To: R. Mountfort  
Product Manager #23  
Registration Division (TS-767C)

From: Paul Mastradone, Acting Chief  
Environmental Chemistry Review Section #1  
Exposure Assessment Branch/HED (TS-769C)

Through: Paul F. Schuda, Chief  
Exposure Assessment Branch/HED (TS-769C)

Attached, please find the EAB review of...

Reg./File #: 239-1246

Chemical Name: Captan

Type Product: Fungicide

Product Name: 

Company Name: Chevron Chemical Company

Purpose: Submission of laboratory volatility study

Date Received: 7/15/87  
Action Code: 660  

Date Completed: 7/7/88  
EAB # (s): 70808  
Total Reviewing time: 2 days

Monitoring Study Requested: 

Monitoring Study Volunteered: 

Deferrals to: 

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch
<table>
<thead>
<tr>
<th>Identifying Number</th>
<th>Action Code</th>
<th>Reference Number</th>
<th>Record Number</th>
<th>Study Guideline or Narrative Description</th>
<th>Reg. Std. Review Submission Criteria (See Below)</th>
<th>Accession Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>225-1346</td>
<td>160</td>
<td>100</td>
<td>19671</td>
<td>163-2, Lab, 15c</td>
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<td>403219-06</td>
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</tbody>
</table>

### PRODUCT MANAGER (PM) OR REVIEW MANAGER (RM) AND NUMBER:

- [Signature]  
- [Signature]

### DATE REVIEWED (SRA):

- 6/12/86

### CHECK APPLICABLE BOX:

- [ ] Adverse 6(a)(2) Data (405,406)
- [ ] Product Specific Data (Reregistration) (655,656)
- [ ] Suspect Data (415,416)
- [ ] Generic Data (Reregistration) (660,661)
- [ ] IBT Data (485,486)
- [ ] Special Review Data (870,871)

### NUMBER OF INDIVIDUAL STUDIES SUBMITTED:

- 1

**HAVE ANY OF THE ABOVE STUDIES (IN WHOLE OR IN PART) BEEN PREVIOUSLY SUBMITTED FOR REVIEW?**

- [ ] Yes
- [ ] No

**IF YES, PLEASE IDENTIFY THE STUDY(IES):**

- [ ] EC35

**RELATED ACTIONS:**

- [ ] Categorize

**INSTRUCTIONS:**

- [ ] Investigate

**RECOMMENDATIONS:**

- [ ] Terminate

**REVIEWED TO (HED/BUD/TSS PROVIDE):**

- 7/15/86

**DATE RETURNED TO RO (HED/BUD/TSS PROVIDE):**

- 9/11/86

**REVIEWED TO:**

- [ ] SIS
- [ ] TSB
- [ ] RCB
- [ ] EAB
- [ ] EEB

**FOR DATA SUBMITTED UNDER A REGISTRATION STANDARD:**

<table>
<thead>
<tr>
<th>Review Submission Criteria</th>
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<tbody>
<tr>
<td>Policy Note #31</td>
</tr>
<tr>
<td>1 = data which meet 6(a)(2) or meet 1(c)(2)(B) flagging criteria</td>
</tr>
<tr>
<td>2 = data of particular concern</td>
</tr>
<tr>
<td>3 = data necessary to determine tiered testing requirements</td>
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</tbody>
</table>

**NOTE TO TSS:**

- Return 1 Copy To RSERB

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**INCLUDE AN ORIGINAL AND FOUR (4)-COPIES OF THIS COMPLETED FORM FOR EACH BRANCH CHECKED FOR REVIEW.
1. **CHEMICAL:** Common name:
   
   Captan

   **Chemical name:**
   
   cis-N-((Trichloromethyl)thio)-4-cyclohexene-1,2-dicarboximide.

   **Structure:**
   
   ![Chemical Structure]

2. **TEST MATERIAL:**

   Trichloromethyl-labeled [14C]captan.
   Cyclohexene ring-labeled [14C]captan.

3. **STUDY/ACTION TYPE:**

   Submission of laboratory volatility study in response to data requirements listed in the Captan Registration Standard.

4. **STUDY IDENTIFICATION:**


5. **REVIEWED BY:**

   L. Lewis
   Environmental Scientist
   Review Section #1
   OPP/HED/EAB

   Signature: [Signature]

   Date: **JUL 8 1988**

6. **APPROVED BY:**

   Paul Mastradone
   Acting Chief
   Review Section #1
   OPP/HED/EAB

   Signature: [Signature]

   Date: **JUL 8 1988**
7. CONCLUSIONS:

A. Data were provided on both the trichloromethyl and tetrahydrophthalamide portions of the captan molecule by this study. \([^{14}C]\)Residues did not volatilize appreciably from sand soil treated with ring-labeled \([^{14}C]\)captan (50% wettable powder) at 1 lb ai/A, with approximately 0.003% of the applied radioactivity volatilized over a 9 day period. Slightly greater amounts of radioactivity volatilized from trichloromethyl-labeled \([^{14}C]\)captan treated soil (3.9% of the applied), indicating the presence of volatile degradates. TLC results showed that none of the volatile radioactivity from this label was parent captan.

B. This study is scientifically sound and fulfills the data requirement for a laboratory volatility study for captan. Based on the results of this study, EAB concurs with waiving the requirement for a field volatility study for captan.

8. RECOMMENDATIONS:

Based on acceptable data showing that the volatility of captan from soil under laboratory conditions is low, EAB recommends waiving the requirement for a field volatility study for captan.

9. BACKGROUND:

This study was submitted by Chevron Chemical Company on behalf of the Captan Task Force in response to the requirement for a laboratory volatility study in the Captan Registration Standard. The registrant has also submitted a request for a waiver of the field volatility study, based on the results of the laboratory study.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

See review of individual study.

11. COMPLETION OF ONE-LINER:

N/A

12. CBI APPENDIX:

N/A
CONCLUSIONS:

Data were provided on both the trichloromethyl and tetrahydrophthalamide portions of the captan molecule by this study. $[14\text{C}]$Residues did not volatilize appreciably from sand soil treated with ring-labeled $[14\text{C}]$captan (50% wettable powder) at 1 lb ai/A, with approximately 0.003% of the applied radioactivity volatilized over a 9 day period. Slightly greater amounts of radioactivity volatilized from trichloromethyl-labeled $[14\text{C}]$captan treated soil (3.9% of the applied), indicating the presence of volatile degradates. TLC results showed that none of the volatile radioactivity from this label was captan.

SUMMARY OF DATA BY REVIEWER:

Scrubber solutions from the soil treated with ring-labeled $[14\text{C}]$captan did not contain sufficient amounts of radioactivity for characterization. Three spots were developed on the TLC plate from soil treated with trichloromethyl-labeled $[14\text{C}]$captan. The amount of radioactivity found in each spot is shown in Table 1. None of the radioactivity was identified as captan; identification of the remaining radioactivity is to be included in an aerobic soil metabolism study currently being conducted.
Volatilization of $[^{14}\text{C}]$ residues was low, with approximately 3.9 and 0.003% of the applied radioactivity volatilized over a 9-day period from soil samples treated with trichloromethyl-labeled $[^{14}\text{C}]$ captan and ring-labeled $[^{14}\text{C}]$ captan, respectively (Tables 2 and 3).

**MATERIALS AND METHODS:**

Two 50 g samples of sand soil (92% sand, 6% silt, 2% clay, pH 7.2, 1.8% organic matter, CEC 3.6 meq/100 g) from Ocoee, Florida were brought to approximately 75% of field capacity and then surface-treated with captan (50% wettable powder formulation, prepared from $[^{14}\text{C}]$ captan labeled in the tetrahydrophthalamide or trichloromethyl moiety) at 1 lb ai/A. The treated soil was maintained at 25°C in an apparatus designed to collect volatile compounds (see Figure 1). Air flow through the system was 100 mL/min.

Methanol scrubber solutions were changed every 24 hours during the 9-day study period, and 10 mL aliquots were removed for counting. Samples were evaporated to dryness, and distillates were trapped with a dry-ice cooled condenser. The residue was dissolved in methanol and aliquots of the residue and distillate were quantified using LSC. A portion of the day 1 sample from the trichloromethyl-labeled $[^{14}\text{C}]$ captan was spotted on a TLC plate along with a captan standard. The TLC plate was developed with chloroform:acetic acid (40:1), autoradiographed, and radioactive areas were scraped from the plate and quantified.

**DISCUSSION:**

1. A material balance was not provided. Only amounts of radioactivity volatilized from the treated soil samples were reported.
Table 1. Distribution of radioactivity on TLC plate from soil sample treated with trichloromethyl-labeled $[^{14}\text{C}]$captan.

<table>
<thead>
<tr>
<th>$R_f$</th>
<th>% of amount spotted</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (origin)</td>
<td>61</td>
</tr>
<tr>
<td>0.11</td>
<td>16</td>
</tr>
<tr>
<td>0.20</td>
<td>23</td>
</tr>
<tr>
<td>0.73 (captan)</td>
<td>0</td>
</tr>
</tbody>
</table>
The material not included contains the following type of information:

___ Identity of product inert ingredients.
___ Identity of product inert impurities.
___ Description of the product manufacturing process.
___ Description of product quality control procedures.
___ Identity of the source of product ingredients.
___ Sales or other commercial/financial information.
___ A draft product label.
___ The product confidential statement of formula.
___ Information about a pending registration action
___ FIFRA registration data.
___ The document is a duplicate of page(s) _______
___ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.