

**Appendix 31: Raw Data for 96-hour Toxicity of
Chloride on *Musculium transversum***

Raw Laboratory Data

96 Hour Water Column Acute Test Data Sheet/ 6 treatments												
Toxicant: NaCl						Species: <i>Musculium transversum</i>						
Rate: 26.253 g NaCl / 2L 50 Hard EPA (PUI 14) 50% serial dilution												
Water: 50 Hard (MHRW) 9/2/09						Culture: Adults collected 8/12/09 Kankakee River, Kankakee, IL						
Start Date/Time: 9/14/09 1PM						Age: Juveniles			Initials: AD			
Temp/Light: 22°C 16:8						Glassware: 150ml beaker w/ 120 ml overlying water						
Treatment	rep	Survival					Chem	0h	24h	48h	72h	96h
		0h	24h	48h	72h	96h						
A Control	1	S	S	S	S	S	temp	23.0	22.9	23.0	23.0	23.0
	2	S	S	S	S	S	pH	8.1				8.0
	3	S	S	S	S	S	cond	385				378
	4	S	S	4	4	4	D.O.	7.93				8.13
							Alk	62	x	x	x	62
							Hard	48	x	x	x	48
							temp	22.9	23.0	22.9	22.9	23.0
							pH	8.1				8.0
B 535	1	S	S	S	S	S	temp	22.9	23.0	22.9	22.9	23.0
	2	S	S	S	S	S	pH	8.1				8.0
	3	S	S	S	S	S	cond	2010				2000
	4	S	S	S	S	S	D.O.	7.99				8.14
							Alk	62	x	x	x	62
							Hard	48	x	x	x	48
							temp	22.8	22.9	22.8	22.7	23.0
							pH	8.1				8.0
C 1032	1	S	S	S	S	S	temp	22.8	22.9	22.8	22.7	23.0
	2	S	S	S	S	S	pH	8.1				8.0
	3	S	S	S	S	S	cond	3620				340
	4	S	S	S	S	S	D.O.	8.00				8.22
							Alk	62	x	x	x	62
							Hard	48	x	x	x	48
							temp	22.9	23.0	22.9	23.0	23.0
							pH	8.0				8.0
D 2028	1	S	S	4	4	3	temp	22.9	23.0	22.9	23.0	23.0
	2	S	S	5	5	3	pH	8.0				8.0
	3	S	S	5	5	1	cond	6700				6730
	4	S	S	3	3	3	D.O.	8.05				8.14
							Alk	62	x	x	x	62
							Hard	48	x	x	x	48
							temp	22.9	23.0	22.7	22.9	22.9
							pH	8.0				8.0
E 4018	1	S	0	0	0	0	temp	22.9	23.0	22.7	22.9	22.9
	2	S	0	0	0	0	pH	8.0				8.0
	3	S	0	0	0	0	cond	12520				12470
	4	S	0	0	0	0	D.O.	8.05				8.06
							Alk	62	x	x	x	62
							Hard	48	x	x	x	48
							temp	22.8	22.9	22.9	22.8	22.9
							pH	8.0				7.9
F 8000	1	S	0	0	0	0	temp	22.8	22.9	22.9	22.8	22.9
	2	S	0	0	0	0	pH	8.0				7.9
	3	S	0	0	0	0	cond	24200				24000
	4	S	0	0	0	0	D.O.	8.07				8.14
							Alk	62	x	x	x	62
							Hard	48	x	x	x	48
							temp	22.9	23.0	22.9	23.0	23.0
							pH	8.0				8.0
Initials		AD	AD	AD	AD	AD						

Analytical Chemistry Data



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LABORATORY REPORT

This report contains 10 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at
(800) 332-4345 or (574) 233-4777.

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Underwriters Laboratories Inc. (UL).*



Underwriters
Laboratories

Laboratory Report

Client: Illinois Natural History Survey
Attn: Amy Dickinson
1910 South Griffith Drive
Champaign, IL 61820

Report: 233654
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Copies
to: None

Sample Information					
UL ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
2147409	1A Control	300.0	09/04/09 11:00	Client	09/17/09 09:45
2147410	1B 535ppm NaCl	300.0	09/04/09 11:00	Client	09/17/09 09:45
2147411	1C 1032ppm NaCl	300.0	09/04/09 11:00	Client	09/17/09 09:45
2147412	1D 2028ppm NaCl	300.0	09/04/09 11:00	Client	09/17/09 09:45
2147413	1E 4018ppm NaCl	300.0	09/04/09 11:00	Client	09/17/09 09:45
2147414	1F 8000ppm NaCl	300.0	09/04/09 11:00	Client	09/17/09 09:45
2147415	2A Control	300.0	09/08/09 13:30	Client	09/17/09 09:45
2147416	2B 535ppm NaCl	300.0	09/08/09 13:30	Client	09/17/09 09:45
2147417	2C 1032ppm NaCl	300.0	09/08/09 13:30	Client	09/17/09 09:45
2147418	2D 2028ppm NaCl	300.0	09/08/09 13:30	Client	09/17/09 09:45
2147419	2E 4018ppm NaCl	300.0	09/08/09 13:30	Client	09/17/09 09:45
2147420	2F 8000ppm NaCl	300.0	09/08/09 13:30	Client	09/17/09 09:45
2147421	1A Control	300.0	09/10/09 11:00	Client	09/17/09 09:45
2147422	1B 397ppm Sulfate	300.0	09/10/09 11:00	Client	09/17/09 09:45
2147423	1C 703ppm Sulfate	300.0	09/10/09 11:00	Client	09/17/09 09:45
2147424	1D 1317ppm Sulfate	300.0	09/10/09 11:00	Client	09/17/09 09:45
2147425	1E 2545ppm Sulfate	300.0	09/10/09 11:00	Client	09/17/09 09:45
2147426	1F 5000ppm Sulfate	300.0	09/10/09 11:00	Client	09/17/09 09:45
2147427	2A Control	300.0	09/14/09 13:00	Client	09/17/09 09:45
2147428	2B 397ppm Sulfate	300.0	09/14/09 13:00	Client	09/17/09 09:45
2147429	2C 703ppm Sulfate	300.0	09/14/09 13:00	Client	09/17/09 09:45
2147430	2D 1317ppm Sulfate	300.0	09/14/09 13:00	Client	09/17/09 09:45
2147431	2E 2545ppm Sulfate	300.0	09/14/09 13:00	Client	09/17/09 09:45
2147432	2F 5000ppm Sulfate	300.0	09/14/09 13:00	Client	09/17/09 09:45

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Kelly Trott at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from Underwriters Laboratories (UL).

Client Name: Illinois Natural History Survey

Report #: 233654

		
Authorized Signature	Title	Date
Client Name: Illinois Natural History Survey		
Report #: 233654		

Data for *Musculium transversum* chloride test

Client Name: Illinois Natural History Survey

Report #: 233654

Sampling Point: 1A Control

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	33	mg/L	---	09/21/09 18:01	2147409
14808-79-8	Sulfate	300.0	250 ^	5.0	58	mg/L	---	09/21/09 18:01	2147409

Sampling Point: 1B 535ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	490	mg/L	---	09/22/09 12:33	2147410
14808-79-8	Sulfate	300.0	250 ^	5.0	58	mg/L	---	09/21/09 18:29	2147410

Sampling Point: 1C 1032ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	970	mg/L	---	09/22/09 13:46	2147411
14808-79-8	Sulfate	300.0	250 ^	5.0	59	mg/L	---	09/21/09 19:51	2147411

Sampling Point: 1D 2028ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	1900	mg/L	---	09/22/09 14:11	2147412
14808-79-8	Sulfate	300.0	250 ^	5.0	58	mg/L	---	09/21/09 21:14	2147412

Sampling Point: 1E 4018ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	3800	mg/L	---	09/22/09 14:35	2147413
14808-79-8	Sulfate	300.0	250 ^	5.0	58	mg/L	---	09/21/09 21:41	2147413

Data for *Musculium transversum* chloride test

Client Name: Illinois Natural History Survey

Report #: 233654

Sampling Point: 1F 8000ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	7700	mg/L	---	09/22/09 15:00	2147414
14808-79-8	Sulfate	300.0	250 ^	5.0	60	mg/L	---	09/21/09 22:09	2147414

Sampling Point: 2A Control

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	39	mg/L	---	09/21/09 22:36	2147415
14808-79-8	Sulfate	300.0	250 ^	5.0	59	mg/L	---	09/21/09 22:36	2147415

Sampling Point: 2B 535ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	520	mg/L	---	09/22/09 15:24	2147416
14808-79-8	Sulfate	300.0	250 ^	5.0	59	mg/L	---	09/21/09 23:04	2147416

Sampling Point: 2C 1032ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	1000	mg/L	---	09/22/09 15:49	2147417
14808-79-8	Sulfate	300.0	250 ^	5.0	59	mg/L	---	09/21/09 23:31	2147417

Sampling Point: 2D 2028ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	1900	mg/L	---	09/22/09 16:13	2147418
14808-79-8	Sulfate	300.0	250 ^	5.0	60	mg/L	---	09/21/09 23:59	2147418

Data for *Musculium transversum* chloride test and *Ligumia recta* sulfate test

Client Name: Illinois Natural History Survey

Report #: 233654

Sampling Point: 2E 4018ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	4000	mg/L	---	09/22/09 16:38	2147419
14808-79-8	Sulfate	300.0	250 ^	5.0	59	mg/L	---	09/22/09 00:26	2147419

Sampling Point: 2F 8000ppm NaCl

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	7800	mg/L	---	09/22/09 17:02	2147420
14808-79-8	Sulfate	300.0	250 ^	5.0	60	mg/L	---	09/22/09 00:54	2147420

Sampling Point: 1A Control

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	3.0	mg/L	---	09/22/09 02:16	2147421
14808-79-8	Sulfate	300.0	250 ^	5.0	83	mg/L	---	09/22/09 02:16	2147421

Sampling Point: 1B 397ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	2.6	mg/L	---	09/22/09 03:39	2147422
14808-79-8	Sulfate	300.0	250 ^	5.0	380	mg/L	---	09/22/09 18:16	2147422

Sampling Point: 1C 703ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	2.8	mg/L	---	09/22/09 04:06	2147423
14808-79-8	Sulfate	300.0	250 ^	5.0	660	mg/L	---	09/22/09 19:29	2147423

Data for *Ligumia recta* sulfate test

Client Name: Illinois Natural History Survey

Report #: 233654

Sampling Point: 1D 1317ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	3.9	mg/L	---	09/22/09 04:34	2147424
14808-79-8	Sulfate	300.0	250 ^	5.0	1200	mg/L	---	09/22/09 19:54	2147424

Sampling Point: 1E 2545ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	4.3	mg/L	---	09/22/09 05:01	2147425
14808-79-8	Sulfate	300.0	250 ^	5.0	2300	mg/L	---	09/22/09 20:18	2147425

Sampling Point: 1F 5000ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	5.9	mg/L	---	09/22/09 05:29	2147426
14808-79-8	Sulfate	300.0	250 ^	5.0	4700	mg/L	---	09/22/09 20:43	2147426

Sampling Point: 2A Control

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	2.5	mg/L	---	09/22/09 05:56	2147427
14808-79-8	Sulfate	300.0	250 ^	5.0	85	mg/L	---	09/22/09 05:56	2147427

Sampling Point: 2B 397ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	2.7	mg/L	---	09/22/09 06:24	2147428
14808-79-8	Sulfate	300.0	250 ^	5.0	360	mg/L	---	09/22/09 21:07	2147428

Data for *Ligumia recta* sulfate test

Client Name: Illinois Natural History Survey

Report #: 233654

Sampling Point: 2C 703ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	2.9	mg/L	---	09/22/09 06:51	2147429
14808-79-8	Sulfate	300.0	250 ^	5.0	670	mg/L	---	09/22/09 21:31	2147429

Sampling Point: 2D 1317ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	3.3	mg/L	---	09/22/09 07:19	2147430
14808-79-8	Sulfate	300.0	250 ^	5.0	1200	mg/L	---	09/22/09 21:56	2147430

Sampling Point: 2E 2545ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	4.8	mg/L	---	09/23/09 10:49	2147431
14808-79-8	Sulfate	300.0	250 ^	5.0	2400	mg/L	---	09/22/09 22:20	2147431

Sampling Point: 2F 5000ppm Sulfate

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
16887-00-6	Chloride	300.0	250 ^	2.0	6.1	mg/L	---	09/23/09 11:14	2147432
14808-79-8	Sulfate	300.0	250 ^	5.0	5400	mg/L	---	09/22/09 22:45	2147432

† UL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!



110 S. Hill Street
 South Bend, IN 46617
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 F: 574.233.8207

Order # **163747**
 Batch # **83364**

www.ul.com/water
 Shaded area for UL use only

CHAIN OF CUSTODY RECORD

Page 1 of 2

REPORT TO: Amy Dickinson
 dickins@illinois.edu

SAMPLER (Signature): *Amy Dickinson*

STATE (of sample origin): IL

PROJECT NAME: Muscatum

PC#:

COMPLIANCE MONITORING: Yes No

POPULATION SERVED:

SOURCE WATER: RW

TEST NAME: Chloride and Sulfate

SAMPLE REMAINS: YES NO

CHLORINATED: YES NO

OF CONTAINERS: 1 RW SW

MATRIX CODE:

TURNAROUND TIME:

LAB Number	COLLECTION		SAMPLING SITE	TEST NAME	LAB RESE	LAB CO#	STO CLIENT
	DATE	TIME					
1	9/4/09	11	A Control	Chloride and Sulfate			
2	9/4/09	11	B 535 PPM NaCl	IGNORE ORDER #			
3	9/4/09	11	1C 1032 PPM NaCl	AND ANALYZE FOR			
4	9/4/09	11	1D 2028 PPM NaCl	CHLORIDE + SULFATE.			
5	9/4/09	11	1E 4018 PPM NaCl	All samples EXCEPT			
6	9/4/09	11	1F 8000 PPM NaCl	Controls (A) SPIKED with			
7	9/8/09	1:30	2A Control	NaCl @ rates of			
8	9/8/09	1:30	2B 535 PPM NaCl	535 - 8000 PPM AS			
9	9/8/09	1:30	2C 1032 PPM NaCl	labelled per sample.			
10	9/8/09	1:30	2D 2028 PPM NaCl				
11	9/8/09	1:30	2E 4018 PPM NaCl				
12	9/8/09	1:30	2F 8000 PPM NaCl				
13							
14							

REINQUISHED BY: (Signature) *Amy Dickinson* DATE: 9/16/09 TIME: 2:00 PM

REINQUISHED BY: (Signature) *Amy Dickinson* DATE: 9/16/09 TIME: 2:00 PM

REINQUISHED BY: (Signature) *Amy Dickinson* DATE: 9/16/09 TIME: 2:00 PM

RECEIVED FOR LABORATORY BY: DATE: 9/17/09 TIME: 9:45 AM

CONDITIONS UPON RECEIPT (optional):

LAB RESE: LAB CO#: STO CLIENT:

TURNAROUND TIME (TAT) - SUBCHARGES:

SW = Standard Written: (15 working days) **0%**
 RW = Rush Written: (5 working days) **50%**
 RW* = Rush Written: (5 working days) **75%**

TV = Immediate Verbal: (3 working days) **100%**
 IW = Immediate Written: (3 working days) **125%**

SP* = Weekend, Holiday
 STAR* = Less than 48 hours
 UL-SBN-SHIF-F-002-09 Effective Date: 05/08/2009

Sample analysis will be provided according to the standard UL-GSA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by UL.



Underwriters
Laboratories

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 574.233.8207

Order # 1057471

Page 2 of 2

CHAIN OF CUSTODY RECORD

REPORT TO: Amy Dickinson
Dickinson @ illinois.edu

SAMPLER (Signature): Amy Dickinson

COMPLIANCE MONITORING: Yes No

STATE (of sample origin): IL

POPULATION SERVED: RW

PROJECT NAME: Ligumia Sulfate

PC#

CHLORINATED: YES NO

OF CONTAINERS: 1

MATRIX CODE: PWS SW

TURNAROUND TIME

LAB NUMBER	COLLECTION		SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED		# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
	DATE	TIME				YES	NO			
1	9/10/09	11	1A Control	Sulfate AND Chloride	Not spiked			1	PWS SW	
2	9/10/09	2	1B 397 ppm Sulfate		Spiked					
3	9/10/09	1	1C 703 ppm Sulfate		Spiked					
4	9/10/09	1	1D 1317 ppm Sulfate		Spiked					
5	9/10/09	1	1E 2545 ppm Sulfate		Spiked					
6	9/10/09	1	1F 5000 ppm Sulfate		Spiked					
7	9/10/09	1	2A Control		Not Spiked					
8	9/10/09	1	2B 397 ppm Sulfate		Spiked					
9	9/10/09	1	2C 703 ppm Sulfate		Spiked					
10	9/10/09	1	2D 1317 ppm Sulfate		Spiked					
11	9/10/09	1	2E 2545 ppm Sulfate		Spiked					
12	9/10/09	1	2F 5000 ppm Sulfate		Spiked					
13										
14										

RELINQUISHED BY (Signature): Amy Dickinson

DATE: 9/10/09

TIME: 2:00 PM

RECEIVED BY (Signature): S. Rogers

DATE: 9/10/09

TIME: 9:45 AM

RECEIVED FOR LABORATORY BY: S. Rogers

DATE: 9/10/09

TIME: 9:45 AM

TURNAROUND TIME (TA): 9/10/09

LAB RE: NA

LESS TO CLIENT

Sample analysis will be provided according to the standard UL GSA/Water Services Terms, which are available upon request unless expressly agreed to in writing by UL.

IGNORE ORDER # AND ANALYZE FOR CHLORIDE AND SULFATE.

All samples except Controls (1A + 2A) SPIKED with SULFATE @ rates of 397 - 5000 ppm as labeled per sample.

announced holding time subject to 1 alterations and are

Statistical Analyses

CT-TOX: BINOMIAL, MOVING AVERAGE, PROBIT, AND SPEARMAN METHODS

SPEARMAN-KARBER

TRIM: .00%
LC50: 2721.783
95% CONFIDENCE LIMITS
ARE UNRELIABLE.

CONC. mg/L	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(%)
505.00	20.	0.	.00	.9537D-04
985.00	20.	0.	.00	.9537D-04
1900.00	20.	0.	.00	.9537D-04
3899.00	20.	20.	100.00	.9537D-04
7750.00	20.	20.	100.00	.9537D-04

THE BINOMIAL TEST SHOWS THAT 1900.00 AND 3899.00 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS 99.9998 PERCENT. AN APPROXIMATE LC50 FOR THIS DATA SET IS 2721.782

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

DATE: September 4, 2009 TEST NUMBER: DURATION: 24 h
SAMPLE: Chloride SPECIES: Musculium transversum

METHOD	LC50	CONFIDENCE LIMITS
	LOWER	UPPER SPAN
BINOMIAL	*****	*****
MAA	*****	*****
PROBIT	*****	*****
SPEARMAN	*****	*****

**** = LIMIT DOES NOT EXIST

SPEARMAN-KARBER

TRIM: .00%
LC50: 2454.933
95% LOWER CONFIDENCE: 2199.539
95% UPPER CONFIDENCE: 2739.981

CONC. mg/L	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(%)
505.00	20.	0.	.00	.9537D-04
985.00	20.	0.	.00	.9537D-04
1900.00	20.	3.	15.00	.1288D+00
3899.00	20.	20.	100.00	.9537D-04
7750.00	20.	20.	100.00	.9537D-04

THE BINOMIAL TEST SHOWS THAT 1900.00 AND 3899.00 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS 99.8711 PERCENT. AN APPROXIMATE LC50 FOR THIS DATA SET IS 2445.871

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

DATE: September 4, 2009 TEST NUMBER: DURATION: 48 h
SAMPLE: Chloride SPECIES: Musculium transversum

METHOD	LC50	CONFIDENCE LIMITS
	LOWER	UPPER SPAN
BINOMIAL	*****	***** *****
MAA	*****	***** *****
PROBIT	*****	***** *****
SPEARMAN	*****	***** 540.442

**** = LIMIT DOES NOT EXIST

SPEARMAN-KARBER

TRIM: .00%
LC50: 2454.933
95% LOWER CONFIDENCE: 2199.539
95% UPPER CONFIDENCE: 2739.981

CONC. mg/L	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(%)
505.00	20.	0.	.00	.9537D-04
985.00	20.	0.	.00	.9537D-04
1900.00	20.	3.	15.00	.1288D+00
3899.00	20.	20.	100.00	.9537D-04
7750.00	20.	20.	100.00	.9537D-04

THE BINOMIAL TEST SHOWS THAT 1900.00 AND 3899.00 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS 99.8711 PERCENT. AN APPROXIMATE LC50 FOR THIS DATA SET IS 2445.871

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

DATE: September 4, 2009 TEST NUMBER: DURATION: 72 h
SAMPLE: Chloride SPECIES: Musculium transversum

METHOD	LC50	CONFIDENCE LIMITS
	LOWER	UPPER SPAN
BINOMIAL	*****	***** *****
MAA	*****	***** *****
PROBIT	*****	***** *****
SPEARMAN	*****	***** 540.442

**** = LIMIT DOES NOT EXIST

SPEARMAN-KARBER

TRIM: .00%
LC50: 1929.631
95% LOWER CONFIDENCE: 1654.511
95% UPPER CONFIDENCE: 2250.498

CONC. mg/L	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(%)
505.00	20.	0.	.00	.9537D-04
985.00	20.	0.	.00	.9537D-04
1900.00	20.	10.	50.00	.5881D+02
3899.00	20.	20.	100.00	.9537D-04
7750.00	20.	20.	100.00	.9537D-04

THE BINOMIAL TEST SHOWS THAT 985.00 AND 3899.00 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS 99.9998 PERCENT. AN APPROXIMATE LC50 FOR THIS DATA SET IS 1900.000

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

DATE: September 4, 2009 TEST NUMBER: DURATION: 96 h
SAMPLE: Chloride SPECIES: Musculium transversum

METHOD	LC50	CONFIDENCE LIMITS
	LOWER	UPPER SPAN
BINOMIAL	***** 985.000 *****	*****
MAA	*****	*****
PROBIT	*****	*****
SPEARMAN	*****	***** 595.987

**** = LIMIT DOES NOT EXIST
