MEMORANDUM

SUBJECT: EPA Reg. No./File Symbol 10182-150
Vapam Soil Fumigant For All Crops

FROM: William S. McDonald 1-8-93
Precautionary Review Section
Registration Support Branch
Registration Division (H75-050)

TO: Susan Lewis / Sidney Jackson (PM-21)
Ergoicide-Herbicide Branch
Registration Division (H75-050)

APPLICANT: Stahl Chemical Co.
1200 South 47th St.
Richmond, CA 94804

FORMULATION FROM LABEL:

Active Ingredient(s):
Sodium methylthionocarbamate (anhydrous) 32.7

Inert Ingredient(s): ......................... 67.3

Total 100.0%
BACKGROUND

The Stauffer Chemical Co. submitted a new primary dermal irritation study for Vapam Soil Fumigant Solution for All Crops (EPA Reg. No. 10182-150).

Mary Walter previously reviewed a dermal sensitization study Aug. 3, 1977. This product was shown to be a skin sensitizer. Study graded Guideline Data.

Mary also reviewed acute oral, acute dermal, acute inhalation, primary eye, and skin irritation studies Sept. 7, 1978. A re-examination of the Vapam effects reported in Marv's review seem to indicate probable destruction of the skin dermis (corrosive effects), and therefore this study probably should have resulted in a Toxicity Category of I designation, instead of Category II.

RECOMMENDATION

1) The new skin irritation study (MRN 425114-
2. BEST AVAILABLE COPY

Laboratory No. CTL/P/3793 is acceptable, and was graded Guideline Data. Due to dermal necrosis (tissue destruction), this study was given a Toxicity Category I status. The Toxicity Category will dictate the skin portion of Precautionary Labeling.

3) Current acute toxicity profile for VAPAM
   (No. 10182-150):

<table>
<thead>
<tr>
<th>Study</th>
<th>Classification</th>
<th>Toxic Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>acute oral LD_{50} 1294 (1062-1578) mg/kg Guideline</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>acute dermal LD_{50} 1012 (720-1471) mg/kg Minimum</td>
<td>11</td>
<td></td>
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<tr>
<td>acute inhalation LC_{50} 4.2 mg/l Guideline</td>
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<td></td>
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<tr>
<td>eye irritation - not absent by day 2 Guideline</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>skin irritation - destruction - day 2 Guideline</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>dermal sensitization - did sensitive Guideline</td>
<td>11</td>
<td></td>
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</table>

LABELING

1) The DANGER signal word is appropriate.
2) Change the Precautionary Statements to read: "Corrosive. Causes burns. May be fatal if absorbed through skin. Harmful if inhaled or swallowed. Causes eye injury (irritation). Do not get in eyes."
3. On skin or on clothing. Wear protective clothing and rubber gloves. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

3) The Statements of Practical Treatment are acceptable:

PM NOTE: This product is intended for uses other than residential or institutional use (40 CFR 152.170 (2)). All other uses and does meet the requirement for restricted use classification.

152.170 (b) (7) (vi) The pesticide, as formulated, is corrosive to the skin (causes tissue destruction into the dermis and/or scarring.
(This product caused eschar in depth destruction in two rabbits through 21 days post treatment).

PM should determine if alternative labeling language is sufficient to offset the hazard and the need for restricted use classifications.
DATA REVIEW FOR SKIN IRRITATION TESTING (§81-5)

Product Manager: (21) 8-21-92
Review: H. Waller
MRID No.: 425214-01
Report Date: 1-7-99
Author(s): D. Robinson
Species: Rabbit
Age: young adult
Sex: female
Weight: 2211.44.86e
Dosage: 0.5 ml undiluted
Test Material: "KPAR 40" system, sodium methyl diethanolamine
Quality Assurance (40 CFR §1500.12): both G.C. P & A.

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Summary:
The Primary Irritation Index =
Toxicity Category: 1
Classification: Guideline

Procedure (Deviation from §81-5): Animals acclimated to lab.
conditions at least 6 days pre-test. 24 hours before
application, hair was shaved by clipping to backs of
7x13 cm on left flanks of rabbits. 0.5 ml was
applied to each prepared site, covered with 2.5 x 2.5 cm
gauze patch, secured w tape, & wrapped with
unremovable rubber sheeting. Sheetig secured with type
4 linum tape. Each (of 6) had one test, treated
untreated; controls placed on same animals to prevent
site damage. Test sites scored according to Draize
scale: 30-60 min & 3 days post patch removal
Assay: Draize 1 then score. Calculation: Percentile
Determination in 3 seconds (up to 21 days) from three
sites, then samples were removed, fixed, and scanned for

Special Comments:

2 of 6 animals = necrotic test sites at 21 days
Corrosive (tissue destruction, into dermis)
Two sabbiae showed excitation (scored) at 14 days, 15 days, 17 days, and death of these sabbiae exhibited 20 scores at 21 days post-patch removal, for ashytheme (scored) 2.0 ashytheme - well defined ashytheme.

Three of sabbiae showed persistent skin lesions (up to 21 days). Samples of test side and samples from opposite sides were removed, prepared, and for analysis.

<table>
<thead>
<tr>
<th>Days</th>
<th>ER 2.8</th>
<th>2.8</th>
<th>2.5</th>
<th>2.5</th>
<th>1.5</th>
<th>1.5</th>
<th>2.5</th>
<th>2.5</th>
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<tr>
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<td>3.5</td>
<td>2.6</td>
<td>2.6</td>
<td>1.1</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
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</tbody>
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Results: As hytheme (ashytheme) F.B. = F.D. scores
"Involucræ 3 days (irritating these 21 days) moderate to severe erythema - one had completely cleared by 71 days.

Histopathologic examination revealed (3 cases) complete loss of hair follicles - fibrous tissue - and loss to subcutaneous muscle layers. Epithelium necrotic with keratinizing layers of superficial debris, a moderate inflammatory reaction at center of lesion and severe edema with slight hyperkeratosis at edges.