US EPA ARCHIVE DOCUMENT

12-3-96

FILE

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

DEC 3 1996

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

**SUBJECT:** Determination of Dislodgeable Residues of Deltamethrin Following a Broadcast Application of SUSPEND (TM) SC (0.06%): A Suspension Concentrate

**FROM:** Jack Arthur, Environmental Health Scientist
Special Review and Registration Section II
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**TO:** Mike Metzger, Branch Chief
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**THRU:** Mark Dow, Section Head
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Please find below, the OREB review of:

DP Barcode: D230590

Pesticide Chemical Code: 097805

EPA Reg. No.: N/A

EPA MRID No.: 439312-01

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## I. INTRODUCTION:

SRRD has requested that OREB review the above referenced dislodgeable residue study for subdivision K Guideline acceptability. The study is intended to support the California Environmental Protection Agency's (CAEPA) data requirements for deltamethrin; it was not requested to support USEPA registration.

This study was conducted by DowElanco, but submitted to the EPA by AgrEvo, the licensed distributor of deltamethrin. AgrEvo markets deltamethrin under the product name, K-Othrine SC 5.0 Insecticide. Deltamethrin is a synthetic pyrethroid with the chemical name, (1R, 3R)-3-(2,2-dibromovinyl)-2,2-dimethyl-cyclopropane carboxylate of (S)-alpha-cyano-3-phenoxybenzyl. The study was conducted using DowElanco's formulation, SUSPEND SC (0.06%) Specialty Insecticide.

## II. DETAILED CONSIDERATIONS:

The purpose of this study was to determine the availability of deltamethrin for dermal exposure after its broadcast application on a typical residential carpet. The EPA guideline against which this study has been evaluated is EPA Postapplication Exposure Monitoring Guideline Series No. 875-2100 (Subdivision K No. 132-4).

SUSPEND SC Specialty Insecticide, a 0.06% deltamethrin-based suspension, was applied at the targeted maximum rate of 3.06 ug ai/cm$^2$ to a 164 ft$^2$, shag, medium pile, nylon carpet, by a hand-held sprayer, equipped with tank and nozzel pressure regulators.

Following application of the test product, dislodgeable residue determinations were made over a 21-day period by dragging a denim coupon affixed to a weighted block (known as the "Dow Sled") across the treated carpet at the following sample times: immediately following application; and at post-application hours 1, 2, 3, 4, 5, 6, 7, 8, 12, 24, 48, 72, 96, 120, 240 and 504 (ie, 21 days post). The mean dislodgeable residue amount immediately after application was 521 ug ai/ft$^2$ (or 0.56 ug ai/cm$^2$) * This amount dropped by about 80% in the first hour post-application. After the 6-hour sampling period (ie, from the 8 hour post-application to the end of the 21-day total test period), very little variation in dislodgeable residue levels were seen. This relatively steady state, included mean residue levels ranging from 57.1 ug ai/ft$^2$ (0.061 ug/cm$^2$) to 66.9 ug ai/ft$^2$ (0.072 ug/cm$^2$).

The term "transfer coefficient" was used in the study to indicate the percent of deltamethrin applied which could be dislodged. Transfer coefficients were calculated for

each sampling interval by dividing the mean dislodgeable residues by the amount of deltamethrin applied to the carpet. This latter amount was found to be 2.61 ug/cm$^2$, which is 86% of the targeted application rate of 3.06 ug/cm$^2$. The initial transfer coefficient (immediately after application) was 21.5%. This dropped quickly, and from the 6-hour post-application sampling period to the end of the 21-day test period, the level stabilized at about 2.5%.

In addition to the above, a determination of carpet drying time was made by weighing remnants and coupons which had been treated identically as the *in situ* test carpet, every 30 minutes post-application, until a gravimetically-determined carpet "dryness profile" was established. This latter analysis revealed that carpet dryness occurred at about 4.5 hours post-application. Environmental conditions (ie, temperature and relative humidity) had been monitored throughout the test period, and were shown to have been held relatively constant.

* Results were reported in ug/ft$^2$. To convert to ug/cm$^2$, multiply ug/ft$^2$ x 1ft$^2$/0.0929m$^2$ x 1m$^2$/10,000cm$^2$

III. CONCLUSIONS:

The results of this study are applicable to a scenario where one application of the product SUSPEND SC (0.06%) is made at maximum label concentration and rate on a residential carpet. While this study was designed to present a representative scenario, it should be kept in mind in the further evaluation of this active ingredient, that other products may have different application rates and formulation characteristics that could affect the FDR results (eg, the cumulative effects of multiple carpet treatments are not considered in this study).

This study was conducted according to the EPA's Good Laboratory Practices (GLP as described in 40 CFR Part 160). It appears that all such matters that affect the appropriate conduct of FDR studies have been considered and incorporated into the execution of this particular study (ie, regarding the appropriate number and kinds of samples, equipment used, method validation, etc.). Therefore, for the purposes of this review, **the Agency concludes that this study meets the acceptablility requirements under Guideline 875.2100 for the product and scenario tested. Please refer to the attached checklist for data acceptability criteria.**

cc: Jack Arthur, OREB
Adam Heyward, RD (7505C)
Chemical File
Circulation
Correspondence File

MRID# 439312-01

SEC. 132 RESIDUE DISSIPATION DATA ACCEPTANCE CRITERIA

for DELTAMETHRIN

| | | |
|---|---|---|
| 1. | YES | Typical end-use product of the active ingredient tested. |
| 2. | YES* | Site(s) tested representative of reasonable worst-case climatic conditions expected in intended use areas. **Product tested in indoor area representative of actual usage locations, with the range of climatic conditions characterisitic of indoor residential areas.* |
| 3. | YES* | End-use product applied by application method recommended for the crop. Application rate given and should be at the least dilution and highest, label permitted, application rate. **Product was tested on indoor carpet at maximum label application rate.* |
| 4. | YES* | Application(s) occurred at time of season that the end use product is normally applied to achieve intended pest control. **Period of testing covered three-week period in October. The actual application period can be at anytime when infestation warrants, however, since usage location is indoors, seasonal variations in outdoor temperature are not factored in. Indoor temperature and humidity were held at normal and relatively constant conditions by heating/cooling and airconditioning.* |
| 5. | YES* | Meteorological conditions including temperature, wind speed, daily rainfall, and humidity provided for the duration of the study. * *Only temperature and humidity are relevant to the indoor situation, and these conditions were documented throughout the study.* |
| 6. | YES | Duplicate foliar and/or soil samples collected at each collection period. |

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|---|---|---|
| 7. | YES* | 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. **Sample intervals were: pre-application; immediately after application; and at post-application hours 1, 2, 3, 4, 5, 6, 7, 8, 12, 24 (ie, one day), 48, 72, 96, 120 (ie, five days), 240 and 504 (ie, twenty-one days). Dryness was determined through gravimetric means to be at approximatly 4.5 hours post-application.* |
| 8. | YES* | Control and baseline foliar or soil samples collected. *Preapplication samples were collected to determine potential background deltamethrin levels in the carpet.* |
| 9. | YES | Residue storage stability, method efficiency (residue recovery), and limit of quantification provided. |
| 10. | YES* | Foliar residue data expressed as ug/cm2 or mg/cm2 leaf surface area. **Carpet residue data are presented as ug ai per $ft^2$ which can be converted to ug per $cm^2$.* |
| 11. | N/A | Soil residue data expressed as ug of fine soil material. |
| 12. | YES* | Reported residue dissipation data in conjunction with toxicity data must be sufficient to support the determination of a reentry interval. **Dissipation data submitted are sufficient to be used in calculations leading to the determination of the MOE, however, since this is a residential exposure scenario, determination of reentry interval is not applicable.* |

<u>Other Data Gaps:</u>

Much of the background and supporting data for the results of this study have been referenced and only summary or typical data actually provided. This is sufficient for the purposes of review when the results reported seem reasonable and proper study conduct is evident, as is the case here.