DP Barcode: D168032
PC#: 029001
Date Out of EFGWB:
DEC 3 1991

TO: Lisa Engstrom
PM Team Reviewer
Reregistration Branch/SRRD (7508W)

FROM: Akiva Abramovitch, Ph.D., Chief
Review Section #3
OPP/EFED/EFGWB (H7507C)

THROUGH: Henry Jacoby, Chief
OPP/EFED/EFGWB (H7507C)

Attached, please find the EFGWB review of:

Submission/Case#: S401580/838282

Common Name : Dichloropropene, 1,3-D

Chemical Name : 1,3-Dichloropropene

Product Type : Nematicide/Fungicide/Herbicide/Insecticide

Product Name : Telone II

Company Name : DowElanco

Purpose : Review study to evaluate environmental factors influencing air concentration of Telone II

Date Received: 9/10/91 **EFGWB #(s):** 91-0910

Date Completed: 11/5/91

Total Reviewing Time: 1.0 days

Deferrals to: _____Ecological Effects Branch/EFED

_____Science Integration & Policy Staff/EFED

__X__Occupational, Residential; Exposure Branch/HED

_____Dietary Exposure Branch/HED

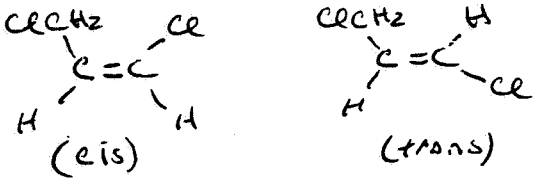
_____Toxicology Branch I, II/HED

1. CHEMICAL:
Common Name: 1,3-Dichloropropene, 1,3-D

Chemical Name: 1,3-Dichloropropene

Type of product: Nematicide/Fungicide/Herbicide/Insecticide

Chemical Structure:



Physical/Chemical Properties
molecular weight: 110.9
aqueous solubility: 218 ppm
vapor pressure: 27.3 torr

2. TEST MATERIAL:
See the attached DERS.

3. STUDY/ACTION TYPE: Review study to evaluate environmental factors influencing air concentrations of Telone II.

4. STUDY IDENTIFICATION:

(1) No MRID #: Houtman B.A., Knuteson J.A., Powers B.S., Rick D.L., Merchant S.A. Air concentrations of 1,3-Dichloropropene following Telone II Soil Fumigation. Performing laboratory Industrial Hygiene Laboratory Health and Environmental Sciences, The Dow Chemical Company, Midland Michigan 48674. Study # HEH 2.1-1-182(102), IHAL-90-0272, IHAL-90-0282.

5. REVIEWED BY:
Kevin L. Poff, Chemist
Environmental Chemistry Review Section #3
Environmental Fate and Groundwater Branch/EFED
Date: 11/20/91

6. APPROVED BY:
Akiva Abramovitch, Ph.D., Chemist
Environmental Chemistry Review Section #3
Environmental Fate and Groundwater Branch/EFED
Date: DEC 2 1991

7. CONCLUSIONS:

This is an ancillary study, it appears to be scientifically valid but is not normally reviewed by EFGWB and should be deferred to OREB. The following is a summary of the registrant's data.

1. 1,3-Dichloropropene was applied at approximately 12.8 gallons/A to a fallow plot in Nevada and monitored over 7 days for airborne concentrations of the chemical directly above the field and at locations up to 1/2 mile away. The average value of measured 1,3-D vapor at a 6 inch height above the field over 7 days was 465.31 ug/m^3, at a 5 foot height at the edge of the field, 94.81 ug/m^3, at a 5 foot height 100 feet from the field, 39.39 ug/m^3, at a 5 foot

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height 1/4 mile from the field, 5.17 ug/m^3, at a 5 foot height 1/2 mile from the field 3.88 ug/m^3. Wind was a major factor in the dispersion of 1,3-D.

2. This study would only allow a possible prediction of volitilization of Telone under environmental conditions /application of telone used in the study. A comparison should be made of soil types-properties, at varying environmental conditions to better understand the volatility of telone under field conditions.

8. RECOMMENDATIONS:

Please defer to Occupation, Residential and Exposure Branch/HED.

9. BACKGROUND :

This study was submitted to the EPA to determine if there are particular environmental parameters that affect the volatilization of Telone, it appears that the data may be more applicable to OREB.

10. DISCUSSION:
See attached DER.

11. COMPLETION OF ONE-LINER:
Attached.

12. CBI INDEX:
All data reviewed here are considered "company confidential" by the registrant and must be treated as such.

DATA EVALUATION RECORD

SHAUGHNESSY No. 029001
COMMON NAME: 1,3-Dichloropropene, 1,3-D
CHEMICAL NAME: 1,3-Dichloropropene
FORMULATION: Active Ingredient
DATA REQUIREMENT: none specified, ancillary study

No MRID #: Houtman B.A., Knuteson J.A., Powers B.S., Rick D.L., Merchant S.A. Air concentrations of 1,3-Dichloropropene following Telone II Soil Fumigation. Performing laboratory Industrial Hygiene Laboratory Health and Environmental Sciences, The Dow Chemical Company, Midland Michigan 48674. Study # HEH 2.1-1-182(102), IHAL-90-0272, IHAL-90-0282.

REVIEWED BY: Kevin L. Poff
Chemist EFGWB/EFED
Signature: Kevin Poff
Date: 11/20/91

APPROVED BY: Akiva Abramovitch, Ph.D.
Chemist EFGWB/EFED
Signature: Akiva Abramovitch
Date: DEC 2 1991

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2. This study would only allow a possible prediction of volitilization of Telone under environmental conditions /application of telone used in the study. A comparison should be made of soil types-properties, at varying environmental conditions to better understand the volatility of telone under field conditions.

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MATERIALS AND METHODS:

A 14 acre fallow field in Yerington, Nevada on August 11, 1990 was treated with 180 lbs. of soil injected (13 inches) 1,3-dichloropropene and monitored 7 days for 1,3-D vapors at points 6 inches above the treated field and locations surrounding the plot up to 1/2 mile away. Soil samples were taken from 0-12 inches and 13-24 inches which averaged out to be a clay loam soil (25% sand, 38.8% silt, 36.2% clay) with 1.2% O.M., pH= 7.7, soluble salts 0.5 mmhos/cm, for the 14 acre plot. Soil moisture was evaluated for the 7 day period at a depth of 0-3 inches (day 0 was collected at 1-4 inches), this averaged out to 10.6% (by weight) soil moisture for the 7 day study. Environmental conditions (wind speed, air temperature, soil temperature at 1, 4, 12, and 20 inch depths, and wind direction at a height of 5 feet) were monitored by a remote weather station 200 feet to the south of the treated field. 1,3-D vapors were collected by battery operated pumps that were calibrated to pull 1.0-1.5 liters of air/ minute through activated charcoal. These charcoal filters were sampled 12 hour intervals (8:00 a.m. and 8:00 p.m.) during the 7 day study.

RESULTS:

Sampling results are listed in Table 2. The sample results at 6 inches heights are listed in Figure 5.

1. The measured concentration of 1,3-D vapors were much higher in the night cycle than that measured in the day cycle.

2. Concentrations on the field, 6 inch height, (day cycles only) averaged 29.38 ug/m^3 at 3-7 hours (first day cycle), climbed to a maximum of 398.98 ug/m^3 at 18-31 hours (second day cycle), then fell to 46.59 ug/m^3 at 139-150 hours (seventh day cycle).

3. Concentrations on the field, 6 inch height, (night cycles only) averaged 1131.4 ug/m^3 at 8-17 hours (first night cycle), climbed to a maximum of 1945.32 ug/m^3 at 31-42 hours (second night cycle), then fell to 43.14 ug/m^3 (seventh night cycle).

4. The 12 hour average wind speed was lowest on the night cycle as compared to the day cycle; wind averaged approximately 3.5 m/p/h on night cycles, and approximately 5 m/p/h on day cycles over the 7 day study period.

5. The 12 hour average ambient air temperature were lowest on the night cycle as compared to the day cycle; ambient air temperature averaged approximately 13° C on night cycles, and approximately 32°C on day cycles over the 7 day study period.

6. Soil moisture remained relatively constant during the 7 day study.

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7. There are no mass balances so a comparison of soil concentration to the vapor density of 1,3-D cannot be made.

DISCUSSION:

1) Under these particular environmental/soil conditions-properties in combination with the physical/chemical properties of 1,3-D, the measured concentrations of the vapor density were higher during the night cycle than the day cycle. One would expect the flux (quantity volatilizing from soil to air) of 1,3-D to be higher during the day cycle due mainly to the higher ambient air and soil temperatures. However, this study indicates the contrary is true, mainly due to the small increase in wind velocity during the day cycle which increases the vapor dispersion (lowering measurable concentrations of 1,3-D) and possibly the rate of volatilization of 1,3-D from the soil.

2) This study would only allow a possible prediction of volitilization of Telone under environmental conditions /application of telone used in the study.