Efficacy Review

Date: July 1, 2011

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Products: Cyphenothrin + Pyriproxyfen Squeeze-on for Dogs (20%)

EPA Reg. #: 2517-129

A.I.'s: Cyphenothrin (20%), Pyriproxyfen (2%)

Decision #s: 445165

DP #s: 387383, 390083

Submission: R340, Amendment, Non-fast track, RD Science Review

MRIDs: Submitted: 48382701

GLP: No

MRID 48382701

Title: Efficacy Evaluation of Sergeant's Cyphenothrin Squeeze-ons for Dogs against Moquitoes (*Aedes aegypti*, and *Culex quinquefasciatus*) on Dogs.

Guideline: OPPTS 810.3300

Materials and Methods: Laboratory studies were conducted to evaluate the efficacy of 2 cyphenothrin spot-on products applied to dogs for repellence of mosquitoes. 24 dogs of mixed weight and sex were assigned to one of 4 test groups (6 dogs per group) as follows: Cyphenothrin 20%, Cyphenothrin 30%, and 2 untreated control groups. The 20% cyphenothrin treatment was applied per label directions to dogs weighing 9-39 lbs, and the 30% product was used for dogs weighing 40-60 lbs. Each species (*Aedes* and *Culex*) was tested twice each week, for 4 weeks between 1 and 25 days after application. Dogs were sedated and placed in BioQuip aluminum mosquito rearing cages, 24" x 24" x 24". For each test, approximately 25 unfed mosquitoes were released into each cage. The cages were covered to provide darkness. For the first 5 minutes after introducing the mosquitoes, the cumulative numbers of mosquitoes that landed and adopted normal resting posture on each dog were recorded. The mosquitoes were

removed from the cages and all female mosquitoes, alive and dead were squashed to determine blood feeding status.

Study Summary of the Results:

1. *Aedes aegypti* repellence was maintained above 90% through 25 days after treatment, with some mortality observed.
2. *Culex quinquefasciatus* repellence was maintained above 90% through 24 days after treatment, with some mortality observed.

Entomologist's Observations/Discussion:

1. Data was not submitted or cited to demonstrate efficacy against any species of *Anopheles* mosquitoes. Typically the Agency requires data from 3 species, including *Anopheles* in order to support a general mosquito claim.
2. The claim can be approved conditionally, if the registrant agrees to submit efficacy data (using the same submitted protocol) against a representative species from *Anopheles*.
3. While repellence claims are adequate for the mosquito species tested, the data did not demonstrate killing efficacy for 30 days. Therefore 'kills' claims against mosquitoes are unacceptable and must be removed from the label.

Overall Review of Label Claims and Directions:

1. Submitted data was adequate to support efficacy claims for repellence against *Culex*, and *Aedes*. The general mosquito claim can be approved conditionally, pending future submission of data for *Anopheles*.
2. Kill claims for mosquitoes were not supported and must be removed from the label.
3. There are a number of claims present on the label for repellence of fleas and/or ticks. No data has been submitted or cited to support these claims in this or previous applications, and the approval of such claims initially was an oversight on the part of the Agency. Unless the registrant can submit or cite data demonstrating repellence (i.e., 90% or greater prevention of animal attachment and feeding by fleas or ticks) for these species, all claims related to repellence for fleas and ticks must be removed from the label.

Line by Line Review of New Label Claims and Use Directions

(Multiple species)

[Five][5] Way Protection! [Kills fleas, flea eggs, flea larvae, ticks and mosquitoes: Kill claim for mosquitoes is unacceptable. Can be revised to 'repels'

Five in one protection [Kills fleas, flea eggs, flea larvae, ticks, and mosquitoes]: Kill claim for mosquitoes is unacceptable. Can be revised to 'repels'

Kills fleas, flea eggs, flea larvae, ticks, mosquitoes: Kill claim for mosquitoes is unacceptable. Can be revised to 'repels'

Kills mosquitoes (all instances): Kill claim for mosquitoes is unacceptable. Can be revised to 'repels'

(Mosquitoes)

Kills [and Repels] mosquitoes: Kill claim for mosquitoes is unacceptable. Can be revised to 'repels'

[Kills [and] [&] [Repels] mosquitoes] [within 24 hours]: Kill claim for mosquitoes is unacceptable. Can be revised to 'repels'

[Kills [and] [&] [Repels] mosquitoes [for up to [30 days] [4 weeks] [1 month]!]: Kill claim for mosquitoes is unacceptable. Can be revised to 'repels'

Kills ([and] [&] repels) mosquitoes that may transmit heartworm: Kill claim for mosquitoes is unacceptable. Can be revised to 'repels'

Repels mosquitoes that may transmit [heartworm] [West Nile virus] [from feeding on dogs] [for up to [one month] [30 days] [4 weeks]: Acceptable

[Repels Mosquitoes] [Prevents mosquitoes that transmit West Nile virus and heartworm] [from feeding on dogs] [for up to [one month] [30 days] [4 weeks]: Acceptable

Prevents mosquitoes from blood feeding, which may transmit viruses such as West Nile Virus and heartworm to dogs for up to four weeks: Acceptable

Review of Unacceptable Existing Label Claims and Use Directions

All references to repelling of fleas and ticks are unacceptable and must be removed from the label. This was an oversight from the previous efficacy review. In order to support repellence claims against fleas and ticks, data must be submitted demonstrating that the product prevents fleas and ticks from attaching and/or feeding on animals, with a 90% reduction compared to an untreated control. This data was never submitted or cited for this product and all such claims are unacceptable for fleas and ticks.