

EFFICACY STUDY REVIEW

by Kevin J. Sweeney, Entomologist - IB

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To: Ann Sibold

Through: Mark Dow *MD*
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Date: January 7, 2000

EPA File Symbol: 241-GOE

Product Name: Phantom Termiticide-Insecticide

Registrant: American Cyanamid

PM: Marion Johnson

Action: 194

Submission No(s). S561487 & D255727

Chemical: chlorfenapyr insecticide (I)

OPPTS Guideline: 810.31, 35 & 36

Instructions: Review efficacy results for chlorfenapyr against insects.

Studies Submitted:

MRID 446117-01 entitled "Chlorfenapyr Termiticide-Insecticide: Summary of Efficacy Data by American Cyanamid Company.

Exhibit 1 - Efficacy of Chlorfenapyr as an Imported Fire Ant Quarantine Treatment

These results of whole colony and standard female alate bioassays showed that chlorfenapyr applied at rates of 100-200ppm as a soil drench provided the residual activity necessary to control fire ants in containerized nursery stock. USDA pointed out that a fire ant colony did survive in the bottom of a treated container because chlorfenapyr did not move freely through the

soil, thus, the soil in the bottom of the container remained untreated. The fire ants avoided the treated area and were able to survive for 12 months. USDA recommended use a chlorfenapyr granule that could be mixed into the soil when it is prepared for nursery stock as a better means of attaining long term control of fire ants.

Exhibit 2 - Toxicity of AC303, 630 to Insecticide Resistant and Susceptible German cockroach Strains

This study found that the German cockroach strains tested were more susceptible to chlorfenapyr than chlorpyrifos and cypermethrin. Resistance to chlorfenapyr does not appear to exist in the German cockroach based on the resistance ratios calculated with the LD₅₀ and LD₉₅.

Exhibit 3 - Laboratory Evaluation of the Flushing Activity of AC 303,630 on German cockroaches

SC and WP formulations tested were not good flushing agents.

Exhibit 4 - Laboratory Evaluation of the Flushing Activity and Knockdown Effect of AC 303, 630 and Demon EC Formulations for the Control of the German Cockroach.

Chlorfenapyr SC formulations had better flushing activity when compared to WP formulations regardless of chlorfenapyr concentration. Chlorfenapyr SC had flushing activity equivalent to Demon EC.

Exhibit 5 - Laboratory Evaluation of AC 303, 630 for Control of Minor Cockroach Species and Carpenter Ants and Exhibit 6 - Laboratory Evaluation of AC 303, 630 for Control of Minor Cockroach Species and Carpenter Ants.

The bioassays were conducted in the same manner in both studies with the difference being the length of exposure time, one hour in the former and one day in the latter study. Distinct differences in the susceptibility of tested cockroach and carpenter ant species were detected in the one hour exposure bioassays. These differences were not as apparent in the one day exposure assays. Based on the results of the one-day exposure assays Smokey brown and brown-banded cockroaches were most susceptible (killed in the least amount of time) followed by American and Oriental cockroaches, respectively. Asian cockroaches and Carpenter ants were not tested in the one day exposure assays.

**Exhibit 7 Efficacy of Chlorfenapyr 2SC and 25 WP for Control of German Cockroach Infestations in Multifamily Housing
and Exhibit 8 Efficacy of AC 303, 630 Sprays in the Control of German Cockroaches in Multifamily Housing.**

Chlorfenapyr applied in multifamily housing gave adequate but not outstanding control against populations of the German cockroach. German cockroach reduction ranged from about 40% to 80%. In apartments with high German cockroach populations, control was more difficult to achieve.

Exhibit 9 USDA-FS First Progress Report of chlorfenapyr as a termiticide - 1997.

The Arizona, Mississippi, and South Carolina tests remained 100 percent effective for all treatments. In Florida, the 0.25% treatment under ground boards (GB) declined to 80% control. All other Florida treatments remained 100% effective.