034001

108801

000/5346

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. (Unpublished report prepared by Aquatic Environmental Sciences, Union Carbide Corp.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 requirement for an aquatic invertebrate acute LC_{50}.

2044717

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

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Henry T. Craven

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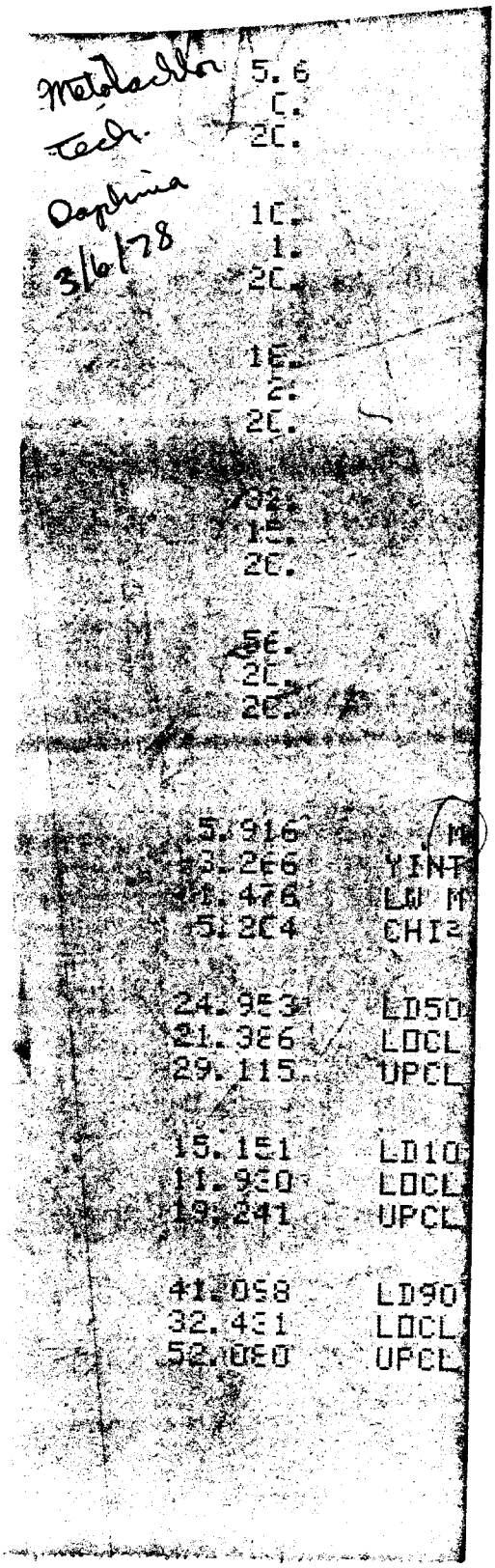

Metolachlor
Tech.
Daphnia
3/6/78
5.6
C.
2C.
1C.
1.
2C.
1E.
2.
2C.
2C.
5E.
2C.
2C.
5.916
3.266
3.476
5.204
24.953
21.326
29.115
15.151
11.930
19.241
41.058
32.431
52.080
M
YINT
LW M
CHI²
LD50
LOCL
UPCL
LD10
LOCL
UPCL
LD90
LOCL
UPCL

IA	IB	T	FW	EC	R		

FORMULATION:

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

Validator: Labuda

Date: 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

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

Source Lab

Exp. Period

PROBIT ANALYSIS WORK SHEET

Chemical

Date Tested

Analysis by: A.G. [illegible] (Name) (Title) (Date)

Concentration	No. dead/ /No. tested	Observed % Mortality	Expected % Mortality	O-E	Contributions to Chi (Nomo #1)
[illegible]	[illegible]	[illegible]	95	3.4	0.023[illegible]
[illegible]	[illegible]	75	69	6	0.0170
[illegible]			26	16	0.132
[illegible]			3.3	1.7	0.0092
[illegible]	[illegible]		0.13	0.13	[illegible]

Total Fish Tested =

Number of Doses (K) = [illegible]

Degrees of freedom (K-2) = [illegible]

Total 0.1829

Chi^2 = Total Cont. to Chi X Total fish / K = [illegible]

Chi^2(p=.05) for [illegible] deg of freedom = 7.82

DETERMINE fLC_{50}:

LC_{84} ______

LC_{50} ______

LC_{16} ______

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

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 =

Lower Limit (LC_1/LC_y)

Upper Limit (LC_1 X LC_y)

LC_{50} =

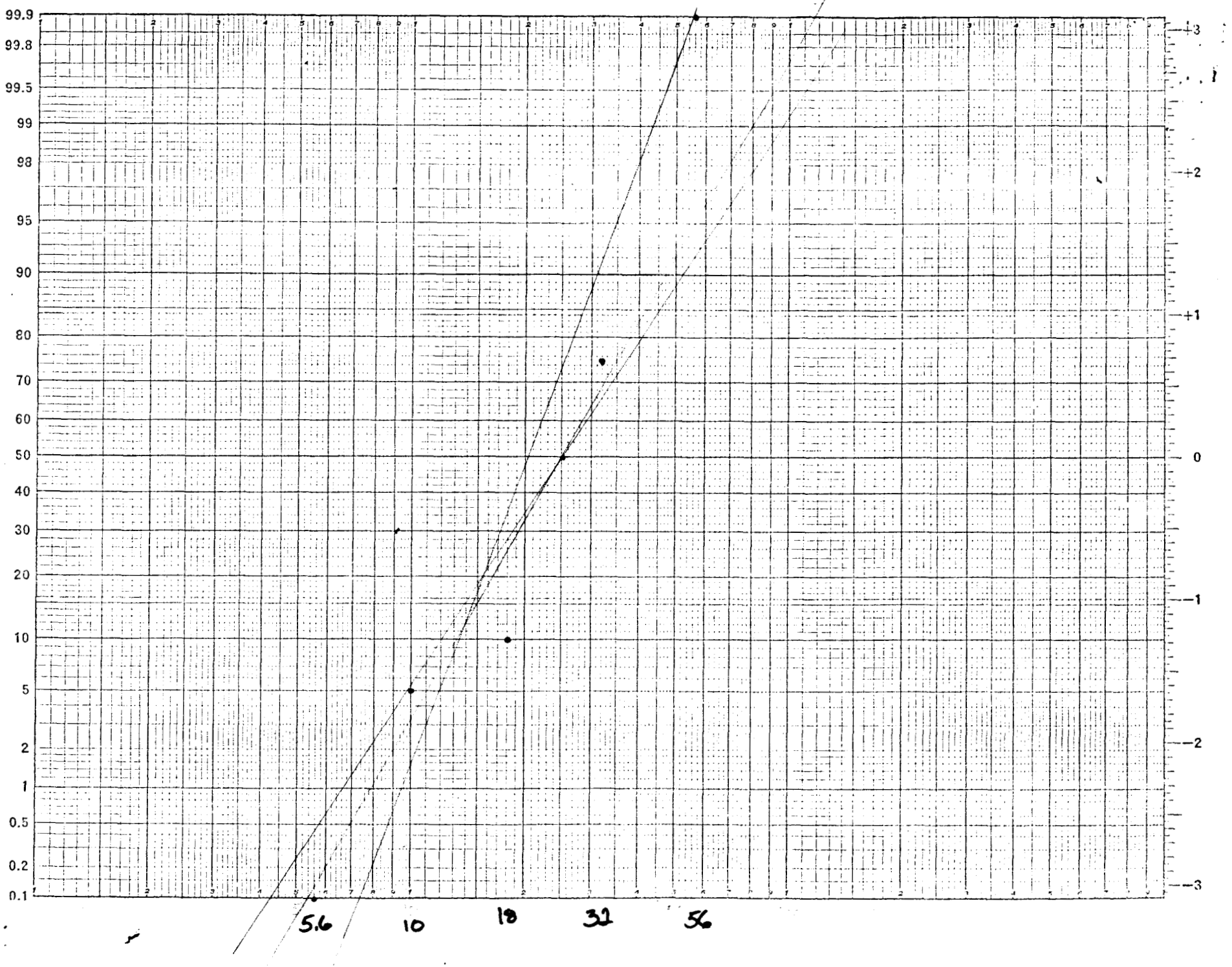
Lower Limit (LC_{50}/fLC_{50})

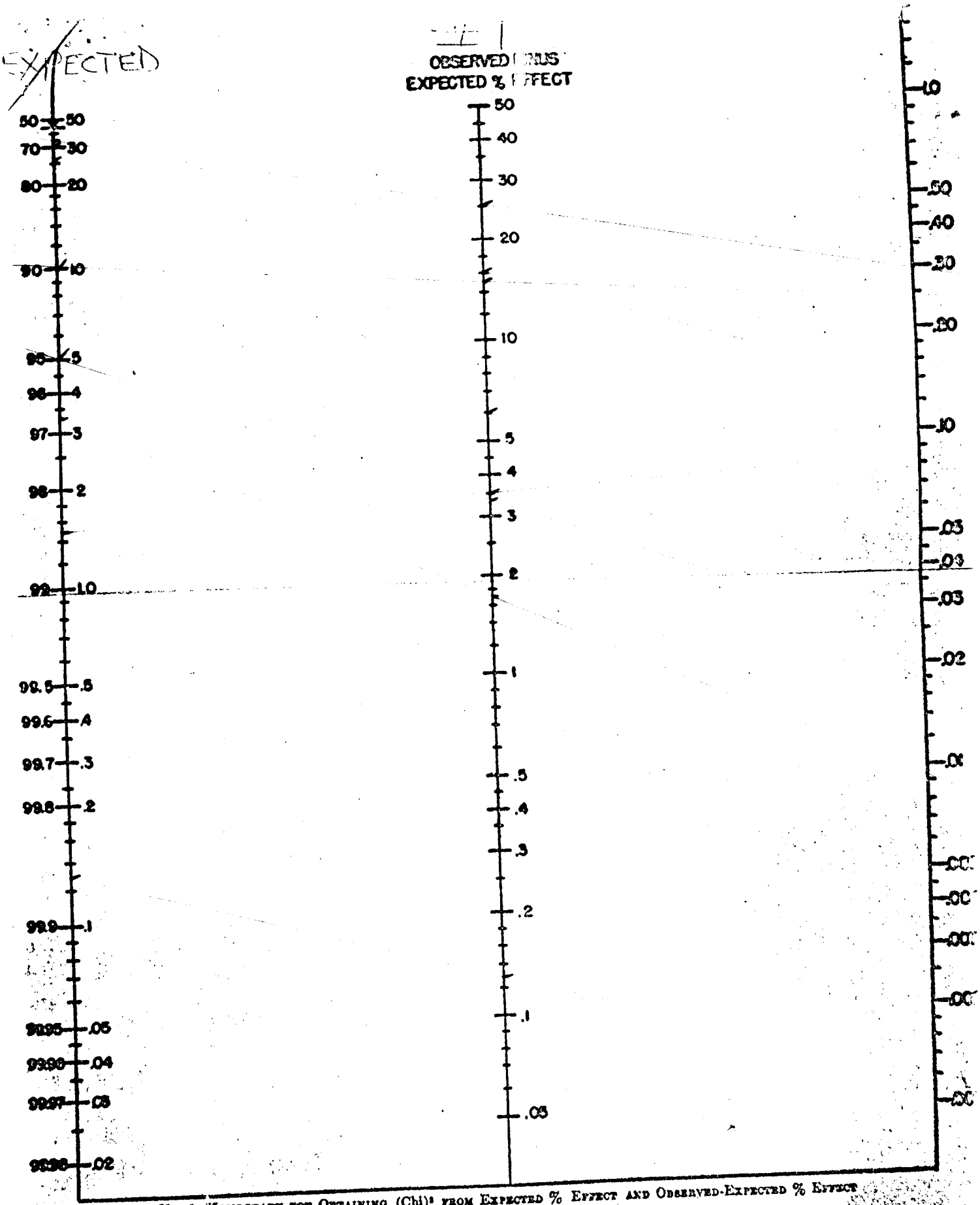
Upper Limit (LC_{50} X fLC_{50})

LC_{99} =

Lower Limit (LC_{99}/LC_y)

Upper Limit (LC_{99} X LC_y)


99.9
99.8
99.5
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
+3
+2
+1
0
−1
−2
−3
5.6
10
18
32
56



No. 1. Nomograph for Obtaining (Chi)^2 from Expected % Effect and Observed-Expected % Effect