

HAZARD EVALUATION: WILDLIFE AND AQUATIC ORGANISMS CHECKLIST

<u>Study Type</u> a)	<u>Species</u>	<u>LARVIN™ Technical</u>
x Avian Single-dose LD ₅₀ (163.71-1) <i>(upland gamebird)</i>	Bobwhite Quail	LD ₅₀ = 2023 mg/kg ✓✓
x Avian Dietary LC ₅₀ (163.71-2) <i>(wild waterfowl)</i>	Mallard Duck	LC ₅₀ = >5620 ppm ✓✓
	Bobwhite Quail	LC ₅₀ = >5620 ppm ✓
Mammalian Acute Toxicity (163.71-3)	Wild Mammals	Not Required
Avian Reproduction (163.71-4)	Birds	Not Required
Simulated & Actual Field Testing (163.71-5)	Mammals & Birds	Not Required
Aquatic Organism Testing - Acute Toxicity (163.72-1) <i>fish ACUTE (2 species)</i>	x Bluegill Sunfish <i>(fresh)</i> ^{water H₂O}	LC ₅₀ = 1.21 mg/liter (96-hour)
	x Rainbow Trout <i>(fresh)</i> ^{old H₂O}	LC ₅₀ = 2.55 mg/liter (96-hour)
	Brook Trout <i>(fresh)</i>	LC ₅₀ = 4.45 mg/liter (96-hour) ✓
x Aquatic Invertebrate - Acute Toxicity (163.72-2)	Daphnia sp.	LC ₅₀ = .0053 mg/liter (48-hour) ✓✓
Estuarine & Marine Organisms - Acute Toxicity (163.72-3)	Grass Shrimp	LC ₅₀ = 0.056 mg/liter (96-hour)
	Fiddler Crab	LC ₅₀ = 2.54 mg/liter (96-hour) ✓
	Coho Salmon	LC ₅₀ = 2.98 mg/liter (96-hour) (3.98?) ✓
Embryo-Larvae & Life-cycle Studies (163.72-4)	Fish	Not Required
	Daphnia sp.	Not Required
Aquatic Organism Toxicity & Residue Studies (163.72-5)	-	Not Required
Simulated or Actual Field Testing for Aquatic Organisms (163.72-6)	-	Not Required

a) References in parenthesis indicate paragraph numbers:
40 CFR Part 163, August 22, 1978.

COMPARATIVE ENVIRONMENTAL TOXICOLOGY

Trade Name	Common Chemical Name	Class	LD ₅₀ (mg/kg)				LC ₅₀ (ppm)					Exposure Time (hr)	Amphiboid
			Oral LD ₅₀ Rat	Oral LD ₅₀ Mammal	Oral LD ₅₀ Fish	Dermal LD ₅₀ (eggs/m ² /hr)	Rainbow Trout	Brook Trout	Coho Salmon	Bluegill	Sheepshead or Flathead Minimum		
Isulthion	Azinphos	OP	16	136	84.2		0.49		0.174			24 48	0.56
Various	Methyl parathion	OP	4 to 30	10.0	6.0		2.75		5.3			24 48	
	Ethyl parathion	OP	4 to 30	1.9 to 2.1	6.0		2.0		0.047			24 48	12
Sevin	Carbaryl	Carb	540	>2178	2290		4.36		0.764		20-30,000 13,000	24 48 96	40
DOT	DOT	CAC	470 to 600	>2240	841		.007		.004			24 48	4.7
Various	Diazinon	OP	76 to 108	3.5			0.380		.052			24 48	600 500
Various	Biomethosate	OP	185 to 245	41.7			19		28			24 48	900
Dusban or Lorban	Chlorpyrifos	OP	135 to 80	70 to 80	61		.020					24 48	0.76 0.4
Thiodan	Emulsifan	CAC	100	33			.0012					24 48	9.2 64
Various	Melathion	OP	480 to 1500	1485			0.17	0.0195	0.101	0.103	12,500	24 48 96	3.8 1.8
Lannate/ Madrin	Methoxy	Carb	17 to 24	15.9			3.4				4,000	24 48 96	
Larvio	Thiodicarb	Carb	248 to 396	5620 Ppm 8 day dietary	2241	842	2.55	4.45	2.36	1.21	5,000 960	24 48 96	789
Various	Terbufos	CAC	69	70.7	85.4		0.05		.008	.0035		24 48 70	180 60
Dilox	Trichlorfon	OP	450				3.2				180,000	24 48	92 60
Orthene	Acaphase	OP	846 to 845	250	1000					20-50		24 48 96	
Pyreth	fenvalerate	Pyre-throid	151	9932	35,000							24 48 96	
Amush Pounce	Permethrin	Pyre-throid	1200 to 8900	4640	10,000		.0054 .0012	.0185	.016	.0116 .0116	<150 .054	24 48 96	
Pyrofl	AC222,705	Pyre-throid	67	26510	700				✓			24 48 96	

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Validation Sheet

Formulation: UC 51762 - Technical grade 99%

Chemical Name(s): Thiodicarb (Larvin)

Validator: Alvaro A. Yamhure

Date: 12/17/80

Type Test: Aquatic Invertebrate
48-hours LC50

Test ID: Issued 6/16/80 by Union Carbide Corp. -Scientific
investigator Alice M. Brown - Date of testing 12-14
June, 1980 UCES Project No.: 11504-25

Citation: Brown, Alice M., 1980 (6/16/80) Union Carbide Corporation
Environmental Services for Union Carbide (Project 11504-25)

Validation Category: Core

Results:

<u>Species</u>	<u>Test Type</u>	<u>(95%) Confidence Limit</u>
<u>Daphnia magna</u> Strauss	48-hour LC50 0.0053 ppm	0.0044 - 0.0064 ppm

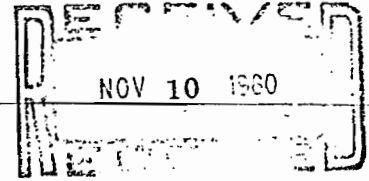
Validation Category Rational: Meets all of EPA requirements.

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INTERNAL CORRESPONDENCE



AGRICULTURAL PRODUCTS COMPANY, Inc. • 7825 BAYMEADOWS WAY, P.O. BOX 17610, JACKSONVILLE, FLA. 32216

To (Name) J. S. Lovell
Division
Location
Floor Number

Date November 10, 1980
From (Name & Dept.)

Answering letter date

Copy to V. Dorr
H. H. Moorefield
H. S. Yang

Subject LARVIN Sample for Static Acute
Daphnia magna

Dear Steve:

The test sample for the LARVIN (thiodicarb) static acute test on Daphnia magna was shipped on November 15, 1979 by Mr. H. D. Conley of R & D Dept. The reference number was 24-TDS-67 and the assay was 99%+ active thiodicarb.

This sample was used in the report No. 11504-25, Archive ref. UNIO/LARV/SADM/061680 which is Document No. 9 in the fish and wildlife book submitted as part of the Application for Registration of LARVIN Thiodicarb Insecticide given to EPA on September 9, 1980.

R. G. Haines

RGH/bk

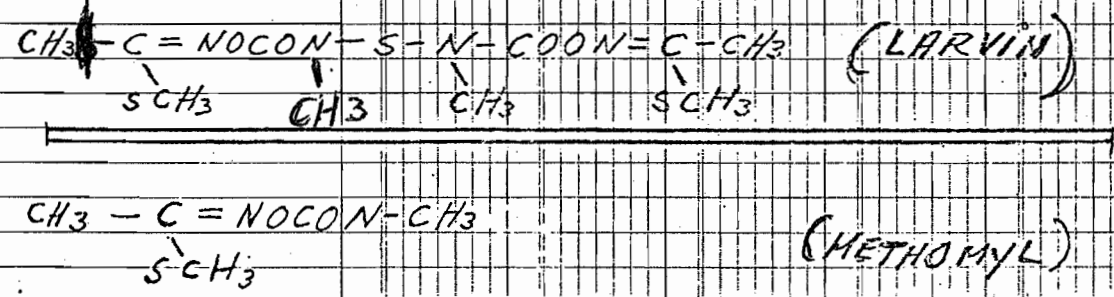
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EPA LARVIN test + ^{Mysidopsis bahia} 96-h LC50 (CL 95%) = 2.63 ppb
 From: EPA Gulf Breeze 2/17/81 (229-299)
 JACK I. LOAN

COMPARISON OF FISH & WILDLIFE TOXICOLOGICAL DATA
 FOR LARVIN AND METHOMYL - ALL TESTS CONDUCTED
 1977 AND 1978

TEST ORGANISM	TYPE OF TEST	RESULTS	
		LARVIN	METHOMYL
Bobwhite Quail	96h - LD50	2023 mg/kg	
" "	96h - LC50	75620 ppm	3680 ppm
Mallard Duck	96h - LC50	75620 ppm	2883 ppm
" " *	96h - LD50		15.9 mg/kg
Ring-necked pheasant *	96h - LD50	—	15.4 mg/kg
" " "	96h - LC50	—	1975 ppm
Blue gill sunfish	96h - LC50	1.21 ppm	1.88 ppm
" " "			
Rainbow Trout *	96h - LC50	2.55 ppm	73.4 ppm
" " (EPA)	" "		2.4 ppm
Brook trout	96h - LC50	4.45 ppm	—
Coho salmon			
Grass shrimp	96h - TL50	0.056 ppm	0.049 ppm
Pink shrimp			
Daphnia sp.	48h - LC50	0.0053 ppm	0.0317 ppm
Mud crab	96h - TL50	—	0.41 ppm
Kiddler crab	96h - LC50	2.54 ppm	2.38 ppm*

* These tests were ranked as "supplemental".
 All other above tests were ranked as "core".



t_{1/2} = 5 days
 Soil = 5 days
 WATER = 240

t_{1/2} = pH 6 = stable in pure H₂O

t_{1/2} = 7 days MAX.
 TROUT = embryo larvae
 Daphnia life cycle
 Daphnia life-cycle
 fish embryo-larvae studies (fathead)?
 with brook trout & bluegill sunfish

114501

Validation Sheet

Formulation: UC 51762 - Technical Grade 99%

Chemical Name(s): Thiodicarb (Larvin).

Validator: Alvaro A. Yamhure

Date: 12/14/80

Test Type: Avian Acute Oral LD50

Test I.D. #: Initiated 9/5/78 for
Project No. 142-117.

Citation: Beavers, J.B. 1978 (Sept. 5). Wildlife
International Ltd. for Union Carbide Corp.

Validation Category: Core

Result: <u>Species</u>	<u>Test</u>	<u>(95%) Confidence Limits</u>
Bobwhite quail	Acute Oral LD50 2023 mg/kg	1489-2740 mg/kg

Validation Category Rationale: Meets all EPA requirements.

Note: This test was previously validated by R.W. Matheny of EEB on 12/12/78 who indicated then that this test could be upgraded to core if the raw data and protocol were presented by the applicant and if the LC50 value remained unchanged. These conditions have been met.

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Validation Sheet

Formulation: Technical (UC51762)
Chemical Name: Larvin 500
Validator: Ray W. Matheny
Date: 12/12/78
Test Type: Avian Acute Oral LC₅₀
Test I.D. #: NA
Citation: Beavers, J.B. 1978, Wildlife International Ltd. (a letter to Dr. R. G. Haines, Union Carbide Corp., dated October 19, 1978). (within Acc. No. 097646).

Validation Category: Supplemental

Result:	<u>Species</u>	<u>Test</u>	<u>Confidence Limits</u>
	Bobwhite Quail	Acute Oral 2241mg/Kg LD ₅₀	(1525 - 3264)

Validation Category Rationale: The above test results only are given:

Category Repairability/Rationale: This test can be upgraded to core providing the registrant submit the raw data and test protocol and, upon validation, the LD₅₀ values are similar to those above.

Abstract: No raw data has been submitted.

80/11/13. 09.49.29. TERMINAL: 24, P 20
 UOFM CYBER 74 NOS 1.3 (11/13-BO).
 USER NUMBER: zzz6944,usepa
 TERMINAL: 24, P 20/TTY
 USERS, TYPE *WRITEUP(NOTE)* 80/11/10.
 RECOVER /SYSTEM: basic,old,s79lc50
 READY.

9000 data 5
 9001 data 2510,1590,1000,631,398
 9002 data 10,10,10,10,10
 9003 data 7,2,2,0,0
 run

80/11/13. 09.53.22.
 BASIC PROGRAM S79LC50

*LARVIN 99% a.i.
 (Thiodicarb)
 Bobwhite Quail
 LD50*

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
2510	10	7	70.	17.1875
1590	10	2	20.	5.46875
1000	10	2	20.	5.46875
631	10	0	0	9.76563E-2
398	10	0	0	9.76563E-2

THE BINOMIAL TEST SHOWS THAT 631 AND +INFINITY CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 2098.96

-----RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
1	.802549	2098.96	1537.88	4281.57

-----RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	.360552	1	.547763

SLOPE = 4.12847
 95 PERCENT CONFIDENCE LIMITS = 1.64949 AND 6.60746

LC50 = 2023.55
 95 PERCENT CONFIDENCE LIMITS = 1549.1 AND 3505.41

114501

Validation Sheet

Formulation: Technical (UC51762)
Chemical Name: Larvin 500
Validator: Ray W. Matheny
Date: 12/12/78
Test Type: Avian Acute Oral LD₅₀
Test I.D. #: NA
Citation: Beavers, J.B. 1978, Wildlife International Ltd. (a letter to Dr. R. G. Haines, Union Carbide Corp., dated October 19, 1978). (within Acc. No. 097646).

Validation Category: Supplemental

Result:	<u>Species</u>	<u>Test</u>	<u>Confidence Limits</u>
	Bobwhite Quail	Acute Oral 2241mg/Kg LD ₅₀	(1525 - 3264)

Validation Category Rationale: The above test results only are given:

Category Repairability/Rationale: This test can be upgraded to core providing the registrant submit the raw data and test protocol and, upon validation, the LD₅₀ values are similar to those above.

Abstract: No raw data has been submitted.

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9000 data 5
 90010data 100.0,56.0,32.0,18.0,10.0
 9002 data 20,20,20,20,20,
 9003 data 20,11,1,0,0.
 run

Daphnia
 48-HOUR LC50
 LARVIN 99%
 (Theodoric b)

80/10/24. 09.24.04.
 BASIC PROGRAM S79LC50

Daphnia

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
100	20	20	100	9.53674E-5
56	20	11	55.	41.1901
32	20	1	5.	2.00272E-3
18	20	0	0	9.53674E-5
10	20	0	0	9.53674E-5

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THE BINOMIAL TEST SHOWS THAT 32 AND 100 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 53.4191

-----RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	5.21229E-2	51.8089	44.764	61.3098

-----RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
8	.18663	1	.934469

SLOPE = 8.26453
 95 PERCENT CONFIDENCE LIMITS = 4.69419 AND 11.8349

LC50 = 52.6925 (53 ppb) for LARVIN -
 95 PERCENT CONFIDENCE LIMITS = 45.6928 AND 60.9389

Validation Sheet

Formulation: UC51762 - Technical grade 99%

Chemical Name: Thiodicarb (Larvin).

Validator: Alvaro A. Yamhure

Date: 12/14/80

Test Type: Avian, 8-day dietary LC50

Test I.D.: Initiated 9/14/78 for project
142-115

Citation: Beaver, J.B. 1978 (Dec. 29);
Wildlife International Ltd. for
Union Carbide Corp.

Category: Core

<u>Result:</u>	<u>Species</u>	<u>Test Type</u>	<u>(95%) Confidence Limits</u>
	Bobwhite quail	8-dietary LC50 - 5620 ppm	N/A

Validation Category Rational: Meets all EPA requirements.

Note: This test was previously validated by R.H. Matheny of EEB on 12/12/78 who indicated then that this test could be upgraded to core if the raw data and the testing protocol were presented by the applicant and if the LC50 value remained unchanged. These conditions have been met.

114501

Validation-Sheet

Formulation: Technical (UC51762)
Chemical Name: Larvin 500
Validator: Ray W. Matheny
Date: 12/12/78
Test Type: Avian Subacute Dietary LC₅₀
Test I.D. #: NA
Citation: Beavers, J.B., 1978, Wildlife International Ltd., (a letter to Dr. R.G. Haines, Union Carbide Corp., dated October 19, 1978). (within Acc. No. 097646).

Validation Category: Supplemental

<u>Result:</u>	<u>Species</u>	<u>Test</u>	<u>Confidence Limits</u>
	Bobwhite Quail	Subacute Dietary LC ₅₀	>5620
	Mallard Duck	Subacute Dietary LC ₅₀	>5620

Validation Category Rationale: The above test results only are given.

Category Repairability/Rationale: These tests may be upgraded to core providing the registrant submit raw data and test protocol and, upon validation, the test results are similar to those above.

Abstract: No raw data has been submitted.

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Validation Sheet

Formulation: UC 51762 - Technical grade 99%

Chemical Name(s): Thiodicarb (Larvin)

Validator: Alvaro A. Yamhure

Date: 12/14/80

Test Type: Avian, 8-day dietary LC50

Test I.D.: Initiated 9/7/78 for project No. 142-116

Citation: Beavers, J.B. 1978 (Sept. 7); Wildlife International Ltd. for Union Carbide Corp.

Validation Category: Core

<u>Result:</u>	<u>Species</u>	<u>Test Type</u>	<u>(95%) Confidence Limits</u>
	Hallard duck	8-day dietary LC50 5620 ppm	N/A

Validation Category Rational: Meets All EPA requirements.

Note: This tests was previously validated by R.W. Matheny of EEB on 12/12/78 who indicated then that this test could be upgraded to their core if the raw data and the testing protocol were presented by the applicant and if the LC50 value remained unchanged. These conditions have been met.

114501

Validation-Sheet

Formulation: Technical (UC51762)
Chemical Name: Larvin 500
Validator: Ray W. Matheny
Date: 12/12/78
Test Type: Avian Subacute Dietary LC₅₀
Test I.D. #: NA
Citation: Beavers, J.B., 1978, Wildlife International Ltd., (a letter to Dr. R.G. Haines, Union Carbide Corp., dated October 19, 1978). (within Acc. No. 097646).

Validation Category: Supplemental

Result:	<u>Species</u>	<u>Test</u>	<u>Confidence Limits</u>
	Bobwhite Quail	Subacute Dietary LC ₅₀	>5620
	Mallard Duck	Subacute Dietary LC ₅₀	>5620

Validation Category Rationale: The above test results only are given.

Category Repairability/Rationale: These tests may be upgraded to core providing the registrant submit raw data and test protocol and, upon validation, the test results are similar to those above.

Abstract: No raw data has been submitted.

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