



MACTEC

ENGINEERING AND CONSULTING, INC.
BIOTOX LABORATORY
KENNESAW, GEORGIA

CHRONIC TOXICITY TESTING REPORT

**SILT STOP 707a PRODUCT
WOODSTOCK, GEORGIA**

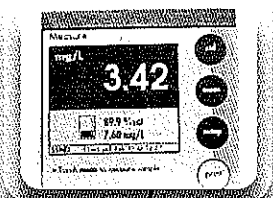
Test Period: April 16 - 23, 2007

Prepared for:

**Applied Polymer Systems, Inc.
Woodstock, Georgia**

May 14, 2007

Project Number: 6126-07-0005



**REPORT FOR CHRONIC TOXICITY TESTING OF
APPLIED POLYMER SYSTEMS, INC.
SILT STOP 707a PRODUCT**

WOODSTOCK, GEORGIA

TEST PERIOD: April 16-23, 2007

Prepared for:

**Applied Polymer Systems, Inc.
Woodstock, Georgia**

Prepared by:

**BioTox Laboratory
MACTEC Engineering and Consulting, Inc.
Kennesaw, Georgia**

May 14, 2007

Project No. 6126-07-0005



— engineering and constructing a better tomorrow

May 14, 2007

Mr. Steven R. Iwinski
Applied Polymer Systems, Inc.
519 Industrial Drive
Woodstock, GA 30189

Subject: **Applied Polymer Systems, Inc. Chronic Toxicity Testing on
707a Product
April 16 -23, 2007
MACTEC Project No. 6126-07-0005**

Dear Mr. Iwinski:

MACTEC Engineering and Consulting, Inc. (MACTEC), BioTox Laboratory has completed 7-day chronic toxicity testing on samples of Applied Polymer 707a Product. Toxicity testing was initiated by MACTEC on April 16, 2007 to determine the IC₂₅ (the Inhibition Concentration of the sample at which there is a 25% reduction in survival and reproduction of the water flea, *Ceriodaphnia dubia*, when compared to the laboratory control) and the NOEC (the No Observed Effect Concentration, or the highest concentration tested that did not exhibit chronic toxicity). The test sample was prepared by adding 420 ppm of polymer to 1.0 liter (L) of laboratory formulated water and allowed to mix on a stir plate until fully dissolved (approximately 4 hour). This stock test sample was then diluted with laboratory formulated water to the following test concentrations: 25.25 ppm, 52.5 ppm, 105 ppm, 210 ppm, and 420 ppm. Water fleas were exposed to the individual test concentrations, which were renewed with a fresh polymer solution daily, for a period of 7-days. After 7-days, the survival and reproduction endpoints were determined.


Test results indicated chronic toxicity to daphnia survival and growth at the 420 ppm concentrations. Based on the concentrations analyzed, the statistically determined IC₂₅ for survival was 262.5 ppm and the NOEC was 210 ppm. The statistically determined IC₂₅ for reproduction was 226.8 ppm and the NOEC was 210 ppm.


Results are summarized in the accompanying report (177 total pages). All test results contained herein comply with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC). A summary of test conditions, as well as chemical and physical data, are located in Appendix A (17 pages). Test organism source data are located in Appendix B (2 pages). Raw laboratory data and statistical analyses results are located in Appendix C (138 pages). Sample collection locations, dates, times, and temperatures, are located in the attached chain of custody documents in Appendix D (2 pages).

We appreciate the opportunity to provide these environmental services to the Applied Polymer Systems, and we look forward to working with you again in the future. If there are any questions, please do not hesitate to contact Dale McPherson or Paul Brafford at (770) 421-3400.

Sincerely,

MACTEC ENGINEERING AND CONSULTING, INC.


R. Dale McPherson
BioTox Laboratory Manager


W. Paul Brafford, CHMM
BioTox Laboratory Director

Attachment: Data Report

TEST SUMMARY

I. Client

Client: Applied Polymer Systems, Inc.
519 Industrial Drive
Woodstock, GA 30189

Product Tested: 7Silt Stop 707a (MACTEC Lab ID 07-050-01)

II. Laboratory Accreditation

Laboratory: BioTox Laboratory
Mactec Engineering and Consulting, Inc.
3200 Town Point Drive N.W., Suite 100
Kennesaw, Georgia 30144

Accreditor: State of Florida, Department of Health
Bureau of Laboratories

Accreditation ID: Lab ID. E87477

Category: Non-Potable Water – Whole Effluent Toxicity

Effective: October 18 through June 30, 2007

III. Tests Conducted

Test: Water Flea, *Ceriodaphnia dubia*
Chronic Definitive Survival and Reproduction Test
EPA-821-R-02-013, 2002

Test Dates: April 16-23, 2007

Source/Age of Organisms: In-house culture, ID No. CERB01040707, <24 hrs.

Test Concentrations: Control, 25.25 ppm, 52.5 ppm, 105 ppm, 210 ppm, and 420 ppm

Dilution/Control Water: Moderately hard synthetic freshwater (20% Perrier/80% Milli-Q)

Deviation From Test Protocol: None

IV. Results

Table 1. Survival and Reproduction Data for the Water Flea, *Ceriodaphnia dubia*, Exposed for 7-days to Applied Polymer Systems, Inc. 707a Product, April 16-23, 2007.

Concentration (ppm)	Survival (%)	Reproduction ^d
Laboratory Control ^a	100.0	17.3
25.25	100.0	17.0
52.5	100.0	15.8
105	100.0	17.9
210	100.0	14.1
420	0.0	0.0
IC₂₅ (ppm)^b	262.5	226.7
NOEC (ppm)^c	210	210

Prepared by: *4/24/5/10/07*
 Checked by: *6/5/5/11/07*

^a Laboratory Control – Moderately hard synthetic freshwater (20% Perrier/80% Milli-Q)

^b Inhibition Concentration – concentration at which there was a 25% reduction in survival/reproduction from the Laboratory Control

^c No Observed Effect Concentration - the highest concentration tested that did not exhibit chronic toxicity

^d Reported as mean number of neonates (offspring) per original number of females at test start.

^e Significantly different when statistically compared to the laboratory control.

V. Summary

Test results indicated chronic toxicity to daphnia survival and growth at the 420 ppm concentrations. Based on the concentrations analyzed, the statistically determined IC₂₅ for survival was 262.5 ppm and the NOEC was 210 ppm. The statistically determined IC₂₅ for reproduction was 226.8 ppm and the NOEC was 210 ppm.

VI. Quality Assurance

Ceriodaphnia dubia, KCl Reference Toxicant, RT9CCD, 5/1/07

Survival: 7-day NOEC = 125 mg/L KCl

7-day NOEC Range of Acceptability = 125 to 125 mg/L KCl (ACCEPTABLE)

Reproduction: 7-day IC₂₅ = 144 mg/L KCl

7-day IC₂₅ Range of Acceptability = 110 to 190 mg/L KCl (ACCEPTABLE)

GLOSSARY AND ABBREVIATIONS

Acute	Involving a stimulus severe enough to rapidly induce a response; in toxicity tests, a response observed in 96 hours or less typically is considered acute.
Chronic	Involving a stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. A chronic effect can be lethality, growth, reduced reproduction, etc.
Chronic Value	A numeric value representing the geometric mean of the numeric values of concentrations analyzed as the NOEC (No Observed Effect Concentration) and the LOEC (Lowest Observed Effect Concentration) by chronic toxicity testing. The chronic value is an estimate of the toxicant concentration that will be the actual no effect concentration based on the chronic effect tested.
Critical Value	Minimum numeric value for a toxicity test endpoint (i.e., survival, growth, or reproduction) below which a given test result will be statistically significantly different from the control value.
DMW	Diluted Mineral Water
EC	Effective concentration, a point estimate of the toxicant concentration that would cause an adverse response such as death, immobilization, or serious incapacitation.
Ft-c	Foot candles - a measure of <u>light</u> intensity
Graphical Method	Log concentration versus percent mortality method. Toxicity test data are plotted on 2-cycle semi-log graph paper. The logarithmic axis (y axis) is used for percent effluent concentration, and the linear axis (x axis) is used for percent mortality. The graph provides a reasonably accurate estimate of the LC ₅₀ , but does not provide a confidence interval.
IC	Inhibition Concentration, a point estimate of the toxicant concentration that would cause a given percent reduction in a biological measurement such as fecundity or growth.
LC	Lethal Concentration, identical to EC when the observed response is death.
LC ₅₀	The toxicant concentration that is lethal to 50 percent of exposed organisms at a specific time of observation.
LCL	Lower 95% Confidence Limit
LOEC	Lowest-Observed-Effect-Concentration, the lowest concentration of toxicant to which organisms are exposed that causes adverse effects.
LWC	Lab Water Control, moderately hard synthetic freshwater prepared from MILLIPORE MILLI-Q ^R water and reagent grade chemicals.

NOEC	No-Observed-Effect-Concentration, the highest concentration of toxicant to which organisms are exposed that causes no observable adverse effects.
Probit Analysis	Probit Analysis consists of a group of statistical methods used to analyze data from concentration-response experiments, and provides an estimate of the LC ₅₀ and the precision of this estimate. In Probit Analysis, the percentages of affected organisms are converted to Probits (probability units), and the effluent concentrations are converted to logarithms. The relationship between the Probits and the logarithmic values of the concentrations is approximately linear. A Probit regression line drawn through the data points is used to estimate the LC ₅₀ and its precision estimate. To use Probit Analysis, at least two partial mortalities must be obtained in the toxicity test.
RWC	Receiving Water Control
UCL	Upper 95% Confidence Limit
$\mu\text{E}/\text{m}^2/\text{s}$	Micro-ergs per square meter per second - a measure of <u>light</u> intensity

REFERENCES

- Gulley, D.D., and WEST, Inc. 1996. TOXSTAT version 3.5. Fish Physiology and Toxicology Laboratory. Department of Zoology and Physiology. University of Wyoming. Laramie, Wyoming.
- U.S. Environmental Protection Agency. 1979. Methods for Chemical Analysis of Water And Wastes. Environmental Monitoring Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. EPA 600/4-79-020.
- U.S. Environmental Protection Agency. 1999. Errata for Effluent and Receiving Water Toxicity Testing Manuals: Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms; Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms; and Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN. EPA/600/R-98/182.
- U.S. Environmental Protection Agency. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. Office of Water (4303T), U.S. Environmental Protection Agency, Washington, DC. EPA-821-R-02-013.

TABLES

Summary of Toxicity Test Conditions for the Water Flea, *Ceriodaphnia dubia*, Survival and Reproduction Test.

1. Test type: Static renewal definitive
2. Temperature (°C): 24.0-25.0 °C
3. Light quality: Ambient laboratory illumination
4. Light intensity: 10-20 $\mu\text{E}/\text{m}^2/\text{s}$, or 50-100 ft-c
5. Photoperiod: 16-hr. light, 8-hr. darkness
6. Test chamber size: 30 mL
7. Test solution volume: 15 mL/replicate
8. Renewal of test concentrations: Daily
9. Age of test organisms: Newly hatched neonates < 24-hr. old
10. No. neonates per test chamber: 1
11. No. replicate chambers per concentration: 10
12. No. neonates per concentration: 10
13. Feeding regime: Fed 0.1 mL each of YCT and algae suspension per test chamber daily
14. Aeration: None
15. Dilution water: Moderately hard synthetic water is prepared using MILLIPORE MILLI-Q^R and Perrier.
16. Test concentrations (ppm): Control (0.0), 25.25, 52.5, 105, 210, and 420
17. Dilution factor: 0.5
18. Test duration: 7 days, 60% of control females had 3 broods
19. End points: Survival and reproduction
20. Test acceptability: 80% or greater survival in controls; Average of 15 or more young/surviving female in the control solutions. At least 60% of surviving females in controls should have produced their third brood.
21. Sampling requirement: Samples are collected daily, and used within 36-hr. of the time they are removed from the sampling device
22. Sample volume required: 1.0 L per day

**Initial Chemical Characterization of Applied Polymer Systems, Inc. Silt Stop Products and Control Water
Used in Chronic Toxicity Tests, April 19 through May 4, 2005.**

Parameter	707a (420 ppm)	Laboratory Control ^a
Dissolved Oxygen (mg/L)	7.63	7.69
pH	4.14	7.86
Total Alkalinity as CaCO ₃ (mg/L)	27.5 ^d	55.0
Total Hardness as CaCO ₃ (mg/L)	150.0	66.0
Conductivity @ 25°C (µmhos/cm)	220	227
Total Residual Chlorine ^b (mg/L)	<0.020	<0.020
Total Ammonia-nitrogen ^b (mg/L)	0.929 ^c	0.046

Determined according to EPA 600/4-79-020, 1979.

Prepared by: *DBS/SLK*
Checked by: *CJS/SLK*

^a Laboratory Control = Moderately hard synthetic freshwater (20% Perrier and 80% Milli-Q)

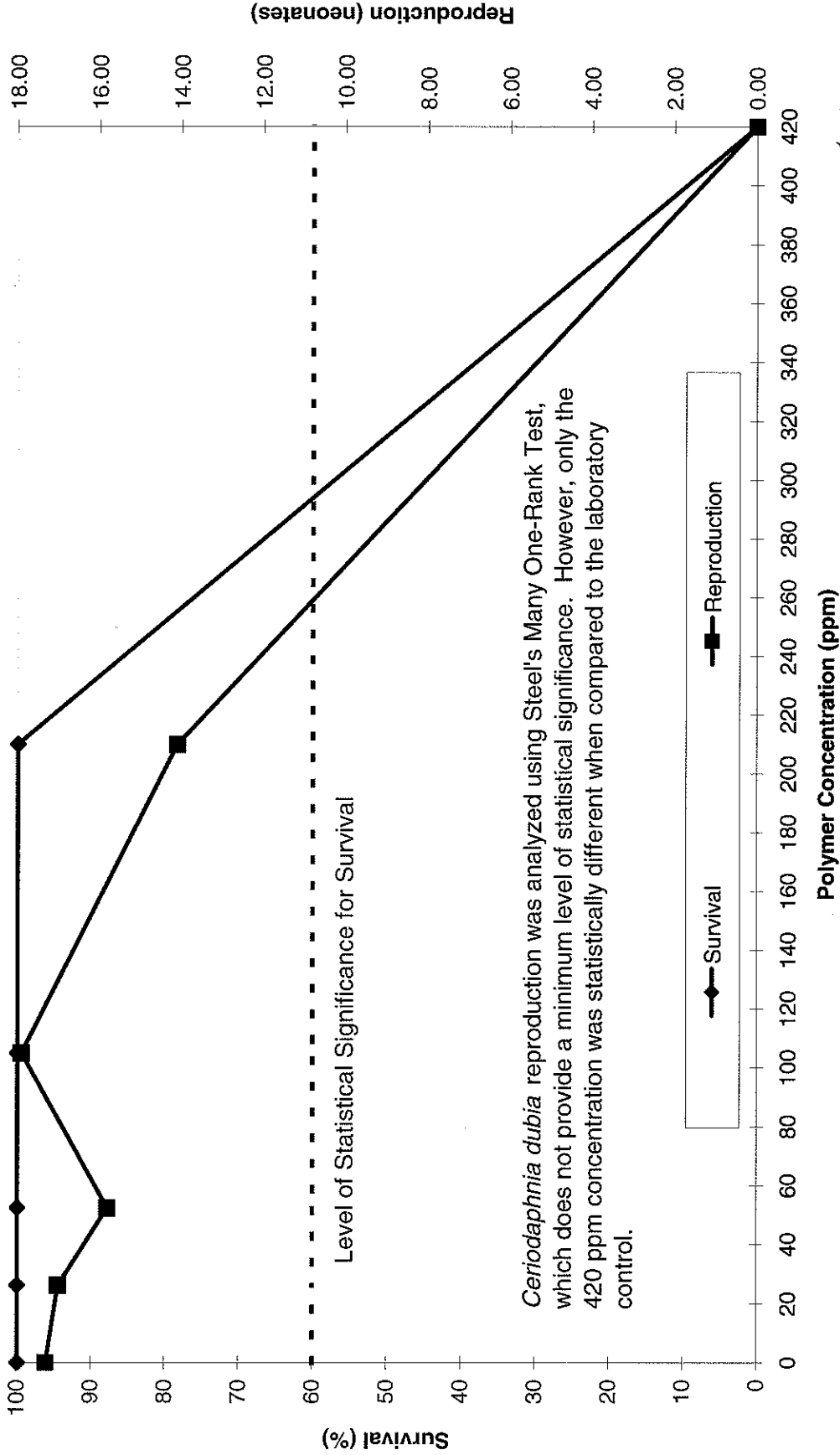
^b Determined by Hach Colorimetric Test Kit in conjunction with spectrophotometer

^c An interference was noted (cloudy white flocculant) upon addition of the Nessler's Reagent to the sample. The typical "orange" coloration that develops when ammonia is present was not noted. Therefore, the results should be interpreted with caution as a false positive result is likely.

^d Alkalinity is measured by the addition of sulfuric acid until a pH of 4.50 is reached, the initial pH of the sample was at ~4.60 results may not reflect the actual alkalinity of the solution.

FIGURES

**Figure 1. Applied Polymer Systems, Inc. Silt Stop 707a Polymer
Water Flea Chronic Toxicity Test
4/16-22/07**



Ceriodaphnia dubia reproduction was analyzed using Steel's Many One-Rank Test, which does not provide a minimum level of statistical significance. However, only the 420 ppm concentration was statistically different when compared to the laboratory control.

Prepared by: AOA 5/14/07
Reviewed by: EJS 5/11/07

APPENDICES

APPENDIX A

Chemical and Physical Data

MACTEC ENGINEERING AND CONSULTING, INC.

BIOTOX LABORATORY

DAILY WATER QUALITY DATA FOR CHRONIC TEST

CLIENT: Applied Polymer AERATION REQUIRED: No ORGANISM ID: CERB01040707
 LOCATION: TEST CHAMBER SIZE: 50mL D.O. METER ID: 001
 TEST TYPE: Definitive / Screening TEST SOLUTION VOLUME: 15mL pH METER ID: 001
 NPDES NUMBER: DILUTION/CONTROL ID: DMW01040607 SPECTROPHOTOMETER ID: 001

DATE/ANALYST 4/16/07/EJS 4/17/07/EJS 4/18/07/40A 4/19/07/40A 4/20/07/EJS 4/21/07/EJS 4/22/07/EJS COMMENT

CONTROL: DMW

D.O.	INITIAL	7.69	7.71	7.76	7.82 8.01	7.73	8.02	8.11
	FINAL	7.20	7.97	7.82	7.80	7.76	7.77	7.89
pH	INITIAL	7.86	7.84	7.87	7.85 7.74	7.81	7.88	7.81
	FINAL	7.77	7.84	7.85	7.83	7.85	7.90	7.79
ALKALINITY		55.0	52.5					
HARDNESS		66.0	47.1					
*CONDUCTIVITY		227						
TRC mg/l		<0.020						
NH3 mg/l		0.416						

CONCENTRATION: 20.25 mg/L (ppm)

D.O.	INITIAL	7.71	8.18	7.81	7.99	7.78	7.93	7.84
	FINAL	7.24	8.03	7.83	7.97	7.94	7.82	7.84
pH	INITIAL	7.41	7.44	7.56	7.57	7.69	7.92	7.51
	FINAL	7.87	7.51	7.61	7.88	8.00	7.97	7.70

CONCENTRATION: 52.5 ppm

D.O.	INITIAL	7.32	7.78	7.79	7.96	7.75	7.74	7.63
	FINAL	7.25	7.79	7.79	7.57	7.93	7.41	7.49
pH	INITIAL	7.15	7.40	7.45	7.48	7.38	7.29	7.43
	FINAL	7.86	7.54	7.67	7.85	7.52	7.69	7.85

CONCENTRATION: 105 ppm

D.O.	INITIAL	7.40	7.82	7.67	7.97	7.75	7.81	1.72
	FINAL	7.38	7.79	7.71	7.58	7.87	7.76	7.12
pH	INITIAL	6.70	7.20	7.18	7.21	7.05	7.16	7.22
	FINAL	7.78	7.61	7.34	7.72	7.47	7.31	7.71

CONCENTRATION: 210 ppm

D.O.	INITIAL	7.37	7.71	7.91	7.68 7.99	7.67	7.77	7.69
	FINAL	7.35	7.73	7.68	7.52	7.92	7.29	6.21
pH	INITIAL	5.88	6.00	6.70	7.23	6.46	6.51	6.78
	FINAL	7.43	7.73	7.57	7.18	7.21	7.03	7.35

CONCENTRATION: 420 ppm

D.O.	INITIAL	7.63						
	FINAL	7.97						
pH	INITIAL	4.14						
	FINAL	7.43	4.20					
ALKALINITY		27.5	67.5					
HARDNESS		150.0	47.1					
*CONDUCTIVITY		2.20						
TRC mg/l		<0.020						
NH3 mg/l		6.929						

Lab Sample ID: 07-050-01 Day 0-2 07-050-01 Day 3-4 07-050-01 Day 5-7 * 4/19/07 40A

D.O. = Dissolved Oxygen
 ALKALINITY and HARDNESS are reported as mg/L as CaCO3
 TRC mg/L Total Residual Chlorine milligrams per liter
 *Conductivity in micro siemens (µs/cm)
 NH3 mg/L ammonia nitrogen milligrams per liter



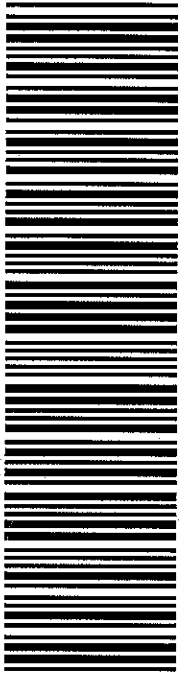
Reviewed by: EJS
 Date: 4/23/07

Client: Applied Polymer Project: Applied Polymer Bioremediation Proposal #: _____
 Cooler Received on: 4/5/07 Opened on: 4/5/07
 By: [Signature] (Signature)

FedEx Client Drop Off UPS DHL FAS Courier Other: _____
 MACTEC Cooler Foam Box Client Cooler Other: Cold board box

1. Were custody seals on the outside of the cooler? Yes No Intact? Yes No NA
 If YES, Quantity _____
 Were the custody seals signed and dated? Yes No NA
 2. Shipper's packaging slip attached to this form? Yes No NA
 3. Did custody papers accompany the samples? Yes No Relinquished by client? Yes No
 4. Did you sign the custody papers in the appropriate place? Yes No
 5. Packaging material used: Bubble Wrap Foam None Other: _____
 6. Cooler temperature upon receipt N/A °C (see back of form for multiple coolers/temp)
 METHOD: Temp Vial Coolant & Sample Against Bottles IR ICE/H₂O Slurry
 COOLANT: Wet Ice Blue Ice Dry Ice Water None
 7. Did all ^{zip locks} ~~bottles~~ arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels and/or tags be reconciled with the COC? Yes No
 9. Were samples at the correct pH upon receipt? Yes No NA
 11. Sufficient quantity received to perform indicated analyses? Yes No
- Contacted PM Bradford Date: 4/5/07 By: N/A via Voice Mail Verbal Other
 Concerning: No work authorization, no chain of custody encl

√		
1. CHAIN OF CUSTODY		
		The following discrepancies occurred: <u>No Chain of Custody</u>
2. SAMPLE CONDITION		
	Sample(s)	were received after the recommended holding time had expired.
	Sample(s)	were received in a broken container.
3. SAMPLE PRESERVATION		
	Sample(s)	were further preserved in sample receiving.
	Sample(s)	
4. OTHER (see below or back)		

		GND		Pieces: 1/1
FM: APPLIED POLYMER SYSTEMS S. Iwinski 519 INDUSTRIAL DR WOODSTOCK, GA 30189 UNITED STATES Phone: 678-494-5998		ORIGIN: BAK		
To: MECTEC ENGINEERING & CONSULTING MARGARET TANNER 3200 TOWN POINT DR. SUITE 100 KENNESAW, GA 30144 UNITED STATES		POSTCODE: 30144		
		TEL: 770-421-7032		
Description:		Weight: 1 lbs for 1 pcs Date: 2007-04-04		05TH Day
DHL standard terms and conditions apply.				
		BJJB 6V ATT		
(2L)US30144				
				
WAYBILL: 8994309531 (Non-Negotiable)				

Please fold or cut in half

DO NOT PHOTOCOPY

Using a photocopy could delay the delivery of your package and will result in additional shipping charge

SENDER'S RECEIPT

Waybill #: 8994309531

To(Company):

MECTEC Engineering & Consulting
Suite 100
3200 Town Point Dr.

Kennesaw, GA 30144
UNITED STATES

Attention To: Margaret Tanner
Phone#: 770-421-7032

Sent By: S. Iwinski
Phone#: 678-494-5998

Rate Estimate: 0
Protection: Not Required
Description:

Weight (lbs.): 1
Dimensions: 0 x 0 x 0

Service Level: Ground (Est. delivery in 1 business day(s))


Special Svc:

Date Printed: 4/4/2007
Bill Shipment To: Sender
Bill To Acct: 850222690

DHL Signature (optional) _____ Route _____ Date _____ Time _____

For Tracking, please go to www.dhl-usa.com or call 1-800-225-5345

Thank you for shipping with DHL

Create new shipment 

View pending shipments

Print waybill 

APPENDIX B

Waterflea Culture Documents

MACTEC Engineering and Consulting, Inc.
BioTox Laboratory

Ceriodaphnia dubia Culture Source Document

Brood Board ID No.	Brood Board Date	Date/Time Cups Marked	Age of Test Organisms	Water Type/Temp. (°C)	Food Type
CERB010407	4/7/07	4/16/07 0810	<24-hr	DMW / 25.0	YCT & <i>Selenastrum</i>

APPENDIX C

Test Data Sheets

**Water Flea
707a Polymer Test**

MACTEC ENGINEERING AND CONSULTING, INC.
BIOTOX LABORATORY

Daily Survival and Reproduction Data for *Ceriodaphnia dubia* Chronic Test

Client: Applied Polymer Dilution Water ID: DMW01040707 Test Set-up Date (day 0): 4/16/07 ** Feeding: 0.10mL YTC+S. capricornutum daily

Discharge: C. dubia Source ID: CCRB0104007 Test Set-up Time: 1530 Incubator: 003

Location: DMW *Date/time of transfer: 4/16/07/0800 Test Set-up Analyst: EJS Shelf: 21

Concentration 1: DMW Concentration 2: 26.75 ppm Concentration 3: 62.5 ppm Concentration 4: 165 ppm Concentration 5: 210 ppm Concentration 6: 420 ppm

DAILY RENEWAL DATES, TIMES, TEMPS, AND ANALYST'S INITIALS

Day 1: <u>4/17/07</u>	Day 2: <u>4/18/07</u>	Day 3: <u>4/19/07</u>	Day 4: <u>4/20/07</u>	Day 5: <u>4/21/07</u>	Day 6: <u>4/22/07</u>	Day 7: <u>4/23/07</u>	Day 8:
Time: <u>1230</u>	Time: <u>1510</u>	Time: <u>1525</u>	Time: <u>1340</u>	Time: <u>1000</u>	Time: <u>1170</u>	Time: <u>1140</u>	Time:
Initials: <u>EJS</u>	Initials: <u>MAA</u>	Initials: <u>ADA</u>	Initials: <u>EJS</u>	Initials: <u>EJS</u>	Initials: <u>EJS</u>	Initials: <u>EJS</u>	Initials:

BEHAVIOR KEY
ME = molten embryo V = alive adult # = number live neonates MA = missing adult GA = gravid adult SA = small adult
MC = molten carapace X = dead adult # = number dead neonates Y = male adult EA = ephippial adult NB = neonates on bottom

Day	Cup 5	Cup 15	Cup 25	Cup 35	Cup 45	Cup 55	Day	Cup 10	Cup 20	Cup 30	Cup 40	Cup 50	Cup 60
0	✓	✓	✓	✓	✓	✓	0	✓	✓	✓	✓	✓	✓
1	✓	✓	✓	X	✓	✓	1	✓	✓	X	✓	✓	✓
2	✓	✓	✓	✓	✓	✓	2	✓	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	3	✓	✓	✓	✓	✓	✓
4	✓ ₅	✓ ₄	✓	✓	✓ ₆	✓	4	✓ ₅	✓ ₅	✓	✓	✓ ₅	✓ ₄
5	✓	✓	✓ ₅	✓	✓ ₉	✓	5	✓	✓	✓	✓	✓ ₅	✓
6	✓ ₈	✓ ₆	✓ ₄	✓	✓	✓ ₈	6	✓ ₇	✓ ₆	✓	✓ ₃	✓ ₉	✓ ₆
7	✓ ₉	✓ ₇	✓ ₂	✓	✓ ₂	✓ ₄	7	✓ ₁₂	✓ ₇	✓	✓	✓ ₆	✓ ₈
8							8						

Day	Cup 4	Cup 14	Cup 24	Cup 34	Cup 44	Cup 54	Day	Cup 9	Cup 19	Cup 29	Cup 39	Cup 49	Cup 59
0	✓	✓	✓	✓	✓	✓	0	✓	✓	✓	✓	✓	✓
1	✓	X	✓	✓	✓	✓	1	✓	X	✓	✓	✓	✓
2	✓	✓	✓	✓	✓	✓	2	✓	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	3	✓	✓	✓	✓	✓	✓
4	✓ ₂	✓	✓ ₅	✓ ₆	✓ ₅	✓ ₅	4	✓ ₅	✓	✓ ₆	✓ ₆	✓ ₃	✓ ₅
5	✓	✓	✓	✓	✓	✓	5	✓	✓	✓	✓ ₂	✓	✓ ₄
6	✓ ₇	✓	✓ ₈	✓ ₄	✓ ₆	✓ ₇	6	✓ ₆	✓	✓ ₇	✓ ₁₁	✓ ₈	✓ ₅
7	✓ ₄	✓	✓ ₄	✓ ₅	✓ ₅	✓ ₆	7	✓ ₉	✓	✓ ₉	✓	✓ ₆	✓ ₈
8							8						

Day	Cup 3	Cup 13	Cup 23	Cup 33	Cup 43	Cup 53	Day	Cup 8	Cup 18	Cup 28	Cup 38	Cup 48	Cup 58
0	✓	✓	✓	✓	✓	✓	0	✓	✓	✓	✓	✓	✓
1	✓	✓	✓	✓	X	✓	1	✓	✓	✓	X	✓	✓
2	✓	✓	✓	✓	✓	✓	2	✓	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	3	✓	✓	✓	✓	✓	✓
4	✓	✓ ₄	✓	✓ ₄	✓	✓ ₅	4	✓ ₅	✓ ₅	✓ ₆	✓	✓ ₃	✓ ₄
5	✓ ₄	✓ ₂	✓ ₁₀	✓	✓	✓	5	✓	✓	✓	✓	✓	✓
6	✓ ₂	✓ ₅	✓	✓ ₇	✓ ₁₀	✓ ₈	6	✓ ₈	✓ ₇	✓ ₇	✓	✓ ₆	✓ ₁₀
7	✓	✓ ₇	✓	✓ ₃	✓	✓ ₁₀	7	✓ ₄	✓ ₅	✓ ₇	✓	✓ ₉	✓
8							8						

Day	Cup 2	Cup 12	Cup 22	Cup 32	Cup 42	Cup 52	Day	Cup 7	Cup 17	Cup 27	Cup 37	Cup 47	Cup 57
0	✓	✓	✓	✓	✓	✓	0	✓	✓	✓	✓	✓	✓
1	✓	✓	X	✓	✓	✓	1	✓	✓	✓	✓	✓	X
2	✓	✓	✓	✓	✓	✓	2	✓	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	3	✓	✓	✓	✓	✓	✓
4	✓	✓ ₄	✓	✓ ₅	✓ ₆	✓ ₅	4	✓ ₅	✓ ₄	✓ ₅	✓ ₅	✓ ₅	✓
5	✓ ₃	✓	✓	✓	✓	✓	5	✓	✓	✓	✓	✓	✓
6	✓ ₁	✓ ₉	✓	✓ ₇	✓ ₁₀	✓ ₅	6	✓ ₅	✓ ₉	✓	✓ ₁₀	✓ ₆	✓
7	✓ ₂	✓ ₈	✓	✓ ₅	✓ ₄	✓ ₉	7	✓	✓ ₅	✓ ₅	✓ ₅	✓ ₂	✓
8							8						

Day	Cup 1	Cup 11	Cup 21	Cup 31	Cup 41	Cup 51	Day	Cup 6	Cup 16	Cup 26	Cup 36	Cup 46	Cup 56
0	✓	✓	✓	✓	✓	✓	0	✓	✓	✓	✓	✓	✓
1	✓	✓	✓	✓	✓	X	1	X	✓	✓	✓	✓	✓
2	✓	✓	✓	✓	✓	✓	2	✓	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	3	✓	✓	✓	✓	✓	✓
4	✓	✓ ₄	✓ ₄	✓ ₅	✓ ₄	✓	4	✓	✓ ₃	✓ ₅	✓ ₅	✓ ₇	✓ ₆
5	✓ ₆	✓	✓	✓ ₂	✓	✓	5	✓	✓	✓	✓	✓	✓
6	✓	✓ ₆	✓ ₆	✓ ₇	✓ ₆	✓	6	✓	✓	✓	✓	✓	✓
7	✓	✓ ₄	✓ ₈	✓ ₁₁	✓ ₁₀	✓	7	✓	✓ ₆	✓ ₇	✓ ₉	✓ ₇	✓
8							8	✓	✓ ₃	✓ ₇	✓	✓ ₃	✓ ₄

Temperature Record - Thermometer ID: 004

Day	Cup #1	Cup #11	Cup #21	Cup #31	Cup #41	Cup #51
0	23.0	24.1	24.5	24.5	24.5	25.0
1	24.5	25.0	24.5	24.5	25.0	25.0
2	24.5	24.5	24.5	24.5	25.0	25.0
3	24.5	24.5	24.0	24.0	24.0	24.5
4	24.5	24.5	24.5	24.0	24.5	24.5
5	25.0	25.0	24.5	24.5	24.5	24.5
6	24.0	24.5	24.5	24.5	25.0	25.0
7	24.5	24.5	24.5	25.0	25.0	26.0
8						

**YTC ID: YTC 01041707

**S. Capricornutum ID: C51085041707

*adult C. dubia transferred to new cup, neonates transferred to test cup within 24 hours, each neonate no more than 8 hours apart in age.

YTC = Yeast, Cerophyl®, Trout chow

Reviewed by: EJS

Date: 4/23/07

MACTEC ENGINEERING AND CONSULTING, INC.
BIOTOX LABORATORY
Ceriodaphnia dubia 3-brood Chronic Test De-randomization Sheet

Client: Applied Polymer Dilution Water ID: DMW01040707 Test Set-up Date (Time): 4/16/07 (1530)
 Sample ID: Product 707a C. dubia Source ID: CERB01041307 Test End Date (Time): 4/23/07 (1140)
 Location: Woodstock, GA Template ID: _____ Test Analyst(s): EJS, RDM

Behavior Key																													
ME = molten embryo					A = alive adult					# = no. live neonates					MF = missing adult					GA = gravid adult					SA = small adult				
MC = molten carapace					X = dead adult					-# = no. dead neonates					Y = male adult					EA = ephippial adult					NB = neonates on bottom				
Concentration: DMW 0.0%										Total	Concentration: 26.25 ppm										Total								
Day										Neonates	Day										Neonates								
Cup #	0	1	2	3	4	5	6	7	8		Cup #	0	1	2	3	4	5	6	7	8									
1	A	A	A	A	A	6	A	A		6	11	A	A	A	A	4	A	6	4		14								
12	A	A	A	A	4	A	9	8		21	42	A	A	A	A	6	A	10	4		20								
53	A	A	A	A	5	A	8	10		23	33	A	A	A	A	4	A	7	3		14								
24	A	A	A	A	5	A	8	4		17	4	A	A	A	A	2	A	7	4		13								
45	A	A	A	A	6	9	A	2		17	25	A	A	A	A	A	5	4	2		11								
36	A	A	A	A	5	A	9	A		14	56	A	A	A	A	6	9	A	9		24								
17	A	A	A	A	4	A	9	5		18	37	A	A	A	A	5	A	10	5		20								
58	A	A	A	A	4	A	10	A		14	8	A	A	A	A	5	A	8	4		17								
39	A	A	A	A	6	2	11	A		19	29	A	A	A	A	6	A	7	9		22								
10	A	A	A	A	5	A	7	12		24	50	A	A	A	A	5	A	9	6		20								
Original no. of females:	10									Live neonates per female:	17.3	173	Original no. of females:	10									Live neonates per female:	17.5	175				
Concentration: 52.5 ppm										Total	Concentration: 105 ppm										Total								
Day										Neonates	Day										Neonates								
Cup #	0	1	2	3	4	5	6	7	8		Cup #	0	1	2	3	4	5	6	7	8									
21	A	A	A	A	4	A	6	8		18	31	A	A	A	A	5	2	7	11		25								
32	A	A	A	A	5	A	7	5		17	52	A	A	A	A	5	A	5	9		19								
3	A	A	A	A	A	4	2	A		6	13	A	A	A	A	4	2	5	7		18								
54	A	A	A	A	5	A	7	6		18	44	A	A	A	A	5	A	6	5		16								
15	A	A	A	A	4	A	6	7		17	5	A	A	A	A	5	A	8	9		22								
46	A	A	A	A	7	A	7	3		17	26	A	A	A	A	5	A	7	7		19								
7	A	A	A	A	5	A	5	A		10	47	A	A	A	A	5	A	6	2		13								
28	A	A	A	A	6	A	7	7		20	18	A	A	A	A	5	A	7	5		17								
49	A	A	A	A	3	A	8	6		17	59	A	A	A	A	5	4	5	8		22								
20	A	A	A	A	5	A	6	7		18	40	A	A	A	A	A	5	3	A		8								
Original no. of females:	10									Live neonates per female:	15.8	158	Original no. of females:	10									Live neonates per female:	17.9	179				
Concentration: 210 ppm										Total	Concentration: 420 ppm										Total								
Day										Neonates	Day										Neonates								
Cup #	0	1	2	3	4	5	6	7	8		Cup #	0	1	2	3	4	5	6	7	8									
41	A	A	A	A	4	A	6	10		20	51	A	X								0								
2	A	A	A	A	A	3	1	2		6	22	A	X								0								
23	A	A	A	A	A	10	A	A		10	43	A	X								0								
34	A	A	A	A	6	A	4	5		15	14	A	X								0								
55	A	A	A	A	A	A	8	4		12	35	A	X								0								
16	A	A	A	A	3	A	6	3		12	6	A	X								0								
27	A	A	A	A	5	A	A	5		10	57	A	X								0								
48	A	A	A	A	3	A	6	9		18	38	A	X								0								
9	A	A	A	A	5	A	6	9		20	19	A	X								0								
60	A	A	A	A	4	A	6	8		18	30	A	X								0								
Original no. of females:	10									Live neonates per female:	14.1	141	Original no. of females:	10									Live neonates per female:	0.0	0				

no., # = number

Prepared by: MDH Date: 5/8/07

Reviewed by: EJS Date: 5/11/07

Title: Applied Polymer C. dubia Chronic Survival 4/24/07

File: apcds042407

Transform:

NO TRANSFORMATION

GRP	IDENTIFICATION	MEAN	SMOOTHED MEAN	CONCENTRATION
1	DMW - 0.0%	1.0000	1.0000	0.0000
2	26.25 ppm	1.0000	1.0000	26.2500
3	52.5 ppm	1.0000	1.0000	52.5000
4	105 ppm	1.0000	1.0000	105.0000
5	210 ppm	1.0000	1.0000	210.0000
6	420 ppm	0.0000	0.0000	420.0000

ICp estimate with p = 25 is 262.5000

Bootstrap results using 480 iterations:

Mean = 262.5000 Standard Deviation = 0.0000
95% Confidence Interval: (262.5000 , 262.5000)

Fisher's Exact Test

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
26.25 ppm	10	0	10
TOTAL	20	0	20

Critical Fisher's value (10,10,10) ($\alpha=0.05$) is 6.0. b value is 10.
 Since b is greater than 6.0 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
52.5 ppm	10	0	10
TOTAL	20	0	20

Critical Fisher's value (10,10,10) ($\alpha=0.05$) is 6.0. b value is 10.
 Since b is greater than 6.0 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
105 ppm	10	0	10
TOTAL	20	0	20

Critical Fisher's value (10,10,10) ($\alpha=0.05$) is 6.0. b value is 10.
 Since b is greater than 6.0 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
210 ppm	10	0	10
TOTAL	20	0	20

Critical Fisher's value (10,10,10) ($\alpha=0.05$) is 6.0. b value is 10.
 Since b is greater than 6.0 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
420 ppm	0	10	10
TOTAL	10	10	20

Critical Fisher's value (10,10,10) ($\alpha=0.05$) is 6.0. b value is 0. Since b is less than or equal to 6.0 there is a significant difference between CONTROL and TREATMENT at the 0.05 level.

Summary of Fisher's Exact Tests

GROUP	IDENTIFICATION	NUMBER EXPOSED	NUMBER DEAD	SIG 0.05
	CONTROL	10	0	
1	26.25 ppm	10	0	
2	52.5 ppm	10	0	
3	105 ppm	10	0	
4	210 ppm	10	0	
5	420 ppm	10	10	*

Title: Applied Polymer C. dubia Chronic Survival 4/24/07

File: apcds042407

Transform:

NO TRANSFORMATION

Number of Groups: 6

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	DMW - 0.0%	1	0.0000	0.0000
1	DMW - 0.0%	2	0.0000	0.0000
1	DMW - 0.0%	3	0.0000	0.0000
1	DMW - 0.0%	4	0.0000	0.0000
1	DMW - 0.0%	5	0.0000	0.0000
1	DMW - 0.0%	6	0.0000	0.0000
1	DMW - 0.0%	7	0.0000	0.0000
1	DMW - 0.0%	8	0.0000	0.0000
1	DMW - 0.0%	9	0.0000	0.0000
1	DMW - 0.0%	10	0.0000	0.0000
2	26.25 ppm	1	0.0000	0.0000
2	26.25 ppm	2	0.0000	0.0000
2	26.25 ppm	3	0.0000	0.0000
2	26.25 ppm	4	0.0000	0.0000
2	26.25 ppm	5	0.0000	0.0000
2	26.25 ppm	6	0.0000	0.0000
2	26.25 ppm	7	0.0000	0.0000
2	26.25 ppm	8	0.0000	0.0000
2	26.25 ppm	9	0.0000	0.0000
2	26.25 ppm	10	0.0000	0.0000
3	52.5 ppm	1	0.0000	0.0000
3	52.5 ppm	2	0.0000	0.0000
3	52.5 ppm	3	0.0000	0.0000
3	52.5 ppm	4	0.0000	0.0000
3	52.5 ppm	5	0.0000	0.0000
3	52.5 ppm	6	0.0000	0.0000
3	52.5 ppm	7	0.0000	0.0000
3	52.5 ppm	8	0.0000	0.0000
3	52.5 ppm	9	0.0000	0.0000
3	52.5 ppm	10	0.0000	0.0000
4	105 ppm	1	0.0000	0.0000
4	105 ppm	2	0.0000	0.0000
4	105 ppm	3	0.0000	0.0000
4	105 ppm	4	0.0000	0.0000
4	105 ppm	5	0.0000	0.0000
4	105 ppm	6	0.0000	0.0000
4	105 ppm	7	0.0000	0.0000
4	105 ppm	8	0.0000	0.0000
4	105 ppm	9	0.0000	0.0000
4	105 ppm	10	0.0000	0.0000
5	210 ppm	1	0.0000	0.0000
5	210 ppm	2	0.0000	0.0000
5	210 ppm	3	0.0000	0.0000
5	210 ppm	4	0.0000	0.0000
5	210 ppm	5	0.0000	0.0000
5	210 ppm	6	0.0000	0.0000
5	210 ppm	7	0.0000	0.0000
5	210 ppm	8	0.0000	0.0000
5	210 ppm	9	0.0000	0.0000
5	210 ppm	10	0.0000	0.0000

6	420 ppm	1	1.0000	1.0000
6	420 ppm	2	1.0000	1.0000
6	420 ppm	3	1.0000	1.0000
6	420 ppm	4	1.0000	1.0000
6	420 ppm	5	1.0000	1.0000
6	420 ppm	6	1.0000	1.0000
6	420 ppm	7	1.0000	1.0000
6	420 ppm	8	1.0000	1.0000
6	420 ppm	9	1.0000	1.0000
6	420 ppm	10	1.0000	1.0000

Prep by WJG 5/1/07
Revised by EJS 5/1/07

Title: Applied Polymer C. dubia Chronic Survival 4/24/07

File: apcds042407

Transform:

NO TRANSFORMATION

Summary Statistics on Data

TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	DMW - 0.0%	10	0.0000	0.0000	0.0000
2	26.25 ppm	10	0.0000	0.0000	0.0000
3	52.5 ppm	10	0.0000	0.0000	0.0000
4	105 ppm	10	0.0000	0.0000	0.0000
5	210 ppm	10	0.0000	0.0000	0.0000
6	420 ppm	10	1.0000	1.0000	1.0000

Title: Applied Polymer C. dubia Chronic Survival 4/24/07

File: apcds042407

Transform:

NO TRANSFORMATION

Summary Statistics on Data

TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	DMW - 0.0%	0.0000	0.0000	0.0000	N/A
2	26.25 ppm	0.0000	0.0000	0.0000	N/A
3	52.5 ppm	0.0000	0.0000	0.0000	N/A
4	105 ppm	0.0000	0.0000	0.0000	N/A
5	210 ppm	0.0000	0.0000	0.0000	N/A
6	420 ppm	0.0000	0.0000	0.0000	0.0000

Title: Applied Polymer C. dubia Chronic Reproduction 4/24/07
File: apcdr042407 Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	4.0200	14.5200	22.9200	14.5200	4.0200
OBSERVED	5	9	27	18	1

Chi-Square = 6.1665 (p-value = 0.1871)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: Applied Polymer C. dubia Chronic Reproduction 4/24/07

File: apcdr042407

Transform:

NO TRANSFORMATION

Hartley's Test for Homogeneity of Variance

Bartlett's Test for Homogeneity of Variance

These two tests can not be performed because at least one group has zero variance.

Data FAIL to meet homogeneity of variance assumption.
Additional transformations are useless.

Title: Applied Polymer C. dubia Chronic Reproduction 4/24/07

File: apcdr042407

Transform:

NO TRANSFORMATION

Number of Groups: 6

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	DMW - 0.0 ppm	1	6.0000	6.0000
1	DMW - 0.0 ppm	2	21.0000	21.0000
1	DMW - 0.0 ppm	3	23.0000	23.0000
1	DMW - 0.0 ppm	4	17.0000	17.0000
1	DMW - 0.0 ppm	5	17.0000	17.0000
1	DMW - 0.0 ppm	6	14.0000	14.0000
1	DMW - 0.0 ppm	7	18.0000	18.0000
1	DMW - 0.0 ppm	8	14.0000	14.0000
1	DMW - 0.0 ppm	9	19.0000	19.0000
1	DMW - 0.0 ppm	10	24.0000	24.0000
2	26.25 ppm	1	14.0000	14.0000
2	26.25 ppm	2	20.0000	20.0000
2	26.25 ppm	3	14.0000	14.0000
2	26.25 ppm	4	13.0000	13.0000
2	26.25 ppm	5	11.0000	11.0000
2	26.25 ppm	6	24.0000	24.0000
2	26.25 ppm	7	20.0000	20.0000
2	26.25 ppm	8	17.0000	17.0000
2	26.25 ppm	9	22.0000	22.0000
2	26.25 ppm	10	20.0000	20.0000
3	52.5 ppm	1	18.0000	18.0000
3	52.5 ppm	2	17.0000	17.0000
3	52.5 ppm	3	6.0000	6.0000
3	52.5 ppm	4	18.0000	18.0000
3	52.5 ppm	5	17.0000	17.0000
3	52.5 ppm	6	17.0000	17.0000
3	52.5 ppm	7	10.0000	10.0000
3	52.5 ppm	8	20.0000	20.0000
3	52.5 ppm	9	17.0000	17.0000
3	52.5 ppm	10	18.0000	18.0000
4	105 ppm	1	25.0000	25.0000
4	105 ppm	2	19.0000	19.0000
4	105 ppm	3	18.0000	18.0000
4	105 ppm	4	16.0000	16.0000
4	105 ppm	5	22.0000	22.0000
4	105 ppm	6	19.0000	19.0000
4	105 ppm	7	13.0000	13.0000
4	105 ppm	8	17.0000	17.0000
4	105 ppm	9	22.0000	22.0000
4	105 ppm	10	8.0000	8.0000
5	210 ppm	1	20.0000	20.0000
5	210 ppm	2	6.0000	6.0000
5	210 ppm	3	10.0000	10.0000
5	210 ppm	4	15.0000	15.0000
5	210 ppm	5	12.0000	12.0000
5	210 ppm	6	12.0000	12.0000
5	210 ppm	7	10.0000	10.0000
5	210 ppm	8	18.0000	18.0000

5	210 ppm	9	20.0000	20.0000
5	210 ppm	10	18.0000	18.0000
6	420 ppm	1	0.0000	0.0000
6	420 ppm	2	0.0000	0.0000
6	420 ppm	3	0.0000	0.0000
6	420 ppm	4	0.0000	0.0000
6	420 ppm	5	0.0000	0.0000
6	420 ppm	6	0.0000	0.0000
6	420 ppm	7	0.0000	0.0000
6	420 ppm	8	0.0000	0.0000
6	420 ppm	9	0.0000	0.0000
6	420 ppm	10	0.0000	0.0000

*Plotted by NOS 5/10/07
Reviewed by ETS 5/11/07*

Title: Applied Polymer C. dubia Chronic Reproduction 4/24/07
 File: apcdr042407 Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	DMW - 0.0 ppm	10	6.0000	24.0000	17.3000
2	26.25 ppm	10	11.0000	24.0000	17.5000
3	52.5 ppm	10	6.0000	20.0000	15.8000
4	105 ppm	10	8.0000	25.0000	17.9000
5	210 ppm	10	6.0000	20.0000	14.1000
6	420 ppm	10	0.0000	0.0000	0.0000

Title: Applied Polymer C. dubia Chronic Reproduction 4/24/07
 File: apcdr042407 Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	DMW - 0.0 ppm	27.1222	5.2079	1.6469	30.1035
2	26.25 ppm	18.7222	4.3269	1.3683	24.7252
3	52.5 ppm	18.6222	4.3153	1.3646	27.3123
4	105 ppm	23.6556	4.8637	1.5380	27.1715
5	210 ppm	23.2111	4.8178	1.5235	34.1687
6	420 ppm	0.0000	0.0000	0.0000	N/A

Title: Applied Polymer C. dubia Chronic Reproduction 4/24/07

File: apcdr042407

Transform:

NO TRANSFORMATION

Steel's Many-One Rank Test

-

Ho: Control < Treatment

GROUP	IDENTIFICATION	MEAN IN ORIGINAL UNITS	RANK SUM	CRIT. VALUE	DF	SIG 0.05
1	DMW - 0.0 ppm	17.3000				
2	26.25 ppm	17.5000	103.50	75.00	10.00	
3	52.5 ppm	15.8000	96.00	75.00	10.00	
4	105 ppm	17.9000	108.50	75.00	10.00	
5	210 ppm	14.1000	87.50	75.00	10.00	
6	420 ppm	0.0000	55.00	75.00	10.00	*

Critical values are 1 tailed (k = 5)

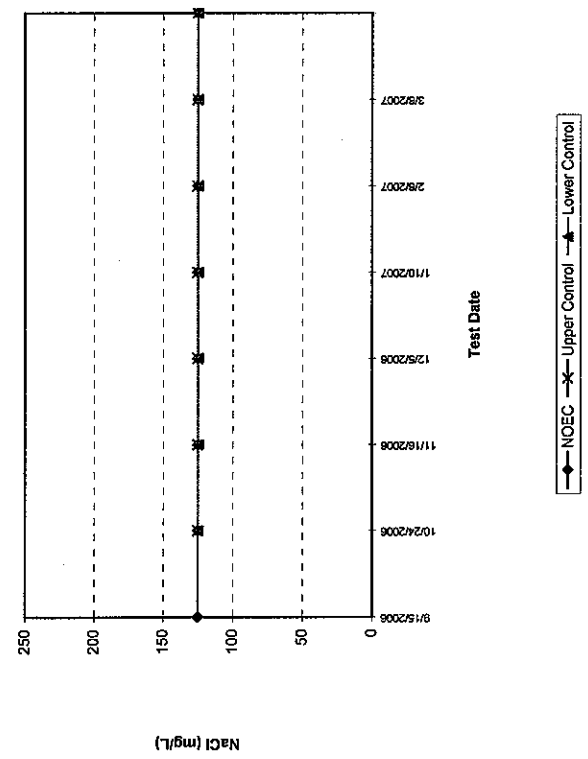
Prod by MAM 5/10/07
Revised by EJS 5/11/07

**Water Flea
Reference Toxicant Data Sheets**

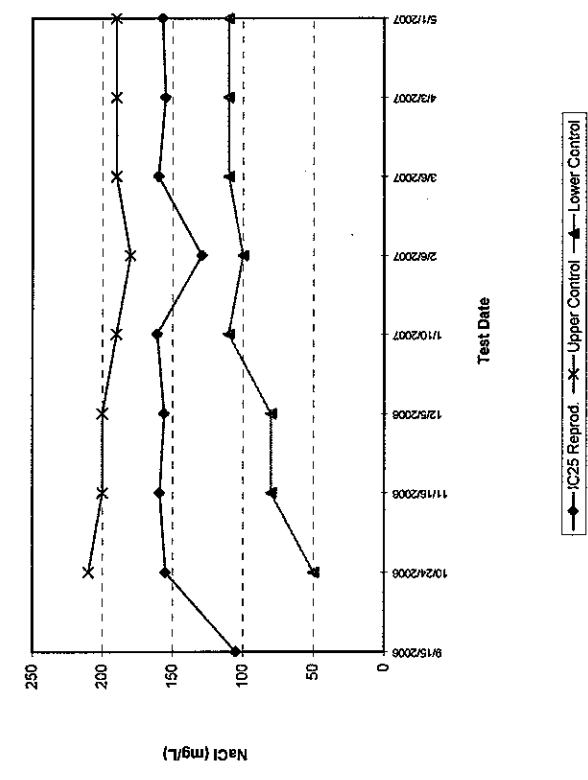
C. dubia Chronic KCl Reference Toxicant Data

Test No.	IRIS	Date	NOEC Surv	Cumulative Mean NOEC	SD	UPPER CONTROL (1.2 cum. SD)	LOWER CONTROL (-2.0 cum. SD)	CUM. SD	UPPER CONTROL (2.0 cum. SD)	LOWER CONTROL (-2.0 cum. SD)
1	EJS	9/15/2006	125	125	0	125	125	105	110	110
2	EJS	10/24/2006	125	125	0	125	125	155	130	130
3	RDM	11/16/2006	125	125	0	125	125	159	140	140
4	RDM	12/5/2006	125	125	0	125	125	166	140	140
5	RDM	1/10/2007	125	125	0	125	125	161	150	150
6	RDM	2/6/2007	125	125	0	125	125	129	140	140
7	RDM	3/6/2007	125	125	0	125	125	160	150	150
8	EJS	4/3/2007	125	125	0	125	125	155	150	150
9	RDM	5/1/2007	125	125	0	125	125	157	150	150

Chronic C. dubia KCl Reference Toxicant Control Chart -- Survival



Chronic C. dubia KCl Reference Toxicant Control Chart -- Reproduction



Reviewed by: *ADA 5/10/07*