APPENDIX 7B.13

CHIRONOMUS TENTANS, LIFE CYCLE CHRONIC TOXICITY TESTS

Chironomus tentans Chronic Survival, Growth, Emergence, and Reproduction Toxicity Tests Conducted on Sediment Samples from the Industriplex Site

Reference BTRs 3152, 3153, 3169, 3189, 3196

Prepared for:
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December 1999

Aquatec Biological Sciences

Ecology | Environmental Toxicology | Natural Resource Assessments | Microbiology

BTRS 3152, 3153, 3169, 3189, 3196

PROJECT: 99026

I have reviewed this data package, which was completed under my supervision. This data package is complete, and to the best of my ability, accurately reflects the conditions and the results of the reported tests.

John W. Williams
Toxicity Laboratory Manager

12/21/99
Date

I have reviewed and discussed this data package with the responsible laboratory manager. Based on this review, the data package was, to the best of my knowledge and belief, conducted in accordance with established company quality assurance procedures.

Philip C. Downey, Ph.D.
Director

12/21/99
Date

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EXECUTIVE SUMMARY

100.5CT Midge, *Chironomus tentans*, Chronic Survival, Growth, Emergence, and Reproduction Test
Conducted July 2 - September 17
for Menzie-Cura & Associates
Industriplex Site

Lab Test ID	Sample ID	Day 20 Mean Survival (%)	Day 20 Mean Ash Weight (mg)	Proportion Emerged (%)	Mean Eggs Hatched/ Female	Mean Days Survived, Female	Mean Days Survived, Male
10219	SD-04 Hall's Brook	38	2.968	45	575	4.5	4.6
10220	SD-12 Hall's Brook	60	3.027	50	552	2.8	2.6
10221	SD-13 Aberjona River	65	2.278	30	735	2.9	1.7
10223	Laboratory Control	38	1.784	36	783	3.8	2.9
10224	SD-03 Phillips Pond	46	3.069	55	725	2.8	1.7
10341	SD-01 Aberjona S. Branch	50	2.838	53	831	3.3	4.9
10342	SD-02 South Pond	27	3.459	42	565	3.5	4.0
10343	SD-10 HBHA Creek	19	1.213	41	666	2.5	4.1
10344	SD-11 HBHA Pond	17	3.933	14	237	1.6	3.6
10346	Laboratory Control	13	0.548	24	503	1.6	4.0
10446	SD-06 HBHA	19	0.946*	18*	539	2.6	2.1*
10447	SD-07 HBHA	Acute Toxicity		--	--	--	--
10449	Laboratory Control	35	3.006	38	584	2.4	5.0
10472	SD-8	65	2.578	51	635	2.5	2.7
10473	SD-9	44	5.619	39	616	2.4	2.8
10474	SD-5	Acute Toxicity		--	--	--	--
10475	SD-5DUP	Acute Toxicity		--	--	--	--

* A statistically significant reduction in the response was observed (relative to the corresponding Laboratory Control, $P<0.05$).

INTRODUCTION:

Samples were received for toxicity testing at Aquatec Biological Sciences of 75 Green Mountain Drive, South Burlington, Vermont. The results of the following tests are reported:

Client:	Menzie-Cura & Associates
Facility/Location:	Industriplex Site
Initial Sampling Date:	June 17, 1999
Testing Dates:	July 2-September 17, 1999
Tests Conducted:	Midge, *Chironomus tentans* Chronic Survival, Growth, Emergence, and Reproduction

METHODS:

Toxicity Tests

The procedures followed in conducting chronic toxicity tests were based on draft methods described by USEPA (EPA 600/R-98/XXX [new number pending]). Test conditions for *Chironomus tentans* are listed in Table 1. Testing was completed in three separate groupings based upon chronological sequencing from the time of sediment collection. The objective for the test groupings was to complete the 10-day acute tests prior to expiration of a project-specific 14-day sediment storage time so that subsequent chronic toxicity tests could be started within a 14-day time frame. The acute toxicity results were reported separately (Aquatec Biological Sciences, August 1999).

Sediments were loaded into beakers for chronic testing within one day after completion of the acute toxicity tests, therefore, the objective of starting all tests within 14-days from the time of collection was accomplished for all samples. Chronic toxicity testing for the first testing group was initiated on July 2, 1999. The second testing group was initiated on July 6, 1999. The third testing group was initiated on July 7, 1999. A laboratory control (artificial sediment) was included with each testing group. Chronic toxicity tests were ended (on an individual sample basis) following seven days with no observed emergence. Overlying water was renewed either automatically or manually. For those samples/replicates renewed automatically, the renewal cycle was programmed for midnight and noon of each day. For samples/replicates renewed manually, the renewal cycle was performed at approximately 7:00 a.m. and 7:00 p.m. daily.

Documentation of renewals and renewal system checks is located in Appendix C.

Sediment Preparation

The samples were stored refrigerated and in the dark whenever they were not being used in preparation for testing. Sediments distributed in test beakers were examined for the presence of indigenous organisms, which were removed when observed. Also, large pieces of vegetative material (e.g., leaf litter, sticks, grass) were removed if observed. Qualitative observations regarding the sediment type and indigenous organisms removed were recorded. The laboratory control sediment (artificial sediment) was prepared following formulations specified in the USEPA protocols and then hydrated prior to distribution to test chambers. Sediments were then distributed to individual replicate test chambers, overlying water was added, and the overlying water renewal system was activated. The unused portion of each sample (in the original sample container) was returned to refrigerated storage.

Statistical Analyses

Statistical endpoints included survival and growth (as measured by mean ash-free dry weight) of midge larvae, evaluated on Day 20. At the end of the test, proportion emergence, reproduction (mean number of eggs per female), and mean number of days male and female flies survived (after emergence) were evaluated.

Statistical comparisons were performed against the concurrent laboratory control. In some cases, where the laboratory control mean response was numerically less than or equal to the test sediment the test samples were judged to be non-significant. If complete mortality was observed in any sample, the response was considered to be significant. Statistical significance for any sample is based upon the most sensitive endpoint observed.

An F-Test was performed to test for equality of variances between each sample and the corresponding control for each endpoint examined. Proportion surviving data were transformed (Arcsin square-root) before analysis. If variances were not significantly different, paired T-Tests with equal variances were used to determine whether there was a significant reduction in the mean response relative to the corresponding control. If the variance between a sample and

control comparison was significantly different, paired T-Tests adjusted for unequal variances were used to identify significant reductions in the response.

PROTOCOL DEVIATIONS:

On August 10/11, 1999 at midnight, the automated overlying water renewal cycle did not function. The programmed 12-hour cycle was re-established at noon on August 11, 1999.

For Sample 10449 an overlying water sample for total ammonia analysis was identified as a Day 44 sample (Testing of this sample was ended on Day 46.). The water sample container may have been mislabeled or the sample identification may have been incorrectly transcribed at the time of analysis. There was a two-day window of uncertainty in regard to the specific day this overlying water sample was collected.

Due to variability in egg production by adult midges, the test organisms (midge larvae less than four hours old) were obtained from two sources. The organisms for the July 2 testing group were larvae from egg cases purchased from outside suppliers, while those larvae used in the July 6 testing group were from egg cases cultured in house. The July 7 testing group consisted of larvae collected from both in house cultures and outside supplier cultures, and were distributed to the test beakers within a 24 hour time period.

On occasion, the number of days that emerged flies survived was not recorded due either to escapes from emergence traps or oviposition chambers, accidental injury, or a laboratory error in recording the number of days until mortality for individual flies. A list of the affected test replicates is located at the end of Appendix C. For those flies where time-to-mortality was not recorded, they were included in the emergence tabulations but were excluded from the days survived tabulations.

RESULTS:

Summary result tabulations and statistical printouts for the *Chironomus tentans* whole sediment toxicity tests are located in Appendix A.

Group 1 Test Results: This group included samples 10219 (SD-04 Hall's Brook), 10220 (SD-12 Hall's Brook), 10221 (SD-13 Aberjona River), and 10224 (SD-03 Phillips Pond). None of the samples in this testing group had survival, growth, emergence, or reproduction responses that were significantly less than the Laboratory Control sample (10223).

Group 2 Test Results: This group included samples 10341 (SD-01 Aberjona S. Branch), 10342 (SD-02 South Pond), 10343 (SD-10 HBHA Creek), and 10344 (SD-11 HBHA Pond). None of the samples in this testing group had survival, growth, emergence, or reproduction responses that were significantly less than the Laboratory Control sample (10346) responses.

Group 3 Test Results: This group included samples 10446 (SD-06 HBHA), 10447 (SD-07 HBHA), 10472 (SD-8), and 10473 (SD-9). Organisms in Sample 10446 displayed a significantly lower mean ash-free dry weight at Day 20, a significantly lower mean proportion emerged, and a significantly lower male fly mean number of days survived when compared to the Laboratory Control sample (10449) corresponding responses. Responses for the other samples in this testing group were not significantly lower than the Laboratory Control sample responses.

Total Ammonia and Sulfide: Measured total ammonia concentrations were less than 25 mg/L in porewater and less than 3 mg/L in overlying water. Total sulfide was not detected (<0.5 mg/L) in any porewater samples during the initial acute toxicity testing, therefore, testing for sulfide in overlying water was not conducted.

QUALITY ASSURANCE:

A standard reference toxicant SRT test was conducted concurrently with each batch of *Chironomus tentans* used in the chronic toxicity tests. The resulting LC50 values fell within control chart limits and were viewed as being acceptable.

Table 1. Test Conditions for the Midge (*Chironomus tentans*) Chronic Whole Sediment Survival, Growth, Emergence and Reproduction Toxicity Test.

ASSOCIATED PROTOCOL: EPA, 1997. Draft *Methods for Measuring the Toxicity and Bioaccummulation of Sediment-associated Contaminants with Freshwater Invertebrates.* Second Edition Method 100.5 (EPA/600/R-98/XXX).

1. Test type:	Whole-sediment toxicity (static renewal)
2. Test temperature:	23 ± 1°C
3. Light quality:	Wide-spectrum fluorescent lights
4. Light illuninance:	500 to 1000 lux
5. Photoperiod:	16 hr. light, 8 hr. dark
6. Test chamber size:	300 mL beaker
7. Sediment volume:	100 mL (distributed to test chambers on the day prior to administration of test organisms)
8. Overlying water volume:	175 mL
9. Renewal of overlying water	Twice daily
10. Age of test organisms:	Larvae less than 24-h old
11. Number of organisms / test chamber:	12
12. Number of replicate test chambers / treatment:	16 (4 for 20-day larval survival and growth and 8 emergence, reproduction, and fly survival). An additional 4 replicates on Day 20 started as a source of auxiliary males
13. Feeding regime:	1.5 mL Tetrafin slurry (1.0 mg/mL) daily
14. Aeration:	None, unless dissoved oxygen in overlying water drops below 2.5 mg/L. Supplemental water renewals may be implemented to raise dissolved oxygen concentrations

Table 1. Test Conditions for the Midge (*Chironomus tentans*) Chronic Whole Sediment Survival, Growth, Emergence and Reproduction Toxicity Test (continued).

15. Overlying water:	Reconstituted water
16. Control sediment:	Formulated sediment (EPA/600/R-94/024, Section 7.2.3.2)
17. Test chamber cleaning:	Overflow screens, as needed
18. Monitoring:	
Overlying water	
Temperature	Daily, one replicate
Dissolved oxygen	At least three days weekly
pH	At least three days weekly
Conductivity	At least Days 0, 20, and end of test
Alkalinity, hardness, and ammonia	At least Days 0, 20, and end of test
Organism behavior	Daily, all replicates
19. Test duration:	On an individual sample basis, when no additional emergence has been recorded for seven consecutive days.
20. End points:	Day 20 survival and growth (ash-free dry weight, larvae dried 60°C - 90°C overnight then ashed at 550°C for 2 h). Reproduction (average hatched eggs produced per female) and number of days emergent flies survived (male and female).
21. Reference toxicant:	96-h acute, water only (KCl)
22. Test acceptability:	Reference or Laboratory Control survival should be 70% or greater on Day 20 with adherence to performance-based criteria outlined in EPA/600/R-98/XXX, Table 15.3
23. Statistical analysis and data interpretation:	Paired-sample hypothesis testing (e.g. t-test) versus the negative control and/or the appropriate reference site. Proportion data transformed (Arc-sine (square-root)) before analysis.

APPENDIX A

Summary of Statistical Tests and Probabilities
Industriplex *Chironomus tentans* Chronic Toxicity Test
BTR: 3152/3153

		Survival				Growth			
Day 20		Proportion Surviving	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]	Average Weight (mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]
10223	Control	0.38				1.784			
10219	Sample	0.38	0.932	0.490		2.968	0.504	0.053	
10220	Sample	0.60	0.663	0.095		3.027	0.995	0.021	
10221	Sample	0.65	0.435	0.056		2.278	0.297	0.122	
10224	Sample	0.46	0.431	0.279		3.069	0.682	0.012	

1. * A statistically significant reduction in the response was observed (relative to the Laboratory Control, $P<0.05$).

Chironomus tentans
Chronic Toxicity Test Results

Menzie-Cura
Industiplex
99026

BTR 3152/3153
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	# Surviving	Proportion Surviving	Mean Proportion Surviving	Day 20 Data: Ashed Pan Wt. + Larval Dry Weight (mg)	Ashed Pan and Ashed Larval Wt. (mg)	# Organisms Weighed	Mean Wt. within Rep (mg)	Mean Wt. Reps I-L (mg)
10223	I	12	8	0.67		2269.25	2263.70	7	0.793	
	J	12	6	0.50		2400.91	2389.55	6	1.893	
	K	12	2	0.17		2431.09	2426.73	2	2.180	
	L	12	2	0.17		2450.37	2445.83	2	2.270	
					0.38					1.784
10219	I	12	4	0.33		2252.19	2239.80	3	4.130	
	J	12	7	0.58		2404.67	2386.86	7	2.544	
	K	12	1	0.08		2288.46	2286.71	1	1.750	
	L	12	6	0.50		2331.89	2314.66	5	3.446	
					0.36					2.968
10220	I	12	9	0.75		2149.65	2131.21	9	2.071	
	J	12	9	0.75		2210.25	2182.69	9	3.062	
	K	12	7	0.58		2515.77	2492.53	7	3.349	
	L	12	4	0.33		2298.07	2283.57	4	3.625	
					0.60					3.027
10221	I	12	5	0.42		2334.39	2321.96	5	2.486	
	J	12	8	0.67		2301.46	2284.68	8	2.098	
	K	12	9	0.75		2407.79	2390.81	9	1.887	
	L	12	9	0.75		2510.65	2486.89	9	2.640	
					0.65					2.278
10224	I	12	4	0.33		2185.63	2174.71	3	3.640	
	J	12	6	0.50		2394.70	2378.76	6	2.657	
	K	12	8	0.67		2400.98	2382.85	7	2.590	
	L	12	4	0.33		2314.98	2301.42	4	3.390	
					0.46					3.069

J 12/10/99

000002

Summary of Statistical Tests and Probabilities
Industriplex *Chironomus tentans* Chronic Toxicity Test
BTR: 3152/3153

		Emergence				Reproduction			
		Proportion Emerged	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]	Mean Eggs Hatched/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]
10223	Control	0.36				783.2			
10219	Sample	0.45	0.585	0.219		574.5	0.676	0.273	
10220	Sample	0.50	0.329	0.235		552.4	0.342	0.236	
10221	Sample	0.30	0.563	0.076		734.8	0.588	0.443	
10224	Sample	0.55	0.381	0.230		724.9	0.286	0.426	

		Days Survived, Female				Days Survived, Male			
		Mean No. Days Survived	F-Test Equal Variance[2]	T-Test Statistical Probability	Statistically Significant[1]	Mean No. Days Survived	F-Test Equal Variance[2]	T-Test Statistical Probability	Statistically Significant[1]
10223	Control	3.8				2.9			
10219	Sample	4.5	0.964	0.192		4.6	0.882	0.072	
10220	Sample	2.8	0.399	0.149		2.6	0.704	0.408	
10221	Sample	2.9	0.945	0.134		1.7	0.924	0.153	
10224	Sample	2.8	0.855	0.088		1.7	0.369	0.118	

1. * A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).
2. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal variances.

000003

Chronic Endpoints

Sample Number	Replicate	Start Count	End of Test Larvae Survived	Emerged Females #	Emerged Males #	Emerged Total #	Proport.	Eggs Total #	Eggs Unhatched #	Eggs Female	Number of Days Survived Female days	Female Ave.	Males days	Males Ave.
10223	A	12	0	4	6	10	0.83	450	450	0	7	2.3	12	2.4
	B	12	0	2	0	2	0.17	2258	0	1129	12	6.0	0	0.0
	C	12	0	1	1	2	0.17	0	0	0	4	4.0	5	5.0
	D	12	0	3	1	4	0.33	3478	0	1159	13	4.3	6	6.0
	E	12	0	2	0	2	0.17	1350	0	675	10	5.0	0	0.0
	F	12	0	2	2	4	0.33	0	0	0	1	1.0	5	2.5
	G	12	0	5	6	7	0.58	4348	0	1449	12	4.0	9	3.0
	H	12	0	2	2	4	0.33	3709	0	1855	8	4.0	8	4.0
Average per sample							0.36			783		3.8		2.9
10219	A	12	0	3	4	7	0.58	4268	0	1423	17	5.7	17	5.7
	B	12	0	1	2	3	0.25	0	0	0	5	5.0	0	0.0
	C	12	0	2	4	6	0.50	2679	1095	792	11	5.5	16	5.3
	D	12	0	1	3	4	0.33	0	0	0	4	4.0	11	3.7
	E	12	0	2	1	3	0.25	3118	100	1509	12	6.0	8	8.0
	F	12	0	3	2	5	0.42	0	0	0	4	1.3	9	4.5
	G	12	0	3	2	5	0.42	1610	300	437	15	5.0	11	5.5
	H	12	0	7	3	10	0.83	3050	0	436	27	3.7	12	4.0
Average per sample							0.45			575		4.5		4.6
10220	A	12	0	2	3	5	0.42	1372	0	686	5	2.5	11	3.7
	B	12	0	5	6	11	0.92	4600	0	920	25	5.0	17	2.8
	C	12	0	1	4	5	0.42	0	0	0	8	8.0	10	2.5
	D	12	0	9	0	9	0.75	4922	0	547	23	2.6	0	0.0
	E	12	0	2	2	4	0.33	2344	12	1166	9	4.5	5	2.5
	F	12	0	2	6	8	0.67	2800	100	1100	2	1.0	26	5.0
	G	12	0	1	5	6	0.50	0	0	0	1	1.0	18	4.5
	H	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
Average per sample							0.59			552		2.8		2.6
10221	A	12	4	1	1	2	0.17	1306	0	1306	3	3.0	0	0.0
	B	12	0	5	2	6	0.42	3217	0	1072	11	3.7	10	5.0
	C	12	0	1	1	2	0.17	1520	0	1520	3	3.0	0	0.0
	D	12	0	7	1	8	0.67	3205	0	458	9	1.3	4	4.0
	E	12	0	1	0	1	0.08	1080	0	1080	5	5.0	0	0.0
	F	12	0	2	0	2	0.17	2145	1260	443	7	3.5	0	0.0
	G	12	0	0	3	3	0.25	0	0	0	0	0.0	5	1.7
	H	12	0	1	5	6	0.50	1340	0	0	4	4.0	13	3.3
Average per sample							0.30			735		2.9		1.7
10224	A	12	0	3	7	10	0.83	4052	0	1351	9	3.0	14	2.3
	B	12	0	3	3	6	0.50	3122	0	1041	8	2.7	2	0.7
	C	12	0	2	5	7	0.58	2600	0	1300	9	4.5	18	3.6
	D	12	0	3	1	4	0.33	1163	4	388	8	2.3	1	1.0
	E	12	0	3	8	11	0.92	1550	30	507	9	3.0	14	2.3
	F	12	0	4	4	8	0.67	3861	500	765	16	4.5	15	3.8
	G	12	0	4	0	4	0.33	1800	0	450	10	2.5	0	0.0
	H	12	0	1	2	3	0.25	0	0	0	0	0.0	0	0.0
Average per sample							0.55			725		2.6		1.7

Summary of Statistical Tests and Probabilities
Industriplex *Chironomus tentans* Chronic Toxicity Test
BTR: 3169

		Survival				Growth			
Day 20		Proportion Surviving	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]	Average Weight (mg)	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant
10346	Control	0.13				0.548			
10341	Sample	0.50	0.885	0.026		2.838	0.954	0.006	
10342	Sample	0.27	0.355	0.100		3.459	0.695	0.001	
10343	Sample	0.19	0.814	0.294		1.213	0.505	0.230	
10344	Sample	0.17	0.134	0.276		3.933	0.558	0.003	

1. * A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

000003

Chironomus tentans
Chronic Toxicity Test Results

Menzie-Cura
Industiplex
99026

BTR 3169
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	# Surviving	Proportion Surviving	Mean Proportion Surviving	Day 20 Data: Ashed Pan Wt. + Larval Dry Weight (mg)	Ashed Pan and Ashed Larval Wt. (mg)	# Organisms Weighed	Mean Wt. within Rep (mg)	Mean Wt. Reps I-L (mg)
10346	I	12	0	0.00				0	0.000	
	J	12	1	0.08		2174.31	2174.04	1	0.270	
	K	12	5	0.42		2388.51	2376.91	5	1.920	
	L	12	0	0.00				0	0.000	
					0.13					0.548
10341	I	12	7	0.58		2250.68	2239.72	4	2.740	
	J	12	3	0.25		2397.52	2386.50	3	3.673	
	K	12	10	0.83		2303.59	2287.26	10	1.633	
	L	12	4	0.33		2327.12	2313.89	4	3.308	
					0.50					2.838
10342	I	12	5	0.42		2150.54	2130.62	5	3.984	
	J	12	2	0.17		2188.84	2181.12	2	3.860	
	K	12	4	0.33		2505.83	2491.48	4	3.587	
	L	12	2	0.17		2287.76	2282.95	2	2.405	
					0.27					3.459
10343	I	12	5	0.42		2332.78	2321.61	5	2.234	
	J	12	0	0.00				0	0.000	
	K	12	2	0.17		2392.06	2389.44	1	2.620	
	L	12	2	0.17				0	0.000	
					0.19					1.213
10344	I	12	1	0.08		2269.23	2263.40	1	5.830	
	J	12	2	0.17		2392.31	2365.52	2	3.395	
	K	12	2	0.17		2432.05	2426.60	2	2.725	
	L	12	3	0.25		2456.90	2445.56	3	3.780	
					0.17					3.933

12/20/99

000006

Summary of Statistical Tests and Probabilities
Industriplex *Chironomus tentans* Chronic Toxicity Test
BTR: 3169

		Emergence				Reproduction			
		Proportion Emerged	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]	Mean Eggs Hatched/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]
10346	Control	0.24				503.0			
10341	Sample	0.53	0.391	0.004		831.1	0.308	0.197	
10342	Sample	0.42	0.422	0.030		565.1	0.419	0.437	
10343	Sample	0.41	0.992	0.087		666.3	0.321	0.335	
10344	Sample	0.14	0.397	0.094		236.9	0.071	0.226	

		Days Survived, Female				Days Survived, Male			
		Mean No. Days Survived	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]	Mean No. Days Survived	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]
10346	Control	1.6				4.0			
10341	Sample	3.3	0.302	0.056		4.9	0.033	0.150	
10342	Sample	3.5	0.483	0.053		4.0	0.065	0.494	
10343	Sample	2.5	0.124	0.180		4.1	0.758	0.457	
10344	Sample	1.6	0.831	0.486		3.6	0.794	0.367	

1. * A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

000007

Chronic Endpoints

Sample Number	Replicate	Start Count	End of Test Larvae Survived	Emerged Females #	Emerged Males #	Emerged Total #	Proport.	Eggs Total #	Eggs Unhatched #	Eggs Female	Number of Days Survived Female days	Ave.	Males days	Ave.
10346	A	12	0	3	2	5	0.42	3860	0	1287	12	4.0	19	5.0
	B	12	0	0	6	6	0.50	0	0	0	0	0.0	24	4.8
	C	12	0	1	2	3	0.25	2376	0	2376	6	6.0	4	2.0
	D	12	0	0	1	1	0.08	0	0	0	0	0.0	3	3.0
	E	12	0	0	1	1	0.08	0	0	0	0	0.0	7	7.0
	F	12	0	0	4	4	0.33	0	0	0	0	0.0	18	6.0
	G	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	H	12	0	2	1	3	0.25	722	0	361	6	3.0	4	4.0
Average per sample							0.24			503		1.5		4.0
10341	A	12	0	3	3	6	0.50	4504	0	1501	14	4.7	17	5.7
	B	12	0	5	5	10	0.83	8469	0	1290	17	3.4	21	4.2
	C	12	0	4	4	8	0.67	2098	0	750	7	2.3	27	6.8
	D	12	0	2	3	5	0.42	1530	3	764	6	3.0	12	4.0
	E	12	0	0	6	6	0.50	0	0	0	0	0.0	21	4.2
	F	12	0	3	3	6	0.50	2775	0	925	14	4.7	15	5.0
	G	12	0	2	5	7	0.58	2840	0	1420	9	4.5	22	4.4
	H	12	1	2	1	3	0.25	0	0	0	8	4.0	5	5.0
Average per sample							0.53			831		3.3		4.6
10342	A	12	0	1	1	2	0.17	806	0	806	4	4.0	5	5.0
	B	12	3	1	3	4	0.33	0	0	0	6	6.0	13	4.3
	C	12	0	2	5	7	0.58	1020	0	510	8	4.0	19	3.8
	D	12	0	2	3	5	0.42	3218	0	1609	7	3.5	13	4.3
	E	12	0	2	1	3	0.25	464	20	232	5	2.5	2	2.0
	F	12	0	3	4	7	0.58	0	0	0	8	2.7	21	5.3
	G	12	0	0	8	8	0.67	0	0	0	0	0.0	34	4.3
	H	12	0	1	3	4	0.33	1364	0	1364	5	5.0	9	3.0
Average per sample							0.42			565		3.5		4.0
10343	A	12	0	2	3	5	0.42	1200	0	600	5	2.5	9	4.5
	B	12	0	4	4	8	0.67	5320	0	1330	15	3.8	11	2.8
	C	12	0	2	5	7	0.58	1764	24	670	7	3.5	11	2.2
	D	12	0	1	1	2	0.17	0	0	0	2	2.0	10	10.0
	E	12	0	1	3	4	0.33	1649	0	1649	4	4.0	8	2.0
	F	12	0	2	4	6	0.50	1090	0	545	2	2.0	17	4.3
	G	12	0	2	3	5	0.42	672	0	336	5	2.5	11	3.7
	H	12	0	0	2	2	0.17	0	0	0	0	0.0	7	3.5
Average per sample							0.41			666		2.5		4.1
10344	A	12	0	1	0	1	0.08	1197	0	1197	4	4.0	0	0.0
	B	12	0	0	2	2	0.17	0	0	0	0	0.0	12	6.0
	C	12	0	0	2	2	0.17	0	0	0	0	0.0	7	3.5
	D	12	0	1	1	2	0.17	265	0	265	4	4.0	8	8.0
	E	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	F	12	0	3	1	4	0.33	2076	778	432	14	4.7	3	3.0
	G	12	0	0	1	1	0.08	0	0	0	0	0.0	4	4.0
	H	12	0	0	1	1	0.08	0	0	0	0	0.0	6	6.0
Average per sample							0.14			237		1.6		3.8

Summary of Statistical Tests and Probabilities
Industriplex *Chironomus tentans* Chronic Toxicity Test
BTR: 3189/3196

		Survival				Growth			
Day 20		Proportion Surviving	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]	Average Weight (mg)	F-Test Equal Variance[2]	T-Test Statistical Probability	Statistically Significant[1]
10449	Control	0.35				3.006			
10446	Sample	0.19	0.522	0.068		0.946	0.751	0.005	*
10472	Sample	0.65	0.492	0.004		2.578	0.416	0.171	
10473	Sample	0.44	0.168	0.348		5.619	0.003	0.260	

1. * A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).
2. If the F-Test result was significant (relative to the Laboratory Control, P<0.05), the T-Test was performed using unequal va

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Chironomus tentans
Chronic Toxicity Test Results

Menzie-Cura
Industiplex
99026

BTR 3189/3196
Aquatec Biological Sciences

Sample Number	Replicate	Start Count	# Surviving	Proportion Surviving	Mean Proportion Surviving	Day 20 Data: Ashed Pan Wt. + Larval Dry Weight (mg)	Ashed Pan and Ashed Larval Wt. (mg)	# Organisms Weighed	Mean Wt. within Rep (mg)	Mean Wt. Reps I-L (mg)
10449	I	12	3	0.25		2139.15	2131.07	3	2.693	
	J	12	3	0.25		2194.30	2183.45	3	3.617	
	K	12	6	0.50		2509.41	2495.14	4	3.568	
	L	12	5	0.42		2295.56	2284.82	5	2.148	
					0.35					3.006
10446	I	12	3	0.25		2242.01	2239.25	3	0.920	
	J	12	2	0.17		2387.71	2386.19	2	0.760	
	K	12	0	0.00				0	0.000	
	L	12	4	0.33		2322.67	2314.26	4	2.102	
					0.19					0.946
10472	I	12	9	0.75		2343.18	2322.46	9	2.302	
	J	12	8	0.67		2300.37	2283.28	8	2.136	
	K	12	7	0.58		2412.09	2391.07	7	3.003	
	L	12	7	0.58		2506.08	2485.98	7	2.871	
					0.65					2.578
10473	I	12	4	0.33		2278.01	2264.06	4	3.488	
	J	12	9	0.75		2403.57	2386.48	9	1.899	
	K	12	1	0.08		2443.37	2427.10	1	16.270	
	L	12	7	0.58		2458.74	2445.01	7	0.619	
					0.44					5.619

12/22/99

Summary of Statistical Tests and Probabilities
Industriplex *Chironomus tentans* Chronic Toxicity Test
BTR: 3189/3196

		Emergence				Reproduction			
		Proportion Emerged	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]	Mean Eggs Hatched/ Female	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]
10449	Control	0.38				584.1			
10446	Sample	0.18	0.627	0.017	*	539.0	0.925	0.444	
10472	Sample	0.51	0.724	0.103		635.0	0.745	0.440	
10473	Sample	0.39	0.535	0.397		615.6	0.405	0.454	

		Days Survived, Female				Days Survived, Male			
		Mean No. Days Survived	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]	Mean No. Days Survived	F-Test Equal Variance	T-Test Statistical Probability	Statistically Significant[1]
10449	Control	2.4				4.0			
10446	Sample	2.6	0.721	0.431		2.1	0.224	0.026	*
10472	Sample	2.5	0.518	0.486		2.7	0.320	0.071	
10473	Sample	2.4	0.673	0.464		2.8	0.139	0.123	

1. * A statistically significant reduction in the response was observed (relative to the Laboratory Control, P<0.05).

				Chronic Endpoints										
			End of Test	Emerged				Eggs			Number of Days Survived			
Sample Number	Replicate	Start Count	Larvae Survived	Females #	Males #	Total #	Proport.	Total #	Unhatched #	Eggs /female	Female days	Ave.	Males days	Ave.
10449	A	12	0	0	1	1	0.08	0	0	0	0	0.0	5	5.0
	B	12	0	2	6	8	0.67	2650	1355	648	7	3.5	10	1.7
	C	12	0	2	5	5	0.42	1518	0	759	4	4.0	16	5.3
	D	12	0	0	4	4	0.33	0	0	0	0	0.0	17	4.3
	E	12	0	2	1	3	0.25	0	0	0	2	1.0	4	4.0
	F	12	0	2	3	5	0.42	3355	0	1676	8	4.0	15	5.0
	G	12	0	4	3	7	0.58	5042	288	1189	20	5.0	12	4.0
	H	12	0	1	2	3	0.25	400	0	400	2	2.0	5	2.5
Average per sample							0.38			584		2.4		4.0
10446	A	12	0	2	0	2	0.17	1376	0	688	8	3.0	0	0.0
	B	12	0	1	2	3	0.25	968	10	956	5	5.0	8	4.0
	C	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
	D	12	0	3	1	4	0.33	2965	0	988	9	4.5	1	1.0
	E	12	0	1	2	3	0.25	1677	0	1677	4	4.0	9	4.5
	F	12	0	2	2	4	0.33	0	0	0	9	4.5	9	4.5
	G	12	2	0	1	1	0.08	0	0	0	0	0.0	3	3.0
	H	12	0	0	0	0	0.00	0	0	0	0	0.0	0	0.0
Average per sample							0.18			539		2.6		2.1
10472	A	12	0	5	4	9	0.75	2552	1556	276	9	2.3	18	4.5
	B	12	0	4	1	5	0.42	5560	1555	906	16	4.0	4	4.0
	C	12	0	2	2	4	0.33	0	0	0	1	0.5	1	0.5
	D	12	0	3	7	10	0.83	780	0	260	3	1.0	16	2.3
	E	12	0	1	7	8	0.67	2160	25	2135	4	4.0	7	1.0
	F	12	0	1	1	2	0.17	744	0	744	2	2.0	0	0.0
	G	12	0	2	4	6	0.50	0	0	0	3	1.5	12	3.0
	H	12	0	2	3	5	0.42	1562	50	756	9	4.5	16	5.3
Average per sample							0.51			635		2.5		2.7
10473	A	12	0	2	4	6	0.50	2753	969	692	10	5.0	21	5.3
	B	12	0	4	3	7	0.58	1850	0	463	2	2.0	2	0.7
	C	12	0	1	1	2	0.17	1180	0	1180	4	4.0	0	0.0
	D	12	0	5	0	3	0.25	2550	394	719	7	3.5	0	0.0
	E	12	0	2	2	4	0.33	1260	0	630	3	1.5	9	4.5
	F	12	0	3	2	5	0.42	1391	1391	0	4	1.3	11	5.5
	G	12	0	0	2	2	0.17	0	0	0	0	0.0	8	4.0
	H	12	0	4	4	8	0.67	4342	177	1041	6	1.5	13	2.8
Average per sample							0.39			616		2.4		2.8

APPENDIX B

Industri-Plex Site
CHAIN OF CUSTODY RECORD

Project No.: 578
Project Name: Industriplex
Project Location: Woburn, MA

DATE: 6/17/99
SAMPLERS: CAM/PK

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL.: 978/453-4300 FAX: 978/453-7260

SAMPLE ID	Date	Comp.	Grab	Station Locations	No. of Containers	Acute Chironomus	Acute Hyalella	Chronic Chironomus	Chronic Hyalella		NOTES
SD-04	6/17		✓	Halls Brook	1	X	X	X	X		
SD-12	6/17		✓	Halls Brook	1	X	X	X	X		
SD-13	6/17		✓	Aberjona Riv	1	X	X	X	X		

Initial Cooler Temp 0.6 °C on delivery

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
[signature]	6/17/99	1800	[signature]	6/18/99	1000
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Laboratory:
Phone:
Contact Person:

Remarks: Halls Brook are reference areas. SD-13 is possibly contaminated with arsenic.

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
578	Industriplex	

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

DATE: 6/18/99

SAMPLERS: CAM

Analyses Required

SAMPLE ID	Date	Comp.	Grab	Station Locations	No. of Containers	Acute Amphipod	Chronic Amphipod	Acute Chironom	Chronic Chironom		NOTES
1229 SD-03	6/18	✓		Phillips Pond	11	X	X	X	X		

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
[signature]	6/18/99	1800			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
	6/19/99	10:30	[signature]		
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Remarks:

Laboratory:

Phone:

Contact Person:

Cooler Temp. [illegible]

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000014

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
578	Industriplex	Woburn

DATE: 6/21/99

SAMPLERS: MA, CM, KC,

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

SAMPLE ID	Date	Comp.	Grab	Station Locations	No. of Containers	Acute Hyalella	Chronic Hyalella	Acute Chironomus	Chronic Chironomus		NOTES
SD-01	6/21	✓		Aberjona S. Branch	1	X	X	X	X		
SD-02	"	✓		South Pond	1	X	X	X	X		
SD-10	"	✓		HBHA Creek	1	X	X	X	X		
SD-11	"	✓		HBHA Pond 3	1	X	X	X	X		

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
[signature]	6/21/99	1800			
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
	6/22/99	11:00	[signature]		
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Laboratory:

Phone:

Contact Person:

Remarks:

Cooler Temp. = 10.3 °C

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
578	Industriplex	Woburn

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

DATE: 6-23-99

SAMPLERS

Analyses Required

SAMPLE ID	Date	Comp.	Grab	Station Locations	No. of Containers	Bioassay Chronic Hischeia	Acute Chronic				NOTES
SD-6	6-23-99		✓	SD-06 HBHA	1	✓	✓				
SD-07	6-23-99		✓	SD-07 HBHA	1	✓	✓				

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Bart Holmes	6-23-99	1220	[signature]	6/24/99	10 W
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Laboratory:

Phone:

Contact Person:

Remarks:
Final 2 Samples for Industriplex Bioassays
Cooler Temp. 9.3°C

CHAIN OF CUSTODY RECORD

Project No.	Project Name:	Project Location:
578	Industri-plex	Woburn

DATE: 6/22/99

SAMPLERS: C. Menzie

MENZIE-CURA & ASSOCIATES, INC.
1 COURTHOUSE LANE, SUITE 2
CHELMSFORD, MA 01824
TEL: 978/453-4300 FAX: 978/453-7260

Analyses Required

SAMPLE ID	Date	Comp.	Grab	Station Locations	No. of Containers	BioAssay					NOTES
SD-8	6/22/99	✓			1	✓					
SD-9	6/22/99	✓			1	✓					
SD-5	6/22/99	✓			1	✓					
SD-5 (dup)	6/22/99	✓			1	✓					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
[signature]	6/22/99	5:13pm	Karen Downey	6/23/99	10:00
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time

Remarks: SD

Laboratory: Aquatech Biological Sciences

Phone: 802-860-1638

Contact Person: John Williams

Cooler Temp = 5.5°C

PAGE OF

APPENDIX C

Midge (*Chironomus tentans*) Chronic Toxicity Test
Day 20 Survival and Dry Weight Data

Client: Menzie-Cura & Assoc.	Project: 99026 Industriplex	BTR: 3152 / 3153
	Test Start: July 2, 1999	Day 20: July 22, 1999

Sample	Repl.	Initial # Larvae	# Alive	7/22/99 Init.	Larvae preserved? Y / N	Repick 8-5-99 CM	③ # Weighed	Crucible # / Ashed Pan Wt.	Ashed Pan Wt. + Larval Dry Wt.	Ashed Pan and Ashed Larval Wt.
10219	I	12	3 larvae/1 pupa	JJG	Y	0	3	1-2239.06	2252.18	2239.80
	J	12	JG ~~3 larvae/1 pupa~~	(7) JJG	Y	0	7	3-2386.02	2404.67	2386.86
	K	12	1	JJG	Y	0	1	4-2286.64	2288.96	2286.71
	L	12	② 5+1 emerged	SAT	Y	0	5	5-2313.31	2331.89	2314.66
10220	I	12	9	JJG	Y	0	9	6-2129.87	2149.85	2131.21
	J	12	9	JJG	Y	0	9	7-2180.97	2210.25	2182.69
	K	12	① 7	JJG	Y	0	7	8-2491.02	2515.77	2492.33
	L	12	4	SAT	Y	0	4	9-2282.86	2298.07	2283.57
10221	I	12	5	JJG	Y	0	5	10-2320.95	2334.39	2321.96
	J	12	8	JJG	Y	0	8	11-2282.19	2301.46	2284.68
	K	12	9	SAT	Y	0	9	12-2389.33	2407.79	2390.81
	L	12	9	JJG	Y	0	9	13-2484.62	2510.65	2486.89
10223	I	12	8	JJG	Y	0	④ 7	14-2263.20	2269.25	2263.70
	J	12	6		Y	0	6	15-2385.24	2400.91	2389.55
	K	12	2		Y		2	16-2426.15	2431.09	2426.73
	L	12	2		Y	0	2	17-2444.75	2450.37	2445.83
10224	I	12	3 larvae/1 pupa	JJG	Y		3	18-2174.06	2185.63	2174.71
	J	12	6	JJG	Y		6	19-2377.44	2394.70	2378.76
	K	12	7 larvae/1 pupa	SAT	Y		7	20-2380.35	2400.98	2382.85
	L	12	4	SAT	Y		4	21-2300.35	2314.98	2301.42

J 9/9/99

55°C

Date / Time / Init. Larvae in oven: 9/9/99-1615 Date / Time / Init. Larvae out of oven: 9/10/99-1415 84°C

Date / Time / Init. Larvae in furnace: 9/10/99 1438 Date / Time / Init. Larvae out of furnace: 9/10/99 1648

J 2000 545°C - 559°C

Balance QC: Initial (20 mg = 2000.04) Final (20 mg =) Balance Asset #: 708

Date/time in ~~Temp(°C)~~ J 9/10/99 Init. Date/time out ~~Temp(°C)~~ Init.

Comments: ① one dead found floating.

② One fly has already emerged (pupal body cast floating). J

③ Rinsed w/ DI H_2O prior to transfer to crucibles J 9/9/99

④ 7 found in vial J 9/9/99

Reviewer: J Date: 12/15/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

ctday20doc

000018

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10219 A	# Males emerged				1	1			1 vie			
	# Females emerged								1			
	Cumulative number emerged				1	2			45			
	Male Time to Mortality (days)				3 days (1/24)	7 d (8/1)			6 days (8/1)			
	Females Time to Mortality (days)											
	Pairings #								1			
	Egg Case # / No. Eggs / Time to hatch / # hatched									1 1140 (8/1)		
										-5 2nd case 3/24	100% hatch 8/4	
10219 B	# Males emerged				2 D							
	# Females emerged											
	Cumulative number emerged				2							
	Male Time to Mortality (days)				0 days 0 days							
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10219 C	# Males emerged							1				
	# Females emerged											
	Cumulative number emerged							1				
	Male Time to Mortality (days)							8 d (8/5)				
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: [signature] Date: 11/30/99

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10219 D	# Males emerged							1		1d		1
	# Females emerged											
	Cumulative number emerged									2		
	Male Time to Mortality (days)							3 (7/3)		0		8d (8/1)
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched				1							
10219 E	# Males emerged					1						
	# Females emerged											1
	Cumulative number emerged					1						2
	Male Time to Mortality (days)					8d (8/3)						
	Females Time to Mortality (days)											7 days (8/8)
	Pairings #											1 w/219 D male
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10219 F	# Males emerged				1 D male	1						
	# Females emerged								3		X	
	Cumulative number emerged				1	2			5			
	Male Time to Mortality (days)				0	9 days (3/4)						
	Females Time to Mortality (days)								1 3 1 3 2d			
	Pairings #					1 pairing w/ 219 F			1 pairing w/ 219 F			
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10219 G	# Males emerged						1					
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)						6 (8/2)					
	Females Time to Mortality (days)										5 (8/5)	
	Pairings #										1 w/ 4/6	
	Egg Case # / No. Eggs / Time to hatch / # hatched											eff. 1,210.4
												100% hatch 8/4
10219 H	# Males emerged			1								X
	# Females emerged			1		1	X	1	1 X	2	1 X	
	Cumulative number emerged			2		3		5	6	8 2 1		
	Male Time to Mortality (days)			4 (7/28)				5 (8/2)	4 (8/1)			4 (8/1)
	Females Time to Mortality (days)			5 (7/29)		1 d			2	3 6 (8/5)		
	Pairings #			1		1 (1) 215 AM	(1)	1	10 sing	6 (8/2)	1	
	Egg Case # / No. Eggs / Time to hatch / # hatched			1 ♂	1 EST 1150 eggs 100% hatch 7/30		2° case 1 partial ≈300 eggs Not sent for hatching 2°		1 1900 eggs 100%	1 partial 2°	1 w/ 720 (2°) (2)	
	Init./Date (1999)	7/22	7/23 ♂	7/24 ♂	7/25 ♂	7/26 ♂	7/27	7/28 SDT	7/29 SAG	7/30 JJG	7/31 SA	8/1 JJG

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for files which emerge but are not surviving.

Comments: (1) No egg case FD.

(2) 2° egg cases not included in tabulation. ♂

Review: ♂ Date: 11/30/99

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10219 A	# Males emerged	7/28			7/31							
	# Females emerged	1										
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)	6 days 8/8										
	Pairings #				1 w/2496							
	Egg Case # / No. Egga / Time to hatch / # hatched				1 w/2490	1 case 8/3 356 100% 8/13						
10219 B	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Egga / Time to hatch / # hatched											
10219 C	# Males emerged	1			1 ● 7/28	1						
	# Females emerged	1			1	1						
	Cumulative number emerged											
	Male Time to Mortality (days)	5d (8/10)				5 days (8/11)						
	Females Time to Mortality (days)	4 (8/10)			4d (8/9)	3d (8/9)						
	Pairings #	1 w/2496 Male 7/28			1 w/2496 8/13	1						
	Egg Case # / No. Egga / Time to hatch / # hatched					1° case (1 ms) 1° case (8/9) 100% 8/13	No egg case 8/13	No egg case				
	Init./Date (1999)	8/2 JG	8/3	8/4	8/5 JG	8/6 DR	8/7	8/8	8/9 JG	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

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● male missing from R/O chamber (w/2496 Female) 8/5

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Dead and not recorded? JG (Assume it died on 8/8 (3 days)

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3156 / 3189~~ 3152/3153	Test Start: 7/~~1~~20/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10219 D	# Males emerged								1			
	# Females emerged								1			
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)								4d (8/9)			
	Pairings #										1	
	Egg Case # / No. Eggs / Time to hatch / # hatched										eggs (1) egg case male (Jossch)	
10219 E	# Males emerged		1 7/26									
	# Females emerged		1									
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)		5 days (8/8)									
	Pairings #		1 w 2 ♂									
	Egg Case # / No. Eggs / Time to hatch / # hatched		1 568	1 dead male								
		97%	40 8/8 hatch 8/10	175 (993)	60 unhatched 8/11 = 97%							
10219 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2	8/3 JJG	8/4	8/5	8/6	8/7	8/8	8/9 JG	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

① Eggs not included in data tabulation

Review: [illegible] Date: 11/30/99

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3156 / 3159~~ 3152/3153	Test Start: 7/~~8~~2/99

Sample / Rept.	Response	31	32	33	34	35	36	37	38	39	40	41
10219 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10219 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2	8/3	8/4	8/5	8/6	8/7	8/8	8/9	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:

Review: _____ Date: 11/30/99

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FOR THIS SAMPLE = 8/16/99 female ended 8/23/99

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10219 A	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
10219 B	# Males emerged											
	# Females emerged	1										
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
10219 C	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

(1) Assume female emerged on 8/13/99 and lived 5 days (until 8/18/99) (the "1" was not recorded)

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10219 D	# Males emerged											
	# Females emerged	~~X~~ 8/9										
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10219 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10219 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10219 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
10219 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:
- DATE OF LAST EMERGENCE = 8/16/99
- ALL REPS ENDED 8/23/99
- No larvae or pupae found 8/23/99 JJG

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10220 A	# Males emerged			1						X		1 dead
	# Females emerged								1	X		
	Cumulative number emerged			1					2			
	Male Time to Mortality (days)			6 d (7/31)								
	Females Time to Mortality (days)								10 (7/31)			
	Pairings #								1			
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10220 B	# Males emerged					1	1					X
	# Females emerged											2
	Cumulative number emerged					1	2					4
	Male Time to Mortality (days)					6 (8/1)	7d (8/2)					
	Females Time to Mortality (days)											7 days 7 days (8/8)
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10220 C	# Males emerged				1	1		1		1		
	# Females emerged											
	Cumulative number emerged				1	2				4	5	
	Male Time to Mortality (days)				4	0				4 (8/5)		
	Females Time to Mortality (days)											
	Pairings #										1	
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30 JJG	7/31	8/1 JJG

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10220 D	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10220 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10220 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

e = escaped.

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10220 G	# Males emerged			3	1	1 E						
	# Females emerged				1	x						
	Cumulative number emerged			3	5	6						
	Male Time to Mortality (days)		(7/23)	4 / 5 / 5	9 (7/24)							
	Females Time to Mortality (days)			(7/24)	1 (7/24)	1d						
	Pairings #				1	1						
	Egg Case # / No. Eggs / Time to hatch / # hatched					0						
10220 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments: E = escaped

Review: [signature] Date: 11/30/99

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10220 A	# Males emerged	1										
	# Females emerged				1							
	Cumulative number emerged											
	Male Time to Mortality (days)	5 days (8/7)										
	Females Time to Mortality (days)				4d (8/9)							
	Pairings #				1 w/ 220 [illegible]							
	Egg Case # / No. Eggs / Time to hatch / # hatched					1° case 1,372 100% 8/13						
10220 B	# Males emerged	2	1/27	2 (body [illegible])								
	# Females emerged	2		1								
	Cumulative number emerged											
	Male Time to Mortality (days)	1,3 days		0 days								
	Females Time to Mortality (days)	1,2 days 5 days (8/7)		4 days (8/8)								
	Pairings #	2		1 (w/ [illegible] male 220-D)								
	Egg Case # / No. Eggs / Time to hatch / # hatched	8	1,222 100% 8/6 1,398 100% hatch (8/8)		(1) est. 1,980 100% 8/10	2° case from 1 female						
10220 C	# Males emerged				7/20							
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2 JJG	8/3 JJG	8/4	8/5 JJG	8/6 SAT	8/7	8/8	8/9 JG	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3156 / 3189~~ 3152 / 3153	Test Start: 7/7/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10220 D	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10220 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10220 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2 JG	8/3 JG	8/4	8/5	8/6	8/7	8/8	8/9 JG	8/10	8/11	8/12 JG

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

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000032

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3150 / 3169~~ 3152/3153	Test Start: ~~7/1/99~~ 7/2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10220 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10220 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2	8/3	8/4	8/5	8/6	8/7	8/8	8/9	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:

Review: _____ Date:

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Rept.	Response	42	43	44	45	46	47	48	49	50	51	52
10220 A	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
								6 larvae 0 pupae				
10220 B	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
								0 larvae 0 pupae				
10220 C	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
								0 pupae 0 larvae				
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19 NG	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

10220 Sample ended on 8/19/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10220 D	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10220 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10220 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Rept.	Response	42	43	44	45	46	47	48	49	50	51	52
10220 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
								0 larvae 0 pupae				
10220 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
								0 larvae 0 pupae				
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19 JJG	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments: – DATE of last emergence (10220) = 8/12/99 JJG
– All Reps ended JJG
– No larvae or pupae found JJG 8/19/99

Review: _____ Date: 11/30/99

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10221 A	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10221 B	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10221 C	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10221 D	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/22/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10221 G	# Males emerged						2 D					
	# Females emerged											
	Cumulative number emerged											3
	Male Time to Mortality (days)						0					5 (8/6)
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10221 H	# Males emerged				1 E				1			
	# Females emerged											
	Cumulative number emerged								2			
	Male Time to Mortality (days)								2 (8/1)			
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28 SDT	7/29 SHA	7/30	7/31	8/1 JKS

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:

E = escaped

Review: [signature] Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
~~10219 A~~ 10221 JJG	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 B	# Males emerged							1				
	# Females emerged							1				1
	Cumulative number emerged											
	Male Time to Mortality (days)								2d (8/12)			
	Females Time to Mortality (days)								4d (8/12)			7d (8/14)
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched								1,782 / 100% 8/16			
10221 C	# Males emerged	1 dead										
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)	0										
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2 JJG	8/3	8/4	8/5	8/6	8/7	8/8	8/9 JJG	8/10 JJG	8/11	8/12 JJG

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: [illegible] Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3156 / 3180~~ 3152/3153	Test Start: 7/~~8~~/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10221 D	# Males emerged			1								
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)			4 days (8/8)								
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched	31,188 also 2 2° case 100% hatch 8/7										
10221 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10221 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2	8/3	8/4	8/5	8/6	8/7	8/8	8/9	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: ____ Date: 11/31/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex | BTR: ~~3156~~ 3152/3159 | Test Start: 7/~~7~~2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10221 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)				1 (8/6)				2 days (8/10)			
	Females Time to Mortality (days)				1 (8/9)							
	Pairings #				1	1 w/22 D 8/14						
	Egg Case # / No. Eggs / Time to hatch / # hatched						1340 eggs 100% 8/14					
	Init./Date (1999)	8/2	8/3	8/4	8/5 JG	8/6 SK	8/7	8/8	8/9 JG	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10221 A	# Males emerged					1d						
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)										3d (8/25)	
	Pairings #										1w/2[illegible]	
	Egg Case # / /No. Eggs / Time to hatch / # hatched											1,306 100% 8/30
10221 B	# Males emerged	8/8	1									
	# Females emerged						1d					
	Cumulative number emerged											
	Male Time to Mortality (days)		5d (8/19)									
	Females Time to Mortality (days)						0					
	Pairings #		1 22[illegible] 8/12 or w/ 22[illegible]									
	Egg Case # / /No. Eggs / Time to hatch / # hatched			1,435 100% hatched 8/23								
10221 C	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)						3d (8/2[illegible])					
	Pairings #						1w 3[illegible] 8/1[illegible]					
	Egg Case # / /No. Eggs / Time to hatch / # hatched							1,520 JG 100% 8/1[illegible]				
	Init./Date (1999)	8/13 JG	8/14 JG	8/15 JG	8/16	8/17 SH	8/18 SH	8/19 JG	8/20	8/21 [illegible]	8/22	8/23 JG

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: [illegible] Date: 8/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10221 D	# Males emerged											
	# Females emerged				1			1				
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)				3d (8/18)			3d (8/22)				2d (8/25)
	Pairings #				221P Aux ♂				W/221H ♂ 8/18			W/221O Aux ♂
	Egg Case # / No. Eggs / Time to hatch / # hatched						1,148 → 2° case			1° 869 100% 8/28		
							100% 8/25					
10221 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)				5d (8/21)							
	Females Time to Mortality (days)											
	Pairings #							W/221 NO 8/13				
	Egg Case # / No. Eggs / Time to hatch / # hatched								1,080 100% 8/27			
10221 F	# Males emerged											
	# Females emerged	8/10							1			
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)								4d (8/24)			
	Pairings #								W/221N Aux ♂			
	Egg Case # / No. Eggs / Time to hatch / # hatched									885 100% 8/29		2° case
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10221 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 H	# Males emerged						1					
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)						8d (8/26)					
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18 SR	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	53	54	55	56	57	58	59	60	61	62	63
10221 A	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
							* 4 larvae					
10221 B	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 C	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/24	8/25	8/26	8/27	8/28	8/29	8/30	8/31	9/1	9/2	9/3

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: [signature] Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	53	54	55	56	57	58	59	60	61	62	63
10221 D	# Males emerged											
	# Females emerged		0									
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 F	# Males emerged											
	# Females emerged	19/22										
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/24	8/25	8/26	8/27	8/28	8/29	8/30	8/31	9/1	9/2	9/3

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	53	54	55	56	57	58	59	60	61	62	63
10221 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10221 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/24	8/25	8/26 JG	8/27	8/28	8/29	8/30	8/31	9/1	9/2	9/3

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments: Last Date of Emergence = 8/23/99
All Reps ended 8/30
- No pupae found.
*4 larvae found in 10221 A 8/30/99 JJG

Review: _____ Date: 11/30/99
Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10223 A	# Males emerged			1		1D	2 (1E)		1			1
	# Females emerged								1		1 1d	1
	Cumulative number emerged					2			3 (8/1)		5	
	Male Time to Mortality (days)			7/26 2-0215		0	7d (8/3)				3d (8/3)	
	Females Time to Mortality (days)								3d (8/2)			
	Pairings #								1-1223A		1-1223	1
	Egg Case # / /No. Eggs / Time to hatch / # hatched											est. 450
												8/9 0% hatch (fungus)
10223 B	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10223 C	# Males emerged											1
	# Females emerged											1
	Cumulative number emerged											
	Male Time to Mortality (days)											5d (8/1)
	Females Time to Mortality (days)											4d (8/5)
	Pairings #											1
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

E = escaped.

Review: [signature] Date: 11/31/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10223 D	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
10223 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
10223 F	# Males emerged					1 — x					1	
	# Females emerged								1	1 — x		
	Cumulative number emerged					1			2	3	4	
	Male Time to Mortality (days)					1d (7/27)					4 (8/4)	
	Females Time to Mortality (days)									1 (7/31)		
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: [signature] Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10223 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
10223 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / #No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments: (D) 2° egg case not scored / discarded.

E = escaped

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10223 A	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10223 B	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10223 C	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2 JJG	8/3 JJG	8/4	8/5 JJG	8/6	8/7	8/8	8/9	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3156 / 3169~~ 3152/3153	Test Start: 7/~~7~~2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10223 D	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10223 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10223 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2	8/3	8/4	8/5 JJG	8/6	8/7	8/8	8/9 JG	8/10 JG	8/11	8/12 JG

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3156 / 3189~~ 3152/3153	Test Start: 7/~~1~~2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10223 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10223 H	# Males emerged	1										
	# Females emerged	1	1/2									
	Cumulative number emerged											
	Male Time to Mortality (days)	3 (8/5)										
	Females Time to Mortality (days)	4d (8/6)										
	Pairings #	[illegible]										
	Egg Case # / /No. Eggs / Time to hatch / # hatched	2° case	1,822 8/10 109 8/8	2° case								
	Init./Date (1999)	8/2	8/3 JJG	8/4	8/5 JJG	8/6	8/7	8/8	8/9	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:

Review: [signature] Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10223 A	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10223 B	# Males emerged											
	# Females emerged								X			
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)	7d (8/20)		5d (8/20)								
	Pairings #	w/223P AUX ♂		w/223N AUX ♂								
	Egg Case # / /No. Eggs / Time to hatch / # hatched		590 SM 100% 8/20		20 CZ	1/600 100% 8/23						
10223 C	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13 JG	8/14 JG	8/15 JG	8/16 JG	8/17	8/18	8/19	8/20 JG	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: [signature] Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10223 D	# Males emerged						K 8/12					
	# Females emerged					K 8/11						
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched	9/10 2230 9/11 2,040 100% 8/10	20 case									
10223 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10223 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10223 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10223 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments: LAST DATE of Emergence = 8/15/99
ALL Reps ended
No larvae or pupae found. 8/22/99 JJG

Review: _____ Date: 11/30/99
Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10224 A	# Males emerged			1 D	1		2 1E			1		
	# Females emerged					1				1		
	Cumulative number emerged			1	2	3	5			2		
	Male Time to Mortality (days)			0	3d (7/28)		Mean (5) (8/1)			paired 6 (8/4)		
	Females Time to Mortality (days)					4d (7/30)				3 (8/4)		
	Pairings #					1 w/ 22A m (7/26)				1		
	Egg Case # / No. Eggs / Time to hatch / # hatched						0	1	1 w/22A (2° egg case discarded)		372 or approx. 1 egg case (8/4)	100% hatch
								Est 2000 eggs				
10224 B	# Males emerged						1 surface emerg					
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)						1d (7/28)					
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10224 C	# Males emerged			3 (D) 1 2			1		2			
	# Females emerged								1	1		
	Cumulative number emerged			2			3		6	7		
	Male Time to Mortality (days)			5 (7/24)			6 (8/2)		1 days, 6 days	(7/30) (8/4)		
	Females Time to Mortality (days)								6 days (8/4)	3 (8/2)		
	Pairings #								1			
	Egg Case # / No. Eggs / Time to hatch / # hatched									1 2000 eggs (100% hatch 8/4)	3° (8/4)	
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

(D) One injured, died – lab error

E = fly escaped.

Review: _____ Date: 11/3/94

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10224 D	# Males emerged								1			
	# Females emerged											
	Cumulative number emerged								1			
	Male Time to Mortality (days)								1d (7/30)			
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10224 E	# Males emerged							1			3	
	# Females emerged					1		1				
	Cumulative number emerged							3			6	
	Male Time to Mortality (days)							2d (7/30)			A(1) 4 degs	
	Females Time to Mortality (days)					4d (7/30)		2 (7/30)			4 degs (8/4)	
	Pairings #					1 (7/24)		1				
	Egg Case # / No. Eggs / Time to hatch / # hatched						0	1 EST 300 eggs	1 1250 eggs			
								① 90% 8/2				
10224 F	# Males emerged			1								
	# Females emerged					1						
	Cumulative number emerged			1		2						
	Male Time to Mortality (days)			5d (7/25)								
	Females Time to Mortality (days)					2d (7/28)						
	Pairings #					1 (7/25)						
	Egg Case # / No. Eggs / Time to hatch / # hatched						Eggs w/o case EST 200					
							0% hatch					
	Init./Date (1999)	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

① 8/2 ~30 unhatched

Review: [signature] Date: 11/12/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	20	21	22	23	24	25	26	27	28	29	30
10224 G	# Males emerged											
	# Females emerged						1 M 22AC M		1	X	1	X
	Cumulative number emerged						1		2		3	
	Male Time to Mortality (days)											
	Females Time to Mortality (days)						5 (8/1)		1 day (7/30)		4 days (8/4)	
	Pairings #						1		1 w/ 22AC		1	
	Egg Case # / No. Eggs / Time to hatch / # hatched							1 5 (8/2)	1 20 egg			
								100% 8/2	1 2 discarded			
10224 H	# Males emerged							1D 1E				
	# Females emerged											
	Cumulative number emerged							2				
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	7/22	7/23	7/24 J	7/25 J	7/26 J	7/27 J	7/28 J	7/29 J	7/30 J	7/31 J	8/1 JJG

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:

E = escaped.

Review: J Date: 11/31/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10224 A	# Males emerged				X	2d						
	# Females emerged	X 4/4										
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10224 B	# Males emerged					1d		1 (8/4) X				
	# Females emerged	X	1			X			1	1 No male avail.		
	Cumulative number emerged											
	Male Time to Mortality (days)							1d (8/4)				
	Females Time to Mortality (days)		3 (8/6)						2 (8/8)	3d (8/13)		
	Pairings #	1/4 24 male	1/3						1/4 22 F 8/10			1/4 22 M 8/20
	Egg Case # / No. Eggs / Time to hatch / # hatched		1,422 30 days							(1) 1,900 100% 8/16		
			100% 8/8									
10224 C	# Males emerged	X 8/29										
	# Females emerged	X 8/30										
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2 JJG	8/3 JJG	8/4	8/5 JJG	8/6	8/7	8/8	8/9 JG	8/10 JG	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3156 / 3180~~ 3152/3153	Test Start: 7/7/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10224 D	# Males emerged											
	# Females emerged	1					1 dead					
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)	3d (8/6)					0 days					
	Pairings #	1 w/ 2 off male										
	Egg Case # / No. Eggs / Time to hatch / # hatched		0 egg case	No egg case								
10224 E	# Males emerged	1	1									
	# Females emerged			1 (set free) escaped ①	1							
	Cumulative number emerged											
	Male Time to Mortality (days)		3d (8/6)									
	Females Time to Mortality (days)				3 days (8/8)							
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10224 F	# Males emerged	1	1				1					
	# Females emerged		1	1	1	1	1					
	Cumulative number emerged											
	Male Time to Mortality (days)	4d (8/6)	3 days (8/6)				3d (8/10)					
	Females Time to Mortality (days)			5d (8/9)	(8/9)	3 days (8/11)						
	Pairings #				1		1		1 2 pairs w/ aux.			
	Egg Case # / No. Eggs / Time to hatch / # hatched				①EST. 1,239 100% 8/9	1 egg		1 1,188 99% 100% 8/15				
	Init./Date (1999)	8/2 JSG	8/3	8/4	8/5 JG	8/6	8/7	8/8	8/9 JG	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

① Designated as male for data tabulation

Review: CT Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: ~~3156 / 3169~~ 3152/3153	Test Start: 7/~~1~~2/99

Sample / Repl.	Response	31	32	33	34	35	36	37	38	39	40	41
10224 G	# Males emerged											
	# Females emerged	1 squished 8/16			1	X						
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)	0			13							
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10224 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/2 JJG	8/3	8/4	8/5 JJG	8/6	8/7	8/8	8/9	8/10	8/11	8/12

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments:

Review: [illegible] Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10224 A	# Males emerged											
	# Females emerged	1										
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)	2d 18h (15)										
	Pairings #	w/22M Quick										
	Egg Case # / No. Eggs / Time to hatch / # hatched		NO case									
10224 B	# Males emerged											
	# Females emerged	38/10										
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10224 C	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13 JG	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10224 D	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10224 E	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
10224 F	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15 DG	8/16 MG	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Review: _____ Date: 11/30/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

Midge (*Chironomus tentans*) Chronic Toxicity Test Biological Monitoring

Project: 99026 M-C Industriplex	BTR: 3152 / 3153	Test Start: 7/2/99

Sample / Repl.	Response	42	43	44	45	46	47	48	49	50	51	52
10224 G	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
10224 H	# Males emerged											
	# Females emerged											
	Cumulative number emerged											
	Male Time to Mortality (days)											
	Females Time to Mortality (days)											
	Pairings #											
	Egg Case # / /No. Eggs / Time to hatch / # hatched											
	Init./Date (1999)	8/13	8/14	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22	8/23

Emergence scoring: Record the # completely emerged (#C) and the number partially emerged (#P). Also record any pupae which die (D) before emergence. D = dead for flies which emerge but are not surviving.

Comments: LAST DATE of Emergence = 8/15/99
All Reps ended.
No larvae or pupae found 8/22/99 JJE

Review: _____ Date: 11/30/99

Laboratory: Aqualec Biological Sciences, South Burlington, Vermont

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Chironomus tentans Culture and Pre-test Environmental Conditions Data

Egg Deposit Date: 6/29	Larval Hatch Date:	Culture ID: 7/2/99 ECT
Culture Source (flies): ~~Aquatec~~ ECT	No. Egg Cases:	

Instructions: Isolate egg cases in petri dish with sediment recon. water. Hold in petri dish up to two days or until larval hatching begins. Add mono-layer of *Selenastrum* prior to hatching. Transfer egg cases with hatching larvae to culture box with mono-layer of fine sand, water, and *Selenastrum*. Feed daily increasing amounts of Cerophyll/Tetrafin slurry to match consumption rates (food should not accumulate). Measure water chemistry / change 80% of water weekly. Measure temperature daily in one representative culture. Split cultures if needed to accomodate larval growth. When emergence occurs, remove flies daily to mating flask or disposal flask. Remove discarded body casies.

Date	Day	Temp	pH	DO	Cond	Fed	WC	Observations	Init.
7/2	0	—	—	—	—	—		Used for M-C Chronic Test	
								as hatching from egg case	
7/3	1					✓			
7/4	2					✓			
7/5	3					✓			
7/6	4					✓			
7/7	5					✓			JJG
7/8	6					TC			JJG
7/9	7	22.2				TC			
7/10	8					✓			
7/11	9					✓			CC
7/12	10					✓			JJG
7/13	11					✓			JJG
7/14	12					✓			JJG
7/15	13							used for SRT	JJG

Culture Terminated 7/15/99 JJG

Environmental Consulting & Testing
1423 N. 8th St. Suite 118 • Superior, WI 54880

SHIPPING DATE: 06-29-99

FROM: ECT SUPERIOR, WI.

TO: AQUATEC
75 GREEN MT. DR.
SOUTH BURLINGTON, VT 05403
802-860-1638

SPECIES: MIDGE (C. tentans)

DATE OF DEPOSITION: 06-29-99

NUMBER: 3 + EGG MASSES

TEMP. AT SHIPPING: 23.2 C

P.O.#: 614 VERBAL: J. WILLIAMS

SHIPPED BY: Fed. Ex. 1706-1491-7

WATER CHEMISTRY RECORDS

TEMPERATURE	22 to 24	AS Co
CONDUCTIVITY	100 to 200	AS UMHOS/CM
T.HARDNESS	60 to 90	AS CACO3
T.ALKALINITY	40 to 60	AS CACO3
pH	7.3 to 7.8	

Originally obtained from culture at EPA Duluth, MN
Fed TETRA MIN slurry.

Rec. 6/30/99
Used for chronic test
Start on 7/2/99
Grow out for SRT. ✓

000068

Midge (*Chironomus tentans*) Overlying Water Environmental Monitoring: Chronic Toxicity Tests

Project: Menzie-Cura & Associates	Project: 99026 Industriplex	BTR: 3152 / 3153 Test Starts 7/2/99

		Day of Analysis										
Sample	Parameter	0	1	2	3	4	5	6	7	8	9	10
10219	T (°C)	24.0	22.4	22.4	22.7	22.5	22.9	21.8	22.7	23.9	21.0	22.7
	pH	7.2	7.4	7.8	7.6	7.7	7.6		7.6	7.5	7.6	7.6
	DO (mg/L)	6.5	7.7	7.2	7.1	6.8	7.0		7.0	6.0	6.3	6.6
	Conductivity	270	X	X	X	X	X	X	X	X	X	255
	Ammonia, alk/hardness Sulfide	✓	X	X	X	X	X	X	X	X	X	X
10220	T (°C)	24.0	22.7	22.4	22.8	22.6	21.9	22.0	22.5	23.8	21.0	22.5
	pH	7.3	7.4	7.4	7.4	7.6	7.6		7.5	7.4	7.5	7.6
	DO (mg/L)	6.5	7.1	6.7	6.0	6.7	6.6		5.6	6.0	6.0	6.3
	Conductivity	310	X	X	X	X	X	X	X	X	X	275
	Ammonia, alk/hardness Sulfide	✓	X	X	X	X	X	X	X	X	X	X
10221	T (°C)	24.1	22.4	22.3	22.7	22.7	22.1	21.8	22.0	23.8	21.1	22.4
	pH	7.3	7.6	7.8	7.6	7.6	7.5		7.5	7.4	7.5	7.5
	DO (mg/L)	6.2	7.4	7.4	6.7	6.6	6.5		6.3	6.0	6.3	6.1
	Conductivity	330	X	X	X	X	X	X	X	X	X	290
	Ammonia, alk/hardness Sulfide	✓	X	X	X	X	X	X	X	X	X	X
	Init./Date (1999):	7/2 JG	7/3 SR	7/4 JG KD	7/5 JG	7/6 JG	7/7 CC	7/8 JG	7/9 SR	7/10 SR	7/11 CC	7/12 CC

Comments:

Review: [illegible] Date: 12/15/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Overlying Water Environmental Monitoring: Chronic Toxicity Tests

Project: Menzie-Cura & Associates	Project: 99026 Industriplex	BTR: 3152 / 3153 Test Starts 7/2/99

Sample	Parameter	Day of Analysis 0	1	2	3	4	5	6	7	8	9	10
10223	T (°C)	24.2	22.4	22.3	22.8	22.7	22.2	22.2	22.3	23.8	21.1	22.6
	pH	7.4	7.7	7.9	7.8	7.7	7.7	7.3	7.7	7.7	7.7	7.6
	DO (mg/L)	7.8	8.1	7.8	7.4	7.0	7.1		7.0	6.9	6.6	5.8
	Conductivity	550	X	X	X	X	X	X	X	X	X	320
	Ammonia, alk/hardness Sulfide	✓	X	X	X	X	X	X	X	X	X	X
10224	T (°C)	24.2	22.4	22.4	22.9	22.3	22.2	22.2	22.7	23.8	21.1	22.3
	pH	7.4	7.5	7.8	7.6	7.6	7.6	7.5	7.4	7.4	7.5	7.6
	DO (mg/L)	6.7	7.8	7.8	6.8	6.2	6.9		5.7	5.5	5.4	5.~~8~~4 cc
	Conductivity	450	X	X	X	X	X	X	X	X	X	280
	Ammonia, alk/hardness Sulfide	✓	X	X	X	X	X	X	X	X	X	X
	T (°C)											
	pH											
	DO (mg/L)											
	Conductivity		X	X	X	X	X	X	X	X	X	
	Ammonia, alk/hardness Sulfide		X	X	X	X	X	X	X	X	X	X
	Init./Date (1999):	7/2 JG	7/3 SK	7/4 KD JG	7/5 JG	7/6 LL JG	7/7 CC	7/8 JG	7/9 SK	7/10 SK	7/11 CC	7/12 CC

Comments:

Review: [illegible] Date: 12/15/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Overlying Water Environmental Monitoring: Chronic Toxicity Tests

Project: Menzie-Cura & Associates	Project: 99026 Industriplex	BTR: 3152 / 3153 Test Starts 7/2/99

Sample	Parameter	Day of Analysis 11	12	13	14	15	16	17	18	19	20	21		22
10219	T (°C)	23.3	22.4	23.2	23.2	22.7	23.6	21.6	23.0	22.6	22.7	24.1		22.9
	pH	7.5	7.4	7.4	7.~~3~~4 cc	7.4	7.4	7.3	7.4	7.3	7.2	~~7.4~~ cc	7.3	7.6
	DO (mg/L)	6.6	6.6	6.7	6.2	6.1	5.9	5.6	6.7	5.2	4.8	~~6.3~~ cc	4.9	6.7
	Conductivity	X	X	X	X	X	X	X	X	X	X	320		X
	Ammonia, alk/hardness Sulfide	X	X	X	X	X	X	X	X	X	X	X		X
10220	T (°C)	23.0	22.9	22.8	22.9	22.8	23.4	21.6	22.7	22.7	22.8	24.1		23.0
	pH	7.5	7.6	7.4	7.~~7~~4 cc	7.5	7.4	7.4	7.5	7.5	7.4	~~7.6~~ cc	7.3	7.5
	DO (mg/L)	5.8	6.4	6.3	6.2	6.0	5.5	5.8	6.9	5.1	4.4	~~6.7~~ cc	4.8	6.7
	Conductivity	X	X	X	X	X	X	X	X	X	X	310		X
	Ammonia, alk/hardness Sulfide	X	X	X	X	X	X	X	X	X	X	X		X
10221	T (°C)	23.1	22.8	22.9	22.9	22.8	23.4	21.7	22.9	22.3	22.8	23.7		23.1
	pH	7.2	7.3	7.4	7.4	7.4	7.4	7.4	7.6	7.4	7.3	~~7.3~~ cc	7.4	7.6
	DO (mg/L)	5.6	6.0	6.2	5.8	5.1	4.9	5.2	7.0	5.0	4.0	~~5.7~~ cc	4.5	6.4
	Conductivity	X	X	X	X	X	X	X	X	X	X	320		X
	Ammonia, alk/hardness Sulfide	X	X	X	X	X	X	X	X	X	X	X		X
	Init./Date (1999):	7/13 JG/SJ	7/14 SJ	7/15 JG	7/16 CC	7/17 JJG	7/18 T	7/19 CC	7/20 SJ	7/21 CC	7/22 JJG	7/23 JJG/CC		7/24 SAJ

Emergence traps installed 7/22/99

Comments:

Review: J Date: 12/15/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Overlying Water Environmental Monitoring: Chronic Toxicity Tests

Project: Menzie-Cura & Associates	Project: 99026 Industriplex	BTR: 3152 / 3153 Test Starts 7/2/99

Sample	Parameter	Day of Analysis 11	12	13	14	15	16	17	18	19	20	21		22
10222 ~~3~~ 5	T (°C)	23.2	22.4	22.9	23.2	23.0	23.5	21.7	22.9	22.3	22.9	23.8		23.0
	pH	7.5	7.6	7.7	7.6	7.7	7.5	7.6	7.7	7.6	7.6	~~7.8~~ cc	7.6	7.7
	DO (mg/L)	6.0	6.8	6.7	6.0	5.9	4.8	5.3	6.7	5.4	5.4	~~7.0~~ cc	5.4	6.3
	Conductivity	X	X	X	X	X	X	X	X	X	X	350		
	Ammonia, alk/hardness Sulfide	X	X	X	X	X	X	X	X	X	X	X		
10224	T (°C)	23.2	22.4	22.9	22.9	22.9	23.5	21.5	23.0	22.3	22.8	23.5		23.1
	pH	7.4	7.5	7.4	7.3	7.6	7.4	7.3	7.5	7.3	7.3	~~7.8~~ cc	7.3	7.5
	DO (mg/L)	6.0	6.8	6.0	6.0	5.6	4.9	5.1	6.1	5.4	5.0	~~6.6~~ cc	4.9	6.8
	Conductivity	X	X	X	X	X	X	X	X	X	X	330		
	Ammonia, alk/hardness Sulfide	X	X	X	X	X	X	X	X	X	X	X		
	T (°C)													
	pH													
	DO (mg/L)													
	Conductivity	X	X	X	X	X	X	X	X	X	X			
	Ammonia, alk/hardness Sulfide	X	X	X	X	X	X	X	X	X	X	X		
	Init./Date (1999):	7/13 JG/JP	7/14 JP	7/15 JG/JP cc	7/16 CC	7/17 JG	7/18 JP	7/19 CC	7/20 JP	7/21 CC	7/22 JG	7/23 JG/JP		7/24 JP

Comments:

Review: [illegible] Date: 12/15/99

Laboratory: Aquatec Biological Sciences, South Burlington, Vermont

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Midge (*Chironomus tentans*) Overlying Water Environmental Monitoring: Chronic Toxicity Tests

Project: Menzie-Cura & Associates	Project: 99026 Industriplex	BTR: 3152 / 3153 Test Starts 7/2/99

		Day of Analysis										
Sample	Parameter	22	23	24	25	26	27	28	29	30	31	32
10219	T (°C)	22.9	22.9	23.0	23.0	22.3	22.8	22.5	22.9	23.4	22.5	21.5
	pH	7.6	7.4	7.5	7.5	7.6	7.4	7.3	7.4	7.5	7.5	7.3
	DO (mg/L)	6.7	5.0	5.3	5.7	6.2	5.3	5.8	4.2	5.0	5.4	4.3
	Conductivity	X	X	X	X	X	X	250	X	X	X	X
	Ammonia, alk/hardness	X	X	X	X	X	X		X	X	X	X
10220	T (°C)	23.0	22.8	22.9	23.0	22.1	22.8	22.5	22.6	23.2	22.6	22.0
	pH	7.5	7.3	7.5	7.4	7.5	7.4	7.3	7.4	7.4	7.5	7.4
	DO (mg/L)	6.7	4.6	4.6	5.2	5.9	4.7	5.3	4.2	4.9	6.1	4.7
	Conductivity	X	X	X	X	X	X	270	X	X	X	X
	Ammonia, alk/hardness	X	X	X	X	X	X		X	X	X	X
10221	T (°C)	23.1	22.7	23.2	23.1	22.0	22.8	22.4	22.5	23.2	22.3	21.8
	pH	7.6	7.4	7.4	7.3	7.5	7.4	7.3	7.3	7.4	7.4	7.3
	DO (mg/L)	6.4	4.6	4.7	4.7	4.9	4.4	4.7	4.0	4.6	4.7	4.3
	Conductivity	X	X	X	X	X	X	290	X	X	X	X
	Ammonia, alk/hardness	X	X	X	X	X	X		X	X	X	X
	Init./Date (1999):	7/24	7/25 JG	7/26 JG	7/27	7/28	7/29	7/30	7/31 JG	8/1 JG	8/2 JG	8/3 JG

Comments:

Review: _____ Date: 12/15/99

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