

ECOTOXICOLOGY LABORATORY TEST REPORT

CLIENT

ROBERT MORGAN
TWC International
SHOP 2/71 KNIGHT TCE
DENHAM
WESTERN AUSTRALIA, 6537

JOB INFORMATION

JOB REFERENCE	:	ECX17-0804 v4 – Final Report
NO. SAMPLES	:	1
CLIENT ORDER NO.	:	040817INTERTEK
SAMPLED BY	:	NA
DATE RECEIVED	:	04/08/17
DATE REPORTED	:	1/10/17

REPORT NOTES

A toxicity assessment was performed on TWC International “TWC” product to determine if there is any potential toxicity to the aquatic environment.

TESTED BY

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COMPANY APPROVED SIGNATORY

DR TRISTAN STRINGER
PRINCIPAL ECOTOXICOLOGIST

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Sample Information

SAMPLE REFERENCE	INTERTEK REFERENCE
The Water Cleanser Industrial	EXC17-0804

Methodology

Following the protocol outlined in ANZECC/ARMCANZ (2000), a suite of bioassays was used to assess the toxicity of The Water Cleanser Industrial product. Due to the insoluble nature of the product, water accommodated fractions were tested following the methodology outlined in the UN GS (2011) for poorly soluble products. All tests were conducted using the water accommodated fractions. The concentrations are expressed as the loading ratio of solid product to filtered seawater / freshwater.

For quality assurance purposes reference toxicant bioassays were tested simultaneously. Statistically calculated effect concentrations (EC₁₀, EC₅₀, NOEC and LOEC) have been reported the samples and reference toxicants.

Bioassay Details

BIOASSAY	PROTOCOL	REFERENCE	TEST SPECIES	TEMPERATURE
Marine				
Microalgae Growth*	WIECX-06	Stauber et al. 1994	<i>I. galbana</i>	22°C
Macroalgae Zoospore Germination *	WIECX-08	Burridge et al. 1999	<i>E. radiata</i>	22°C
Mollusc Larvae Development*	WIECX-23	ASTM E724	<i>S. glomerata</i>	22°C
Copepod Larval Development	WIECX-26	ISO 16778	<i>G. imparipes</i>	22°C
Fish Larvae Development*	WIECX-16	USEPA 1001.0	<i>S. lalandi</i>	22°C
Freshwater				
Microalgae Growth	WIECX-06	Stauber et al. 1994	<i>Chlorella</i>	22°C
Daphnia immobilisation	WIECX-27	OECD 202	<i>Daphnia sp.</i>	22°C
Fish Development*	ESA 126	USEPA (2002)	<i>M. splendida</i>	25°C

* NATA Accredited method – Accreditation Number 5646

* NATA Accredited method – Accreditation Number 14709



Concentration-Response Data

BIOASSAY (% CONTROL)	Water Accommodated Fraction (mg/L)					
	CONTROL	0.1	1	10	100	1000
Marine						
Microalgae Growth*	100 ± 4	98 ± 11	103 ± 3	106 ± 5	99 ± 4	104 ± 5
Macroalgae Zoospore Germination *	100 ± 3	-	110 ± 2	110 ± 3	110 ± 3	109 ± 8
Mollusc Larvae Development*	100 ± 0	-	103 ± 2	99 ± 2	94 ± 1	100 ± 3
Copepod Larval Development	100 ± 4	-	107 ± 4	104 ± 7	100 ± 7	110 ± 3
Fish Larvae Development*	100 ± 17	88 ± 23	103 ± 4	87 ± 20	87 ± 20	91 ± 7
Freshwater						
Microalgae Growth	100 ± 12	-	101 ± 3	102 ± 5	106 ± 9	101 ± 5
Daphnia immobilisation	100 ± 13	-	106 ± 11	100 ± 13	106 ± 11	100 ± 13
Fish Development*	95 ± 10	100 ± 0	95 ± 10	90 ± 12	100 ± 0	95 ± 10

* NATA Accredited method – Accreditation Number 5646

* NATA Accredited method – Accreditation Number 14709



Statistical Effects Data

BIOASSAY	EC ₁₀ (mg/L)	EC ₅₀ (mg/L)	NOEC (mg/L)	LOEC (mg/L)
Marine				
Microalgae Growth*	>1000	>1000	>1000	>1000
Macroalgae Zoospore Germination *	>1000	>1000	>1000	>1000
Mollusc Larvae Development*	>1000	>1000	>1000	>1000
Copepod Larval Development	>1000	>1000	>1000	>1000
Fish Larvae Development*	>1000	>1000	>1000	>1000
Freshwater				
Microalgae Growth	>1000	>1000	>1000	>1000
Daphnia immobilisation	>1000	>1000	>1000	>1000
Fish Development*	>1000	>1000	>1000	>1000

* NATA Accredited method – Accreditation Number 5646

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Quality Assurance Limits

BIOASSAY	REFERENCE TOXICANT	OBSERVED EC ₅₀	CUSUM CHART LIMITS	COEFFICIENT OF VARIANCE	CONTROL RESPONSE	TEST ACCEPTABILITY
Marine						
Microalgae Growth*	Copper	38.2 µg/L	21.1 – 55.3 µg/L	25.5%	>3x Divisions	YES
Macroalgae Zoospore Germination *	Copper	171 µg/L	57.0 – 225 µg/L	34.8%	>70% Germination	YES
Mollusc Larvae Development*	Copper	10.9 µg/L	4.0 – 13.4 µg/L	30.8%	>70% Development	YES
Copepod Larval Development	Copper	37.8 µg/L	6.9 – 39.0 µg/L	22.2%	50-80% Development	YES
Fish Larvae Development*	Copper	62.8 µg/L	38.6 – 74.9 µg/L	33.4%	>70% Development	YES
Freshwater						
Microalgae Growth	Copper	25.4 µg/L	17.3 – 33.6 µg/L	29.6%	>3x Divisions	YES
Daphnia Immobilisation	Copper	20.9 µg/L	11.5 – 31.8 µg/L	22.8%	>70% Normal	YES
Fish Development*	Copper	76.6 µg/L	14.2 – 135 µg/L	-	>80% Normal	YES

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General Comments

There was no observed toxicity in any of TWC water accommodated fractions tested from 0.1 – 1000 mg/L for all the marine and fresh water bioassays.

Quality assurance and quality control criteria were within acceptable limits for all bioassays.



APPENDIX

Statistical Data



Marine - Microalgae Growth Bioassay

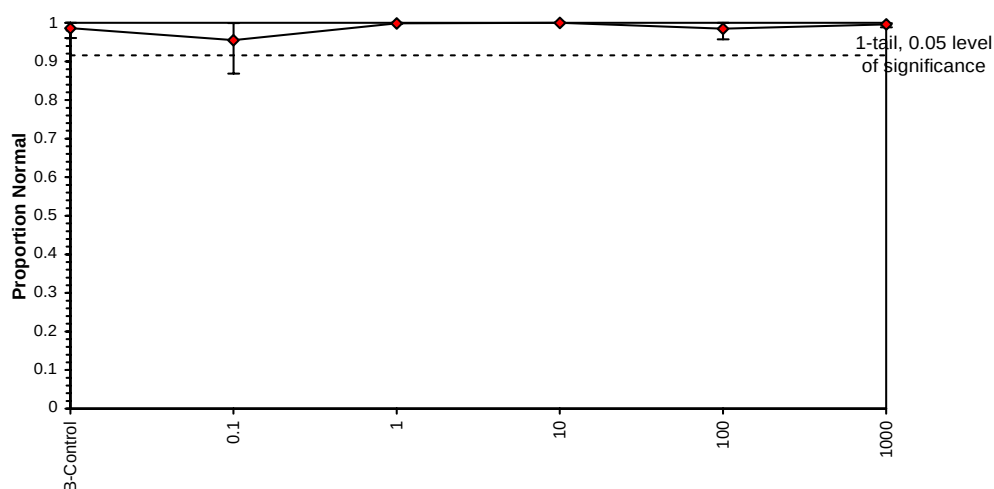
-Proportion Normal			
Start Date:	8/08/2017	Test ID: ECX17-0804	Sample ID: Marine Easy Clean
End Date:	11/8/2017	Lab ID: FREO-Geotech Fremantle La	Sample Type: Marine Easy Clean
Sample Date:		Protocol: WIECX-06-Microalgal Growth Test	Species: T.Iso
Comments:			

Conc-mg/L	1	2	3
B-Control	0.9613	0.9973	1.0000
0.1	1.0000	0.9973	0.8692
1	0.9973	1.0000	1.0000
10	1.0000	1.0000	1.0000
100	0.9573	1.0000	0.9973
1000	1.0000	0.9893	1.0000

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root					N	t-Stat	1-Tailed	
			Mean	Min	Max	CV%				Critical	MSD
B-Control	0.9862	1.0000	1.4709	1.3727	1.5208	5.778	3				
0.1	0.9555	0.9689	1.4135	1.2007	1.5208	13.040	3		0.766	2.500	0.1871
1	0.9991	1.0131	1.5202	1.5191	1.5208	0.064	3		-0.659	2.500	0.1871
10	1.0000	1.0140	1.5208	1.5208	1.5208	0.000	3		-0.667	2.500	0.1871
100	0.9849	0.9986	1.4675	1.3626	1.5208	6.190	3		0.045	2.500	0.1871
1000	0.9964	1.0104	1.5029	1.4673	1.5208	2.056	3		-0.429	2.500	0.1871

Auxiliary Tests					Statistic		Critical	Skew	Kurt					
Shapiro-Wilk's Test indicates normal distribution ($p > 0.01$)					0.8777		0.858	-1.2808	2.46797					
Equality of variance cannot be confirmed														
Hypothesis Test (1-tail, 0.05)					NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test					1000	>1000			0.07019	0.0709	0.00505	0.0084	0.70014	5, 12

Dose-Response Plot





Marine - Macroalgae Zoospore Germination

-Proportion Normal

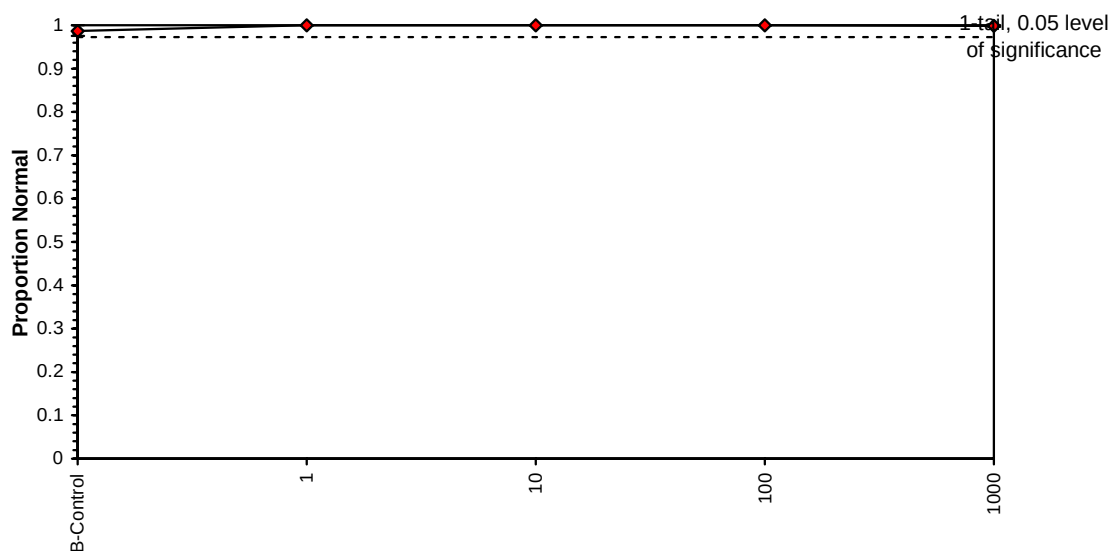
Start Date: Test ID: ECX17-0804 Sample ID: Marine Easy Clean
 End Date: Lab ID: FREO-Geotech Fremantle La Sample Type: The Water Cleanser
 Sample Date: Protocol: WIECX-08 Test Species: E. radiata
 Comments:

Conc-mg/L	1	2	3
B-Control	0.9750	0.9852	1.0000
1	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000
1000	1.0000	1.0000	0.9962

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				N	t-Stat	1-Tailed Critical	MSD
			Mean	Min	Max	CV%				
B-Control	0.9868	1.0000	1.4607	1.4122	1.5208	3.782	3			
1	1.0000	1.0134	1.5208	1.5208	1.5208	0.000	3	-2.959	2.470	0.0502
10	1.0000	1.0134	1.5208	1.5208	1.5208	0.000	3	-2.959	2.470	0.0502
100	1.0000	1.0134	1.5208	1.5208	1.5208	0.000	3	-2.959	2.470	0.0502
1000	0.9987	1.0121	1.5169	1.5090	1.5208	0.447	3	-2.766	2.470	0.0502

Auxiliary Tests					Statistic		Critical	Skew	Kurt					
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)					0.66148		0.835	0.89805	6.685					
Equality of variance cannot be confirmed														
Hypothesis Test (1-tail, 0.05)					NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test					1000	>1000			0.01341	0.01357	0.00211	0.00062	0.05291	4, 10

Dose-Response Plot





Marine - Mollusc Larval Development

-Proportion Normal

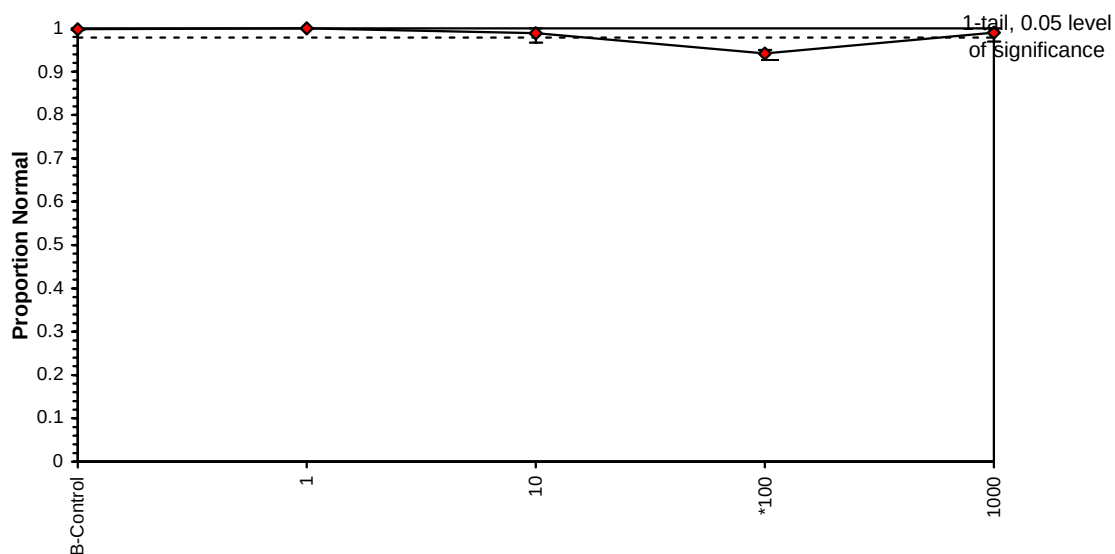
Start Date:	Test ID: ECX17-0804	Sample ID:	Marine Easy Clean
End Date:	Lab ID: FREO-Geotech Fremantle La	Sample Type:	The Water Cleanser
Sample Date:	Protocol: WIECX-23	Test Species:	ME-Mytilis edulis
Comments:			

Conc-mg/L	1	2	3
B-Control	0.9988	1.0000	0.9963
1	1.0000	1.0000	1.0000
10	1.0000	1.0000	0.9673
100	0.9459	0.9308	0.9498
1000	1.0000	1.0000	0.9691

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				N	t-Stat	1-Tailed	
			Mean	Min	Max	CV%			Critical	MSD
B-Control	0.9984	1.0000	1.5223	1.5103	1.5359	0.846	3			
1	1.0000	1.0016	1.5208	1.5208	1.5208	0.000	3	0.040	2.470	0.0978
10	0.9891	0.9907	1.4768	1.3889	1.5208	5.154	3	1.149	2.470	0.0978
*100	0.9422	0.9437	1.3285	1.3046	1.3448	1.593	3	4.894	2.470	0.0978
1000	0.9897	0.9913	1.4785	1.3940	1.5208	4.949	3	1.106	2.470	0.0978

Auxiliary Tests					Statistic		Critical	Skew	Kurt				
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)					0.84517		0.835	-1.1604	1.09311				
Equality of variance cannot be confirmed													
Hypothesis Test (1-tail, 0.05)					NOEC	LOEC	ChV	TU					
Dunnett's Test					10	100	31.6228	0.0189	0.01894	0.01901	0.00235	0.00355	4, 10

Dose-Response Plot





Marine - Copepod Larval Development

-Proportion Normal

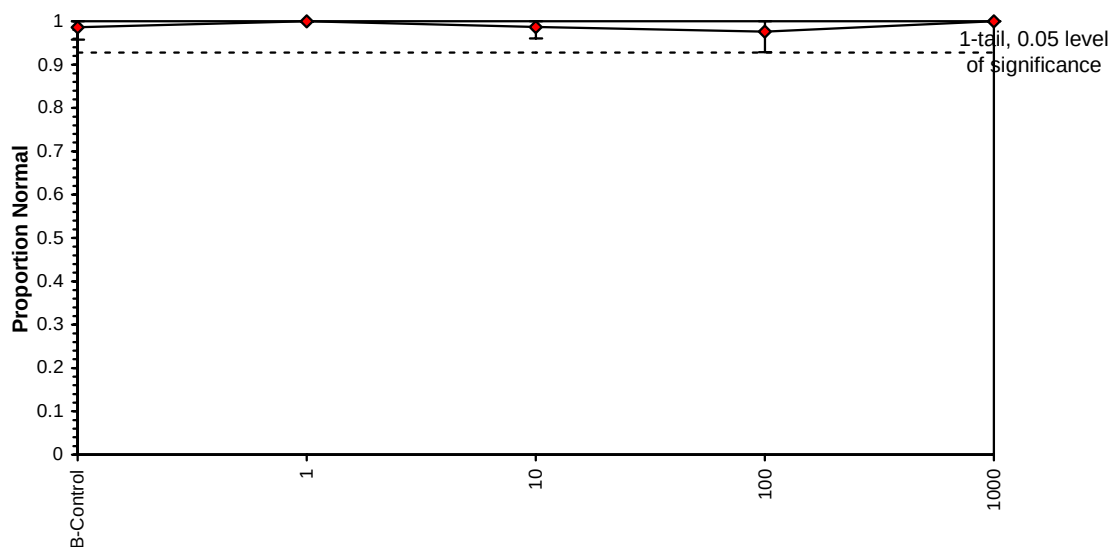
Start Date:	Test ID: ECX17-0804	Sample ID:	Marine Easy Clean
End Date:	Lab ID: FREO-Geotech Fremantle La	Sample Type:	The Water Cleanser
Sample Date:	Protocol: WIECX-26	Test Species:	GI-Gladioferens Imparipes
Comments:			

Conc-mg/L	1	2	3
B-Control	1.0000	0.9576	1.0000
1	1.0000	1.0000	1.0000
10	1.0000	1.0000	0.9602
100	1.0000	1.0000	0.9290
1000	1.0000	1.0000	1.0000

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				N	t-Stat	1-Tailed	
			Mean	Min	Max	CV%			Critical	MSD
B-Control	0.9859	1.0000	1.4683	1.3635	1.5208	6.186	3			
1	1.0000	1.0143	1.5208	1.5208	1.5208	0.000	3	-0.804	2.470	0.1612
10	0.9867	1.0009	1.4705	1.3700	1.5208	5.920	3	-0.033	2.470	0.1612
100	0.9763	0.9903	1.4475	1.3010	1.5208	8.766	3	0.319	2.470	0.1612
1000	1.0000	1.0143	1.5208	1.5208	1.5208	0.000	3	-0.804	2.470	0.1612

Auxiliary Tests					Statistic		Critical	Skew	Kurt			
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)					0.83789		0.835	-1.0664	0.29491			
Equality of variance cannot be confirmed												
Hypothesis Test (1-tail, 0.05)					NOEC	LOEC	ChV	TU				
Dunnett's Test					1000	>1000	0.05744	0.05805	0.00334	0.00639	0.72162	4, 10

Dose-Response Plot





Marine - Fish Larval Development Bioassay

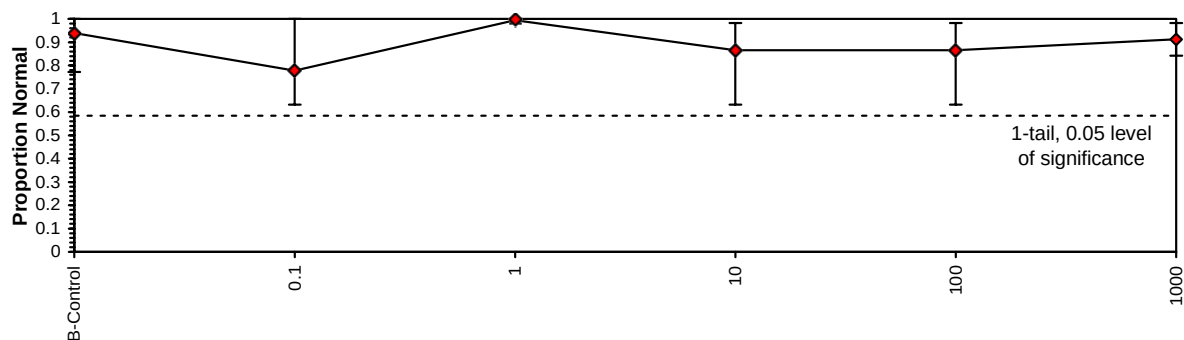
-Proportion Normal					
Start Date:	13/08/2017	Test ID:	ECX17-0804	Sample ID:	Marine easy clean
End Date:	21/08/2017	Lab ID:	FREO-Geotech Fremantle La	Sample Type:	Marine easy clean
Sample Date:		Protocol:	WIECX-16	Test Species:	S. lalandi
Comments:					

Conc-%	1	2	3	4
B-Control	0.7719	1.0000	0.9825	1.0000
0.1	0.7018	0.6316	1.0000	
1	1.0000	1.0000	0.9825	
10	0.9825	0.9825	0.6316	
100	0.9825	0.6316	0.9825	
1000	0.8421	0.9825	0.9123	

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					N	t-Stat	1-Tailed	
			Mean	Min	Max	CV%				Critical	MSD
B-Control	0.9386	1.0000	1.3881	1.0729	1.5208	15.397	4				
0.1	0.7778	0.8287	1.1441	0.9185	1.5208	28.695	3	1.325	2.650	0.4880	
1	0.9942	1.0592	1.4932	1.4380	1.5208	3.202	3	-0.571	2.650	0.4880	
10	0.8655	0.9221	1.2648	0.9185	1.4380	23.709	3	0.670	2.650	0.4880	
100	0.8655	0.9221	1.2648	0.9185	1.4380	23.709	3	0.670	2.650	0.4880	
1000	0.9123	0.9720	1.2901	1.1622	1.4380	10.773	3	0.532	2.650	0.4880	

Auxiliary Tests					Statistic	Critical	Skew	Kurt						
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)					0.93035	0.863	-0.3559	-0.6291						
Bartlett's Test indicates equal variances (p = 0.37)					5.41912	15.0863								
Hypothesis Test (1-tail, 0.05)					NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Bonferroni t Test					1000	>1000		0.1	0.35327	0.36533	0.04419	0.05812	0.5939	5, 13

Dose-Response Plot





Freshwater - Microalgae Growth

-Proportion Normal

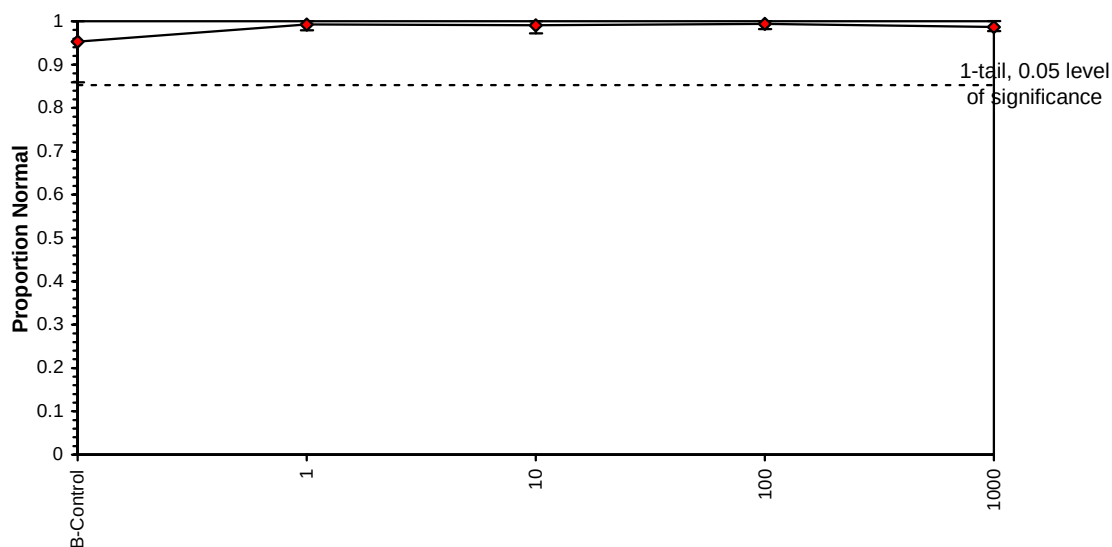
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End Date:	Lab ID: FREO-Geotech Fremantle La	Sample Type:	The Water Cleanser
Sample Date:	Protocol: WIECX-06	Test Species:	Chlorella
Comments:			

Conc-mg/L	1	2	3
B-Control	1.0000	0.8598	1.0000
1	1.0000	0.9800	1.0000
10	1.0000	1.0000	0.9721
100	1.0000	1.0000	0.9826
1000	0.9826	1.0000	0.9774

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				N	t-Stat	1-Tailed	
			Mean	Min	Max	CV%			Critical	MSD
B-Control	0.9533	1.0000	1.4095	1.1869	1.5208	13.674	3			
1	0.9933	1.0420	1.4901	1.4288	1.5208	3.565	3	-0.990	2.470	0.2011
10	0.9907	1.0393	1.4815	1.4031	1.5208	4.588	3	-0.885	2.470	0.2011
100	0.9942	1.0429	1.4933	1.4384	1.5208	3.184	3	-1.029	2.470	0.2011
1000	0.9866	1.0350	1.4596	1.4197	1.5208	3.683	3	-0.616	2.470	0.2011

Auxiliary Tests					Statistic		Critical		Skew	Kurt				
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)					0.89453		0.835		-1.207	2.42364				
Bartlett's Test indicates equal variances (p = 0.22)					5.71209		13.2767							
Hypothesis Test (1-tail, 0.05)					NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test					1000	>1000			0.09992	0.10257	0.0036	0.00995	0.83036	4, 10

Dose-Response Plot





Freshwater - Daphnia Immobilisation

-Proportion Normal

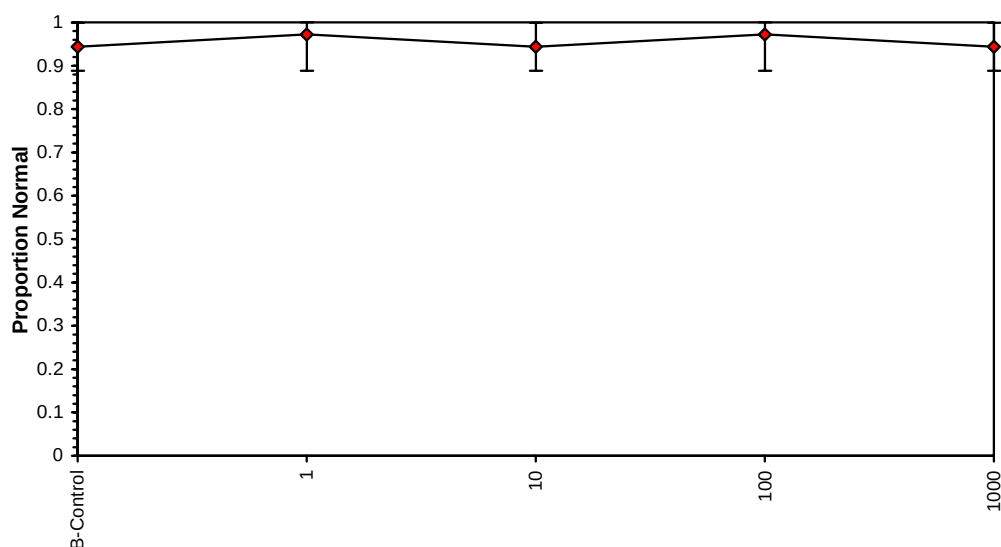
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End Date: Lab ID: FREO-Geotech Fremantle La Sample Type: The Water Cleanser
Sample Date: Protocol: WIECX-27 Test Species: Daphnia
Comments:

Conc-mg/L	1	2	3	4
B-Control	1.0000	0.8889	1.0000	0.8889
1	0.8889	1.0000	1.0000	1.0000
10	0.8889	1.0000	0.8889	1.0000
100	1.0000	1.0000	0.8889	1.0000
1000	0.8889	0.8889	1.0000	1.0000

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
B-Control	0.9444	1.0000	1.3759	1.2310	1.5208	12.161	4		
1	0.9722	1.0294	1.4483	1.2310	1.5208	10.005	4	20.00	10.00
10	0.9444	1.0000	1.3759	1.2310	1.5208	12.161	4	18.00	10.00
100	0.9722	1.0294	1.4483	1.2310	1.5208	10.005	4	20.00	10.00
1000	0.9444	1.0000	1.3759	1.2310	1.5208	12.161	4	18.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution ($p \leq 0.01$)	0.79332	0.868	-0.3805	-1.7282
Bartlett's Test indicates equal variances ($p = 1.00$)	0.12855	13.2767		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	1000	>1000		

Dose-Response Plot





Freshwater - Fish Development Bioassay

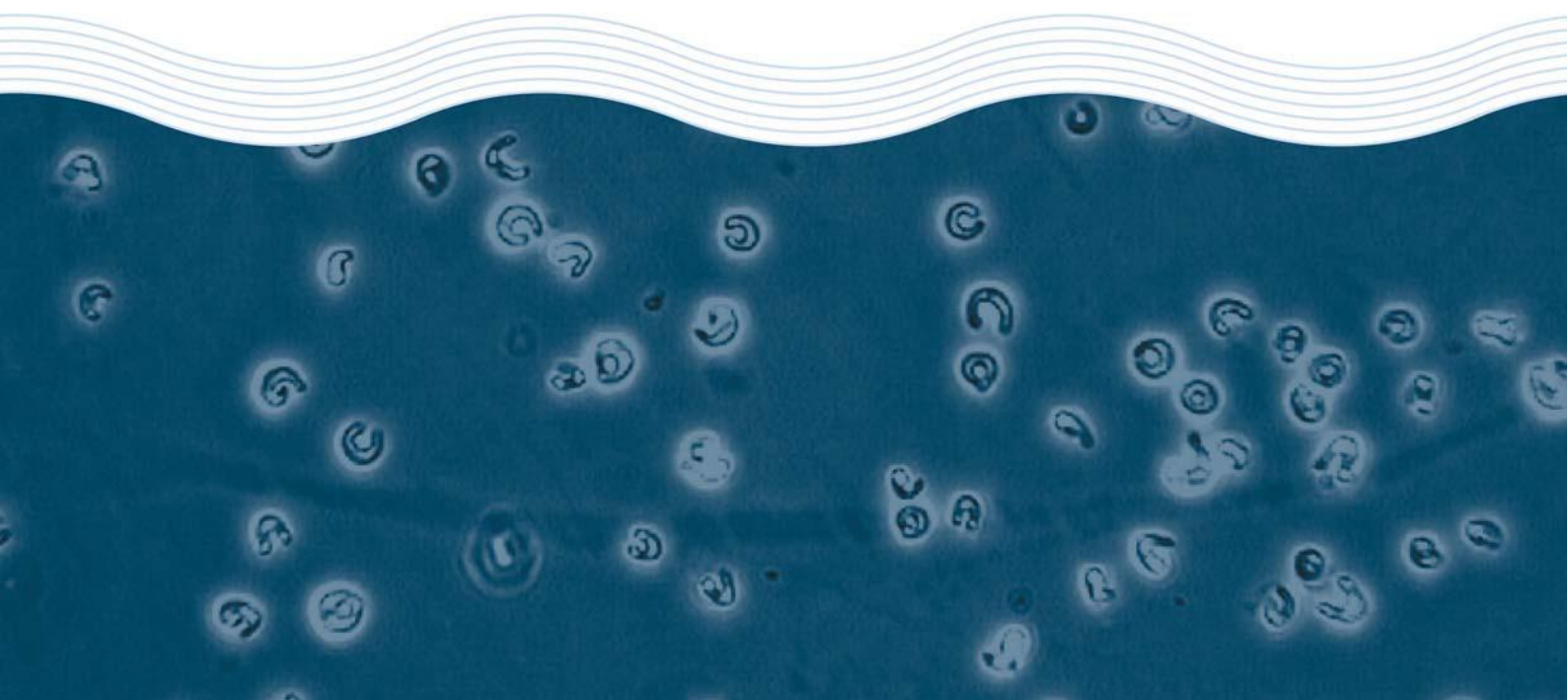
Please see attached report

Toxicity Assessment of Marine Cleaner

Intertek

Test Report

October 2017



Toxicity Test Report: TR1510/1

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Accredited for compliance with ISO/IEC 17025

Client:	Intertek 41-45 Furnace Rd Welshpool WA 6106	ESA Job #:	PR1510
Attention:	Tristan Stringer	Date Shipped:	12 September 2017
Client Ref:	INC000028512376	Date Received:	14 September 2017
		Sampled By:	Client
		ESA Quote #:	PL1510_01

Lab ID No.:	Sample Name:	Sample Description:
8319	Marine Cleaner	Wax block, 65.86g. Sample received at room temperature in apparent good condition.

Test Performed:	Rainbowfish embryo hatching test using <i>Melanotaenia splendida splendida</i>
Test Protocol:	ESA SOP 126 (2016), based on USEPA (2002), but adapted for use with native rainbowfish
Test Temperature:	The test was performed at 25±1°C.
Deviations from Protocol:	Nil
Comments on Solution Preparation:	Separate 1L Water Accommodated Fractions (WAFs) were prepared by mixing the sample with diluent (DMW-Dilute Mineral Water) to achieve loading rates of 0.1, 1, 10, 100 and 1000 mg/L. The WAF was mixed for 24-h using a magnetic stirrer, with the stirring rate adjusted so that the vortex and floating solid wax sample sat no more than half-way down in the water column. A DMW and WAF control were tested concurrently with the WAF samples.
Source of Test Organisms:	ESA Laboratory culture
Test Initiated:	20 September 2017 at 1700h

Sample 8319: Marine Cleaner		
WAF Loading Rate (mg/L)	% Unaffected (Mean ± SD)	
DMW Control	95.0 ± 10.0	
WAF Control	95.0 ± 10.0	
0.1	100 ± 0.0	
1	95.0 ± 10.0	
10	90.0 ± 11.6	
100	100 ± 0.0	
1000	95.0 ± 10.0	
12-d IC10 = >1000 mg/L		
12-d IC50 = >1000 mg/L		
NOEC = 1000 mg/L		
LOEC = >1000 mg/L		

Toxicity Test Report: TR1510/1

(Page 2 of 2)

QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean % unaffected	≥80.0%	95.0%	Yes
Reference Toxicant within cusum chart limit	14.2-135.6µg Cu/L	76.6µg Cu/L	Yes

Test Report Authorised by:



Dr Rick Krassoi, Director on 31 October 2017

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

NATA Accredited Laboratory Number: 14709

This document shall not be reproduced except in full.

Citations:

ESA (2016) *SOP 126- Rainbowfish Embryo Hatching Test*. Issue N°6. Ecotox Services Australasia, Sydney NSW

USEPA (2002) *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. 4th Ed. United States Environmental Protection Agency, Office of Water, Washington DC.

Chain-of-Custody Documentation



Sample Receipt Notification

Attention : Tristan Stringer

Client : Intertek
1 Fleet Street
Fremantle WA 6160

Email : tristan.stringer@intertek.com
Telephone : 08 9336 5071
Facsimile :

Date : 14/09/2017

Re : Receipt of Samples

Pages : 2

ESA Project : PL1510

☐ For Review

☒ Additional Documentation Required - Please Respond

Sample Delivery Details

Completed Chain of Custody accompanied samples: YES

Samples received in apparent good condition and correctly bottled: YES

Security seals on sample bottles and esky intact: YES

Date samples received : 14/09/2017

Time samples received : 14:15

No. of samples received : 1

Sample matrix : Other

Sample temperature : 16-20°C

Comments : Sample received in solid block form at room temperature in apparent good condition. Please send current MSDS so that we may commence processing the sample. Thanks

Contact Details

Director: Rick Krassoi
Telephone : 61 2 9420 9481
Facsimile : 61 2 9420 9484
Email : rkrassoi@ecotox.com.au

Please contact customer services officer for all queries or issues regarding samples

Note that the chain-of-custody provides definitive information on the tests to be performed

Ecotox Services Australia

ABN 95 619 426 201
Unit 27, 2 Chaplin Drive
Lane Cove NSW 2066 Australia

Phone : 61 2 9420 9481
Fax : 61 2 9420 9484
Email : info@ecotox.com.au

Chain-of-Custody/ Service Request Form

Datasheet ID: 601.1
Last Revised: 22 January 2013



Customer: Intertek Geotech

Ship To: Ecotox services

Contact Name: Tristan Stringer

Attention: Rick Krasso

Phone: 08 9263 0261 Email: Tristan.stringer@intertek.com (please provide an email address for sample receipt notification)

Sampled by: Tristan Stringer

Sample Date (day/month/year)	Sample Time	Sample Name (exactly as written on the sample vessel)	Sample Method (eg. Grab, composite etc.)	Number and Volume of Containers (eg 2 x 1L)	Tests Requested (See reverse for guidance)					Comments/ Instructions
										Note that testing will be delayed if an incomplete chain of custody is received - Sub-contracted services (i.e. chemical Additional treatment of samples (i.e. spiking) - Dilutions required (if different than 100% analyses) down to 6.25%) - Sample holding time restriction (if applicable) - Sample used for litigation (if applicable) <i>Note: An MSDS must be attached if Available</i> ESA Project Number: PR <i>IS, (.)</i>
NA	NA	Marine Cleaner	WAF*		x					PL01510_q01
										*WAF concentrations: 0.1, 1, 10, 100, 1000 mg/L

1) Released By: <u>T Stringer</u> Date: <u>12/9/17</u>	2) Released By: <u></u> Date: <u>12/9/17</u>	3) Released By: <u></u> Date: <u></u>	4) Received By: <u></u> Date: <u></u>
Of: <u>Intertek</u> Time: <u>1 pm</u>	Of: <u></u> Time: <u></u>	Of: <u></u> Time: <u></u>	Of: <u></u> Time: <u></u>

Note that the chain-of-custody documentation will provide definitive information on the tests to be performed.

Ecotox Services Australasia . Unit 27, 2 Chaplin Drive, Lane Cove NSW 2066 AUSTRALIA

Phone: 61 2 9420-9481 Fax 61 2 9420-9484 info@ecotox.com.au

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Statistical Printouts for the Rainbowfish Embryonic Development and Post-hatch Survival Tests

Fish Embryonic Development-% Unaffected

Start Date: 20/09/2017 17:00	Test ID: PR1510	Sample ID: Marine Cleaner
End Date: 2/10/2017 17:00	Lab ID: 8319	Sample Type: WAF-Water Accommodated Fraction
Sample Date:	Protocol: ESA 126	Test Species: MS-Melanotaenia splendida
Comments:		

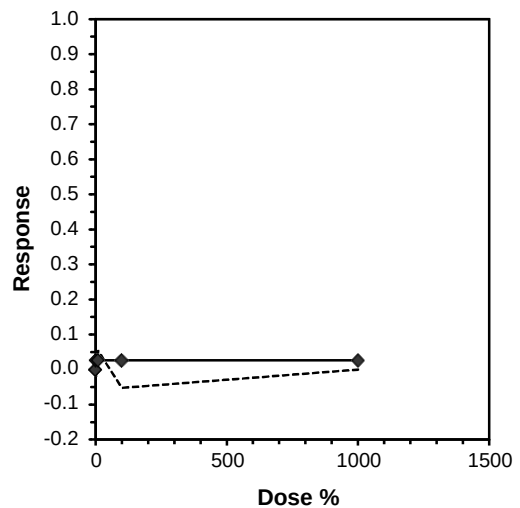
Conc-%	1	2	3	4
DMW-Control	1.0000	1.0000	1.0000	0.8000
WAF-Control	1.0000	0.8000	1.0000	1.0000
0.1	1.0000	1.0000	1.0000	1.0000
1	1.0000	0.8000	1.0000	1.0000
10	1.0000	0.8000	0.8000	1.0000
100	1.0000	1.0000	1.0000	1.0000
1000	1.0000	0.8000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					Rank Sum	1-Tailed Critical	Isotonic	
			Mean	Min	Max	CV%	N			Mean	N-Mean
DMW-Control	0.9500	1.0000	1.2857	1.1071	1.3453	9.261	4	*		0.9750	1.0000
WAF-Control	0.9500	1.0000	1.2857	1.1071	1.3453	9.261	4				
0.1	1.0000	1.0526	1.3453	1.3453	1.3453	0.000	4	20.00	10.00	0.9750	1.0000
1	0.9500	1.0000	1.2857	1.1071	1.3453	9.261	4	18.00	10.00	0.9500	0.9744
10	0.9000	0.9474	1.2262	1.1071	1.3453	11.212	4	16.00	10.00	0.9500	0.9744
100	1.0000	1.0526	1.3453	1.3453	1.3453	0.000	4	20.00	10.00	0.9500	0.9744
1000	0.9500	1.0000	1.2857	1.1071	1.3453	9.261	4	18.00	10.00	0.9500	0.9744

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.822657	0.916	-1.00457	0.055675
Equality of variance cannot be confirmed				
The control means are not significantly different (p = 1.00)	2.64E-15	2.446912		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	1000	>1000		0.1
Treatments vs DMW-Control				

Linear Interpolation (200 Resamples)

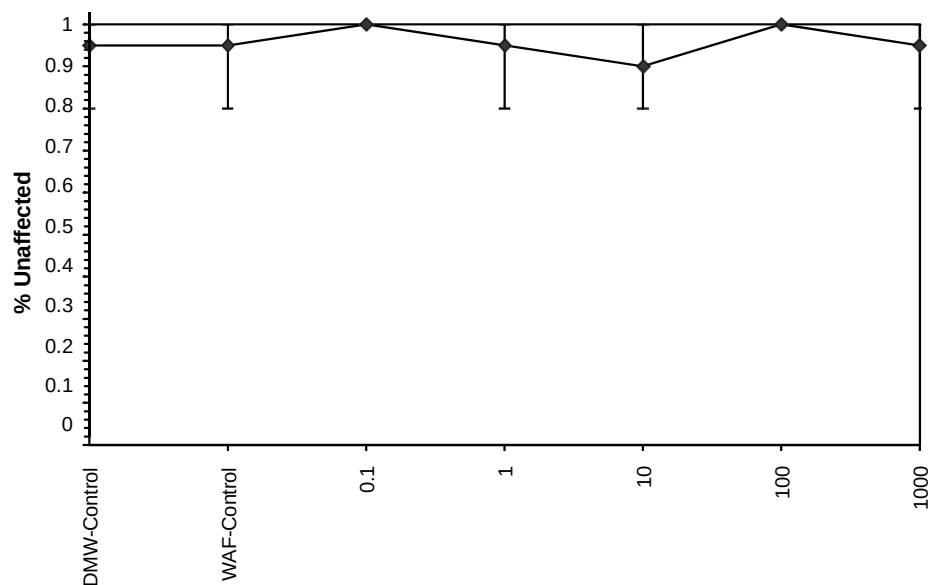
Point	%	SD	95% CL(Exp)	Skew
IC05	>1000			
IC10	>1000			
IC15	>1000			
IC20	>1000			
IC25	>1000			
IC40	>1000			
IC50	>1000			



Fish Embryonic Development-% Unaffected

Start Date:	20/09/2017 17:00	Test ID:	PR1510	Sample ID:	Marine Cleaner
End Date:	2/10/2017 17:00	Lab ID:	8319	Sample Type:	WAF-Water Accommodated Fraction
Sample Date:		Protocol:	ESA 126	Test Species:	MS-Melanotaenia splendida
Comments:					

Dose-Response Plot



Fish Embryonic Development-% Unaffected

Start Date:	20/09/2017 17:00	Test ID:	PR1510	Sample ID:	Marine Cleaner
End Date:	2/10/2017 17:00	Lab ID:	8319	Sample Type:	WAF-Water Accommodated Fraction
Sample Date:		Protocol:	ESA 126	Test Species:	MS-Melanotaenia splendida
Comments:					

		Auxiliary Data Summary					
Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
DMW-Control	% Unaffected	95.00	80.00	100.00	10.00	3.33	4
WAF-Control		95.00	80.00	100.00	10.00	3.33	4
0.1		100.00	100.00	100.00	0.00	0.00	4
1		95.00	80.00	100.00	10.00	3.33	4
10		90.00	80.00	100.00	11.55	3.78	4
100		100.00	100.00	100.00	0.00	0.00	4
1000		95.00	80.00	100.00	10.00	3.33	4
DMW-Control	pH	8.00	8.00	8.00	0.00	0.00	1
WAF-Control		8.00	8.00	8.00	0.00	0.00	1
0.1		8.00	8.00	8.00	0.00	0.00	1
1		8.00	8.00	8.00	0.00	0.00	1
10		8.00	8.00	8.00	0.00	0.00	1
100		8.00	8.00	8.00	0.00	0.00	1
1000		8.00	8.00	8.00	0.00	0.00	1
DMW-Control	Conductivity (uS/cm)	189.00	189.00	189.00	0.00	0.00	1
WAF-Control		189.00	189.00	189.00	0.00	0.00	1
0.1		189.00	189.00	189.00	0.00	0.00	1
1		189.00	189.00	189.00	0.00	0.00	1
10		189.00	189.00	189.00	0.00	0.00	1
100		189.00	189.00	189.00	0.00	0.00	1
1000		189.00	189.00	189.00	0.00	0.00	1
DMW-Control	DO (% sat)	98.10	98.10	98.10	0.00	0.00	1
WAF-Control		96.40	96.40	96.40	0.00	0.00	1
0.1		96.30	96.30	96.30	0.00	0.00	1
1		95.50	95.50	95.50	0.00	0.00	1
10		96.20	96.20	96.20	0.00	0.00	1
100		97.30	97.30	97.30	0.00	0.00	1
1000		94.60	94.60	94.60	0.00	0.00	1