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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FILE

FEB 28 1996

MEMORANDUM

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

SUBJECT: POTENTIAL DAILY EXPOSURE OF REENTRY WORKERS ENTERING
PECAN GROVES TREATED WITH TRIPHENYLTIN HYDROXIDE (TPTH)

FROM: Jeff Evans, Biologist *JEV*
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Health Effects Division (7509C)

TO: Christina L. Scheltema, Chemical Manager
Special Review Section
Risk Characterization and Analysis Branch
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THRU: *Al Nielsen*
Alan P. Nielsen, Section Head
Reregistration Section (7509C)

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Larry C. Dorsey, Chief
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Health Effects Division (7509C)

Please find the OREB review of

DP Barcode: D212482

Pesticide Chemical Code: 083601

EPA MRID No.: 435574-01

Review Time: 5 days

PHED: No

1/5

I. INTRODUCTION:

The Griffin Corporation has submitted an exposure assessment addressing postapplication reentry exposure of workers involved in mechanized pecan harvesting activities. The study, "Exposure of Workers During Reentry into Pecan Groves Treated with Super-Tin® 80WP (Triphenyltin hydroxide; TPTH) Fungicide (Guidelines 133-3,4)", is acceptable and satisfies the criteria established in the Subdivision K Guideline requirements.

TPTH is a fungicide used to control scab, brown leafspot, downy spot, powdery mildew, liver spot, sooty mold, and leaf botch on pecan trees growing in the southeastern United States. A maximum of 10 applications are made to pecan groves beginning at the prepollination stages (mid-April) and repeated at 7 to 14 day intervals until shuck-split (early September). Pecan harvesting begins as early as 21 days after shuck-split, but typically begins 35 to 60 days after shuck-split.

Pecan harvesting is a highly mechanized and dusty operation utilizing mechanical tree shakers, windrowers, and sweepers. The pecan grove floors are kept weed free and/or are mown prior to the initiation of these operations. The result is a potential for machine operators to be exposed to dusts contaminated with TPTH. Postapplication workers are in the field approximately 40 days per year. Windrowing pecans was the task chosen by the registrant to represent the pecan postharvest activities.

The Agency's Risk Characterization and Analysis Branch has requested that OREB provide estimates of the potential daily exposure for workers involved in these operations using the above referenced exposure study. Potential daily exposure does not account for clothing penetration or dermal absorption of the pesticide once it's on the skin.

II. DETAILED CONSIDERATIONS:

The American Agricultural Services, on behalf of Griffin Corporation monitored the dermal and inhalation exposure of five pecan reentry workers each, operating pecan windrowing equipment in Georgia and Texas for a total of ten replicates. Concurrent soil/thatch samples were also taken from the dripline area beneath treated pecan trees. Worker exposure is presented in Table 1.

Table 1

Geometric Mean Exposure of Windrowers Reentering Pecan Groves Treated with 10 Applications of TPTH ($\mu\text{g}/\text{kg}/\text{hr}$)

| Body Region | Georgia | Texas | Both Sites |
|-----------------------------|---------|-------|------------|
| Body | 0.318 | 0.879 | 0.529 |
| Hands | 0.202 | 0.057 | 0.108 |
| Face + Neck | 0.029 | 0.022 | 0.025 |
| Total Inhalation* | 0.006 | 0.006 | 0.006 |
| Total Dermal and Inhalation | 0.590 | 1.029 | 0.779 |

* Quantifiable residues were measured in only 3 of 10 samples. In cases of non-detectable residues, residues were estimated to be 50% of the level of quantification (LOQ).

III. CONCLUSIONS:

Workers were monitored 70 and 71 days after the last application at the Georgia site and 43 and 44 days after the last application at the Texas site. The study accounts for the potential dermal exposure, that is the amount of pesticide contaminated soil falling on the worker. The potential dermal exposure overestimates exposure since it does not account for the amount of clothing penetration (OREB policy currently does not consider clothing mitigation measures for reentry workers) or does this assessment address the dermal absorption of TPTH. Once the dermal absorption value and appropriate endpoints are established, OREB can calculate an REI if one is needed. Since mechanical harvesting takes place longer after the last application, the current 48 hour REI imposed by the Worker Protection Standard may be sufficient for other tasks such as scouting.

Please find the following study acceptability checklist review for the above referenced study prepared by Versar Corporation.

cc: J. Evans, OREB
 J. Housenger, SRB (7508W)
 Correspondence File
 Chemical File (083601)

M E M O R A N D U M

TO: Al Nielsen EPA/OPP/OREB cc: Jeff Evans
Tim Leighton
FROM: Tom Brennan Jeff Dawson
2994.103 file
DATE: April 25, 1995
SUBJECT: Summary Review of
Triphenyltin
Hydroxide Exposure
Study

A study was submitted in support of the registration requirements for triphenyltin hydroxide (TPTH). This study was submitted to satisfy the requirements specified by the U.S. Environmental Protection Agency (i.e. the Agency) under Subdivision K (Exposure: Reentry Protection) of the Pesticide Assessment Guidelines as stipulated in the 1988 FIFRA reauthorization (U.S. EPA, 1984/U.S. EPA 1988). This study's identifying information is presented below:

Table 1: Identifying Information

| | |
|----------------------|---|
| Title: | Exposure of Workers During Reentry into Pecan Groves Treated with Super-Tin® 80WP (Triphenyltin hydroxide; TPTH) Fungicide (Guidelines 133-3,4) |
| Sponsor Facility: | Griffin Corporation Rocky Ford Road Valdosta, GA 31601 |
| Testing Facility: | American Agricultural Services, Inc. P.O. Box 1293 Carey, NC 27512 |
| Performing Facility: | Case Consulting Laboratories, Inc. 622 Route Ten Whippany, NJ 07981 |
| Authors: | Mark G. Bookbinder |

| | |
|-----------|-------------------|
| Date: | December 15, 1994 |
| MRID No.: | 435574-01 |

- *Typical end use product of the active ingredient used.* This criterion was met. Super-Tin® 80WP was applied at pecan groves with airblast sprayers.
- *Site(s) tested representative of reasonable worst-case climatic conditions expected in intended use areas.* This criterion was met. Super-Tin® is for use in the Southeast only, so using Georgia and Texas as study sites are acceptable. According to the registrant, eighty-nine percent of all pecans are grown in Georgia, Texas and adjacent states.
- *End-use product applied by application method recommended for the crop. Application rate given and should be at least dilution and highest, label permitted, application rate.* This criterion was met. The application rates used in the study were within the label (EPA Reg. No 1812-350) specified rates. At the Georgia site, the fungicide was applied at 100 gallons of water/acre, reflecting typical agricultural use. At the Texas site, the fungicide was applied in 20 gallons of water/acre, the minimum dilution specified by the test product label. The application rate was the same for both sites, 0.375 lb ai/A.
- *Application(s) occurred at time of season that the end-use product is normally applied to achieve intended pest control.* This criterion was met. Applications of Super-Tin® 80WP were made for a full season in Georgia (4/23/93 to 8/27/93) and Texas (5/28/93 to 10/18/93). This season long application schedule is customary for treating pecan trees for Scab, brown leafspot, downy spot, powdery mildew, liver spot, sooty mold, and leaf blotch. Application should begin during the prepollination stages and continue during the growing season with applications every 2 to 4 weeks. At the Texas site, high winds prevented prepollination applications.
- *Meteorological conditions including temperature, wind speed, daily rainfall, and humidity provided for the duration of the study.* This criterion was met. Appropriate climatic data were collected during the

application of the fungicide as well as during reentry operations and residue dissipation. In Georgia, meteorological data was collected at the NOAA station at Camilla (~15 miles east of the site). In Texas, meteorological data was collected at the NOAA station at Lubbock (~50 miles south of the site). During the application season, air temperature and rainfall were monitored. During reentry exposure, air temperature, relative humidity, wind speed and percent cloud cover were monitored.

- *For outdoor exposure monitoring at least ten replicates each job function. This criterion was met. At the Georgia site, three replicates were monitored during the first reentry day and two replicates during the second day. At the Texas site four replicates were monitored during the first reentry day and one replicate was monitored during the second day.*
- *Dermal and/or inhalation exposure must be monitored by validated methodologies. Biological monitoring is consistent with and supported by pharmacokinetic data accepted by the Agency. This criterion was met. Dermal exposure was monitored with cotton gauze patches and cotton gloves. Inhalation monitoring was conducted with personal air pumps connected to glass-fiber filters. Biological monitoring was not conducted during this study.*
- *Clothing worn by each study participant and location of dosimeters reported. This criterion was met. Since the dosimeters were worn outside the workers clothing, how the workers dressed is not an issue. The patches were attached to both shoulders, both lower arms, chest, back, both thighs, and both lower legs. Hand exposure was monitored with cotton gloves.*
- *Duplicate foliar and/or soil samples collected at each collection period. This criterion was met as either duplicate or triplicate soil fines were collected during each collection period.*
- *Sufficient collection times to establish dissipation curve. First sample time taken as soon as sprays dry or dusts settle. Short durations should exist between earlier sample intervals and may lengthen with later samples. This criterion was met. Residue samples were taken before the first application, before the last application, and on days 0, 1, 3, 7, 14, 21, 30, 60, 90, and 120.*

- *Control and baseline foliar or soil samples collected.* This criterion was met. A plot on bare-ground 0.25 miles east of the Georgia test site was used as a control plot. Similarly, a bareground plot near the Texas test site was used as a control plot.
- *Residue storage stability, method efficiency (residue recovery), and limit of quantification provided.* This criterion was met. Storage stability data and limit of quantifications were reported for cotton gauze pads, cotton gloves, glass-fiber filters, and soil fines. The LOQs for all media were 0.15 $\mu\text{g}/\text{sample}$ except for soil samples which had an LOQ of 0.05 $\mu\text{g}/\text{g}$. All of the storage stability data had acceptable recoveries (range: 83.6 to 103.8).
- *Efficient of extraction in laboratory provided as means plus or minus one standard deviation. Lower 95 percent confidence limits not less than 70 percent based on a minimum of seven replicates per fortification level prior Agency approval of extraction methodology provided.* This criterion was met. For cotton gauze pads, three fortification levels were analyzed and the percent recovery ranged from 90.7 to 109.7. For cotton gloves, three fortification levels were analyzed and the percent recovery ranged from 97.0 to 105.5. For glass-fiber filters, three fortification levels were analyzed and the percent recoveries ranged from 90.0 to 112.6. For soil fines two fortification levels were analyzed and the percent recoveries ranged from 91.3 to 96.6.
- *Foliar residue data expressed as ug or mg/cm² leaf surface area.* This criterion is not applicable. The residue data were collected from soil fines not leaves. The data were expressed in ug/g.
- *Reported residue dissipation data in conjunction with toxicity data must be sufficient to support the determination of a reentry interval.* This criterion was not met. No toxicity data was supplied in this report, as a result no reentry interval can be established.