4-14-82

Duplicate

DATA EVALUATION

CHEMICAL: Cypermethrin

FORMULATION: 91.5 % active ingredient (Technical material)

CITATION: Jaber, M.J. (1981) the acute toxicity of cypermethrin to eastern oysters (Crassostrea virginia). Unpublished report by EG&G Bionomics, submitted 12/28/81 by ICI Americas Inc, Wilmington, Delaware.

EPA Accession No. 070562 MRID 00089049

REVIEWED BY: Thomas B. Johnston
Biologist, EEB/HED

REVIEW DATE: April 14, 1982

TEST TYPE: 96-hr shell deposition EC_{50}

REPORTED RESULTS: The reported acute 96-hr EC_{50} of cypermethrin for shell deposition in eastern oysters is 370 ppb, with 95% confidence limits of 245 and 556 ppb.

REVIEWER'S CONCLUSIONS: This study is scientifically sound, and fulfills USEPA guideline requirements for an acute toxicity test using a marine mollusc. With a 96-hr shell deposition EC_{50} of 370 ppb, cypermethrin is very highly toxic to eastern oysters.

TERIALS/METHODS

Methods used generally followed USEPA guidelines. The test was run at 11°C Salinity was maintained at 26 ppt. The EC_{50} criterion was a 50% reduction in shell growth compared to control oysters.

ATISTICAL ANALYSES

Data were analyzed according to the probit analysis method.

SULTS

Effects of Cypermethrin Upon Shell Deposition In Eastern Oysters Under Flow Through Conditions

Mean Measured Concentration ug/l	Mean Shell Deposition (mm) at 96 Hours	Percent Reduction[a]
Control	2.2 (S.D. ± 0.4)	-
Solvent Control	2.0 (S.D. ± 0.6)	9
13.9	1.9 (S.D. ± 0.4)	14
92.0	1.4 (S.D. ± 0.5)	36[b]
217	1.4 (S.D. ± 0.4)	36[b]
351	1.1 (S.D. ± 0.4)	50[b]
677	0.9 (S.D. ± 0.6)	59[b]

a/

$$\% \text{ Reductionn} = \frac{C-T}{C} \times 100$$

Where C = Shell Deposition of Control Group
and T = Shell Deposition of a Test Group

b/ Significantly different from controls at $p \leq 0.05$ using a t-test.

EC_{50} = 370 ppb (95% confidence limits = 245, 556 ppb)

CONCLUSIONS:

Validation Category: Core

Category Rationale: N/A

Category Repairability: N/A

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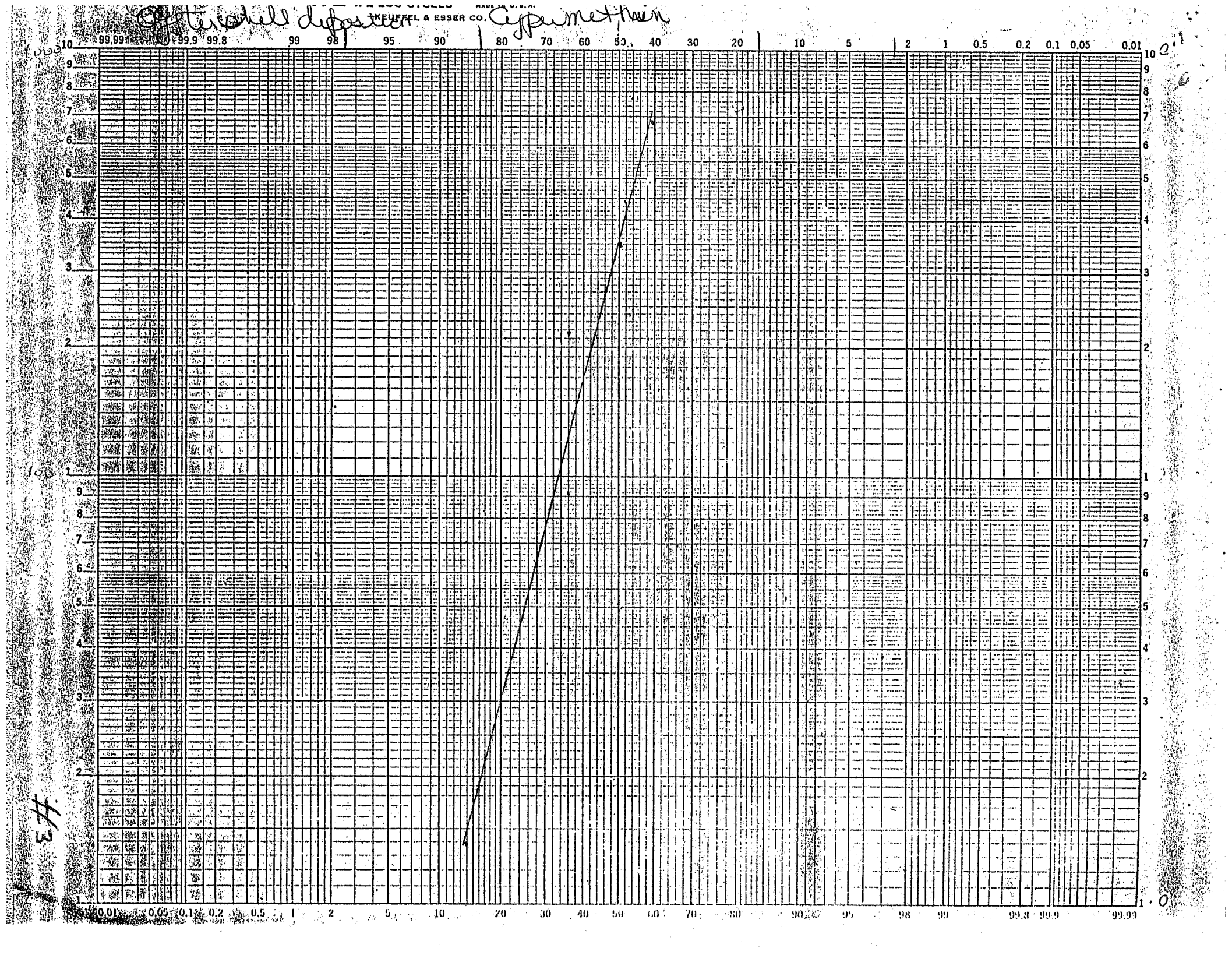
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99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
10 9 8 7 6 5 4 3 2 1

ATERIALS/METHODS

Methods used generally followed USEPA guidelines. The tests were run at 2 Mean measured concentrations were used to estimate the EC_{50} and LC_{50}. Tes I and II were not used because of high control mortality. The highest con centrations tested showed turbidity, indicating that the concentrations we approaching solubility limits. The maximum allowable amount of solvent wa used.

ATISTICAL ANALYSES

Data were not analyzed because of a lack of sufficient mortality.

SULTS

Mean Measured Concentrations (ppm)	Mortality	Net Mortality -	Abnormality
	%	%	%
2.27	8.5	1.4	1.7
1.37	11.9	5.1	1.5
0.81	10.2	3.2	1.5
0.46	7.9	0.75	2.0
Solvent Control	7.3	0	1.2

$EC_{50} > 2.27$ ppm

NCLUSIONS:

Validation Category: Core

Category Rationale: Although no EC_{50} could be calculated, the test demonstrated that the EC_{50} was greater than the solubility of the test compound in seawater, even when the maximum allowable amounts of solvent were employed.

Category Repairability: N/A