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EFFICACY STUDY REVIEW

by Kevin J. Sweeney, Entomologist - IB

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To: Ann Sibold

Date: October 21, 2003

EPA Registration No. 65331-2, 3, 4, and 5

Product Names: FrontLine Top Spot for Cats; Frontline Top Spot for Dogs; Frontline Plus for Cats; and Frontline PLUS for Dogs.

Registrant: Merial Limited

PM: Linda Arrington, Acting PM 10

Decision Nos. 329453, 200325, 333158, 213526 DPs # : D293942, D292555, 293941, and D292556

Chemical: 9.7% fipronil - Frontline Top Spot for Cats
9.7% fipronil - Frontline Top-Spot for Dogs
9.8% fipronil plus 11.8% (S)-methoprene - Frontline PLUS for Cats
9.8% fipronil plus 8.8% (S) -methoprene - Frontline PLUS for Dogs
fipronil - PC Code: 129121 and (S) -methoprene 105402

Type: (I) Insecticide
For dogs: RTU spot-on dogs & puppies 8 weeks and older.
For cats: RTU spot-on for cats and kittens 8 weeks and older.

Guideline: OPPTS Product Performance Guideline 810.3300

Data Review Instructions: Review submitted study and revised label to determine if the products, when use as directed, kills adult mosquitoes.

Submitted Studies:

MRID 45866901 Frontline Plus for Dogs: Study Summaries by Timothy Dotson

MRID 45866902 Frontline Plus for Dogs: A Study to Evaluate the Efficacy of Frontline Plus for Control of Mosquitoes, *Aedes aegypti*, on Dogs by John McCall et al. 2002.

The above studies were previously reviewed. The registrant responded to July 2 and August 5

Efficacy Reviews with a revised label that included the claims: "With a monthly application, Frontline kill mosquitoes within 24 hours for up to 7 days, and within 48 hours for up to 28 days."

This label claim accurately reflects the results of the submitted studies. For the file, the product was not repellent and did not prevent mosquitoes from biting.

MRID 46019201 Study Summaries by Timothy Dotson

MRID 46019202 A study to Evaluate the Efficacy of Frontline PLUS for Control of Mosquitoes, Aedes aegypti, on cats.

These studies were conducted in accordance with OPPTS Guideline 810.3300. The study showed that when Frontline PLUS was applied to cats as a spot-on application the efficacy against mosquitoes was similar to results obtained for spot-on application to dogs except the cat product appears to be more efficacious. Based on a 24 hour mortality evaluation following a one-hour exposure to anethesthized animals treated with Frontline PLUS for cats, the product demonstrated 14 day kill of mosquitoes. Forty-eight hour evaluations showed that the product was efficacious for 28 days.

Entomologist's Recommendations:

1. The Frontline Top Spot for dogs label is acceptable.

2. The FrontLine Top Spot for Cats and the Frontline PLUS label for cats are acceptable provided the mosquito kill claim reads: "With a monthly application, Frontline PLUS for cats kill mosquitoes within 24 hours for up to 14 days, and within 48 hours for up to 28 days."

3. The FrontLine PLUS label for dogs is acceptable.

4. The above recommendations are made based on the data received and reviewed. It would be interesting to see how many mosquitoes were alive immediately following each one hour exposure period on dogs and cats. As a practical matter, a product that is faster acting would probably do a better job of protecting pets from mosquito bites.

5. The OPPTS Guideline 810.3300 does not address application of toxicants to dogs and cats for killing mosquitoes. Only repellent evaluations are mentioned. The only other application type that is similar to the application of toxicants to the skin of pets is that made for lice control on humans. In these tests, evaluations are usually made at intervals of 24 hours or less. However, there no directive in EPA guidance that forbids consideration of a 48 hour mortality evaluation. The guideline provides flexibility in this regard.

6. The submitted data do not support any type of mosquito-borne disease related claim for either the dog or cat products.