Shaughnessy Number: 029001

Date Out of EFGWB: NOV 01 1991

TO: Cynthia Giles-Parker
Product Manager 22
Registration Division (H7505C)

FROM: Elizabeth Behl, Acting Section Head
Ground-Water Technology Section
Environmental Fate & Ground-Water Branch/EFED (H7507C)

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

Attached, please find the EFGWB review of:

Reg./File #: _____

Chemical Name: Dichloropropene (1,3-D; Telone II)

Type Product: Soil Fumigant, Nematicide

Company Name: DowElanco

Purpose: Comment on the DowElanco review of the GAO "Pesticides in Groundwater" report.

Date Received: 10/25/91 ACTION CODE: 350

Date Completed: 10/31/91 EFGWB #(s): 92-0096

Monitoring study requested: X Total Review Time: 1 day

Monitoring study voluntarily: ___

Deferrals To: _____ Biological Effects Branch

_____ Science Integration & Policy Staff, EFED

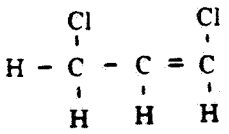
_____ Non-Dietary Exposure Branch, HED

_____ Dietary Exposure Branch, HED

_____ Toxicology Branch, HED

1. CHEMICAL: Dichloropropene (Telone II)

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



2. TEST MATERIAL:

Not Applicable.

3. STUDY/ACTION TYPE:
Comment on the DowElanco review of the GAO "Pesticides in Groundwater" report.

4. STUDY IDENTIFICATION:

Title: Reported Detections of 1,3-Dichloropropene in the US - GAO Pesticides in Ground Water Report

Author: David G. Petty

Submitted for:
DowElanco
N.A. Environmental Chemistry Laboratory
P. O. Box 1706
9001 Building
Midland, MI 48641-1706

Identifying No.: 062719-00012
DP Barcode: 170252
Date Sent to EFED: 10/25/91

5. REVIEWED BY:

Estella Waldman
Hydrologist
OPP/HED/EFED/Ground-Water Section

Signature: Estella Waldman
Date: 10/31/91

6. APPROVED BY:

Elizabeth Behl
Acting Section Head
OPP/HED/EFED/Ground-Water Section

Signature: Eliz Behl
Date: 10/31/91

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DP BARCODE: D170253

CASE: 007717
SUBMISSION: S405610

DATA PACKAGE RECORD
BEAN SHEET

DATE: 10/24/91
Page 1 of 1

* * * CASE/SUBMISSION INFORMATION * * *

CASE TYPE: REGISTRATION ACTION: 350 GENRL CORRES REGISTRATION
CHEMICALS: 029001 1,3-Dichloropropene 94.00,00%

ID#: 062719-00032 TELONE II SOIL FUMIGANT
COMPANY: 062719 DOWELANCO
PRODUCT MANAGER: 22 CYNTHIA GILES-PARKER 703-557-8540 ROOM: CM2 251
PM TEAM REVIEWER: JAMES STONE 703-557-7391 ROOM: CM2 247
RECEIVED DATE: 10/10/91 DUE OUT DATE: 01/28/92

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 170253 EXPEDITE: N DATE SENT: 10/24/91 DATE RET.: / /
CHEMICAL: 029001 1,3-Dichloropropene
DP TYPE: 001 Submission Related Data Package
ADMIN DUE DATE: 01/02/92 CSF: N LABEL: N

ASSIGNED TO	DATE IN	DATE OUT
DIV : EFED	10/24/91	/ /
BRAN: EFGB	/ /	/ /
SECT:	10/25/91	11/01/91
REVR :	/ /	/ /
CONTR:	/ /	/ /

* * * DATA REVIEW INSTRUCTIONS * * *

Attention: Betsy Behl
DowElanco's rebutal to GAO Report. They say Telone only found in Groundwater once in New York.

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

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

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7. CONCLUSIONS:

DowElanco has submitted a review of the 1,3-dichloropropene information contained in the United States General Accounting Office (GAO) "Pesticides in Groundwater" report. DowElanco contends a confirmed detection of 1,3-D has been found in the ground water of one state in the U.S. (New York) as a result of standard agricultural practices. The GAO report indicated that residues of 1,3-D and its by-products have been found in seven states in the U.S. due to normal agricultural use. There does not appear to be any conflict between the information provided by DowElanco and the GAO. However, other information available to EFGWB indicates that 1,3-D has also been found in ground water in Nebraska and in The Netherlands.

8. RECOMMENDATIONS:

A ground-water label advisory for 1,3-D is recommended. The purpose of a ground-water label advisory is to make the user aware of the potential for 1,3-D to contaminate ground-water resources. Data presently available to the EPA indicates that 1,3-D is a ground-water contaminant. Residues have been detected in ground water in New York state, The Netherlands, and in a ground-water monitoring study done by DowElanco in Nebraska.

9. BACKGROUND:

Telone II is a broad-spectrum soil fumigant and nematicide, mainly used as a preplant fumigant by chisel injection for nematode control. According to the 1986 Guidance document for reregistration of this product, the predominant use of Telone II is on vegetables, field crops, citrus, and fruit and nut trees. Application rates are generally high and range from 38.3 lb ai/acre (field crops and vegetables) to 1000 lb ai/acre (citrus, fruit, and nut trees) (EFGWB #90774, 12/21/89).

1,2-Dichloropropane (1,2-D) is present in current Telone formulations in trace quantities of less than 0.1% by weight. 1,2-D is similar to 1,3-D in structure but there are differences in their environmental properties. 1,2-D possesses a higher affinity for the vapor phase over either soil organic matter or water than does 1,3-D, and 1,2-D is less prone to degradation in soil than 1,3-D (Peterson, 1989).

The EPA has categorized the active ingredient (1,3-D) as a B1 oncogen and a B2 carcinogen. The impurity, 1,2-D, has been classified as a Group B2 carcinogen. 1,2-D does not have an MCL or HAL; 1,2-D has an MCL of 5 ppb. There are two degradates, 3-chloroallyl alcohol and 3-chloroacryllic acid.

Telone II is composed of 94 percent by weight 1,3-D. 1,3-D exists in two isomeric forms : cis-1,3-D and trans-1,3-D which are present in a 50:50 ratio for these formulations. In the environment, the dissipation of 1,3-D occurs by three mechanisms which include gaseous diffusion through the soil, hydrolysis in aqueous solution, and biological metabolism by soil microorganisms (Peterson, 1989).

1,3-D is a very mobile compound with K_d's ranging from 0.23 (loamy sand) to 1.09 (clay). Laboratory half-lives for 1,3-D range from 3 - 37 days (aerobic soil metabolism), 2.4 - 9.1 (anaerobic soil metabolism), and 2 - 100 days (pH dependent, hydrolysis half-life). The half-life of 1,3-D in the field appears to be significantly longer than it is in the laboratory. Information received from a ground-water monitoring study in Nebraska shows that residues were detected in ground water 14 months after application. The compound (1,3-D) is very soluble in water with a solubility of 2500 ppm. The Henry's constant is 1.8×10^{-3}.

The EPA determined that the registrant must evaluate the impact on ground water occurring from registered 1,3-D use by conducting retrospective ground water monitoring studies at several different locations (EAB #6572; 6/23/86). Six monitoring sites were tentatively approved by the EPA (EFGWB #90565; 6/6/89). The sites were located in Jackson County, Florida; Grant County, Washington; Merced County, California; Monterey County, California; Wayne County, North Carolina; and Scotts Bluff County, Nebraska (EFGWB #90774, 12/21/89). Monitoring complications caused the site in Florida to be put on hold. Additional monitoring in Hawaii was also put on hold pending the results of monitoring at the other sites (EFGWB #90778, 12/27/89).

10. DISCUSSION

DowElanco submitted a review of the GAO "Pesticides in Groundwater" report which lists the states where detections of 1,3-D (and other pesticides) have been found in ground water. The GAO reports that 1,3-D has been found in seven states including California, Connecticut, Hawaii, Maryland, Massachusetts, New York, and Washington. DowElanco asserts that the information provided by the GAO is not presented correctly, and that 1,3-D has been found in the ground water of one state only (New York) as a result of agricultural practices. The DowElanco document was produced as partial evidence that a ground-water label advisory for 1,3-D is not necessary.

One of the information sources used by the GAO to develop the "Pesticides in Groundwater" report was the paper "Monitoring Ground Water for Pesticides" (Cohen et al., 1986). DowElanco notes that "no mention of 1,3-dichloropropene was found in this report". The Cohen et al. paper was published in 1986, and reports the detections of ground-water contamination by pesticides to that date. The first documented incident of 1,3-D in ground water was reported in a 1986 publication by Loria et al. Therefore, the information concerning 1,3-D residues in ground water was not available to Cohen et al. when their paper was published.

The other document used in the GAO "Pesticides in Groundwater" report was the "Pesticides in Ground Water Data Base" (Williams et al., 1988). The data base reports a confirmed detection of 1,3-D in the ground water of New York state, as well as two unconfirmed detections in New York, and one unconfirmed detection in Hawaii. Since the data base was published, the two unconfirmed 1,3-D detections in New York have been invalidated. The Hawaii Department of Agriculture (7/31/91) and Williams et al. (1988) reported that the sample was "unconfirmed" which indicates that no duplicate samples were analyzed.

The GAO report specifies the states in which 16 pesticides have been detected in ground water as a result of normal agricultural use. This information is given in tabular form on page 16 of the report (Table 1.1). A footnote on this page notes that "the table includes detections of by-products or breakdown products for some of the pesticides". In other words, as inferred by the DowElanco report, the GAO has probably included 1,2-D in its evaluation of 1,3-D residues in ground water. However, recent information continues to suggest that 1,3-D is a ground-water contaminant. This information is as follows:

Ground-water Monitoring Study - Nebraska

In October 1989, five small-scale retrospective monitoring studies were initiated by DowElanco to assess the potential for Telone to leach to ground water. Residues of 1,3-D were detected in the ground water from one well on the Nebraska small-scale

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