



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

529-92

MAY 29 1992

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

MEMORANDUM:

SUBJECT: RAID MOSQUITO COILS EXPOSURE ASSESSMENT

FROM: Radamés Lozada, Chemist

TO: Richard Mountfort, PM 10
Insecticide-Rodenticide Branch
Registration Division (H7505C)

THRU: Mark I. Dow, Ph.D., Section Head
Special Review and Registration Section II

Larry C. Dorsey, Acting Chief
Occupational and Residential Exposure Branch
Health Effects Division (H7509C)

Please find below, the OREB review of:

DP Barcode: D178082

Pesticide Chemical Code: 004003

EPA Reg. No.: 4822-300

EPA MRID No.: none

Review Time: 2 days

PHED: no

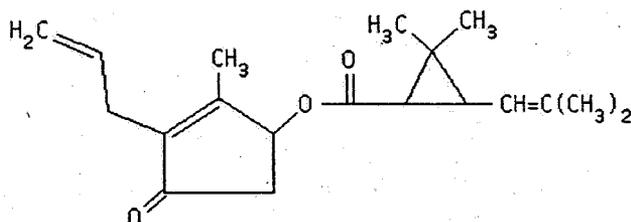
D-TRANS ALLETHRIN

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I. INTRODUCTION:

A. Background:

Allethrin is the common name of the active ingredient (AI) found in Raid Mosquito Coils produced by Johnson & Son, Inc. Allethrin is used for control of flies, mosquitoes, ants, and other household and public health insect pests. The chemical structure of the AI is shown below.



Additional identifying characteristics of allethrin include:

Chemical Names:	(RS)-3-allyl-2-methyl-4-oxocyclopent-2-enyl-(1RS)-cis, trans-chrysanthemate
Molecular Formula:	C ₁₉ H ₂₆ O ₃
Molecular Weight:	302.4
CAS Registry No.:	584-79-2

The following table summarizes the toxicological information, for allethrin, found in the Tox Oneliners database, dated 01/27/92.

Study	Allethrin 2.87 %	Allethrin 0.057 %
Acute Oral	LD ₅₀ = 2460 mg/kg Toxicity Category 3	LD ₅₀ = 16000 mg/kg Toxicity Category 3
Acute Dermal	LD ₅₀ = 400 mg/kg (Male) LD ₅₀ = 400-800 mg/kg (Female) Toxicity Category 3	LD ₅₀ = 800-16000 mg/kg (Male) LD ₅₀ = 16000 mg/kg (Female) Toxicity Category 4

Study	Allethrin 2.87 %	Allethrin 0.057 %
Acute Inhalation	No data available for this formulation	No mortalities following 1 hr exposure to nominal concentration of 41.62 mg/L

B. Purpose:

Johnson & Son, Inc. has voluntarily submitted modeling data to estimate the potential exposure to humans from the use of mosquito coils, an outdoor product. Registration Division (RD) has requested the review of these data.

II. DETAILED CONSIDERATIONS:

In a brief letter to the PM, the registrant stated that in order to justify their labeling statement for this outdoor product they assumed an 8' x 8' x 8' patio, with 10 air exchanges per hour. Given the known burn rate of 3.2 g/hr they predicted that the patio concentration of the "whole product" would be 0.00189 mg/l. These data do not provide enough information for OREB to determine its acceptability. However, in order to evaluate exposure resulting from the use of Raid Mosquito Coils and due to the lack of actual or surrogate data to evaluate exposure from this type of formulation; an exposure scenario was postulated where the full content of a 3 oz package was available for exposure. The inhalation, dermal and ingestion routes of exposure have been considered.

A. Exposure Assessment:

1. The following data were obtained from the product label:
 - a. Percent of AI in the product 0.15 %
 - b. The net weight of the package is 3 oz

2. The following assumptions were made:
 - a. The average male adult weight is 70 kg.
 - b. The average child weight is 7.5 kg

c. The entire contents of a package are ingested, inhaled or available for dermal exposure.

d. 100% dermal absorption

3. The amount of AI available for exposure is calculated below:

$$3 \text{ oz of product} * \frac{1 \text{ lb}}{16 \text{ oz}} * \frac{454 \text{ g}}{1 \text{ lb}} * \frac{0.15 \text{ g of AI}}{100 \text{ g of product}} = 0.13 \text{ g of AI}$$

$$0.13 \text{ g of AI} * \frac{1000 \text{ mg}}{1 \text{ g}} = 130 \text{ mg of AI}$$

4. If a male adult consumes the whole package, the following amount would be available:

$$\frac{130 \text{ mg of AI}}{70 \text{ kg}} = 1.86 \text{ mg/kg}$$

5. If a child consumes the whole package, the following amount would be available:

$$\frac{130 \text{ mg of AI}}{7.50 \text{ kg}} = 17.33 \text{ mg/kg}$$

In summary, for a male adult 1.86 mg/kg is available for ingestion or inhalation. For a child 17.33 mg/kg is available for ingestion or inhalation. If 100 % dermal absorption is assumed, the same amounts are available for dermal exposure.

Although the above exposure is highly speculative, exposure to Raid Mosquito Coil via ingestion, inhalation or dermal exposure is at significantly lower levels than the LD₅₀ shown in the Introduction Section. The exposure scenario outlined above is not expected

to occur under normal circumstances and consequently, OREB does not expect a large amount of active ingredient to be available for exposure either from ingestion, inhalation or dermal exposure.

III. CONCLUSIONS:

1. The submitted data do not provide enough information for OREB to determine its acceptability.
2. OREB does not expect a large amount of active ingredient to be available for exposure either from ingestion, inhalation or dermal exposure.

IV. REFERENCES:

1. The Royal Society of Chemistry. 1988. The Agrochemical Handbook.

cc: R. Lozada, OREB
Correspondence File
Chemical File (Allethrin)
Circulation