

US EPA ARCHIVE DOCUMENT

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 Unpublished report by EG&G Bionomics, submitted 12/28/81 by ICI Americas Inc, Wilmington, Delaware.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 00099049

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

REVIEW DATE: April 14, 1982

TEST TYPE: 96-hr shell deposition EC50

REPORTED RESULTS: The reported acute 96-hr EC50 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 EC50 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<sub>50</sub> criterion was a 50% reduction in shell growth compared to control oysters.

## STATISTICAL ANALYSES

Data were analyzed according to the probit analysis method.

## RESULTS

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 <sup>a/</sup>
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 <sup>b/</sup>
217	1.4 (S.D. ± 0.4)	36 <sup>b/</sup>
351	1.1 (S.D. ± 0.4)	50 <sup>b/</sup>
677	0.9 (S.D. ± 0.6)	59 <sup>b/</sup>

<sup>a/</sup>

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

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

<sup>b/</sup>

Significantly different from controls at  $p < 0.05$  using a t-test.

EC<sub>50</sub> = 370 ppb (95% confidence limits = 245, 556 ppb)

## CONCLUSIONS:

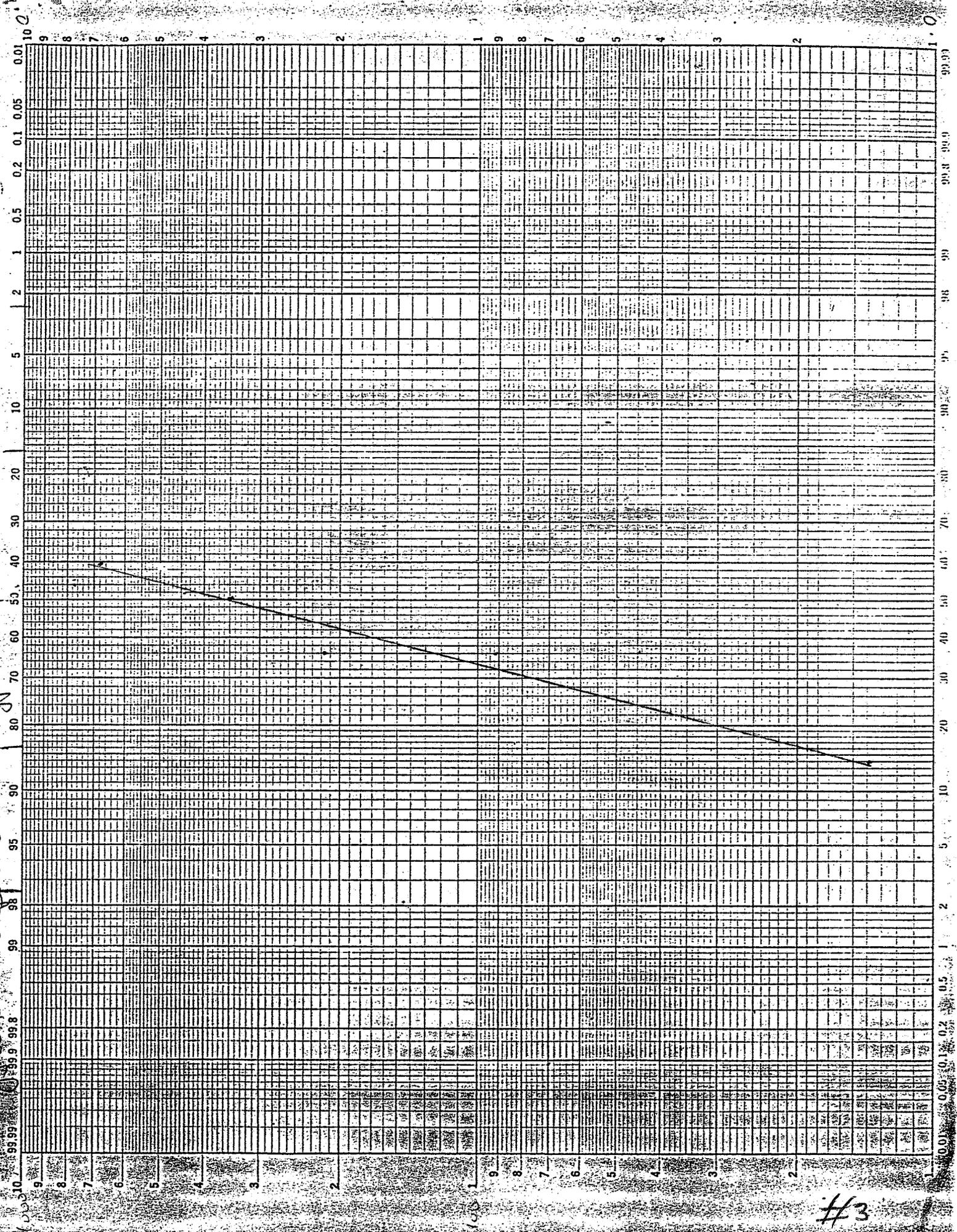
Validation Category: Core

Category Rationale: N/A

Category Repairability: N/A

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Paul W. D. M. KEUFFEL & ESSER CO. Cyprienmetrum



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MATERIALS/METHODS

Methods used generally followed USEPA guidelines. The tests were run at 2 Mean measured concentrations were used to estimate the EC50 and LC50. Test I and II were not used because of high control mortality. The highest concentrations tested showed turbidity, indicating that the concentrations were approaching solubility limits. The maximum allowable amount of solvent was used.

STATISTICAL ANALYSES

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

RESULTS

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

EC50 > 2.27 ppm

CONCLUSIONS:

Validation Category: Core

Category Rationale: Although no EC50 could be calculated, the test demonstrated that the EC50 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