



Premise delivers termite elimination Industry's most comprehensive multi-year retreat study

By Bayer Environmental Science Development and Technical Service Team

Premise was launched in the United States for termite control seven years ago and rapidly built a solid reputation for superior performance and reliability. As the original non-repellent termiticide, Premise changed the way all of us thought termiticides work and the pest control industry soon came to rely on its unparalleled ability to clean out structural termite infestations with virtually no callbacks.

Earlier this year we set out to generate the most comprehensive database on retreat rates in the industry. We wanted to analyze real-world data on Premise performance in all types of situations.

With the help of scores of professionals across the United States, we have accumulated a rigidly controlled, comprehensive database covering nearly 12,000 Premise applications going back more than seven years. We haven't stopped – more

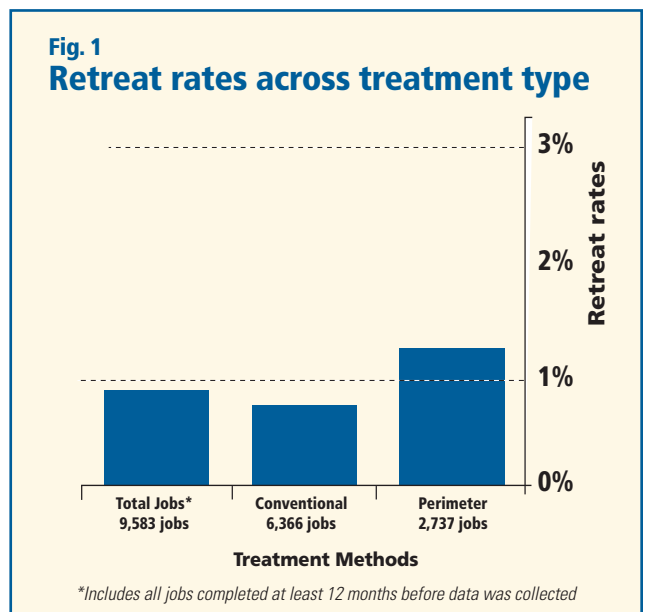
“This is without a doubt the largest, most comprehensive research project of its kind in the history of the pest management industry. No other termiticide has ever been subjected to a more rigorous and thorough study of its performance under actual use conditions.”

Doug Mampe, PhD, DM Associates

data is added to the database every day and those efforts will continue – but the initial analysis reveals remarkable information that you need to consider as you make your next termiticide purchase decision.

Data Collection

To begin the study, our technical and sales teams identified pest management companies with solid records of Premise application and follow-up inspections. Companies with long-term histories of Premise use in various application scenarios and geographical locations were targeted.



Data collected from PMP records by Bayer Environmental Science

PREMISE®

Termite-control records in each company's files were manually searched for Premise treatments or electronic records transfer was initiated. Data from the records were entered into a customized computer program, which sought data for more than 40 parameters on:

- the structure itself (foundation type, construction type, use, etc.);
- the termite infestation (species);
- the treatment performed (conventional, perimeter, etc.); and
- any recurrence of termites after treatment.

Once data from a large number of sources had been collected, the information was compiled and analyzed. No effort was made to "cherry-pick" data to enhance results.

Data Analysis

The present data analysis includes records from 35 pest management companies across the country (see Table 1). The identities of the cooperating firms are confidential, but they cover a broad cross-section of the industry. Nine firms rank in the top 100 U.S. pest management businesses, but all of the companies involved made important contributions to the data. We are grateful for the energy, labor and data they contributed to this research effort.

Presently, the database contains information from 11,685 Premise applications, some treated as long ago as 1996. This study covered states across the termite belt from coast to coast, and a majority of the jobs occurred in five states of critical importance to the termite market: Arizona, Florida, North Carolina, South Carolina and Texas. Not only are these states important because of their share of the termite market, but their diverse climates, local construction practices, and various termite species combine to compile an accurate representation of the performance of Premise on a national scale.

Nearly every treatment in the database was performed using Premise 75 at the low label rate of 0.05% (98%). Pest management companies either combined trenching and rodding procedures (70%) or relied on trenching alone (17%) to treat soil along the outside foundation wall. However, 4% of the records indicate that soil rodding alone was used, even though this once-popular procedure has been prohibited since 1996.

Overall, each job required an average of 140 gallons of end-use dilution, but there was quite a range in the volumes applied, as individual treatments ranged from spot to full-label treatments. Volumes between 50 and 250 gallons accounted for 67% of all treatments.

Given the sheer size of the database, the geographic distribution of jobs, and the breakdown of property and construction types, termite species and infestation frequency, and treatment practices, we believe the results are an accurate representation of Premise use nationally.

Interesting Data Details

When analyzing the data, we learned some interesting things that might benefit you and your business (Table 1).

Nearly nine out of 10 termite control jobs were performed on single-family residences. Construction type varied widely, but more than half of all jobs were slab construction. Construction of foundations was less variable, with nearly 60% being poured (solid) concrete and only 12% built from hollow blocks. A wide array of minor methods were used for foundation walls, including wood!

More than 90% of jobs were against a native species of the genus *Reticulitermes* or the desert termite, *Heterotermes aureus*. Only 5% of the jobs targeted Formosan termites, despite collecting data from Georgia, Florida, Louisiana, Mississippi, South Carolina and Texas, where this imported pest is well established. While this species is widely commented on due to its highly destructive nature, Formosans are less prevalent on a job-by-job basis.

Table 1
Premise Performance Database Segmentation
(Total jobs=11,685)

Construction Type	
Monolithic slab	27%
Floating/supported slab	26%
Basement	12%
Crawl space	21%
Combination	12%
Not specified	2%
Foundation Type	
Poured (solid) concrete	59%
Hollow block	12%
Other (piers, etc.)	6%
Stone, brick, rubble	4%
Wood	1%
Not specified	18%
Property Size (linear footage)	
Less than 100	6%
101 to 150	17%
151 to 200	27%
201 to 250	21%
More than 250	15%
Not specified	14%
Treatment Volume	
Less than 50 gallons	19%
51 to 100 gallons	38%
101 to 250 gallons	29%
More than 250 gallons	10%
Not specified	4%

Premise Performance

To analyze the performance of Premise in this database, we looked at the annual retreat rate over several years. Across the first five years of data, the Premise retreat rate was remarkably consistent. Consequently, the average retreat rates reported here were calculated based on the first five years after treatment.

Across all treatment types (conventional, perimeter, spot, etc.), about 2,000 of the 11,685 jobs were excluded because they had been treated within the previous year and had not yet passed through a full swarm season. For the 9,583 remaining jobs (Fig. 1), the retreat rate over the five years summarized in this analysis averaged 0.88%. In other words, when you treat with Premise, you can expect to retreat less than 1% of those properties in the first five years after treatment.

When we isolated only full-label conventional treatments that had occurred one year or more prior to data collection (6,366 treatments), retreats averaged just 0.68% over five years. Full-label conventional treatments remain the dominant practice in

our industry today – in fact, they account for 66% of the information in our database – and this 0.68% retreat rate is a valid benchmark for the way Premise has performed over the past seven years.

Looking Ahead to Perimeter Treatment

Many believe the future for non-repellent termiticides is in perimeter treatments. As we identified companies for this study, we knew some had made perimeter treatments their standard service. While EPA has not yet approved perimeter-only treatments, regulations in some states allow this variance from standard product labeling. From the data we collected, we were able to isolate 2,737 applications that had been performed as perimeter treatments at least one year prior to data collection. Retreat rates for these perimeter treatments averaged just 1.24%.

Pre-Construction Treatments

To date, we have data on more than 21,000 pre-construction treatments where Premise was used under the slab and on completion of the final grade. These data come from Arizona, North Carolina and South Carolina and provide performance history for three years following treatment. As of June 2003, only 16 of these preconstruction treatments had experienced a breakthrough, for a retreat rate of less than 0.1% (Fig. 3).

Premise Mechanisms

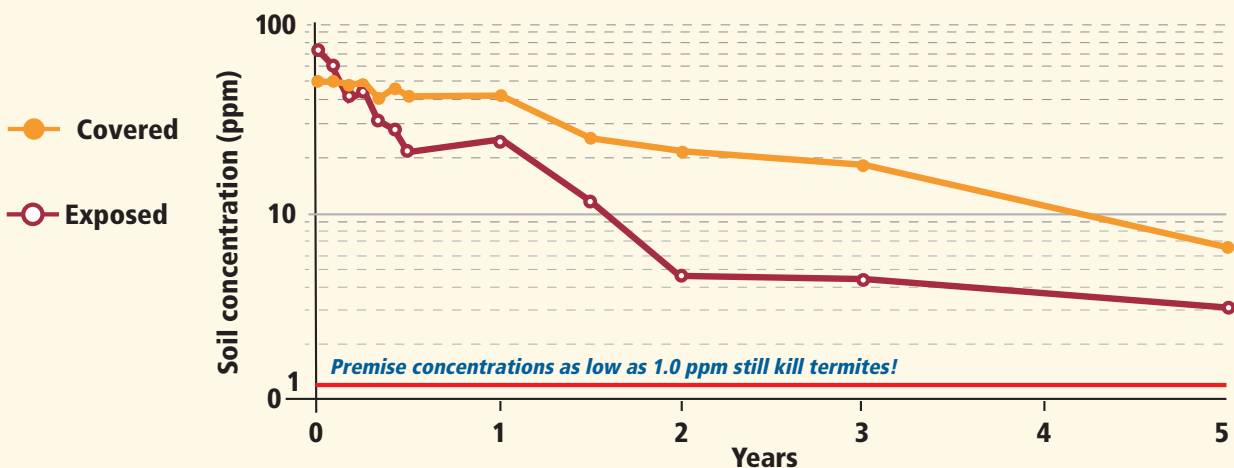
This study and years of user satisfaction point to the long-term efficacy of Premise (imidacloprid). Research conducted in Georgia (Fig. 2) points to two factors that contribute to outstanding termite control over time:

- the exceptionally long residual of Premise; and
- the efficacy of Premise at very low rates in soil.

As the industry explores the appropriate use and value of perimeter treatments, these same factors will play a role.

Fig. 2

Premise residual study results



Data from trench study of termiticide degradation, Tifton, GA 1995-2000

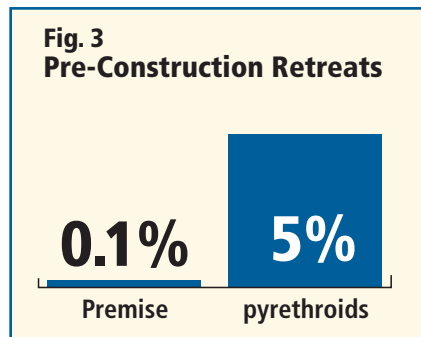
To provide a fair comparison, we requested one company's data on pyrethroid pretreat results over an equivalent period of time. Based on 6,771 pretreats over four years, this company retreated 333 times when using a pyrethroid in pre-construction treatments – that's a retreat rate of nearly 5%!

Summary

As we continue to collect data and explore Premise performance, a number of conclusions can be drawn from this initial analysis:

- Conventional, full-label applications of Premise had a very low retreat rate – less than 1.0%.
- Retreat rates were stable throughout the five years following treatment. Consequently, pest management companies can confidently guarantee termite protection to their customers.
- The stability of the retreat rate over time confirms that the

residual life of Premise is **AT LEAST FIVE YEARS** in all regions of the United States.



- Premise has been shown to be effective in perimeter treatments.
 - Premise delivers a dramatically lower retreat rate than pyrethroids.
- Other conclusions can be drawn from preliminary analyses on the cause of retreats:
- While retreat rates varied widely among pest management companies, nearly 80% of the firms participating in this survey had low retreat rates.
 - There was no obvious relation

between retreat rate and construction type.

- The sheer breadth of the geographic coverage in the survey proves Premise performance is consistent across varying climate and soil types and when controlling various termite species.

Ultimately, we believe the most significant conclusion from this study is simple:

There is no technical reason a pest management professional should use any termiticide other than Premise.



Bayer Environmental Science