114501
SHAUGHNESSEY NO.

4
REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 10/21/81 OUT 12/1/81

FILE OR REG. NO.

PETITION OR EXP. PERMIT NO. 264-EUP-AN, 264-EUP-AR

DATE OF SUBMISSION 10/9/81

DATE RECEIVED BY HED 10/16/81

RD REQUESTED COMPLETION DATE 1/16/82

EEB ESTIMATED COMPLETION DATE

RD ACTION CODE/TYPE OF REVIEW 705/EUP

TYPE PRODUCT(S): I, D, H, F, N, R, S Insecticide

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. J. Ellenberger (12)

PRODUCT NAME(S) Larvin 500
Larvin 3.2

COMPANY NAME Union Carbide

SUBMISSION PURPOSE Proposed EUP for use on cotton and soybeans

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
114501	Thiodicarb	35.8%

LARVIN 3.2 and LARVIN 500

100 Experimental Use Label Information

100.1 Pesticide Use

Cotton and Soybeans

100.2 Formulation Information

Larvin 3.2 contains 33% Thiodicarb as active ingredient
Larvin 500 contains 44% Thiodicarb as active ingredient

100.3 Application Methods, Direction, Rates

Both LARVIN 500 and LARVIN 3.2 are aqueous flowable products to be diluted with water for application by ground or air equipment.

To prepare for spraying, fill tank about one-half full of water. Add LARVIN Insecticide according to use directions and mix thoroughly by mechanical or hydraulic agitation.

Apply when insects first appear. Repeat as needed, usually at 5 to 7 day intervals for most pests. Use sufficient water to obtain adequate and uniform coverage. Low rates are for small plants or early infestations. Higher rates are for larger plants or more established pest populations. For air application, up to five gallons of total spray per acre is suggested.

Physical compatibility of LARVIN insecticides with other pesticides is not fully known but it has been used effectively with common insecticides and miticides. Before preparing tank-mix combinations, add a small amount of LARVIN Insecticide to water and then add the other pesticide. DO NOT USE MIXTURES THAT CURDLE, PRECIPITATE OR GREASE. Unstable under highly alkaline conditions.

SUGGESTIONS FOR EXPERIMENTAL USE

DOSAGE PER ACRE

CROP	INSECT	Pounds ACTIVE	SUGGESTED TIMING & COMMENTS
Cotton	Beet armyworm Cotton bollworm Tobacco budworm Cabbage looper Saltmarsh caterpillar Fall armyworm	0.3 to 0.9	Use lower rates for early infestations and newly hatched larvae. As worm pressure increases dosage should be increased. Use maximum rate for emergeny reduction of established worms. Good pest management practices are suggested.
	Cotton leaf-perforator Pink bollworm	0.6 to 0.9	Apply as insect infestations occur. Repeat as required.
Soybeans	Beet armyworm Corn earworm Green Cloverworm Velvetbean caterpillar Fall armyworm Yellow striped armyworm Tobacco badworm Mexican bean beetle	0.2 to 0.45	Apply when insects begin to reach economic damaging levels. Follow good pest management practices. As worm populations just begin to cause economic damage, use lowest rates. Repeat with this rate or increase, depending on infestation.

100.4 Target Organism

See preceeding section.

100.5 Precautionary Labeling

PROTECTION OF ENVIRONMENT - This product is moderately toxic to fish and wildlife. Keep away from ponds, lakes or streams. Do not contaminate bodies of water when cleaning spray equipment or disposing of waste. Do not apply where runoff is likely. Avoid direct application to foraging honeybees or bee hives. Apply late in evening or early morning where honeybees visit fields or orchards.

100.6 Proposed EUP Program

100.6.1 Objectives

The two year program has the following objectives:

a. To determine effects of LARVIN 500 and LARVIN 3.2 on lepidopterous insects attacking cotton and soybeans by aerial or ground applications in accordance to IPM practices.

b. To confirm absence of phytotoxicity from proposed label dosage rates at multiple application of LARVIN 500, and LARVIN 3.2.

c. To confirm the magnitude of residues in or on cotton and soybeans from multiple applications of LARVIN 500 and LARVIN 3.2.

d. To compare effect on maturity, yield, quality and overall growth characteristics on cotton and soybeans with standard products now in commercial use.

e. To record impact on beneficial organisms and other non-target pests in cotton and soybean plantings.

f. To determine role of LARVIN 500 and LARVIN 3.2 in IPM programs on cotton and soybeans.

g. To confirm similarity of performance among the two LARVIN formulations under evaluation.

100.6.2 Date, Duration

Two years beginning with granting of the permit.

100.6.3 Amount Shipped, Geographieal Distribution

In 1982, 4,171 lbs will be shipped
In 1983, 8,626 lbs will be shipped.

Cotton/Soybeans EUP
States and Material Requirements
For Both Larvin 3.2 and Larvin 500

1982 SUMMARY

State	Crop	Number of Locations	Acres per Location	Applications per Acre	TOTAL* LBS. AI REQUIRED
Alabama	Cotton	2	10	15	252
	Soybeans	2	10	2	26
Arkansas	Cotton	2	20	15	432
Arizona	Cotton	3	40	8	634
California	Cotton	2	40	8	422
Georgia	Cotton	1	10	15	126
	Soybeans	1	10	2	13
Indiana	Soybeans	1	10	2	13
Iowa	Soybeans	1	10	2	13
Louisiana	Cotton	2	20	15	432
	Soybeans	3	10	2	26
Mississippi	Cotton	3	20	15	648
	Soybeans	1	10	2	13
Missouri	Cotton	1	20	15	216
N. Carolina	Soybeans	2	10	2	26
Oklahoma	Cotton	1	20	8	115
S. Carolina	Cotton	2	10	15	252
	Soybeans	1	10	2	13
Texas	Cotton	5	20	8	460
	Soybeans	2	10	2	26
Virginia	Soybeans	1	10	2	13
Totals		39	700		4,171

*This column includes waste which is based on 0.60 lbs a.i./A average use rate X 4 acres waste/application/location.

A total of 2050 acres will be involved in this EUP

1983 Summary

State	CROP	Number of Locations	Acres per Location	Applications per Acre	TOTAL* LBS. AI REQUIRED
Alabama	Cotton	4	10	15	504
	Soybeans	3	10	2	38
Arkansas	Cotton	4	20	15	864
	Soybeans	1	10	2	13
Arizona	Cotton	6	40	8	1267
California	Cotton	4	40	8	845
Florida	Soybeans	1	10	2	13
Georgia	Cotton	2	10	15	252
	Soybeans	3	10	2	38
Illinois	Soybeans	1	10	2	13
Indiana	Soybeans	2	10	2	25
Iowa	Soybeans	2	10	2	25
Kentucky	Soybeans	1	10	2	13
Louisiana	Cotton	4	20	15	864
	Soybeans	3	10	2	38
Mississippi	Cotton	5	20	15	1296
	Soybeans	3	10	2	38
Missouri	Cotton	2	20	15	432
	Soybeans	1	10	2	13
New Mexico	Cotton	2	20	8	230
N. Carolina	Cotton	2	10	15	252
	Soybeans	3	10	2	38
Ohio	Soybeans	1	10	2	13
Oklahoma	Cotton	2	20	8	230
	Soybeans	1	10	2	13
S. Carolina	Cotton	2	10	15	252
	Soybeans	3	10	2	38
Tennessee	Soybeans	1	10	2	13
	Cotton	2	20	15	432
Texas	Cotton	4	20	8	461
	Soybeans	3	10	2	38
Virginia	Soybeans	2	10	2	25
Totals		80	1350		8,626

*This column includes waste which is based on 0.60 lbs. a.i./acre average use rate X 4 acres waste/application/location.

All applications are at 0.6 lbs. a.i./acre

100.6.4 Other Test Features

LARVIN 500 LARVIN 3.2 Insecticide will be packaged in one-gallon plastic bottles and overpacked in suitable DOT-approved containers. LARVIN 500 contains 500 grams/liter, or 1.075 lbs. active/quart. LARVIN 3.2 contains 385 grams/liter, or 0.8 lbs. active/quart.

101 Physical and Chemical Properties

See EEB review by Ray Matheny dated 12/15/78

102 Behavior in the Environment

According to an EFB review dated 3/1/79, which is attached to EEB memo on thiodicarb dated 11/18/80, the halflife of thiodicarb in water when exposed to light is 80 days. Its immediate major degradate is methomyl. Half-life values of thiodicarb were less than 1 week and about one week under aerobic and anaerobic conditions, respectively. Bioaccumulation studies show a low accumulation potential in fish.

103 Toxicological Properties

See EEB review by R. Matheny dated 12/15/78 and EEB memo by A. Yamhure dated 11/18/80.

In summary, thiodicarb is apparently moderately toxic to mammals, practically non-toxic to birds, highly to moderately toxic to fish and very highly toxic to aquatic invertebrates.

104 Hazard Assessment

104.1 Discussion

Thiodicarb is very toxic to aquatic organisms and is relatively persistent in the field, however the number of acres proposed in this EUP, 2050 acres, is considered low. The use of Larvin (thiodicarb) on this amount of land is expected to result in only minimal adverse environmental effects.

104.2 Likelihood of Adverse Effects

See the EEB review by R. Matheny dated 12/15/78 and the EEB memo by A. Yamhure dated 11/18/80 for discussions on the possible adverse effects of Larvin on the environment.

104.3 Endangered Species

Because of its low toxicity to birds and mammals, it is unlikely that thiodicarb will effect these endangered species. The effects on aquatic endangered species will be negligible because of the limited acreage involved.

104.4 Adequacy of Toxicity Data

The available data are adequate to asses the hazards of this EUP. However for full registration, additional data are required, see section 105.4.

105 Conclusions

105.2 Environmental Hazards Labeling

The precautionary labeling is adequate as it appears.

105.4 Data Requests

The following additional data were requested in a previous review by A. Yamhure, 11/18/80 because of the high toxicity and persistence of thiodicarb.

- An invertebrate life-cycle study (with Daphnia sp.)
- An fish embryolarvae study
- Field studies that would demonstrate the actual aquatic concentrations of thiodicarb and methomyl under natural conditions similar to those expected to occur under actual agricultural use practices.

105.6 Recommendations

Issuance of this EUP is not likely to result in significant adverse effects to the environment.

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