

US EPA ARCHIVE DOCUMENT

1-EEB-08C
6/26/98

MRID No. 438646-15

DATA EVALUATION RECORD
§ 72-3 - ACUTE EC₅₀ TEST WITH AN ESTUARINE/MARINE MOLLUSK SHELL DEPOSITION STUDY

1. **CHEMICAL:** Omadine® Sulfonic Acid **PC Code No.:** 088002

2. **TEST MATERIAL:** Pyridine-N-oxide-2-sulfonic acid (98.5%)
(Omadine® sulfonic acid)

3. **CITATION:**
Authors: R.L. Boeri, P.L. Kowalski, and T.J. Ward
Title: Acute Flow-Through Mollusc Shell Deposition Test (Pyridine-N-oxide-2-sulfonic acid) with Omadine® Sulfonic Acid

Study Completion Date: March 9, 1994
Laboratory: T.R. Wilbury Laboratories, Inc.,
Marblehead, MA
Sponsor: Olin Corporation, New Haven, CT
Laboratory Report ID: 38-OL
MRID No.: 438646-15
DP Barcode: D239429

4. **REVIEWED BY:** Mark Mossler, M.S., Toxicologist,
Golder Associates Inc.

Signature: *Mark Mossler* **Date:** 6/25/98

APPROVED BY: Pim Kosalwat, Ph.D., Senior Scientist,
Golder Associates Inc.

Signature: *P. Kosalwat* **Date:** 6/25/98

5. **APPROVED BY:**

Signature: **Date:**

6. **STUDY PARAMETERS:**

Age or Size of Test Organism: Valve height, 27-39 mm
Definitive Test Duration: 96 hours
Study Method: Flow-through
Type of Concentrations: Mean measured

7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements. A 96-hour EC₅₀ of 96.2 ppm ai classifies Omadine® sulfonic acid as slightly toxic to the eastern oyster. The NOEC was 21.9 ppm ai.

Mossler Omadine sulfonic acid Crassostrea virginica 6-2-98

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
138	100	85	85	0
80.1	100	27	27	0
55.2	100	16	16	0
35.6	100	12	12	0

BECAUSE THE NUMBER OF ORGANISMS USED WAS SO LARGE, THE 95 PERCENT CONFIDENCE INTERVALS CALCULATED FROM THE BINOMIAL PROBABILITY ARE UNRELIABLE. USE THE INTERVALS CALCULATED BY THE OTHER TESTS.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 98.58777

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS
2	3.377343E-02	96.16503	89.3132 104.5599

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
4	1.863142	10.8686	0

A PROBABILITY OF 0 MEANS THAT IT IS LESS THAN 0.001.

SINCE THE PROBABILITY IS LESS THAN 0.05, RESULTS CALCULATED USING THE PROBIT METHOD PROBABLY SHOULD NOT BE USED.

SLOPE = 3.884664
 95 PERCENT CONFIDENCE LIMITS = -1.417785 AND 9.187112

LC50 = 91.32971
 95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 = 43.02149
 95 PERCENT CONFIDENCE LIMITS = 0 AND 79.54166

Shell deposition

File: oys2

Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model)

TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	Control	2	3.405	3.405	3.405
2	21.9 ppm ai	2	3.405	3.405	3.405
3	35.6 ppm ai	2	2.985	2.985	2.985
4	55.2 ppm ai	2	2.845	2.845	2.845
5	80.1 ppm ai	2	2.480	2.480	2.480
6	138 ppm ai	2	0.505	0.505	0.505

Shell deposition

File: oys2

Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model)

TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
Control	3.405				
21.9 ppm ai	3.405	0.000		1.94	k= 1, v= 6
35.6 ppm ai	2.985	3.362	*	2.06	k= 2, v= 6
55.2 ppm ai	2.845	4.482	*	2.10	k= 3, v= 6
80.1 ppm ai	2.480	7.404	*	2.12	k= 4, v= 6
138 ppm ai	0.505	23.211	*	2.13	k= 5, v= 6

s = 0.125

Note: df used for table values are approximate when v > 20.

NOEC = 21.9 ppm ai

3

Shell deposition

File: oys2

Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	3.405	3.405		
2	21.9 ppm ai	3.405	3.405	0.000	
3	35.6 ppm ai	2.985	2.985	3.362	*
4	55.2 ppm ai	2.845	2.845	4.482	*
5	80.1 ppm ai	2.480	2.480	7.404	*
6	138 ppm ai	0.505	0.505	23.212	*

Dunnett table value = 2.83 (1 Tailed Value, P=0.05, df=6,5)

Shell deposition

File: oys2

Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 2 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	2			
2	21.9 ppm ai	2	0.354	10.4	0.000
3	35.6 ppm ai	2	0.354	10.4	0.420
4	55.2 ppm ai	2	0.354	10.4	0.560
5	80.1 ppm ai	2	0.354	10.4	0.925
6	138 ppm ai	2	0.354	10.4	2.900

4

Shell deposition

File: oys

Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model)

TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	Control	20	3.405	3.405	3.405
2	21.9 ppm ai	20	3.405	3.405	3.405
3	35.6 ppm ai	20	2.985	2.985	2.985
4	55.2 ppm ai	20	2.845	2.845	2.845
5	80.1 ppm ai	20	2.480	2.480	2.480
6	138 ppm ai	20	0.505	0.505	0.505

Shell deposition

File: oys

Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model)

TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
Control	3.405				
21.9 ppm ai	3.405	0.000		1.67	k= 1, v=114
35.6 ppm ai	2.985	2.122	*	1.75	k= 2, v=114
55.2 ppm ai	2.845	2.829	*	1.77	k= 3, v=114
80.1 ppm ai	2.480	4.674	*	1.78	k= 4, v=114
138 ppm ai	0.505	14.653	*	1.79	k= 5, v=114

s = 0.626

Note: df used for table values are approximate when v > 20.

NOEC = 21.9 ppm ai

5

Shell deposition

File: oys

Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	3.405	3.405		
2	21.9 ppm ai	3.405	3.405	0.000	
3	35.6 ppm ai	2.985	2.985	2.122	
4	55.2 ppm ai	2.845	2.845	2.829	*
5	80.1 ppm ai	2.480	2.480	4.674	*
6	138 ppm ai	0.505	0.505	14.653	*

Dunnnett table value = 2.28 (1 Tailed Value, P=0.05, df=60,5)

Shell deposition

File: oys

Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 2 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	20			
2	21.9 ppm ai	20	0.451	13.3	0.000
3	35.6 ppm ai	20	0.451	13.3	0.420
4	55.2 ppm ai	20	0.451	13.3	0.560
5	80.1 ppm ai	20	0.451	13.3	0.925
6	138 ppm ai	20	0.451	13.3	2.900

6