6/11/87

Shaughnessy No.: 029001

Date Out of EAB: MAY 22 1987

To:
Product Manager I. Sunzenauer #78
Registration Division (TS-767)

From: Carolyn K. Offutt, Chief
Environmental Processes and Guidelines Section
Exposure Assessment Branch
Hazard Evaluation Division (TS-769C)

Attached, please find the EAB review of...

Reg./File # : Not given

Chemical Name: 1,3 dichloropropene

Type Product : Soil fumigant

Product Name : Telone II

Company Name : Dow

Purpose : Review Popendorf study on Telone II and other soil fumigant information.

Action Code: 4/29/87

EAB #(s) : 6563

Date Received: 5/22/87

TAIS Code:

Date Completed:

Total Reviewing Time: 3

Monitoring study requested:

Monitoring study voluntarily: x (CA data)

Deferrals to: ____ Ecological Effects Branch

____ Residue Chemistry Branch

____ Toxicology Branch

REVIEW OF NEMATOCIDE EXPOSURE ASSESSMENT FIELD STUDIES 1981-82

1. CHEMICAL:

Common Name: Telone
Product Name: Telone II
Chemical Name: 1,2 dichloropropene
Structure:

ClHC=CHCl

2. TEST MATERIAL: Telone II

3. STUDY/ACTION TYPE: Pesticide Exposure Study

4. STUDY IDENTIFICATION:

Popendorf, W., Leffingwell, J. and B. Cohen, Final Report (First Draft)-"Nematocide Exposure Assessment Field Studies 1981-1982," Pesticide Hazard Assessment Program (PHAP), University of California and University of Iowa, March 15, 1983

5. REVIEWED BY:

Harold R. Day
Environmental Chemist
Environmental Processes and Guidelines Section 5/22/87

6. APPROVED BY:

Carolyn K. Offutt, Chief
Environmental Processes and Guidelines Section
Exposure Assessment Branch, HED (TS-769) 5/22/87

7. CONCLUSIONS:

a. This report by Popendorf et al should be accepted as valid and exposure values found are typical of Telone exposure under field use conditions.

b. Telone exposure is not a simple matter to address because exposure values vary widely. Effective training of personnel (including loaders, applicators, and cultivators) should be provided and the equipment used should be resistant to deterioration from contact with Telone. All equipment should be well maintained.

c. Because of the physical nature of Telone (a volatile, permeating liquid), skin contact is likely to be a sporatic, but regular occurence.

8. RECOMMENDATIONS:

The values found in this study should be compared with other Telone exposure studies for integration into an overall assessment.

9. BACKGROUND:

The Special Review Branch has requested a review of the nematocide study with regard to exposure from the use of Telone II. Specifically, they want to determine what exposure levels are likely to be encountered from Telone use.

This study measured dermal and inhalation exposure to four nematocides (Furadan, Nemacure, Mocap, and Telone II). Only Telone II exposure will be addressed.

10. DISCUSSION OF STUDY:

A. Methods and Materials:

Eleven one-day field studies were conducted to determine exposure to different nematocides. Each study involved the measurement of dermal and inhalation exposure during actual field usage. Section 3 of the report adequately describes the sampling protocol, collection equipment (filters/pads), and analytical procedures. Exposure for both loaders and applicators was measured including a TWA (time weighted average) for an eight hour work day.

B. Results

The loading procedure generally comprised 15-20% of the work, but exposure rates for loaders were 7-30 times higher than applicators. The results from Table 2 of the study show exposure to Telone to be:

Inhalation	mg/hr	mg/kg/hr[1]
TWA	0.75	0.01
loading	2.5	0.04
application	0.7	0.01
Dermal[2]		
TWA	8[3]	0.1
loading	15[4]	0.2
application	8[4]	0.1

1. For a 70 kg person.
2. Most dermal exposures were zero; high exposure values have distorted the average such that the average listed in the table above represents many zero values and a few high values.
3. Represents average of highly variable exposure values; high values seem to be the result of accidental spillage.
4. These values include spill incidents; some excursions up to 35 mg/hr were noted.

From the data, the sum of dermal and inhalation exposure would be 0.24 mg/kg/hr loading and 0.11 mg/kg/hr for application. It should remembered however, that much higher exposure values were found, mostly due to spills, which are common enough to be considered the norm for Telone application. Telone is a difficult pesticide to handle because of its volatility. Safe use should be of paramount concern.

C. Study Author's Conclusions

The authors of the report conclude that:

1. Airborne dosage is generally generally higher, but dermal doses from spills can exceed vapor exposure exposure.

2. Normal work coveralls reduce skin exposure, but only if the fabric is not overwelmed by an excessive spill.

3. In the case of Telone, subsequent cultivation of treated soil can produce air concentration higher than during application.

4. Although respect for Telone and safety equipment appear adequate to protect workers, there are still sporadic, high exposures from spillage incidents due to the Telone's properties of volatility and permeating qualities of the liquid.

D. Reviewers Discussion and Conclusions

This reviewer agrees with the conclusions of the study author. The compilation of data in this report is useful in pointing out the very uncertain values that can be obtained from measuring Telone exposure. If care and experience are present in a situation, dermal exposure is likely to be negligible compared with inhalation exposure. If faulty equipment or negligent personnel apply Telone, occasional high exposures can be expected on a frequent basis from wetting the clothing/skin with liquid Telone.

11. COMPLETION OF ONELINER: NA

12. CBI APPENDIX: NA