DATA EVALUATION RECORD

1. CHEMICAL: Metolachlor (108801)

2. FORMULATION: Technical

3. CITATION: Vilkas, A.G. (1976) Acute Toxicity of CGA-24705
               Technical to the Water Flea Daphnia magna,
               Received Nov. 23, 1976 under 100-587. (Unpub-
               lished report prepared by Aquatic Environmental
               Sciences, Union Carbide Corp. for CIBA-GEIGY
               Corp., Greensboro, N.C.: CDL: 226955-C)

4. REASON FOR REVIEW: Generic Standard for Metolachlor

5. REVIEWED BY: H.T. Craven Henry T. Craven
                  Biologist
                  Efficacy and Ecological Effects Branch
                  Registration Division

6. DATE REVIEWED: 2/2/78

7. TEST TYPE: Freshwater aquatic invertebrate acute 48 hr.

    A. TEST ID: ES H1

    B. TEST SPECIES: Daphnia magna STRAUS

    C. TEST MATERIAL: Technical Metolachlor

    D. REPORTED RESULTS

        The 48 hr. LC_{50} to D. magna is 25.1 (21.6-29.2)
        mg/l (ppm). The 48 hr. no effect level was observed
        to be 5.6 mg/l (ppm).

    E. COMMENTS

        The study is scientifically sound and with an LC_{50}
        of 25.1 ppm metolachlor is slightly toxic to aquatic
        invertebrates. The study does fulfill the require-
        ment for an aquatic invertebrate acute LC_{50}.

MATERIALS AND METHODS

A. Five test levels ranging from 5.6 to 56 mg/l and two controls (acetone and acetone free) were established. Protocol followed that recommded by U.S. EPA (1975).

B. Statistical analysis: The LC_{50} values were calculated according to Thompson (1947).

DISCUSSION/RESULTS

No mortality occurred in any of the four replicates for each of the two controls throughout the test nor in the two lower dosage levels - 5.6 and 10.0 ppm - during the first 24 hours. After 48 hours 5% mortality occurred at 10.0 ppm. The no effect level was reported as 5.6 ppm. The 48 hour LC_{50} with 95% C.L. was 25.1 (21.6-29.2) ppm.

REVIEWER'S EVALUATION

A. Test Procedure

The test complies with the recommended EPA protocol (1975).

B. Statistical Analysis

The Environmental Safety section determined that the testing facility performed a modified Thompson (1947) by discarding the lowest dosage level to make K = 3 to calculate an f value. The result of this revision yielded a 48 hr. LC_{50} of 25.7 ppm. Further confirmation of the 48 hr. LC_{50} value was done by Finney probit (see copy of printout). Probit analysis produced an LC_{50} with 95% C.L. of 24.9 (21.4-29.1) ppm.

C. Validation

1. Category: Core

COMMENTS

The study is scientifically sound and with an LC_{50} of 25.1 ppm is slightly toxic to aquatic invertebrates. The study does fulfill the requirement for an aquatic invertebrate acute LC_{50}.

Henry T. Craven

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A.   Test Procedure

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B.   Statistical Analysis
.   Validation

1.   Category: Core

CONCLUSIONS

The study is scientifically sound and with an LC_{50} of 25.1 ppm is slightly toxic to aquatic invertebrates. The study does fulfill the requirement for an aquatic invertebrate acute LC_{50}.

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Metolachlor
Tech.

Daphnia
3/16/78

5.916	M
43.266	YINT
76.476	LOW M
5.204	CHI2
24.953	LD50
21.386	LOCL
29.115	UPCL
15.151	LD10
11.930	LOCL
19.241	UPCL
41.098	LD90
32.431	LOCL
52.060	UPCL

IA	IB	T	FW	EC	R		

FORMULATION:

% a.i.   SC #   CHEMICAL NAME
Tech.   Metolachlor
(CGA-24705)

Validator: **Date:**

Labuda   27 October, 1977

Test Type:

Aquatic Invertebrate Acute
Toxicity

Test ID.#   ESHI

CITATION: Aquatic Environemntal Sciences
              Union Carbide Corporation
              Tarrytown, New York
              26 May, 1976
              "Acute Toxicity of CGA-24705 Technical to the Water Flea
              (Daphnia magna)"

RESULTS: 24-hr. LC_{50} > 32.0 mg/l
              48-hr. LC_{50} = 25.1 mg/l (21.6-29.2)*
              48-hr. no effect level = 5.6 mg/l

              * 95% Confidence Interval.

VALIDATION CATEGORY: Core

VALIDATION CATEGORY RATIONALE: N.A.

CATEGORY REPAIRABILITY/RATIONALE: N.A.

Data Evaluation Record

1. CHEMICAL: Metobachlor (108801)

2. FORMULATION: Technical

3. CITATION: Vilkas, A.G.; (1976) Acute toxicity of CGA-24705 technical to the water flea Daphnia magna Straus. Aquatic Environmental Sciences. Received 11/76 under 100-LIT. (Unpublished report prepared by Ciba-Geigy Corp. Greensboro NC (226955).

4. REASON FOR REVIEW: Generic Standard for Metabachlor

5. REVIEWED BY: H.T. Craven
               Biologist
               Efficacy and Ecological Effects Branch
               Registration Division

6. DATA REVIEWED: 2/2/78

7. TEST TYPE: Fresh water aquatic invertebrate acute 48 hr.

A. TEST ID: ES H1

B. TEST SPECIES: Daphnia magna Straus

C. TEST MATERIAL: CGA Technical

D. REPORTED RESULTS

The 48 hr LC_{50} to D. magna is 25.1 (21.6-29.2) mg/l (ppm). The 48 hr. no effect level was observed to be 5.6 mg/l (ppm).

E. SUMMARY OF CONCLUSIONS   metabachlor

The study is scientifically sound and with an LC_{50} of 25.1 ppm is slightly toxic to aquatic invertebrates. The study does fulfill the requirements) for an aquatic invertebrate acute LC_{50}.

Test Species _Daphnia_   PROBIT ANALYSIS WORK SHEET   Chemical _Metolachlor CGA_

Source _Lab_   Date Tested _____-24__

o. Period _____   Analysis by: _A.G. Wilkes_

                                         (Name)   (Title)   (Date)

Concentration	No. dead/ No. tested	Observed % Mortality	Expected % Mortality	O-E	Contributions to Chi (Nomo #1)
		(40)	95	5.4	0.02
		75	69	6	0.0170
			26	16	0.132
			3.3	1.7	0.009
			0.13	0.13	(.01)
				Total	0.1829

Total Fish Tested = _____

Number of Doses (K) = _____

Degrees of freedom (K-2) = ___

Chi^2 = Total Cont. $\times$ $\dfrac{\text{Total fish}}{K}$ = _____
to Chi

Chi^2(p=.05) for ___ deg of freedom = _7.82_

DETERMINE fLC_{50}:

LC_{84} _____ $S = \dfrac{LC_{84}/LC_{50} + LC_{50}/LC_{16}}{2}$ = _____

LC_{50} _____

LC_{16} _____   N'(Fish used between 16% and 84% E) = _____

                                 $\sqrt{N'}$ = _____

$fLC_{50} = S^{2.77/\sqrt{N'}} = S$ _____   (Nomo. #2) = _____

DETERMINE fS:

R (Largest/Smallest dose plotted) _____

S (As determined above) _____

A (Nomo. #3 using R and S) _____

$fS = A^{10(K-1)/K\sqrt{N'}}$ = A _____   (Nomo. #2) = _____

DETERMINE fLC_y:

$(fS)^X = fS^{2.33 \text{ or } 1.30}$ (Table 3 and Nomo. #2) = _____

fLC_y (Nomo. #4 using $(fS)^X$ and fLC_{50}) = _____

RESULTS (LC_X and Confidence Limits at p = .05):

LC_1 = _____ LC_{50} = _____

  Lower Limit (LC_1/LC_y) _____   Lower Limit (LC_{50}/fLC_{50}) _____

  Upper Limit ($LC_1 \times LC_y$) _____   Upper Limit ($LC_{50} \times fLC_{50}$) _____
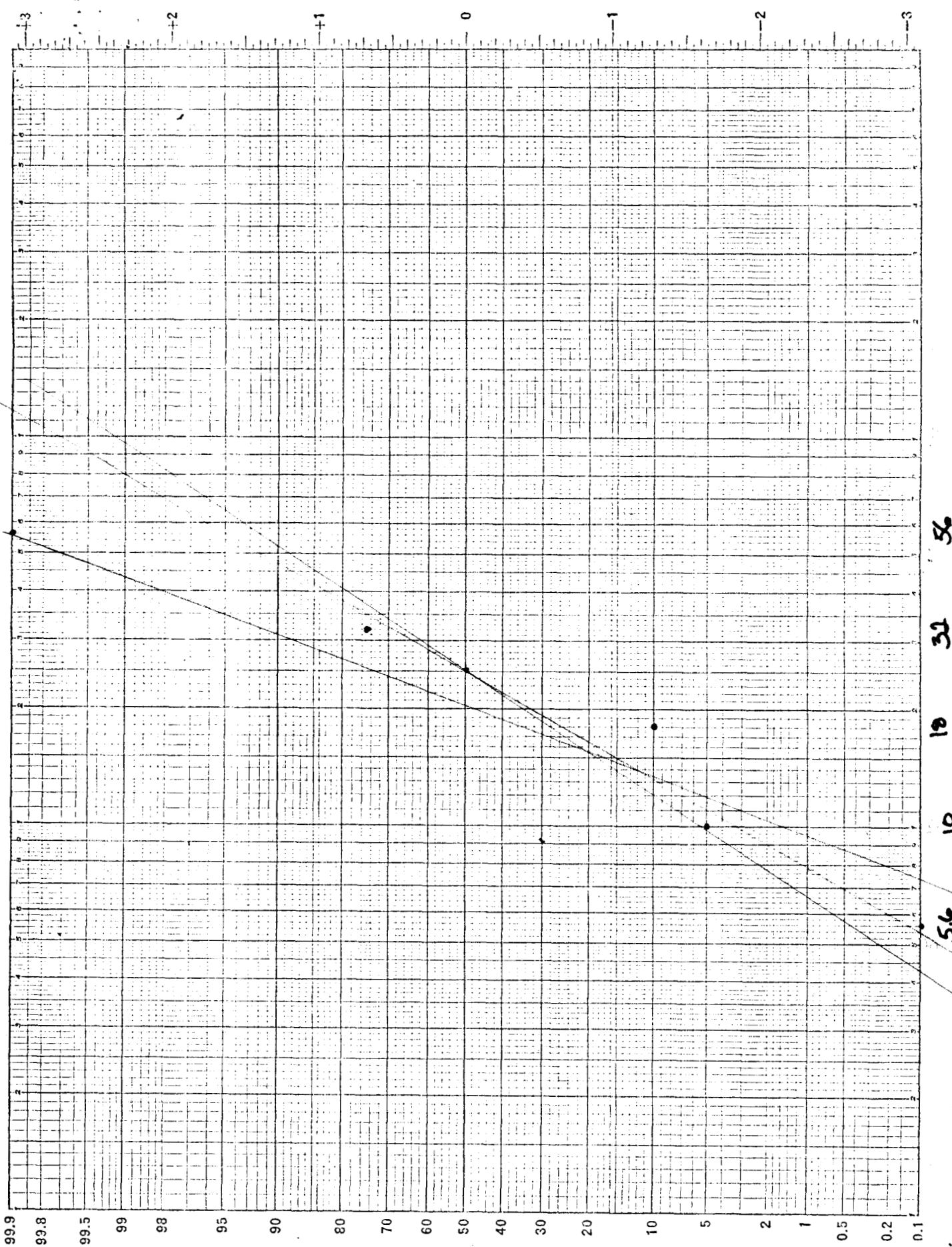
LC_{99} = _____

  Lower Limit (LC_{99}/LC_y) _____

  Upper Limit ($LC_{99} \times LC_y$) _____

No. 1. NOMOGRAPH FOR OBTAINING (Chi)² FROM EXPECTED % EFFECT AND OBSERVED-EXPECTED % EFFECT