Shaughnessy No.: 031301

Date Out of EFGWB: SEP 29 1989

To: Susan Stanton
Product Manager PM #41
Registration Division (H7505C)

From: Emil Regelman, Supervisory Chemist
Environmental Chemistry Review Section #2
Environmental Fate & Ground Water Branch/EFED (H7507C)

Thru: Henry Jacoby, Acting Chief
Environmental Fate & Ground Water Branch/EFED (H7507C)

Attached, please find the EFGWB review of...

Reg./File # : 89-TX-13

Chemical Name : DCNA (Dicloran)

Type Product : fungicide

Product Name : BOTRAN 75W

Company Name : Nor-Am

Purpose : Review fish accumulation study submitted in response to the 1983 Registration Standard.

Action Code : 510 EFGWB #(s) : 90677

Date Received : 7/14/89 Total Reviewing Time : 2 days

Date Completed : 9/20/89

Deferrals to: __ Ecological Effects Branch

__ Dietary Exposure Branch

__ Non-Dietary Exposure Branch

__ Toxicology Branch I

__ Toxicology Branch II

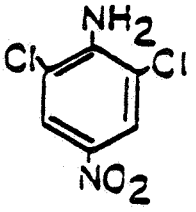
1. CHEMICAL:

chemical name: 2,6-dichloro-4-nitroaniline

common name: DCNA, Dicloran

trade name: Botran 75W

structure:



physical/chemical properties:

molecular weight: 207.0
physical state: crystalline solid
solubility in water: insoluble
melting point: 192-194°C

2. TEST MATERIAL:

Ring-labeled [^{14}C]-dicloran, 95.4 uCi/mg, 98.5% purity.

3. STUDY/ACTION TYPE:

Review an Accumulation in Fish study which was required by the 1983 DCNA Registration Standard. A Section 18 registration for use of DCNA on peanuts in Texas is pending.

4. STUDY IDENTIFICATION:

Hill, R.W. "Determination of the Accumulation and Elimination of [^{14}C]-Dicloran in Bluegill Sunfish (Lepomis Macrochirus)." Performed by Schering Agrochemicals, Limited. Submitted by Nor-Am Chemical Company. Received by EPA on February 10, 1988. MRID #: 405088-08.

5. REVIEWED BY:

Dana Spatz
Chemist, ECRS #2
EFGWB/EFED/OPP

Date: SEP 20 1989

6. APPROVED BY:

Emil Regelman
Supervisory Chemist, ECRS #2
EFGWB/EFED/OPP

C B Conerly for Emil Regelman

Date: 9/27/89

7. CONCLUSIONS:

The submitted study does not satisfy the Accumulation in Fish Data Requirement for the following reasons:

a. The 14-day exposure period was insufficient to allow the concentration of ^{14}C-dicloran in the viscera to plateau. The mean concentration of dicloran in the viscera at 14 days was 131 ppm and had increased from 102 ppm at day 10.

b. ^{14}C-residues in the tissues were not identified.

The results of the study indicate that after 14 days exposure to an average concentration of 0.38 ppm ^{14}C-DCNA, average BCF's in viscera, edible fraction, non-edible fraction, and whole fish were 268x, 12x, 29x, and 46x respectively. However, as noted above, the concentration measured in the viscera did not plateau.

During the depuration phase of the experiment, greater than 96% of the ^{14}C in whole fish was eliminated within 3 days and 98% was eliminated in 7 days.

8. RECOMMENDATIONS:

The study must be repeated for the reasons discussed above. The registrant must continue the exposure for a sufficient length of time to adequately characterize the bioaccumulation of ^{14}C-DCNA, as well as, identify the residues measured in the fish.

STATUS OF DATA REQUIREMENTS SPECIFIED IN THE

1983 REGISTRATION STANDARD

SATISFIED

Hydrolysis

NOT SATISFIED

Photodegradation in Water
Photodegradation on Soil
Aerobic Soil Metabolism - *submitted, not reviewed*
Anaerobic Soil Metabolism-*submitted, not reviewed*
Leaching-Adsorption/Desorption-*submitted, not reviewed*
Laboratory Volatility - *waiver requested*
Soil Field Dissipation - *submitted, not reviewed*
Accumulation in Confined Rotational Crops
Accumulation in Fish

3

9. BACKGROUND:

The DCNA Registration Standard was issued in December 1983. Since that time, only the Hydrolysis Data Requirement has been satisfied. Apparently, other studies have been submitted but have not yet been reviewed.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

See attached DER.

11. COMPLETION OF ONE-LINER:

Not applicable.

12. CBI APPENDIX:

Not applicable.

4

DATA EVALUATION RECORD

STUDY 1

CHEM 031301 DCNA

FORMULATION—00—ACTIVE INGREDIENT

STUDY ID 405088-08

Hill, R.W. "Determination of the Accumulation and Elimination of [^{14}C]-Dicloran in Bluegill Sunfish (Lepomis Macrochirus)." Performed by Schering Agrochemicals, Limited. Submitted by Nor-Am Chemical Company. Received by EPA on February 10, 1988. MRID #: 405088-08.

DIRECT REVIEW TIME = 2

REVIEWED BY: Dana S. Spatz
TITLE: Chemist
ORG: EFGWB/EFED/OPP

SIGNATURE: SEP 20 1989

CONCLUSIONS:

Accumulation in Fish

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The results of the study indicate that after 14 days exposure to an average concentration of 0.38 ppm ^{14}C-DCNA, average BCF's in viscera, edible fraction, non-edible fraction, and whole fish were 268x, 12x, 29x, and 46x respectively. However, as noted above, the concentration measured in the viscera did not plateau.

During the depuration phase of the experiment, greater than 96% of the ^{14}C in whole fish was eliminated within 3 days and 98% was eliminated in 7 days.

METHODOLOGY:

80 bluegill sunfish were exposed to ^{14}C-labeled dicloran for 14 days using a dynamic test system. The average concentration of labeled dicloran in the test water was 0.38 ppm as determined by LSC and HPLC. During the test, fish in the exposure vessels and the control vessels were sacrificed and the total ^{14}C-residues were analyzed in viscera and edible and non-edible fractions. Control fish were maintained in an identical test system to the exposed fish, although clean water and solvent (50 ppm acetone:50 ppm Tween 80) were passed through the tanks.

5

At the end of the 14 day exposure, the dosing was terminated and the fish were transferred to new tanks and freshwater was fed to the tanks at the same rate as previously used in the accumulation phase (250 ml/minute; 5.3 aquaria volumes per 24 hours).

The bluegill sunfish were fed daily on a diet of BP Mainstream trout food, a proprietary brand.

Aliquots of water were taken from each test vessel at mid-depth at the outflow end of the test vessel on days 0, 1, 2, 3, 4, 5, 7, 10, and 14 and were analyzed by LSC and HPLC. Total ^{14}C-residues in viscera and edible/non-edible fractions were analyzed on days 1, 3, 7, 10, and 14 of the exposure phase and days 1, 3, and 7 of the depuration phase.

REPORTED RESULTS:

Dicloran STUDY N695/C: Summary of water analysis by liquid scintillation counting (LSC) during exposure period

Date	Study day	Measured concentration (mg/l)		
17.2.86	-1	0.32	0.33	0.33
17.2.86	-1	0.43	0.42	0.43
18.2.86	0	0.41	0.41	0.41
19.2.86	1	0.39	0.40	0.39
20.2.86	2	0.40	0.40	0.39
21.2.86	3	0.38	0.37	0.38
22.2.86	4	0.36	0.36	0.37
23.2.86	5	0.38	0.38	0.38
25.2.86	7	0.34	0.35	0.35
28.2.86	10	0.33	0.33	0.33
4.3.86	14	0.43	0.41	0.43

Mean value (Day 0 - Day 14) = 0.38 mg/l, SD = 0.029
Percent of nominal = 95.0
Range of values = 0.33-0.43 mg/l

Dicloran STUDY N695/C: Summary of water analysis by HPLC (mg/l)

Date	Study day	Control vessel			Exposure vessel (Nominal 0.4 mg/l dicloran)		
17.2.86	-1	<0.04	<0.04	<0.04	0.32	0.32	0.33
18.2.86	0	<0.04	<0.04	<0.04	0.40	0.41	0.40
19.2.86	1	<0.04	<0.04	<0.04	0.38	0.38	0.38
20.2.86	2						
21.2.86	3	<0.04	<0.04	<0.04	0.37	0.37	0.37
22.2.86	4						
23.2.86	5						
25.2.96	7	<0.04	<0.04	<0.04	0.34	0.34	0.34
28.2.86	10	<0.04	<0.04	<0.04	0.31	0.31	0.31
4.3.86	14	<0.04	<0.04	<0.04	0.38	0.41	0.40

Mean value (day 0 - Day 14) = 0.37 mg/l, SD = 0.034
Percent of nominal = 92.5
Range of values = 0.31-0.41

All control levels were <0.04 mg/l as dicloran

BIOCONCENTRATION OF DICLORAN: Summary of tissue analysis (mg/kg wet weight) (five fish were sampled on each sample day)

Study day	Viscera		Edible fraction		Non-edible fraction		Whole fish	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Exposure phase								
1	92.7	30.8	4.1	0.78	10.5	2.55	15.9	3.52
3	85.0	28.1	4.5	0.57	11.3	1.83	18.9	5.77
7	100.0	25.3	4.3	0.80	10.1	4.98	16.4	2.54
10	102.0	23.6	5.1	0.33	11.8	1.90	18.0	1.06
14	131.0	16.3	4.9	0.73	11.4	2.45	18.7	3.25
Depuration phase								
15	38.2	28.8	0.6	0.34	1.0	0.15	4.0	2.4
17	2.3	0.22	0.1	0.0	0.5	0.09	0.4	0.05
21	1.1	0.30	<0.09	0.01	0.3	0.0	0.4	0.05

DAILY MORTALITIES OF BLUEGILL SUNFISH OBSERVED DURING THE EXPOSURE TO DICLORAN (initial 80 fish in both the treatment and solvent control)

Date	Study day	Dicloran	
		Exposure 0.4 mg/l	Solvent control
18.2.86	0	0	0
19.2.86	1*	0	0
20.2.86	2	2(2.5%)(a)	0
21.2.86	3*	0	0
22.2.86	4	0	0
23.2.86	5	0	0
24.2.86	6	0	0
25.2.86	7*	0	0
26.2.86	8	0	0
27.2.86	9	0	0
28.2.86	10*	0	0
1.3.86	11	1(3.75%)(a)	0
2.3.86	12	0	0
3.3.86	13	0	0
4.3.86	14*	0	0
5.3.86	15*	0	0
6.3.86	16	0	0
7.3.86	17*	0	0
8.3.86	18	0	0
9.3.86	19	0	0
10.3.86	20	0	0
11.3.86	21*	0	0

* Indicates 5 fish removed for ^{14}C analyses
(a) Cumulative percentage mortalities based on the initial 80 fish