8/5/86

Shaughnessy No.: 034401

Date Out of EAB AUG 5 1986

Signature:

To: William Miller
Product Manager # 16
Registration Division (TS-767)

From: Emil Regelman, Supervisory Chemist
Review Section #3
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Attached, please find the EAB review of...

Reg./File # : 239-1633

Chemical Name: Naled

Type Product : Insecticide / Acaricide

Product Name : Dibrom

Company Name : Chevron

Purpose : Registrants Response to Registration Standard , and requests for Data Waivers.

Action Code(s): 650; 660

EAB #(s) : 6721; 6722; 6723 6241; 6650; 6651

Date Received: 3/28/86

Monitoring submitted: _____

Date Completed: 8/04/86

Monitoring requested: _____

Total EAB Reviewing Time: 3.0 days

Deferrals to: _____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

1. CHEMICAL: Common name:

Naled

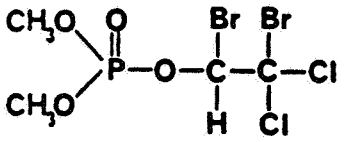
Chemical name:

1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate

Trade name(s):

RE 4355, Bromex, Dibrom

Structure:



Formulations:

4 and 6% D, 10-20% Impr., 2-7.2 lb/gal and 6-26% EC, 2.35-14 lb/gal and 11.4 and 20% SC/L, 1.26-12.6 lb/gal and 1-15% RTU/L.

Physical/Chemical properties:[a]

Physical state: Yellow liquid, slightly pungent odor
Melting point: 26.5-27.5°C
Boiling point: 110°C
Vapor pressure: 2×10^{-4} mm Hg at 20°C
Solubility: Practically insoluble in water. Freely soluble in aromatic and chlorinated hydrocarbons, ketones, alcohols.
Sparingly soluble in petroleum solvents and mineral oils.

[a] The Merck Index. 9th ed. 1976. Ed. M. Windolz. Merck & Co., Inc. Rahway, NJ.

2. TEST MATERIAL:

See individual studies.

3. STUDY/ACTION TYPE:

Addendum to the Naled Registration Standard.

4. STUDY IDENTIFICATION:

A. Bush, P., F. Selman, and M. Wright. 1986. Dissipation study on Dibrom 14 concentrate for forestry uses. ABC Report No. 33770. Analytical Bio-Chemistry Laboratories, Inc., Columbia, Missouri. Unpublished study received June 2, 1986 under 239-1633; submitted by Chevron Chemical Co., Richmond, CA. Preliminary Report - Study in Progress

B. Cheng H.M.,1986. Naled Accumulation Study Rotational Crops(Confined) June 10,1986. Submitted by Chevron Chemical Co.; Ortho Agr.Chem. Div. Development, Research Dept., Richmond ,California. Acc. No.263623

C. Chen, Y.S., J. Abell, and C.R. Tanner. 1984. Photodegradation of [ethyl-1-^{14}C]naled in water by long wavelength UV light. Unpublished study received Nov. 25, 1985 under 239-1633; submitted by Chevron Chemical Co., Richmond, CA.

D. Chevron Chemical Company. 1986. Preliminary report for naled soil dissipation study. Unpublished study received June 2, 1986 under 239-1633; submitted by Chevron Chemical Co., Richmond, CA.

E. Chevron Chemical Company. 1986. Naled Photodegradation in Air. ABC report no. 34595, Analytical Bio-Chemistry Lab. ,Inc.,Columbia,Mo. Unpublished study recd. June,1986; Submitted by Chevron Chem. Co. Richmond California. Acc. No. 236624. Preliminary Report - Study in Progress

F. Fujie, G.H., J.B. Leary, and J. Abell. 1984. Naled hydrolysis in aqueous solutions. Unpublished study received Nov. 25, 1985 under 239-1633; submitted by Chevron Chemical Co., Richmond, CA. G. Leary, J.B.(1970)

G. Leary, J.B. (1970)Decomposition of naled and DDVP in soils. File no. 721.2 (Unpublished study recd. Nov. 27,1970 under unknown adm. no.; submitted by Chevron Chemical Co., Richmond,California; CDL; 120336-A) [Aerobic Soil Metabolism] [Study Previously Reviewed]

H. Pack,et al. 1980. The soil metabolism of ^{14}C-naled(Dibrom) Unpublished study submitted October 2,1981 under 239-1633; submitted by Chevron Chemical Co., Richmond,California. [Aerobic and Anaerobic Soil Metabolism] [Study Previously Reviewed]

5. REVIEWED BY:

John H. Jordan, Ph.D.
Microbiologist
EAB/HED/OPP

Signature: John H. Jordan

Date: August 4, 1986

6. APPROVED BY:

Emil Regelman
Supervisory Chemist
Review Section #3,
EAB/HED/OPP

Signature: E Regelman

Date: AUG 5 1986

7. CONCLUSIONS:

A. Discussion of Registrant's Comments of 11/22/85 and 5/29/86

Aerobic Soil Metabolism

Two studies,G and H combined,(Section 4) satisfy the aerobic soil metabolism requirement.

Anaerobic Soil Metabolism (Submitted as Anaerobic Aquatic Study)

The Pack,et al. study H,(Section 4) includes an anaerobic and an aerobic study.

The anaerobic study H,(Section 4) does not satisfy the anaerobic aquatic requirement,because soil samples were not taken at the aquatic site. Aerobic soil samples were used for the aquatic study,therefore, according to the guidelines, the Pack,et al. study is an anaerobic soil metabolism study.The Pack, et al.,anaerobic soil metabolism study does not meet requirements,because,1) only CO_2 was measured in the samples treated with 12 ppm naled and,2) parent decline and degradate formation and decline were not established.

Photodegradation in Water

The photodegradation in water,study C,(Section 4) does not meet requirements, because no material balance was provided.

Photodegradation on Soil (No Study Submitted)

A soil or plant surface photodegradation study is required. The registrant is concerned that a soil photolysis study would only measure soil metabolism,because of the short half-life of naled. Because of the short half-life,in soil,a plant surface photolysis study must be substituted for the usual soil photolysis study. If plant-surface half-life photolysis data are available,the data may be submitted in lieu of the study.

Volatility - Lab Study (No Study Submitted)

The Agency requires a methods verification for the volatiles trapping procedure, used in the soil metabolism studies,because of the following rationale:

The v.p. for the naled degradate,DDVP, is 1.2×10^{-2} at 20°C,therefore,DDVP is potentially volatile;when naled is used in the greenhouse there may be an inhalation hazard.However, in the Pack,et al. study F,no volatile degradates except CO_2 were caught in ethanolamine and 2(2-ethoxyethoxy)ethanol traps. It does not seem logical that only CO_2 would be trapped,because,a) DDVP is a soil metabolite , b) DDVP is mobile in a variety of soils, and c) in study E, DDVP was found in all soils at the 1.3 ppm level within 24 hours.

A Naled laboratory volatility study and the volatiles method verification study are required.

Field Dissipation Study

A waiver is granted for the field dissipation study,because the aerobic soil metabolism and the preliminary soil dissipation studies show the very short half-life of naled and its degradates.

Accumulation in Irrigated Crops (No Study Submitted)

Naled has a short half-life in aerobic soil,but the data requirement for aquatic dissipation has not been satisfied. A waiver will be considered after the aquatic dissipation requirement has been satisfied.

B. Summary of DERs

1. Fujie, G.H. et al., 1984.(Study F in Section 4) Degradation- Hydrolysis This study does not satisfy data requirement, because, a)degradates not identified, b) purity of test substance not identified, c)material balance not provided and, d) no hydrolysis data obtained at pH-5.
2. Chen, Y.S.1984.(Study C in Section 4) Degradation--Photodegradation in Water. This study does not fulfill data requirement, because a material balance was not provided.
3. Chevron Chemical Co. 1986.(Study D in Section 4)[Field Dissipation-Terrestrial]. This stuay satisfies the data requirement.
4. Bush,P. et al. 1986.(Study A in Section 4)[Field Dissipation-Forestry] This preliminary study is incomplete; data will be evaluated when re-submitted.
5. Cheng,H.M.1986. (Study B in Section 4) [Confined Accumulation-Rotation Crops] This study is not acceptable,because maximum label rate was not used. One-half label rate was applied (2 lbs./Ac.) but only 0.5 ppm (one-fourth label rate) was detected at day 0, immediately after application. The study must be repeated using the maximum label rate of 4 lbs ai Ac.

8. RECOMMENDATIONS: The attached Table 1, page 5, shows data gaps and requirements that have been satisfied. Extension of time (to 12/86) for submission of Forestry Dissipation (Study A) and Photodegradation in Air(Study E) is granted.

TABLE 1.

Naled Registration Standard - Addendum

Data Requirements Satisfied	Data Gaps
Aerobic Soil Metabolism	Hydrolysis
Mobility (Leaching in soils)	Batch Equilibrium
Field dissipation	Photodegradation, Water
Field dissipation long term	Photodegradation, Soil
Aquatic non-target	† Photodegradation, Air
Accumulation in fish	Volatility, Lab
	Re-entry, foliar residue decline curve
	* Anaerobic Soil metabolism
	Anaerobic aquatic metabolism
	Aquatic field dissipation
	† Forestry (soil) field dissipation
	Accumulation irrigated crops
	Confined Rotation Crops
	Aerobic aquatic metabolism
	*An acceptable anaerobic aquatic study will replace anaerobic soil metabolism
	† = in progress.
	Conditional
	Field Crop Rotation
	Volatility, Field

9. BACKGROUND:

A. Introduction

1. Chevron submitted additional studies A,B,C,D,E, and F (Section 4) to satisfy data requirements identified in the Registration Standard. Two previous studies,G and H,(Section 4) address aerobic and anaerobic soil metabolism.

2. Data waivers were requested for:

a. Field Dissipation-Soil (Waived by EAB)
b. Field Dissipation-Aquatic (Required)
c. Accumulation - Irrigated Crops (Required)
d. Photodegradation on Soil (Required on Foilage)
e. Volatility Lab (Required)
f. Aerobic Soil Metabolism (Satisfied Requirement)
g. Anaerobic Aquatic Metabolism (Required)

3. Clarification of the following requirements,in the Registration Standard, was requested in the registrant's Vol.I,II, and memoranda attached to the original Registration Action request:

a. Aerobic Soil Metabolism (Satisfied Requirement)
b. Anaerobic Aquatic Metabolism (Study not Acceptable)
c. Photodegrdation on Soil (Study Required on Foliage)
d. Volatility Lab (Study Required - See page 3.)
e. Field Dissipation (Waived by EAB)
f. Aquatic Field Dissipation (Study Required)

4. Extension of time for submission of studies A and E (Forestry Dissipation and Photodegradation in Air) was requested.

B. Directions for Use

Naled is a nonsystemic insecticide-acaricide registered for use on field, vegetable, and orchard crops; livestock and poultry and their surroundings; greenhouses; forest and wasteland; agricultural, domestic, medical, and commercial establishments; and urban and rural outdoor areas (mosquito control). Of the naled applied in the United States the major use sites are: fruit, nut, vegetable, and field crops (50%); mosquito control (35%); dog flea collars (10%); and livestock (5%). Naled is formulated into dusts (D; 4 and 6%), impregnated materials (Impr; 10-25%), emulsifiable concentrates (EC; 2-7.2 lb/gal and 6-26%), and ready-to-use/liquids (RTU/L; 1.26-12.6 lb/gal and 1-15%). Naled is applied by using aircraft and ground equipment including mist sprayers and foggers. The specific type of equipment is determined by site and equipment availability. Applicators need not be certified to apply naled.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

See attached reviews of individual studies. The incomplete, Photodegradation in Air study , E , was not reviewed.

11. COMPLETION OF ONE-LINER:

One-liner not initiated to date

12. CBI APPENDIX:

No CBI included except the hard copy in the original package