

EFFICACY STUDY REVIEW

by Kevin J. Sweeney, Entomologist - IB

Kevin J. Sweeney
7/10/00

To: Ann Sibold

Through: Mark Dow

MD 10 July 2000

Date: July 10, 2000

EPA File Symbol: 241-GOE

Product Name: Phantom Termiticide-Insecticide and Chlorfenapyr 2SC

Registrant: American Cyanamid

PM: Marion Johnson

Action: 116

Submission No(s): S581214 DP: D266947

Chemical: chlorfenapyr insecticide (I)

OPPTS Guideline: 810.36

Instructions: Review USDA-FS efficacy results for termites

Studies Submitted: MRID 451373-02 AC303,630 Treatments to Soil to Control Subterranean Termites

This study included the 1999 USDA-FS field trial results. The results from these trials continue to be variable between test site locations, chlorfenapyr concentration, and within field plot replicates of the same chlorfenapyr concentration. Unlike other termiticide formulations and active ingredients, the efficacy of Phantom termiticide may or may not be field dose dependent. Failures have occurred at low and high concentrations at the Florida and Mississippi USDA-FS field plots. To date, American Cyanamid and the USDA-FS have not fully resolved the reason for this variability. However, as the enclosed slides indicate, EPA and American Cyanamid held a meeting on May 31, 2000 to address this issue.

Comments and Observations:

1. Mississippi Field Trials

- a. 0.125% rate - This rate was 100% effective in the 1997 concrete slab and ground board tests. Provided 90% protection (termites penetrated the chemical barrier and fed on the wood in one replicate of ten at this concentration) in the 1998 and 1999 concrete slab tests. However, the same replicate did not fail two years in a row. The failed 1998 replicate provided protection in 1997 and 1999. The failed 1999 replicate provided protection in 1997 and 1998.
- b. 0.25% rate - In 1999, Phantom termiticide provided only 90% protection in the ground board and concrete slab tests in Mississippi. The product failed in one replicate in each of these tests.
- c. 0.50% rate - 100% effective in ground board and concrete slab tests from 1997-1999.
- d. 0.75% rate - 100% effective in ground board and concrete slab tests from 1997-1999.
- e. 1.00% rate - 100% effective in ground board and concrete slab tests from 1997-1999.
- f. 2.0% application rate - In 1998, termites penetrated the chemical barrier in one replicate of ten (90% protection) in the concrete slab test yet this rate was 100% effective in 1997 and 1999. The product was 100% effective in the ground board test in 1997-1999.

2 Florida Field Trials

- a. 0.125% rate - 100% effective in 1997 and 1999. In 1998, Phantom termiticide protected 90% of the replicates from termite feeding. One replicate failed. However, there was no repeat penetration.
- b. 0.25% rate - 100% effective in the concrete slab test from 1997 to 1999. In 1997, Phantom termiticide failed in the ground board test (80% protection, equivalent to two failed replicates). but this rate was 100% effective in 1998 and 1999.
- c. 0.50% rate - 100% effective in the concrete slab test from 1997-1999. in the ground board test, this product was effective in 1997 and 1999 but provide only 90% protection (termites penetrated one replicate) in 1998.
- d. 0.75% rate - 100% effective in the ground board test from 1997-1999. Results from the concrete slab tests showed 100% protection in 1997 and 1999 but only 80% protection (equivalent to two replicates penetrated by termites) in 1998.
- e. 1.00% rate - 100% effective in ground board and concrete slab tests from 1997-1999.
- f. 2.00% rate - 100% effective in ground board and concrete slab tests from 1997-1999.

3. Arizona and South Carolina Field Trials

a. 100% effective at both locations in the ground board and concrete slab tests at rates of 0.125%, 0.25%, 0.50%, 0.75%, 1.00%, and 2.00% chlorfenapyr

4. Untreated plots and termite feeding pressure - Termite populations and feeding pressure have been high in Florida, Mississippi, and South Carolina throughout the course of these field trials from 1997-1999. In Arizona, populations of desert termites have been moderate.

Recommendations:

As discussed at the EPA-American Cyanamid meeting on May 31, 2000 we suspect that the unique albeit slow mode of action of the oxidative uncoupler chlorfenapyr combined with subterranean termite behavior may be responsible for the variability in the field test results. Dr. Brad Kard at the USDA-FS in Starkville, MS has ruled out any secondary or unintended effects from other termiticide field plots in any of the test locations. I concur with his recommendation to delay our registration decision until these field trials have generated five years of data. We have asked American Cyanamid to examine the results and propose a written explanation for the variability of the test results.