**Efficacy Review**

**Date:** August 26, 2009

**Efficacy Reviewer:** Clayton Myers, Ph.D., Entomologist, RD-IB
myers.clayton@epa.gov
703-347-8874

8-26-09

**Risk Manager Rev.:** BeWanda Alexander

**Product:** Home Defense Max Perimeter Insect Killer Aerosol

**EPA Reg. #:** 239-2696

**A.I.'s:** Bifenthrin (0.05%)

**Decision #:** 409013

**DP #:** 364911

**Submission:** R340, Amendment, Non-fast track. Efficacy data submitted and cited in support of additional residual and marketing claims

**MRIDs:** Submitted: 47711501, 47711502, 47711503

Cited: 45060601, 46371601, 46393501, 46553201, 46888508, 47086001, 47311209, 47425001,

**GLP:** Not all

**MRID 47711501**

**Title:** Evaluation of the Efficacy of a 0.05% Bifenthrin Plus 0.03% Prallethrin Aerosol Formulation Against American Cockroach (Non-GLP)

**Purpose/Objectives:** To evaluate the efficacy of a 0.05% Bifenthrin plus 0.03% Prallethrin aerosol formulation as an indoor crawling insect killer against American Cockroaches for typical home owner use.

**Materials and Methods:**

*Guideline:* OPPTS 810.3500

*Species:* American Cockroach, *Periplaneta americana* ($9^{th}$-$10^{th}$ instar nymphys)

*Test material:* Aerosol Formulation, 0.05% Bifenthrin + 0.03% Prallethrin

*Design:* 6 replicates for each treatment, 15 cockroaches per replicate

*Dosages:* Each cockroach treated individually on a non-porous floor. Each cockroach sprayed 'with sufficient formula from an aerosol can to sufficiently wet the arthropod without interfering with the movement of the insect.'

*Data collection:* A timer was started after treatment of each insect. Knockdown time was recorded. After spraying, the cockroach was 'encouraged' to crawl out of the spray and roam freely around the room, until knockdown. After KD, each cockroach was placed in a polypropylene bowl for observation. Mortality was recorded when no visible movement was observed after probing the abdomen and appendages.

*Statistics:* Means were calculated for the treatment and control group and compared using AOV ($p < 0.05$) and means were separated using Student-Newman-Keuls test ($p < 0.05$).

**Study Summary of the Results:**

Mean knockdown time was 21.22 seconds, within a SD of 11.84 seconds. 100% mortality was achieved within 30 minutes of treatment. >90% knockdown was achieved in each treatment.

**Entomologist's Observations/Discussion:**

1. The study evaluated a material that included a second active ingredient (prallethrin) that could add additional efficacy beyond that conferred by bifenthrin alone. Therefore, the proposed knockdown claims are not supported.

**MRID 47711502**

**Title:** Evaluation of the effect of exposure time on control of indoor crawling insects (multiple arthropods) with 0.05% bifenthrin applications (Non-GLP)

**Purpose/Objectives:** To evaluate the impact of exposure time on the control of multiple arthropods with 0.05% bifenthrin applications applied at 0.2 # ai/A. (~2 mg ai/sq. ft).

**Materials and Methods:**

*Guideline:* OPPTS 810.3500

*Species:* American Cockroach
German Cockroach
Oriental Cockroach
Western Harvester Ant
Striped Scorpion
Black Widow Spider

Brown Recluse Spider

*Test material:* RTU, 0.05% Bifenthrin

*Design:* Forced exposure test of various arthropods to a number of different surfaces treated with a 0.05% bifenthrin product, 5 months after application. Split plot design with varying replicates of each arthropod. Arthropods are caged onto the surfaces for differing lengths of time, and then removed to clean containers for evaluation. (Study is planned to go out 12 months and data presented now is an interim update).

*Dosages:* 0.2 # ai/A. (~2 mg ai/sq. ft). Surfaces evaluated: Linoleum, treated wood flooring, ceramic tile, polypropylene bowls.

*Data collection:* Knockdown after placement on treated surfaces was evaluated. Morbidity and mortality was recorded at 24, 48, and 72 hrs. after exposure to treated surfaces.

*Statistics:* Summary statistics only.

**Study Summary of the Results:**

Residual control from bifenthrin is dependent on the species and exposure time, though all species required less than 60 minutes exposure on non-porous surfaces. Replication for studies with scorpions was inadequate (2 replicates of 1 scorpion in each).

Control efficacy was adequate for Ants (including Harvester Ants, but excluding Carpenter Ants, Pharaoh's Ants, and Foraging Fire Ants), Carpet Beetles, Crickets, Firebrats, Moths, Silverfish, and Spiders on treated non-porous surfaces after 5 minutes of continuous exposure. Efficacy was adequate for German cockroaches after 30 minutes of continuous exposure.

**Entomologist's Observations/Discussion:**

2. For residual control studies, it is preferred to have only 5 minutes of forced exposure to a residue, as this more accurately simulates real-world exposure scenarios. After the forced exposure, the insects must be removed from the residue for evaluation of knockdown and mortality. Because this is not the case for all listed pests, a footnote will be required on the label. For insects where the required forced exposure time was higher, controls claim must be qualified by a statement to describe how much exposure is required to kill the pest, i.e., "after 30 minutes continuous exposure."
3. 5 month controls claims are supported for Ants (including Harvester Ants, but excluding Carpenter Ants, Pharaoh's Ants, and Foraging Fire Ants), Carpet Beetles, Crickets, Firebrats, Moths, Silverfish, and Spiders on treated non-porous surfaces after 5 minutes of continuous exposure.
4. Replication was inadequate for the studies supporting scorpion claims (only 1 scorpion was used per replicate, with only 2 replicates per study). Therefore, claims are not supported for scorpions.

5. Data only supports claims for indoor non-porous surfaces. Footnotes indicating such may not be removed until further data is submitted to support controls claims for additional surfaces and longer periods of time. Any time-related outdoor claims on the label must be removed unless efficacy data is submitted or cited for insects exposed to appropriate treated outdoor surfaces (i.e., brick, cement, vinyl siding, eaves, etc.) under field conditions.

**MRID 47711503**

**Title:** Efficacy of Simulated Barrier Treatments Against Laboratory Colonies of Pharaoh Ant (Journal of Economic Entomology)

**Purpose/Objectives:** Evaluate the efficacy of a number of treatments on repellence and control of Pharaoh Ant

**Materials and Methods:**

*Guideline:* N/A

*Species:* Pharaoh Ant, *Monomorium pharaonis*

*Test material:* Talstar F, Bifenthrin spray (compared with other treatments)

*Design:* A foraging array was set up using fluon trays connected by steel 'slinky' coils (to allow foraging over long distances in a small space). Ants were placed on this array (with food sources) for a 7 day acclimation period, after which treated substrates (treated or untreated brick, mulch, ceramic, and vinyl) were placed around the middle nesting site. These substrates were treated to evaluate:

1. repellence/control of ants and colony relocation behaviors were measured (movement of reproductively competent colonies into side trays)
2. worker foraging activity
3. worker mortality
4. queen mortality
5. brood mortality

Evaluations were conducted for 42 days, with counts daken on day 2, 4, 7, 14, 21, 28, 35, and 42 days after placement of treated substrates. 3 replicates were done for each treatment, including an untreated control.

*Dosages:* 2.6 micrograms/square cm

*Data collection:* Foraging activity was monitored by counting foragers crossing a marked line on all 4 of the 50-foot sections of coil, 20 feet from the pans. Mortality was assessed by aspirating dead individuals from the pans and counting htem at the end of the 6-wk study. Brood

mortality was estimated by counting the number of 1-square cm squares of brood at the beginning and end of the study.

*Statistics:* ANOVA for all variables, means separated by LSD t-test (p = 0.05).

**Study Summary of the Results:**

Migration of ants from the original nest to side nests was prevented for 2 of 3 replicates on bifenthrin treated brick and for all 3 replicates of bifenthrin treated mulch (20 cm x 10 cm). Observations were not taken on ceramic or vinyl.

On concrete, worker foraging activity was reduced approximately 80-90% throughout the 6 week study. On mulch, near 100% reduction was achieved from day 14-42, although reduction was less effective prior to day 14. Bifenthrin was only moderately effective in killing queens, workers, and broods (~40% mortality).

**Entomologist's Observations/Discussion:**

6. Because foraging ants were prevented from crossing concrete or mulch substrates (20 cm x 10 cm in size), 6 weeks after treatment, a claim for 'prevents foraging' or 'keeps pests out' could conceivably have been supported for certain outdoor surfaces. However, because the study was conducted indoors, it is unknown how long this treatment efficacy would last under outdoor conditions, weathering, etc. Therefore an outdoor barrier claim, controls claim, or foraging claim is not supported since no realistic time component can be determined for product efficacy.
7. Additionally, because forager and queen mortality was not adequate, this data does not support a controls claim for Pharaoh Ants.

**CITED MRID's**

**MRID 45060601**

**Title:** Evaluation of Knockdown Speed and Mortality Efficacy on the Hobo Spider, Ortho Home Defense Indoor and Outdoor Insect Killers.

**Entomologist's Observations/Discussion:**

8. Per prior review (M. Suarez, 5 August 2008), data are adequate to support claims against Hobo spiders. I have read and fully concur with the prior review and conclusions.

**MRID 46371601**

**Title:** Residual Efficacy of F701EW (DV7130), F701EW (DV7131), F2700 EW, and Talstar® One for Control of German, Oriental, and American Cockroaches, and Direct Contact Efficacy on Carpenter Ants, Paper Wasps, Yellow Jackets, Eastern Subterranean and Formosan Termites.

**Purpose/Objectives:** Evaluate a bifenthrin treatment (along with others) for initial and residual activity on 3 substrates (ceramic tile, vinyl tile, and painted wood) against cockroaches, carpenter ants, and other species.

**Materials and Methods:**

*Guideline:* OPPTS 810.3500

*Species:* German Cockroach, *Blatella germanica*; American Cockroach, *Periplaneta Americana*; Oriental Cockroach, *Blatta orientalis*; Carpenter Ants, *Camponotus modoc*; etc.

*Test material:* Talstar® One, Bifenthrin Flowable

*Design:* Forced exposure to treated residues at various times for cockroach species, in support of controls claims. Direct spray of ants in cages in support of kills claims for Carpenter Ants.

*Dosages:* Various

*Data collection:* Various

*Statistics:* Summary Only

**Study Summary of the Results:**

German cockroaches were knocked down after 60 minutes of forced exposure to treated ceramic tile, at day 0, 1 month, and 3 months after treatment, and 90% mortality was observed for all treatments. On vinyl tile, German cockroaches were knocked down after 2 hours of forced exposure at day 0, 1 month, and 3 months after treatment, and 95% mortality was observed for all treatments. Knockdown and mortality was not adequate on a painted wood surface.

American cockroaches were knocked down after 2 hours of forced exposure to treated ceramic and vinyl tile at day 0, 1 month, and 3 months after treatment, but mortality was not adequate.

Oriental cockroaches were knocked down after 2 hours of forced exposure to treated ceramic tile at day 0, 1 month, and 3 months after treatment, but mortality was not adequate. Similar knockdown was observed but mortality was adequate on vinyl tile.

Carpenter Ants were killed after 2 hours of continuous exposure and direct treatment in a treated cage.

**Entomologist's Observations/Discussion:**

9. For residual control studies, it is preferred to have only 5 minutes of forced exposure to a residue, as this more accurately simulates real-world exposure scenarios. After the forced

exposure, the insects must be removed from the residue for evaluation of knockdown and mortality.

10. Controls claims for German cockroaches are valid for indoor non-porous surfaces only, are valid for 3 months after treatment, and must be qualified by the statement "after 1-2 hours continuous exposure." However, this data is superseded by the aforementioned findings in the prior residual study (MRID 477115-02).
11. Controls claims for American cockroaches and Oriental cockroaches are not supported, except for Oriental cockroaches on vinyl tile.
12. Kills claims for Carpenter Ants are supported, but residual controls claims are not supported.

**MRID 46393501**

**Title:** Residual Efficacy of FMC 54800 Formulations to Control Public Health Pests

**Purpose/Objectives:** Evaluation of a number of materials against pest of public health importance

**Materials and Methods:**

*Guideline:* OPPTS 810.3500

*Species:* Cat fleas and others

*Test material:* Various bifenthrin formulations

*Design:* Various

*Dosages:* Minimum, 12.0 mg ai/square meter

*Data collection:* Various

*Statistics:* Summary

**Study Summary of the Results:**

>90% knockdown of cat fleas after 2 hours of exposure to treated surface

100% mortality after 2 hours of exposure time to treated residue, out to 16 weeks post-treatment for non-porous surfaces. On a calico treatment, residual efficacy was only demonstrated out to 2 weeks post-treatment.

**Entomologist's Observations/Discussion:**

13. For residual control studies, it is preferred to have only 5 minutes of forced exposure to a residue, as this more accurately simulates real-world exposure scenarios. After the forced exposure, the insects must be removed from the residue for evaluation of knockdown and mortality.
14. The study results are adequate to support kills and control claims for fleas, if qualified by "after 2 hours continuous exposure." The data supports a controls claim out to 16 weeks (or 4 months) for non-porous surfaces only.

**MRID 46553201**

**Title:** Evaluation of Residual Efficacy of Ortho Home Defense Indoor & Outdoor Insect Killer Against Multiple Arthropod Pests

**Entomologist's Observations/Discussion:**

15. This study was reviewed (M. Suarez, 2 November, 2005) and was deemed inadequate to support controls claims for any pests of public heatlh concern, per a prior review and required corroborative data submission under a conditional registration for the product supported by this study. (The aforementioned study, MRID 477115-02 is an interim report on the data submitted in support of these claims.) I have read and fully concur with the prior review and conclusions.

**MRID 46888508**

**Title:** F5997 ME for Control of General Household, Ornamental, and Turf Pests

**Study Summary of the Results:**

Demonstrates efficacy for a number of insect pests not of public health importance

**Entomologist's Observations/Discussion:**

16. The study supports claims for a number of pests that do not require submission of efficacy data, including crickets, earwigs, millipedes, etc.

**MRID 47086001**

**Title:** Residual Control of Bifenthrin Granules

**Purpose/Objectives:**

**Materials and Methods:**

*Guideline:* OPPTS 810.3500

*Species:* Red imported fire ant, *Solenopsis invicta*

*Test material:* Bifenthrin granules

*Design:* Outdoor trials with caged forced exposure of insects to treated areas.

*Dosages:* 0.2 lbs ai/acre

*Data collection:* Various

*Statistics:* Summary only

**Study Summary of the Results:**

Control of foraging red imported fire ant outdoors (on soil) was supported for up to 148 days after treatment, when applying a granule at 0.2 lbs ai/acre.

**Entomologist's Observations/Discussion:**

17. Insufficient detail was provided on the length of forced exposure of fire ants to the treated surfaces. Generally a 5 minute forced exposure period is required, after which, insects are removed to a clean container for evaluation of mortality after 24 hours. The methodology for forced exposure was not provided and this is of particular importance because the use of this product for outdoor application would only be for small bands 'along the foundation, around window frames and doorways, on porches and patios, in garages, [and] along eaves and exterior siding.' These are all surfaces for which efficacy of application of an aerosol to a smooth surface could differ quite significantly from application of granules to soil, and for which separate residual efficacy data needs to be submitted or cited. For such data, forced insect exposure must be no greater than five minutes, after which insects are removed for knockdown/mortality assessments.
18. Claims for control of foraging fire ants and associated barrier claims related to outdoor applications are not supported.

**<u>MRID 47311209</u>:**

**Title:** Residual efficacy of Ortho Home Defense Indoor & Outdoor Insect Killer (EPA Reg. No. 239-2663) on multiple arthropod pests

**Purpose/Objectives:** Evaluate the residual efficacy of Ortho Home Defense Indoor & Outdoor Insect Killer against multiple home arthropod pests.

**Materials and Methods:**

*Guideline:* OPPTS 810.3500

*Species:* Western Harvester Ant (*Pogonomyrmex occidentalis*), Carpenter Ant (*Camponotus pennsylvanicus*), Red Imported Fire Ant Foragers (*Solenopsis invicta*), Striped Tail Scorpion (*Vaejovis spingerus*), and Dune Scroprion (*Smeringurus mesaensis*)

*Test material:* Ortho Home Defense Indoor & Outdoor Insect Killer (0.05% Bifenthrin)

*Design:* .Laboratory study where the product was applied to three common indoor surfaces: linoleum flooring, ceramic tile flooring, and polypropylene testing containers. Substrates were aged over 1 year indoors under ambient conditions to evaluate residual efficacy. Ten insects per replicate, 4 replicates per treatment, except scorpions, where 1 scorpion per replicate was used, with 5 replicates per treatment.

*Infestations:* Insects were forced exposure to surfaces for 24 hours by placement under polypropylene testing containers.

*Dosages:* "until slightly wet without soaking"

*Data collection:* Mortality readings were taken 24, 48, and 96 hours after introductions of insects to treated surfaces

*Statistics:* Summary only

**Study Summary of the Results:**

Mortality for 3 ant species exceeded 90% for non-porous surfaces including linoleum and plastic containers. Mortality for 3 scorpion species exceeded 90% for both ceramic tile and plastic containers.

**Entomologist's Observations/Discussion:**

19. Replication was inadequate for the scorpion studies, as only 5 total insects were evaluated for each treatment, therefore scorpion claims are not supported.
20. For residual control studies, it is required to have only 5 minutes of forced exposure to a residue, as this more accurately simulates real-world exposure scenarios. After the forced exposure, the insects must be removed from the residue for evaluation of knockdown and mortality. Because the exposure was forced for 24 hours, and such scenarios of continuous exposure are not realistic for typical indoor uses, the control claims proposed for these pests are not supported.

**MRID 47425001:**

**Title:** Evaluation of Residual Efficacy of Ortho Home Defense Indoor and Outdoor Insect Killer (EPA Reg. No. 239-2663) Against Multiple Arthropod Pests

**Purpose/Objectives:** Satisfy the conditional approvals for Ortho Home Defense indoor and Outdoor Insect Killer (EPA Reg. No. 239-2663) for ants and scorpions (detailed in bullet point #2 of the EPA response letter dated November 9, 2005).

**Materials and Methods:**

*Guideline:* OPPTS 810.3500

*Species:* Western Harvester Ant (*Pogonomyrmex occidentalis*), Carpenter Ant (*Camponotus pennsylvanicus*), Red Imported Fire Ant Foragers (*Solenopsis invicta*), Striped Tail Scorpion (*Vaejovis spingerus*), and Dune Scroprion (*Smeringurus mesaensis*)

*Test material:* Ortho Home Defense Indoor & Outdoor Insect Killer (0.05% Bifenthrin)

*Design:* Laboratory study where the product was applied to polypropylene testing containers. Substrates were aged over 1 year indoors under ambient conditions to evaluate residual efficacy. Ten insects per replicate, 4 replicates per treatment, except scorpions, where 1 scorpion per replicate was used, with 5 replicates per treatment.

*Infestations:* Insects were forced exposure to surfaces for 24 hours by placement under polypropylene testing containers.

*Dosages:* "until slightly wet without soaking"

*Data collection:* Mortality readings were taken 24, 48, and 96 hours after introductions of insects to treated surfaces

*Statistics:* Summary only

**Study Summary of the Results:**

Mortality for 3 ant species exceeded 90% for plastic containers. Mortality for 3 scorpion species exceeded 90% for plastic containers.

**Entomologist's Observations/Discussion:**

21. Replication was inadequate for the scorpion studies, as only 5 total insects were evaluated for each treatment, therefore scorpion claims are not supported.
22. For residual control studies, it is required to have only 5 minutes of forced exposure to a residue, as this more accurately simulates real-world exposure scenarios. After the forced exposure, the insects must be removed from the residue for evaluation of knockdown and mortality. Because the exposure was forced for 24 hours, and such scenarios of continuous exposure are not realistic for typical indoor uses, the control claims proposed for these pests are not supported.

**Overall Review of Label Claims from all Submitted and Cited Studies:**

Based upon submitted and cited data, non-residual kills claims are supported for the following: Ants (including Harvester Ants and Carpenter Ants, but excluding Pharaoh's Ants, and Foraging Fire Ants), Beetles, German Cockroaches, Crickets, Earwigs, Firebrats, Fleas (after 2 hours continuous exposure), Moths, Pantry Pests, Spiders (including Black Widow, Hobo, and Wolf), and Silverfish. Claims are not supported for Pharaoh's Ants, Foraging Fire Ants, American and Oriental Cockroaches, Centipedes, or Scorpions, and all references to such must be removed from the label.

Based upon submitted and cited data, residual control claims including the word 'barrier' are not supported, and all references to the word 'barrier' must be removed from the label. The registrant cited another registered product label, EPA Reg. No. 9688-83 as justification for support of 'barrier' claims. A quick tracking search of that product showed that the barrier claims on that label were added improperly via an Agency Notification dated 24 September, 2001. The Agency intends to contact that registrant and move forward to rescind the barrier claim, as it is a misleading statement of product effectiveness, per 40 CFR 156.10(a)(5)(ii).

Based upon submitted and cited data, the submitted 12 month control claims are not acceptable until data is submitted or cited demonstrating residual control of the listed insects out to 12 months after initial treatment, and such claims will require footnoting of necessary exposure time if forced exposure time to treatment residues exceeds five minutes.

Based upon submitted and cited data, the submitted 5 month control claims are acceptable, only with an accompanying footnote as follows: "*Ants (including Harvester Ants, but excluding Carpenter, Pharaoh's Ants, and Foraging Fire Ants), Carpet Beetles, Crickets, Firebrats, Moths, Silverfish, and Spiders on treated non-porous surfaces after 5 minutes continuous exposure to residues. 5 month control indoors on German Cockroaches after 30 minutes continuous exposure to residues." Claims against Carpenter's Ants, Pharaoh's Ants, Foraging Fire Ants, American Cockroaches, Oriental Cockroaches, and Scorpions are not supported and all references to such must be removed from the label.

Based upon submitted and cited data, the submitted 3-month claims, which include claims for outdoor and/or 'season-long' efficacy are not supported, as the length of seasons can vary in different geographical areas.

For further data submissions related to claims that were not supported by the submitted or cited studies, the registrant is encouraged to discuss or submit protocols to the Agency for review prior to study initiation.

**Line by Line Label Claims:**

Kills: Ants (including Carpenter, Western Harvester, Pharaoh, and Foraging Fire), Beetles (including Asian Lady and Carpet), Centipedes, Cockroaches (including American, German, and Oriental), Crickets, Earwigs, Firebrats, Fleas, Moths, Pantry Pests, Scorpions (including Dune and Striped Tail), Spiders, (including Black Widow, Hobo, and Wolf), and Silverfish: Claims

for Pharaoh, and Foraging Fire Ants, Centipedes, American Cockroaches, Oriental Cockroaches, and Scorpions are not acceptable and must be removed. The Carpenter Ant, and Flea claims must be either qualified with the statement "after 2 hours continuous exposure" or removed. The remaining claims are acceptable.

Kills on contact!: Not acceptable

Kills by contact!: Acceptable

Kills bugs inside. Keeps bugs out: Acceptable

Immediately forms [creates] [establishes] a perimeter treatment: "Immediately" is unacceptable because the product must first dry. The remainder of the claim is acceptable.

[Creates] [Establishes] a perimeter treatment: Acceptable

Immediately forms [creates] [establishes] a [bug] [insect] barrier: 'barrier' is unacceptable

[Creates] [ Establishes] a [bug] [insect] barrier: Unacceptable

Creates a bug barrier: Unacceptable

Create bug barriers: Unacceptable

Creates a barrier that [will kill] the bugs you have and prevent[s] new bugs from coming [in] [inside your home]: 'barrier' is unacceptable

Enough to create [an] [one] entire bug barrier for the average 1800 sq. ft. home!: 'barrier' is unacceptable

[New] Barrier Technology [keeps bugs out [of your home]]: 'barrier' is unacceptable

[New] Barrier Technology keeps bugs from coming in: 'barrier' is unacceptable

Long-lasting Barrier Technology: 'barrier' is unacceptable

[New] InvisiShield™ Brand Barrier Technology: Unacceptable

[Contains] [With] InvisiShield™ Brand Technology: Unacceptable

InvisiShield™ Brand Barrier: Unacceptable

InvisiShield Barrier™ Brand: Unacceptable

Guards against bugs so you don't have to: Efficacy reviewer defers to Risk Manager Reviewer and Product Manager

Guards against the bugs you can't (don't) see: Efficacy reviewer defers to Risk Manager Reviewer and Product Manager

Kills and prevents [insects] [inside your home] [outside your home]: Acceptable if qualified with [insects 'as listed']

Provides residual control against home invading insects: Acceptable if 'as listed'

Keeps [on] killing with residual action, even after you spray: Acceptable

Keeps [on] killing with residual action, even after spray has dried: Acceptable

Keeps on killing after spray has dried: Acceptable

Use in [kitchens], [garages], [basements], [attics] to keep bugs [insects] from entering your home: Acceptable if 'as listed'

Use in [kitchens], [garages], [basements], [attics] to kill bugs [insects]: Acceptable if 'as listed'

Long-lasting control: Acceptable

Long-lasting insect control: Acceptable

Kills [two] [2] ways [Dual Action]: 1) Kills insects fast [on contact] [by contact] and 2) Keeps killing even after spray has dried: Acceptable

All 12 month claims: Unacceptable

5 month claims (listed insects): Up to 5 month control indoors on: Ants (including Carpenter, Western Harvester, and Foraging Fire), Carpet Beetles, Crickets, Firebrats, Moths, Scorpions (including Dune and Striped Tail), Silverfish, and Spiders on treated common household surfaces after 5 minutes exposure. 5 month control indoors on Cockroaches (including American, German, and Oriental) after 30 minutes exposure: Claims for Carpenter, Pharaoh, and Foraging Fire Ants, American Cockroaches, Oriental Cockroaches, and Scorpions are not acceptable and must be removed. Remaining claims are acceptable, only with an accompanying footnote as follows: "*Ants (including Harvester Ants, but excluding Carpenter Ants, Pharaoh's Ants, and Foraging Fire Ants), Carpet Beetles, Crickets, Firebrats, Moths, Silverfish, and Spiders on treated non-porous surfaces after 5 minutes continuous exposure to residues. 5 month control indoors on German Cockroaches after 30 minutes continuous exposure to residues."

3 month claims: Any references to outdoor efficacy or 'season-long' efficacy are unacceptable and must be removed. Claims for Carpenter, Pharaoh, and Foraging Fire Ants, American Cockroaches, Oriental Cockroaches, and Scorpions are not acceptable and must be removed. Other claims are acceptable, only with an accompanying footnote as follows: "*Ants (including Harvester Ants, but excluding Carpenter Ants, Pharaoh's Ants, and Foraging Fire Ants), Carpet

Beetles, Crickets, Firebrats, Moths, Silverfish, and Spiders on treated non-porous surfaces after 5 minutes continuous exposure to residues. 3 month control indoors on German Cockroaches after 30 minutes continuous exposure to residues."

Knockdown claims:

Fast acting [formula]: Unacceptable

Quick knockdown: Unacceptable

Fast knockdown: Unacceptable

Kills [bugs] in seconds: Unacceptable

Kills [bugs] fast: Unacceptable

Starts killing [bugs] in seconds: Acceptable

Starts killing [bugs] on contact: Unacceptable

Starts killing [bugs] fast: Acceptable

Kills on contact: Unacceptable

Kills by contact [Guranteed]: Acceptable

Quick [Fast] Kill: Unacceptable

QuickKill™ Brand [Technology]: Efficacy reviewer defers to risk manager reviwer and product manager

Other claims:

Kills [all] [most] [many] [several] major home invading insects: Acceptable if 'as listed'

Kills [all] [most] [many] [several] common home invading insects: 'Most' is unacceptable, remaining claims are acceptable if 'as listed'

Kills ants [and many other listed pests [insects]!]: Acceptable if 'as listed'

Kills scorptions [and many other listed pests]: Unacceptable

Kills ants [and] roaches [and many other listed pests [insects]!]: Acceptable if 'as listed'

Kills ants, roaches [and] spiders [and many other listed pests [insects]!]: Acceptable if 'as listed'