US EPA ARCHIVE DOCUMENT

PRODUCT REVIEW

DATE: IN 4-2-85 OUT 6-18-85

FILE OR REG. NO. 4758-RLR

PETITION OR EXP. PERMIT NO. _____

DATE DIV. RECEIVED 3-22-85

DATE OF SUBMISSION 3-20-85

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCT(S): (1) I, E, J, F, I, S

DATE ACCESSION NO(S). _____

PRODUCT MGR. NO. 16

PRODUCT NAME(S) Hill's Holiday Flea Stop Pump Spray for Dogs + Cats

COMPANY NAME Pet Chemicals, Inc.

SUBMISSION PURPOSE Registration

CHEMICAL & FORMULATION

Linalool	0.925%
Piperonyl butoxide	0.500%
Inert Ingredients	98.575%

CONCLUSIONS & RECOMMENDATIONS

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Introduction - The submission contains data intended to support use of the subject formulation in control of fleas on pets and in pet bedding by acting on all 4 stages of the life cycle.

Uses - Directions specify direct spray into hair of animals and treatment of pet bedding.

Data Summary - The submitted data consist of laboratory tests conducted by Ohio State University Dept. Entomology.

The test procedure consisted of infesting carpet squares of 4 inches placed on glass dishes with eggs, larvae or pupae (50/square) and spraying until the carpet is damp. After drying for 24 hours at room temperature, flea rearing medium was sprinkled on the squares and they were incubated at 27°C and 75% RH. Eggs and larvae were incubated 8 weeks and pupae for 4 weeks. Adult emergence was recorded every 3-4 days.

Testing for activity against adult fleas was conducted by recording mortality and immobility periodically after exposure. Fleas were held for 7 days to observe any recovery.

Test results are summarized as follows.

Report of 1-10-85

Formulation [1]	Mean [2] Percent Adult Emergence From Eggs	Larvae	Pupae
Linalool 10%	0	0	0
" " 5%	0	0	0
" " 1%	0	10	20
" " .05%	64	—	—
" " 1% + 0.5% MGK264	0	31	—
" " 05% + 10% Proplylene Glycol	28	12	0
" " 10% Proplylene Glycol	0	2	0

[1] Toxicant + 5% ETOH + 0.1% Tween 80 in water
[2] Mean of 2 reps.

Report of 11-9-84

Formulation	Mean percent Adult Emergence From Eggs	Larvae	Pupae
PA020 - Subject formulation	0	0	10
PA039 - Subject formulation + 1% [redacted]	0	0	8
PA059 - Same as Subject formulation [redacted]	0	0	12
PE001 - Synthetic pyrethroid	0	0	16
PA001 - 2% Linalool Aerosol	6	0	16
Control - water	54	68	58

Report of activity against adult fleas.
For 0.4% Linalool there was 100% mortality and immobility in 20 minutes after exposure and less than 10% recovery at 7 days.

Report of 2-10-85 was designed to determine the effects of adding proplylene glycol.

INFORMATION WHICH MAY REVEAL THE IDENTITY OF AN INERT INGREDIENT IS NOT INCLUDED

Formulation	Percent Adult Flea Emergence From Treated Eggs
0.5% Linalool	32
0.5% " "+2.5% Propylene Glycol	4
0.5% " "+0.05% MGK264	44
0.5% " "+2.5% Propylene Glycol +0.05% MGK264	12
2.5% Propylene Glycol	0
0.05% MGK 264	64
2.5% Propylene Glycol +0.05% MGK264	0
Untreated	74

Formulation	Percent Adult Emergence From Treated Larvae
5.0% Linalool	56
5.0% " "+5.0% propylene Glycol	0
5.0% " "+0.05% MGK 264	73
5.0% " "+5.0% propylene Glycol +0.05% MGK264	0
5.0% Propylene Glycol	0
0.05% MGK 264	86
5.0% Propylene Glycol + 0.05% MGK 264	0
Untreated	62

Formulation	Percent Adult Emergence From Treated Pupae
0.5% Linalool	44
0.5% " "+5.0% Propylene Glycol	44
0.5% " "+0.05% MGK264	34
0.5% " "+5.0% Propylene Glycol + 0.05% MGK 264	42
5.0% Propylene Glycol	60
0.05% MGK 264	40
5.0% Propylene Glycol + 0.05% MGK264	38
Untreated	66

Conclusions- The laboratory test results indicate that formulations of Linalool + propylene glycol are active in flea control and that the subject formulation is effective in reducing adult flea emergence from treated eggs, larvae and pupae when applied as a contact treatment. The laboratory test results for adult flea exposure to Linalool indicate high activity at the maximum concentration tested (0.4%).

The Report of 1-10-85 states that "numerous studies have been done by putting eggs, larvae, or pupae on treated filter paper to give us an idea of dosages for carpets. These results aren't reported but are available if you want them". These data should be submitted to supplement the existing data submission. Review will be

The below-noted information should also be furnished.

1. The number of replicates and the number of insects/replicate for the Test Report of 11-9-84. It is assumed that this is 2 replicates with 50 fleas/replicate.

2. The number of replicates and the number of insects/replicate for the adult flea exposure Test

The formulations included in the report of 11-9-84 are not specified. On 6-11-85 the registrant was contacted to obtain this information. Based on this contact it is our understanding that PA020 is exactly the same as the formulation

of the subject product and that PA 059 is the same as the subject product except for containing [redacted]. This should be confirmed for the record. The specific active ingredients in the pyrethroid formulation (the specific pyrethroid) should be indicated for the record.

There are no submitted data to demonstrate that treated eggs do not hatch. The egg data show the effect of treated eggs on adult development flea populations. There are no data to demonstrate that larvae did not develop from the treated eggs. It is possible that eggs may have hatched and that the hatched larvae may have been killed by the spray deposits on the carpet. We cannot comment on activity against eggs until the egg ~~test~~ data for eggs on filter paper have been submitted.

With reference to killing adults, eggs, larvae, and pupae of fleas and the claim "This special effectiveness is due to linalool, a new insecticide with a pleasant scent", the data indicate that 10% Propylene Glycol may be needed in combination with linalool to act on certain flea stages (pupae for example) for high control. The label claim should be modified accordingly. Propylene Glycol is an active ingredient in the subject formulation, based on data.

Claims for this product should clearly specify activity as a contact insecticide.

INFORMATION WHICH MAY REVEAL THE IDENTITY OF AN INERT INGREDIENT IS NOT INCLUDED

The label claim that one treatment is effective implies residual activity. The label should clearly specify that activity is as a contact insecticide. Any claims for residual activity must be based on residual testing, including field testing.

R. S. VanDenburgh 6-18-85