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EEE BRANCH REVIEW

DATE: IN 12/14 OUT 5/30/78 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 1016-69

PETITION OR EXP. PERMIT NO. 6F1829

DATE DIV. RECEIVED

DATE OF SUBMISSION

DATE SUBMISSION ACCEPTED

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

DATA ACCESSION NO(S). 096397

PRODUCT MGR. NO. (12) Sanders

PRODUCT NAME(S) Temik 10% Granular Aldicarb Pesticide

COMPANY NAME Union Carbide Corp.

SUBMISSION PURPOSE Resubmission of data

CHEMICAL & FORMULATION 2-methyl-2-(methylthio) propionaldehyde O-(Methylcarbamoyl) oxime

100.0 Pesticide Use:

Temik 10% granular Aldicarb pesticide is proposed for use on oranges to control aphids, mites and citrus nematode.

The purpose of this resubmission is to enter new fish and wildlife data to support registration.

101.0 Chemical and Physical Properties:

See previous reviews by R. W. Felthousen dated 4/9/77 and L. W. Turner dated 1/31/78.

102.0 Behavior in the Environment:

See previous reviews listed above.

103.0 Toxicological Properties:

Previous reviews indicate that the following fish and wildlife tests must be submitted or referenced to support registration:

A. 48 hour LC_{50} for an aquatic invertebrate,

B. 8-day dietary LC_{50} for one species of wild waterfowl,

C. An Avian acute oral LD_{50} on one species of wild waterfowl or upland game bird,

D. A 96 hour LC_{50} for a cold water and a warm water fish.

The following is a list of submitted studies with their appropriate validation and data revision number.

Study	Validation	Data Review No.
Aldicarb toxicity to grass shrimp	~~Supp.~~ Invalid	ES-L-1, ES-M-1
Aldicarb toxicity to Daphnia	Invalid	ES-H-1
8 day dietary LC_{50} of Aldicarb to mallard ducks, ring-necked pheasants, Japanese quail.	Core	ES-E-1, ~~ES-B-1~~
	Supp.	ES-P-1, ES-D-2
Acute oral LD_{50} of Aldicarb to mallard ducks	Supp.	ES-C-1
96 hour LC_{50} of Aldicarb to rainbow trout	Supp.	Study #4*
96 hour LC_{50} of Aldicarb to bluegill sunfish	Supp.	Study #3*

* Studies validated by R. W. Felthousen in his TEMIK review dated 4/9/77

The validation sheets for the above studies follow.

STUDY VALIDATION

DATA REVIEW NUMBER: ES-L-1, ES-M-1

TEST: Acute 96 hour LC_{50} (marine and Fresh water shrimp)

SPECIES: marine; Palaemonetes pugio
freshwater; P. kadiakensis

RESULTS:

An unknown number of the above species were tested in flow through systems including a control and four concentrations of Temik. The test is essentially a range-finding test using four concentrations, 1.0 ppm, 0.1 ppm, 0.01 ppm and 0.001 ppm. Polyethylene glycol was used as a carrier. Prior to testing the shrimp were acclimated to testing conditions (21°C and salinity) for 24 hours.

Temik at 0.1 ppm and above was acutely toxic to P. pugio. After 96 hours P. kadiakensis appeared not to be effected at any concentration and after 1 week they showed little or no effects from temik.

CHEMICAL: Temik (% a.i. unknown)

TITLE: letter from EPA Gulf Breeze Lab to Shell Development Co. dated June 7, 1972

Accession No: 096397, Reg nos. 1016-69 and 1016-78 document no. 1.

STUDY DATE: unknown

RESEARCHER: Tom Heitmuller, E.P.A. Gulf Breeze Lab.

REGISTRANT: Union Carbide Corp., Agricultural Products Division

VALIDATION CATEGORY: ~~Supplemental~~ Invalid Fish

CATEGORY REPAIRABILITY: None

Although not stated, the apparent purpose of the study was to conduct a preliminary toxicity test. The range of concentrations were widely spaced. The following basic information was not furnished.

1. detailed description of the toxicant
2. source and chemical characteristics of the dilution water
3. detailed information about the test organisms
4. description of the experimental design - test chambers and toxicant delivery system
5. % of organisms died or the number used
6. LC_{50} values were not determined

STUDY VALIDATION

DATA REVIEW NUMBER: ES-H-1

TEST: Aquatic invertebrate LC_{50}

SPECIES: Daphnia magna

RESULTS: LD_{50}, 30 minutes, 0.164 ppm.

CHEMICAL: TEMIK (% a.i. unknown)

TITLE: TOXICITY TESTING; a letter with attachments from Shell Chemical Co. (H.G. Staaterman) to Union Carbide Corp. (Dr. Moorefield) dated July 13, 1971.

ACCESSION NO: 096397 (Document #2)

STUDY DATE: unknown

RESEARCHER: Shell Chemical Corp.

VALIDATION CATEGORY: Invalid

CATEGORY REPAIRABILITY: No

The report (letter) mentioned the test results in passing, giving no details about the experimental procedures or design.

STUDY VALIDATION

DATA REVIEW NUMBER: ES-D-1, ES-D-2, ES-E-1

TEST: Avian subacute dietary LC_{50}

SPECIES: D-1, Ring-necked pheasant
D-2, Japanese quail
E-1, Mallard duck

RESULTS:

SPECIES	TOXICITY (95% Conf. limits)
Ring-neck pheasant	LC_{50} > 300 ppm (no mortality at 300 ppm)
Japanese quail	LC_{50} = 381 ppm (317-453 ppm)
Mallard (10 days old)	LC_{50} < 1000 ppm (70% mortality at 1000 ppm)
Mallard (5 days old)	LC_{50} = 594 (507-695 ppm)

CHEMICAL: Aldicarb (% a.i. unknown)

TITLE: Lethal Dietary Toxicities of Environmental Pollutants to Birds. USDI, Fish and Wildlife Service, No. 191

ACCESSION NO: 096397 Pet. No. 6F1849

RESEARCHER: E. F. Hill, R. G. Heath, J. W. Spann, and J. D. Williams

REGISTRANT: Union Carbide Corp.

VALIDATION CATEGORY: ~~D-1 and~~ E-1 = CORE
D-1 and D-2 = Supplemental

CATEGORY RATIONAL: Felthousen memo dated 12/12/77, except that the pheasant study was termed supplemental because no dose level higher than 300 ppm was tested.

STUDY VALIDATION

DATA REVIEW NUMBER: ES-C-1

TEST: Avain acute oral

SPECIES: Mallard duck (Anas platyrhynchos)

RESULTS: LD_{50} values for four age groups were determined:

AGE		TOXICITY LC_{50} (95% conf. limits)
36 hr.	3 hrs.	1.92 mg/kg (1.55 - 2.37 mg/kg)
7 days	1 day	3.60 mg/kg (2.90 - 4.49 mg/kg)
30 days	3 days	6.73 mg/kg (5.29 - 8.55 mg/kg)
6 mo.	3 days	4.44 mg/kg (3.49 - 3.65 mg/kg)

The experiment was designed to determine the effect of age on mallard sensitivity to toxicants. To determine the effect, LD_{50}'s were run on different aged kinds using 5 doses with 5 birds per dose level (personal communication with R. Tucker).

CHEMICAL: Temik 95% purity

TITLE: Effect of Age on Sensitivity: Acute Oral Toxicity of 14 Pesticides to Mallard Ducks of Several Ages

RESEARCHER: R. H. Hudson, R. K. Tucker, and M. A. Haegele, Denver Wildlife Research Center

ACCESSION NO: 096397 ("Document #4)

STUDY DATE: Circa 1971

REGISTRANT: Union Carbide Corp.

VALIDATION CATEGORY: Supplemental

CATEGORY REPAIRABILITY: Yes, to CORE if the following data is submitted:

1. Bird weights and food consumption during the testing period.

2. Raw mortality data so that a statistical analysis may be performed.

3. Signs of intoxification

4. Date of study

NOTE: It is recognized that the referenced study was conducted at a U.S. Government lab by highly qualified investigators, however, due to a lace of the requested data the study was validated as supplemental

104.0 Hazard Assessment:

No assessment is necessary - Data submission only.

104.1.3 Adequacy of Toxicity Data:

Upon reviewing the data, the only study that will support registration is the 8 day dietary LC_{50} of Aldicarb to mallard ducks. The other studies submitted did not provide the in-depth information about the tests or results to analize the studies.

104.1.4 Additional Data Required:

1. A 48 hour LC_{50} for one species of aquatic invertebrate (preferably Daphnia magna).

2. An acute oral LD_{50} for either one species of wild waterfowl (mallard) or one species of upland game bird (bobwhite quail or ring-necked pheasant). The species used in the acute oral study should be the same as the species used in the dietary study ~~(i.e., mallard duck or ring-necked pheasant)~~.

3. An avian dietary LC_{50} for upland game bird (bobwhite quail or ring-necked pheasant).

4. A 96 hour LC_{50} for one species of cold water and warm water fish.

107.0 Conclusions:

107.4 Data Adequacy:

The only acceptable study was the 8 day dietary LC_{50} of Aldicarb to mallard ducks ("document #3).

107.5 Data Requests:

Prior to registration, the following information must be submitted or referenced using technical temik.

1. A 48 hour LC_{50} for one species of aquatic invertebrate (Daphnia magna).

2. An acute oral LD_{50} for either one species of wild water fowl or one species of upland game bird. The species used in the acute oral study should be one of the same species used in the dietary studies ~~(i.e., mallard duck or ring-necked pheasant)~~.

3. An avian dietary LC_{50} for upland game bird (bobwhite quail or ring-necked pheasant).

4. A fish acute 96 hour LC_{50} for one species of cold water and one species of warm water fish.

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EEEB-RD WH567
5/30/78