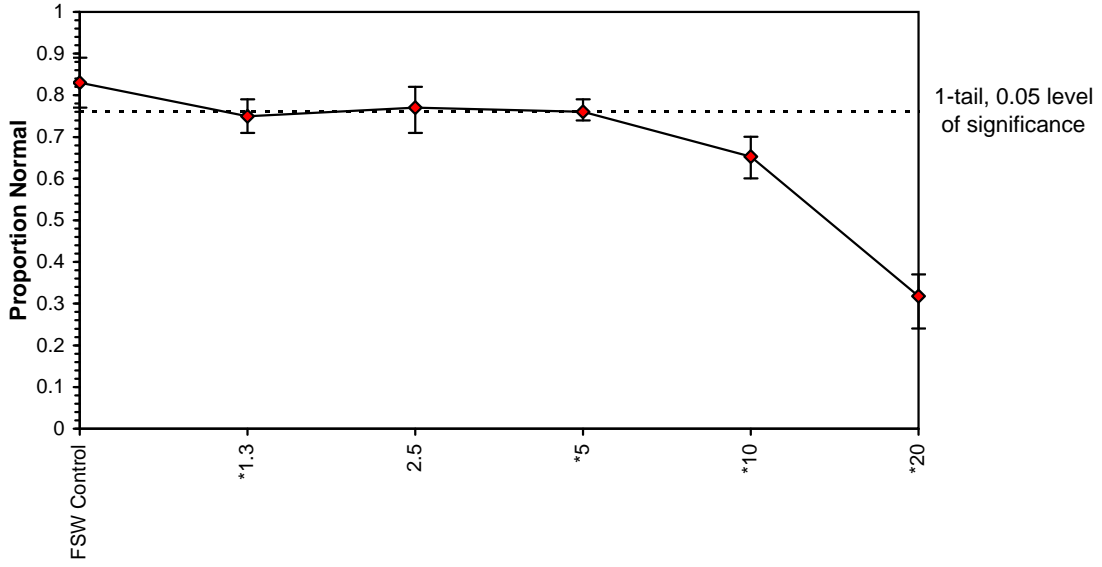
| Point | Probits | mg/L | 95% Fiducial Limits |
|-------|---------|----------|---------------------|
| EC01 | 2.674 | 4.490815 | 2.936547 5.855492 |
| EC05 | 3.355 | 6.684469 | 4.928821 8.106775 |
| EC10 | 3.718 | 8.263326 | 6.485439 9.657547 |
| EC15 | 3.964 | 9.534243 | 7.794564 10.88241 |
| EC20 | 4.158 | 10.68234 | 9.009178 11.9815 |
| EC25 | 4.326 | 11.77687 | 10.18567 13.03203 |
| EC40 | 4.747 | 15.05841 | 13.70311 16.31089 |
| EC50 | 5.000 | 17.45807 | 16.11097 18.98049 |
| EC60 | 5.253 | 20.24013 | 18.64014 22.44461 |
| EC75 | 5.674 | 25.87989 | 23.21426 30.346 |
| EC80 | 5.842 | 28.5316 | 25.22762 34.33884 |
| EC85 | 6.036 | 31.96732 | 27.75743 39.71569 |
| EC90 | 6.282 | 36.88395 | 31.26215 47.75655 |
| EC95 | 6.645 | 45.59587 | 37.22689 62.86517 |
| EC99 | 7.326 | 67.86836 | 51.52159 105.5526 |



Bivalve Larval Development Test-Proportion Normal

Start Date: 4/07/2013 18:00 Test ID: PR1034/11 Sample ID: Colloidal Concentrate
End Date: 6/07/2013 18:00 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 106 Test Species: SE-Saccostrea echinata
Comments:

Dose-Response Plot



Bivalve Larval Development Test-Proportion Normal

| | | |
|-----------------------------|--------------------|--------------------------------------|
| Start Date: 4/07/2013 18:00 | Test ID: PR1034/11 | Sample ID: Colloidal Concentrate |
| End Date: 6/07/2013 18:00 | Lab ID: 6026 | Sample Type: CP-Chemical product |
| Sample Date: | Protocol: ESA 106 | Test Species: SE-Saccostrea echinata |

Comments:

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|--------------|-------|-------|-------|------|------|---|
| FSW Control | % Normal | 83.00 | 77.00 | 89.00 | 4.97 | 2.69 | 4 |
| 1.3 | | 75.00 | 71.00 | 79.00 | 3.37 | 2.45 | 4 |
| 2.5 | | 77.00 | 71.00 | 82.00 | 4.69 | 2.81 | 4 |
| 5 | | 76.00 | 74.00 | 79.00 | 2.45 | 2.06 | 4 |
| 10 | | 65.25 | 60.00 | 70.00 | 4.57 | 3.28 | 4 |
| 20 | | 31.75 | 24.00 | 37.00 | 5.56 | 7.43 | 4 |
| FSW Control | pH | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 5 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 10 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| 20 | | 8.20 | 8.20 | 8.20 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 33.90 | 33.90 | 33.90 | 0.00 | 0.00 | 1 |
| 1.3 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 5 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 10 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 20 | | 34.30 | 34.30 | 34.30 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | 96.10 | 96.10 | 96.10 | 0.00 | 0.00 | 1 |
| 1.3 | | 99.20 | 99.20 | 99.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 98.60 | 98.60 | 98.60 | 0.00 | 0.00 | 1 |
| 5 | | 98.50 | 98.50 | 98.50 | 0.00 | 0.00 | 1 |
| 10 | | 99.00 | 99.00 | 99.00 | 0.00 | 0.00 | 1 |
| 20 | | 99.70 | 99.70 | 99.70 | 0.00 | 0.00 | 1 |

Statistical Printouts for the Mussel Toxicity Tests

Bivalve Larval Development Test-Proportion Normal

| | | | | | |
|--------------|-----------------|-----------|-----------|---------------|------------------------------|
| Start Date: | 1/07/2013 16:30 | Test ID: | PR1034/12 | Sample ID: | Colloidal Concentrate |
| End Date: | 3/07/2013 16:30 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 106 | Test Species: | MG-Mytilus galloprovincialis |

| Conc-mg/L | 1 | 2 | 3 | 4 |
|-------------|--------|--------|--------|--------|
| FSW Control | 0.8400 | 0.8700 | 0.7600 | 0.8100 |
| 1.3 | 0.8100 | 0.8600 | 0.7900 | 0.8200 |
| 2.5 | 0.7600 | 0.8400 | 0.7900 | 0.8100 |
| 5 | 0.7600 | 0.8300 | 0.7900 | 0.7900 |
| 10 | 0.7600 | 0.7900 | 0.6800 | 0.6900 |
| 20 | 0.0000 | 0.0500 | 0.0200 | 0.0200 |

| 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 | 0.8200 | 1.0000 | 1.1350 | 1.0588 | 1.2019 | 5.361 | 4 | | | | 72 | 400 |
| 1.3 | 0.8200 | 1.0000 | 1.1336 | 1.0948 | 1.1873 | 3.448 | 4 | 0.035 | 2.410 | 0.0911 | 72 | 400 |
| 2.5 | 0.8000 | 0.9756 | 1.1082 | 1.0588 | 1.1593 | 3.815 | 4 | 0.709 | 2.410 | 0.0911 | 80 | 400 |
| 5 | 0.7925 | 0.9665 | 1.0985 | 1.0588 | 1.1458 | 3.257 | 4 | 0.964 | 2.410 | 0.0911 | 83 | 400 |
| *10 | 0.7300 | 0.8902 | 1.0259 | 0.9695 | 1.0948 | 5.925 | 4 | 2.888 | 2.410 | 0.0911 | 108 | 400 |
| *20 | 0.0225 | 0.0274 | 0.1398 | 0.0500 | 0.2255 | 51.264 | 4 | 26.338 | 2.410 | 0.0911 | 391 | 400 |

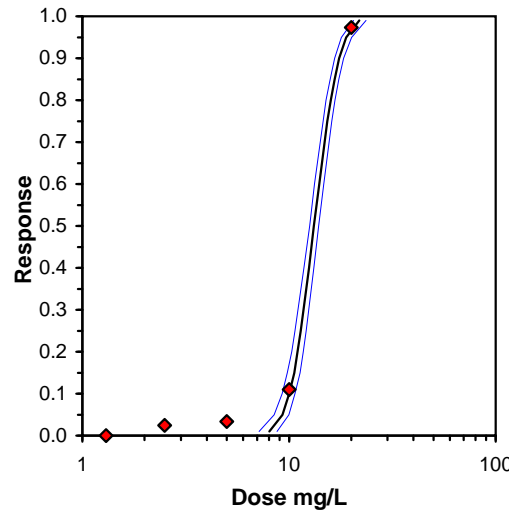
| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|--|-----------|----------|----------|----------|
| Shapiro-Wilk's Test indicates normal distribution (p > 0.05) | 0.975251 | 0.916 | 0.006087 | -0.69695 |
| Bartlett's Test indicates equal variances (p = 0.84) | 2.09931 | 15.08627 | | |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU | MSDu | MSDp | MSB | MSE | F-Prob | df |
|--------------------------------|------|------|----------|----|----------|----------|----------|----------|---------|-------|
| Dunnett's Test | 5 | 10 | 7.071068 | | 0.074631 | 0.090818 | 0.621237 | 0.002855 | 1.9E-15 | 5, 18 |

Treatments vs FSW Control

| Parameter | Value | SE | 95% Fiducial Limits | | Maximum Likelihood-Probit | | | | | | |
|-----------|----------|----------|---------------------|----------|---------------------------|----------|----------|-------|----------|----------|---|
| | | | Control | Chi-Sq | Critical | P-value | Mu | Sigma | Iter | | |
| Slope | 10.6773 | 0.741169 | 9.224613 | 12.13 | 0.18 | 1.163802 | 7.814728 | 0.76 | 1.121819 | 0.093657 | 5 |
| Intercept | -6.97801 | 0.872337 | -8.68779 | -5.26823 | | | | | | | |
| TSCR | 0.191874 | 0.009845 | 0.172578 | 0.211169 | | | | | | | |

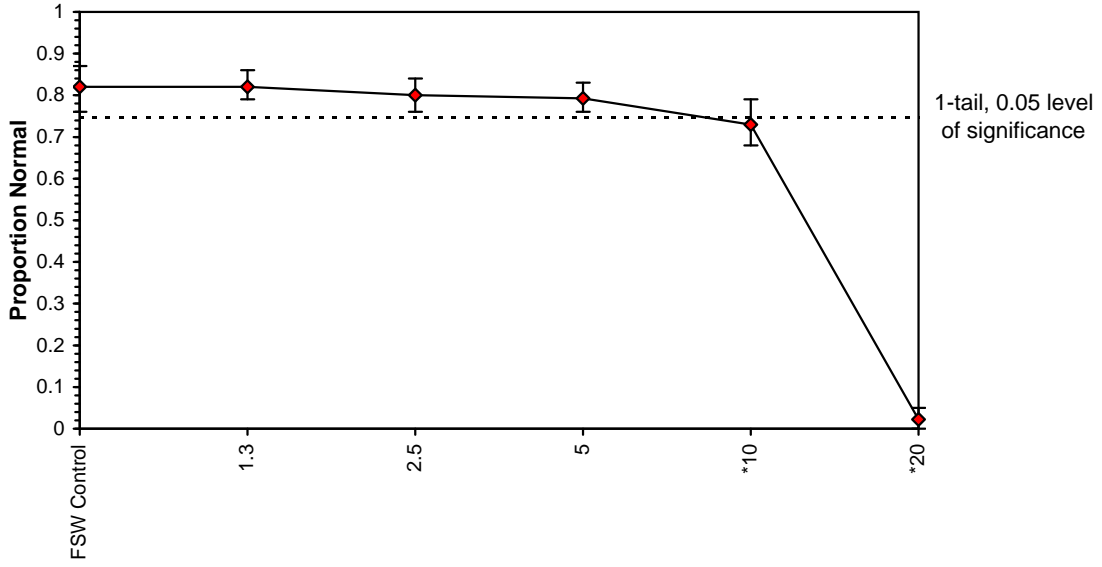
| Point | Probits | mg/L | 95% Fiducial Limits | |
|-------|---------|----------|---------------------|----------|
| EC01 | 2.674 | 8.015702 | 7.169364 | 8.750723 |
| EC05 | 3.355 | 9.284703 | 8.473131 | 9.989436 |
| EC10 | 3.718 | 10.04139 | 9.256591 | 10.72676 |
| EC15 | 3.964 | 10.58646 | 9.822145 | 11.25883 |
| EC20 | 4.158 | 11.04069 | 10.29342 | 11.70358 |
| EC25 | 4.326 | 11.44587 | 10.71326 | 12.10189 |
| EC40 | 4.747 | 12.53406 | 11.83458 | 13.18243 |
| EC50 | 5.000 | 13.23791 | 12.55174 | 13.89295 |
| EC60 | 5.253 | 13.98128 | 13.29927 | 14.65619 |
| EC75 | 5.674 | 15.31052 | 14.60486 | 16.05922 |
| EC80 | 5.842 | 15.87241 | 15.14394 | 16.66785 |
| EC85 | 6.036 | 16.55344 | 15.78735 | 17.41759 |
| EC90 | 6.282 | 17.452 | 16.62088 | 18.42567 |
| EC95 | 6.645 | 18.8743 | 17.90967 | 20.0597 |
| EC99 | 7.326 | 21.86237 | 20.52838 | 23.61119 |



Bivalve Larval Development Test-Proportion Normal

Start Date: 1/07/2013 16:30 Test ID: PR1034/12 Sample ID: Colloidal Concentrate
End Date: 3/07/2013 16:30 Lab ID: 6026 Sample Type: CP-Chemical product
Sample Date: Protocol: ESA 106 Test Species: MG-Mytilus galloprovincialis
Comments:

Dose-Response Plot



Bivalve Larval Development Test-Proportion Normal

| | | | | | |
|--------------|-----------------|-----------|-----------|---------------|------------------------------|
| Start Date: | 1/07/2013 16:30 | Test ID: | PR1034/12 | Sample ID: | Colloidal Concentrate |
| End Date: | 3/07/2013 16:30 | Lab ID: | 6026 | Sample Type: | CP-Chemical product |
| Sample Date: | | Protocol: | ESA 106 | Test Species: | MG-Mytilus galloprovincialis |
| Comments: | | | | | |

Auxiliary Data Summary

| Conc-mg/L | Parameter | Mean | Min | Max | SD | CV% | N |
|-------------|--------------|-------|-------|-------|------|-------|---|
| FSW Control | % Normal | 82.00 | 76.00 | 87.00 | 4.69 | 2.64 | 4 |
| 1.3 | | 82.00 | 79.00 | 86.00 | 2.94 | 2.09 | 4 |
| 2.5 | | 80.00 | 76.00 | 84.00 | 3.37 | 2.29 | 4 |
| 5 | | 79.25 | 76.00 | 83.00 | 2.87 | 2.14 | 4 |
| 10 | | 73.00 | 68.00 | 79.00 | 5.35 | 3.17 | 4 |
| 20 | | 2.25 | 0.00 | 5.00 | 2.06 | 63.81 | 4 |
| FSW Control | pH | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| 1.3 | | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| 2.5 | | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| 5 | | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| 10 | | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| 20 | | 8.00 | 8.00 | 8.00 | 0.00 | 0.00 | 1 |
| FSW Control | Salinity ppt | 33.90 | 33.90 | 33.90 | 0.00 | 0.00 | 1 |
| 1.3 | | 34.20 | 34.20 | 34.20 | 0.00 | 0.00 | 1 |
| 2.5 | | 34.10 | 34.10 | 34.10 | 0.00 | 0.00 | 1 |
| 5 | | 34.10 | 34.10 | 34.10 | 0.00 | 0.00 | 1 |
| 10 | | 34.10 | 34.10 | 34.10 | 0.00 | 0.00 | 1 |
| 20 | | 34.10 | 34.10 | 34.10 | 0.00 | 0.00 | 1 |
| FSW Control | DO % | 92.30 | 92.30 | 92.30 | 0.00 | 0.00 | 1 |
| 1.3 | | 97.00 | 97.00 | 97.00 | 0.00 | 0.00 | 1 |
| 2.5 | | 96.30 | 96.30 | 96.30 | 0.00 | 0.00 | 1 |
| 5 | | 96.30 | 96.30 | 96.30 | 0.00 | 0.00 | 1 |
| 10 | | 95.90 | 95.90 | 95.90 | 0.00 | 0.00 | 1 |
| 20 | | 94.80 | 94.80 | 94.80 | 0.00 | 0.00 | 1 |