Date Out: 3/24/97

D 160854
Chemical Code: 029001
DP Barcode: D233703
SR-1,3-Dichloropropc

13PP

ENVIRONMENTAL FATE AND GROUND WATER BRANCH

Review Action

To: Lisa Nisenson, #62
Special Review and Reregistration Division (7508W)

Thru: Elizabeth Behl, Acting Chief
Environmental Fate & Ground Water Branch/EFED (7507C)

3/24/97

Attached, please find the EFGWB review of...

Common Name:	1,3-Dichloropropene	**Trade name:**	Telone C-17
Company Name:	DowElanco		
ID #:	029001		
Purpose:	Review second progress report for small-scale prospective ground-water monitoring study in South Florida.		

Type Product:	Action Code:	EFGWB #(s):	Review Time:
Nematicide	820	NA	2 days

STATUS OF STUDIES IN THIS PACKAGE:

Guideline #	MRID	Status
166-1	NA	A

STATUS OF DATA REQUIREMENTS ADDRESSED IN THIS PACKAGE:

Guideline #	Status
166-1	P

[1]Study Status Codes: A=Acceptable U=Upgradeable C=Ancillary I=Invalid.
[2]Data Requirement Status Codes: S=Satisfied P=Partially satisfied N=Not satisfied R=Reserved W=Waived. NA=Not Available.

1. CHEMICAL : Dichloropropene

Chemical name: 1,3-Dichloropropene
Common name: Telone II; Telone C-17; 1,3-D

2. TEST MATERIAL :

Soil, soil-pore water, ground water, air.

3. STUDY/ACTION TYPE:

Review second progress report for Florida small-scale prospective monitoring study.

4. STUDY IDENTIFICATION :

Title(s): Air, surface water, and ground water field study of 1,3-dichloropropene in a South Florida vegetable production system - First year interim report

Author(s): J.A. Knuteson, S.C. Dolder
Date: January 30, 1997

Submitted for: DowElanco
9330 Zionsville Road
Indianapolis, IN 46268-1054

Date Sent to EFED: 2/27/97

5. REVIEWED BY:

Estella Waldman Signature: Estella Waldman
Hydrologist
OPP/EFED/EFGWB/Ground-Water Section Date: 3/24/97

6. APPROVED BY:

James Wolf Signature: James Wolf
Environmental Scientist
OPP/EFED/EFGWB/GWTS Date: 3/24/97

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7. CONCLUSIONS:

The second progress report for the small-scale ground-water monitoring study in Florida was submitted by the registrant. The report covers the results for the first year of the study; i.e., from pre-application sampling to 391 days post-application. The authors state that all results are preliminary and subject to change.

The monitoring data generated by this study demonstrate that 1,3-D has the potential to contaminate drinking water in Florida. Furthermore, the concentrations found in this study are generally above the estimated lifetime health advisory level for 1,3-D, indicating a risk concern for human health.

Preliminary data indicate that 1,3-D and its two metabolites, 3-chloroallyl alcohol and 3-chloroacrylic acid, were found in soil, ground water, and surface water. 1,3-D was detected in **all 8 of the shallow onsite wells** in the four-foot deep water table aquifer at concentrations ranging from 0.10 to 364 ppb (two wells with higher concentrations probably had construction problems). 1,3-D was also detected in five out of six of the offsite shallow wells at concentrations from trace levels to 0.23 ppb. 1,3-D was detected in **all 8 of the onsite intermediate wells** (depths of approximately 10 feet) and two offsite intermediate wells. Concentrations ranged from 0.05 to 21.57 ppb. 1,3-D was also detected in **both of the onsite deep wells** (approximately 70 feet deep) in the Lower Tamiami Aquifer with concentrations ranging from 0.05 to 1.03 ppb.

The degradate 3-chloroallyl alcohol was detected in all of the onsite shallow wells. Concentrations ranged from 0.08 to 360 ppb excluding the two problem wells. 3-chloroallyl alcohol was also detected in seven of the eight onsite intermediate wells, one of the onsite deep wells, and one of the offsite shallow wells.

The degradate 3-chloroacrylic acid was detected in all of the shallow onsite wells. Excluding the two problem wells, the maximum concentration of 3-chloroacrylic acid in the shallow wells on the site was approximately 424 ppb. All of the onsite intermediate wells also contained 3-chloroacrylic acid at concentrations ranging from 0.01 to 8.79 ppb. Trace levels were found in one onsite deep well. Three of the offsite shallow wells and two of the offsite intermediate wells contained 3-chloroacrylic acid residues.

Detections of the contaminant 1,2-D were found in all of the onsite shallow, intermediate, and deep wells including the control well. 1,2-D was also detected in one shallow offsite well. Concentrations in the onsite wells ranged from 0.01 to 11.47 ppb; concentrations in the offsite wells ranged from trace levels to 0.11 ppb. 1,2-D was also detected in one ditch sample at a concentration of 0.36 ppb.

Bromide and chloride tracer results are not yet available.

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8. RECOMMENDATIONS:

1) EFED has developed standard language for ground-water label advisories. These advisories are recommended for all chemicals known to contaminate ground water. Therefore, EFED suggests the following advisory for the Telone C-17 and Telone II labels:

> "This chemical is known to leach through soil into ground water under certain conditions as a result of label use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination."

2) EFED requests that tracer results be submitted as soon as possible.

3) EFED defers to OREB for a review of the air sampling portion of this progress report.

4) A complete set of conclusions and recommendations will be developed following a review of the final study report.

9. BACKGROUND:

Because of concern for ground-water contamination resulting from Telone use, EPA and the State of Florida requested that DowElanco conduct a small-scale prospective monitoring study in southern Florida. This report describes the study progress through the end of January 1997.

The study is being conducted on a 3.77-acre site cropped in peppers near Immokalee, Florida. The Myakka soil on the site is composed of fine-grained sands to a depth of about 9 feet. About 22.5 gallons (238 lbs.) per acre of Telone C-17 were applied to the study site on December 13, 1995.

10. DISCUSSION:

Results as follows were available for up to 391 days following application.

SOIL: Soil sampling was done from pre-application to nine months after application. Total average 1,3-D (cis and trans) concentrations in the 0-12 inch depth dropped from 80,452 ppb to 12.19 ppb within 5 days of application. Soil concentrations in this zone remained low until Day 26 when there was an increase to an average of 771.1 ppb. Concentrations decrease in the next round to 10.9 ppb. By 181 days after application, no 1,3-D residues were detected.

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DP BARCODE: D235916

CASE: 838282 DATA PACKAGE RECORD DATE: 07/16/97
SUBMISSION: S523519 BEAN SHEET Page 1 of 1

* * * CASE/SUBMISSION INFORMATION * * *

CASE TYPE: SPECIAL REVIEW ACTION: 820 SPECIAL REVIEW DATA
CHEMICALS: 029001 1,3-Dichloropropene 100.00 %

ID#: 029001
COMPANY:
PRODUCT MANAGER: 62 LISA NISENSON 703-308-8031 ROOM: CS1 2N6
PM TEAM REVIEWER: LISA NISENSON 703-308-8031 ROOM: CS1 2N6
RECEIVED DATE: 05/01/97 DUE OUT DATE: 05/31/97

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 235916 EXPEDITE: N DATE SENT: 05/16/97 DATE RET.: / /
CHEMICAL: 029001 1,3-Dichloropropene
DP TYPE: 001 Submission Related Data Package
CSF: N LABEL: N

ASSIGNED TO	DATE IN	DATE OUT
DIV : EFED	06/15/97	7/15/97
BRAN: EFGB	06/15/97	07/15/97
SECT: GTS	06/15/97	07/15/97
REVR : EWALDMAN	06/15/97	07/15/97
CONTR:	/ /	/ /

ADMIN DUE DATE: 06/15/97
NEGOT DATE: / /
PROJ DATE: / /

* * * DATA REVIEW INSTRUCTIONS * * *

Please review DowElanco's cold weather interim report (this report was handed to the reviewer during an April 30 1997 meeting regarding the subject. Call Lisa Nisenson at 308-8031 if there are any questions. Thank you.

* * * DATA PACKAGE EVALUATION * * *

No evaluation is written for this data package

* * * ADDITIONAL DATA PACKAGES FOR THIS SUBMISSION * * *

DP BC	BRANCH/SECTION	DATE OUT	DUE BACK	INS	CSF	LABEL

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The 1,3-D maximum concentration in the 12- to 24-inch interval was 419 ppb on Day 1. By Day 26, the concentration had decreased to approximately 55 ppb. For most of the first month of sampling, the water table was within this soil depth increment. No 1,3-D residues were seen after Day 110.

The chloroallyl alcohol metabolite concentration increased up to Day 19, reaching a maximum of almost 7,000 ppb on Day 5 in the 0- to 12-inch soil increment. At Day 181, approximately 1 ppb was still seen in this interval. No alcohol residues were detected in the 12- to 24-inch interval after Day 26. Maximum residues in this interval were approximately 77 ppb.

The 3-chloroacrylic acid metabolite concentration increased up to Day 19 followed by a decline in the 0 to 12 inch increment. No residues were detected at Day 181. The maximum average soil concentration was 2,384 ppb. Up to 3.1 ppb was detected in the 12- to 24-inch zone with no detections after Day 54.

GROUND WATER:

1,3-D: 1,3-D was detected in all of the shallow wells on the site. Poor seal and/or reconstruction problems may have occurred in MW1S and MW3S. Total 1,3-D concentrations (cis and trans) in these two wells ranged from approximately 32 to 6411.41 ppb. If the detections in these two problem wells are excluded, 1,3-D concentrations in the shallow wells range from 0.10 to 364 ppb. 1,3-D was detected in five of the six offsite shallow well at concentrations ranging from trace levels to 0.23 ppb.

1,3-D was also detected in all of the onsite intermediate wells (depths of approximately 10 feet). Concentrations ranged from 0.05 to 21.57 ppb. 1,3-D was detected in two offsite intermediate wells at trace levels.

1,3-D was detected in both of the onsite deep wells with concentrations ranging from 0.05 to 1.03 ppb. These wells are approximately 70 feet deep. 1,3-D was not detected in the deep offsite well.

3-chloroallyl alcohol: This degradate was detected in all of the shallow onsite wells. A maximum concentration of 360 ppb (excluding 1S and 3S) was found on Day 7. The concentration had declined to 0.15 ppb by Day 110.

Seven of the eight onsite intermediate wells also contained 3-chloroallyl alcohol (trace-13.5 ppb) as did one of the two onsite deep wells (7.85 ppb). One of the offsite shallow wells also contained traces of 3-chloroallyl alcohol.

3-chloroacrylic acid: This metabolite was detected in all of the shallow onsite wells. 3-chloroacrylic acid was still being detected in one shallow onsite well and three onsite intermediate wells on Day 356, the last sampling date reported. Excluding 1S and 3S,

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the maximum concentration of 3-chloroacrylic acid in the shallow wells on the site was approximately 424 ppb. All of the onsite intermediate wells also contained 3-chloroacrylic acid at concentrations ranging from 0.01 to 8.79 ppb. Trace levels were found in one of the onsite deep wells.

Three of the offsite shallow wells contained 3-chloroacrylic acid residues at concentrations ranging from trace to 0.08 ppb. Two of the offsite intermediate wells contained 3-chloroacrylic acid residues (0.01-0.07 ppb). The deep well did not contain 3-chloroacrylic acid.

1,2-D: 1,2-D was detected in all of the onsite shallow, intermediate, and deep wells. 1,2-D was also detected in one shallow offsite well. Concentrations in the onsite wells ranged from 0.01 to 11.47 ppb; concentrations in the offsite wells ranged from trace levels to 0.11 ppb. 1,2-D was also detected in one ditch sample (a total of 126 were taken) at a concentration of 0.36 ppb.

Miscellaneous

All of the water blanks from the new Teflon bailers contained 1,3-D residues for almost two weeks after application. Total 1,3-D concentrations (1,2-D; *cis*- and *trans*-1,3-D) ranged from 0.023 to 1.122 ppb. 1,2-D was also detected in the water blank on Day 5 at a concentration of 0.036 ppb.

Environmental Fate & Effects Division
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY
DICHLOROPROPENE
Last Update on March 19, 1997
[V] = Validated Study [S] = Supplemental Study [U] = USDA Data

LOGOUT	Reviewer: GW	Section Head:	Date: 3/19/97

Common Name:DICHLOROPROPENE
Smiles Code:ClC=CCCl
PC Code # : 29001 CAS #:542-75-6 Caswell #:

Chem. Name :1,3-DICHLOROPROPENE

Action Type:NEMATICIDE; FUNGICIDE; INSECTICIDE; HERBICIDE

Trade Names:1,3-D; TELONE II; TELONE C-17
(Formul'tn):SINGLE ACTIVE INGREDIENT, 94% RTU
Physical State: COLORLESS/PALE YELLOW LIQUID

Use :SOIL FUMIGANT, APPLIED PRIOR TO PLANTING TERRESTRIAL-FOOD
Patterns :AND NON-FOOD USE SITES.
(% Usage) :
:

Empirical Form: $C_3H_4Cl_2$
Molecular Wgt.: 110.97 Vapor Pressure: 27.30E Torr
Melting Point : NA °C Boiling Point: 104 °C
Log Kow : pKa: @ °C
Henry's : 1.80E -3 Atm. M3/Mol (Measured) 1.59E -3 (calc'd)

Solubility in ...						Comments
Water	2.50E	3	ppm	@20.0	°C	
Acetone	E		ppm	@	°C	
Acetonitrile	E		ppm	@	°C	
Benzene	E		ppm	@	°C	
Chloroform	E		ppm	@	°C	
Ethanol	E		ppm	@	°C	
Methanol	E		ppm	@	°C	
Toluene	E		ppm	@	°C	
Xylene	E		ppm	@	°C	
Water	2.70E	3	ppm	@20.0	°C	1,2-dichloropropane
	E		ppm	@	°C	

Hydrolysis (161-1)
[V] pH 5.0:13.5 DAYS AT 20 C
[V] pH 7.0:13.5 DAYS AT 20 C
[V] pH 9.0:13.5 DAYS AT 20 C
[ ] pH :pH5.5, 2 C, 90-100 DAYS
[ ] pH : " 15 C, 11-13 DAYS
[ ] pH : " 29 C, 2 DAYS

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DICHLOROPROPENE
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Photolysis (161-2, -3, -4)
[ ] Water:
[ ] :
[ ] :
[ ] :

[V] Soil :RAPID, although study not required due to soil incorporation
[V] Air :stable to direct photo. Does react with OH rad and ozone.

Aerobic Soil Metabolism (162-1)
[V] 12 day half-life in a silt loam soil; 54 days in a loamy sand;
[ ] major degradates are cis/trans-3-chloroprop-2-en-1-ol, cis-3-
[ ] chloroprop-2-enoic acid, and trans-3-chloroprop-2-einoic acid,
[ ] and numerous naturally occurring carboxylic acids.
[ ]
[ ]
[ ]

Anaerobic Soil Metabolism (162-2)

	SOIL	TEMP	T 1/2
[V]	SILT CLAY LOAM	15 C	9.1 DA
[ ]	" " "	25 C	2.4 DA
[ ]	SANDY LOAM	15 C	7.7 DA
[ ]	" "	25 C	2.4

[ ]
[ ]

Anaerobic Aquatic Metabolism (162-3)
[S] AT pH 6.9-7.5, T1/2=20 DAYS
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

Aerobic Aquatic Metabolism (162-4)
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

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Soil Partition Coefficient (Kd) (163-1)
[V] LOAMY SAND 0.23
[V] SAND 0.32
[V] CLAY 0.42 AND 1.09
[ ] AVG MAX Koc VALUES WERE 20 FOR
[ ] SAND, 25 FOR LOAMY SAND, AND
[ ] 41 AND 42 FOR TWO CLAY SOILS

Soil Rf Factors (163-1)
[V] IN 30 CM COLUMNS OF SAND, LOAMY SAND, AND FLA. CLAY, LEACHED WITH >25" WATER, 1.9-4.6% APPL RADIO. REMAINED IN SOILS AND 70-84% WAS IN LEACHATE. (unaged)

[V] Aged residues were very mobile 25.6-32.0% of applied in leach ate.

Laboratory Volatility (163-2)
[ ]
[ ]

Field Volatility (163-3)
[V] 25% of applied volatilized within 14 days posttreatment.
[S] 11% of applied volatilized within 8 days posttreatment.

Terrestrial Field Dissipation (164-1)
[V] 1,3-D APPLIED AT 342 LB AIA DECLINED FROM A MAX OF 130,000 PPB IN .30-.45 M LAYER, IMMEDIATELY AFTER TREATMENT, TO <10 PPB (DETECTION LIMIT) IN ANY SOIL LAYER AT 71 DAYS; THIS WAS IN A FIELD PLOT OF SAND SOIL IN CALIFORNIA.
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

Aquatic Dissipation (164-2)
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

Forestry Dissipation (164-3)
[ ]
[ ]

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Long-Term Soil Dissipation (164-5)
[ ]
[ ]

Accumulation in Rotational Crops, Confined (165-1)
[ ]
[ ]

Accumulation in Rotational Crops, Field (165-2)
[ ]
[ ]

Accumulation in Irrigated Crops (165-3)
[ ]
[ ]

Bioaccumulation in Fish (165-4)
[ ]
[ ]

Bioaccumulation in Non-Target Organisms (165-5)
[ ]
[ ]

Ground Water Monitoring, Prospective (166-1)
[ ] Detections of 1,3-D and two degradates in FL in shallow and deep
[ ] aquifers (progress report, one year after application, D233703).
[ ] 1,3-D concentrations in shallow wells ranged from 0.11-364 ppb.
[ ] 1,3-D concentrations in deep wells ranged from 0.05-1.03 ppb.

Ground Water Monitoring, Small Scale Retrospective (166-2)
[ ] Five studies completed. Residues up to 3.86 ppb reported
[ ] in ground water at Nebraska site; degradates in four wells.
[ ] Residues below detection limit at Washington site. No detections
[ ] at two CA sites and in NC but few samples collected.

Ground Water Monitoring, Large Scale Retrospective (166-3)
[ ]
[ ]
[ ]
[ ]

Ground Water Monitoring, Miscellaneous Data (158.75)
[ ] Detections of 1,3-D in ground water in New York, Oregon,
[ ] Washington, and California range up to 270 ppb.
[ ]

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Field Runoff (167-1)
[ ]
[ ]
[ ]
[ ]

Surface Water Monitoring (167-2)
[ ]
[ ]
[ ]
[ ]

Spray Drift, Droplet Spectrum (201-1)
[ ]
[ ]
[ ]
[ ]

Spray Drift, Field Evaluation (202-1)
[ ]
[ ]
[ ]
[ ]

Degradation Products

None detected in leached column studies
3-chloroallyl alcohol, in field dissipation studies, declined from max of 410 ppb in the .66-.81 M layer at 7 days post-treatment to <10 ppb in any soil layer at 71 days.
Propionic acid and an unknown (contg. an alcohol of carboxyl)

Two metabolites: 3-chloroallyl alcohol (c-OH, t-OH)
3-chloroacrylic acid (c-CAA, t-CAA)

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DICHLOROPROPENE
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Comments

In anaerobic studies, 1,3-D has an affinity for the water phase over the organic phase.
1,3-D exposed to 275 W GE sunlamp degraded; T 1/2 = .5 to 3.3 DA.
Wells 65-1200 feet in So. Cal. had no 1,3-D or chloroallyl alc..
Wells in Suffolk Co.(NY) had detectable 1,3-D and 1,2-D 68 days after fumigation of field with 140 L/HA; conc peaked at 83 days and persisted for 138 days.
Despite 7000 gal spill in Calif, 1,3-D decreased to <100 ppm in 0-12"depth 5.5 mos later, and was never found in wells nearby.

Kd(ads) values for 1,2-Dichloropropane are all < 1.0. Soil column leaching suggest high mobility with 85.8% of applied found in the leachate (0.64% OC) and 73.2% in the leachate of another column (2.32% OC).

References: EPA REVIEWS
Writer : PJH, KLP, EW

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