

# Is There Anything Green about Killing Termites?

*Low-Impact Termite-Control Techniques Can Limit Exposure to Insecticides*

By Jerry Mix

Until somewhat recently, there was no real green alternative to getting rid of termites: you poisoned them with a neurotoxin applied as a soil barrier. Today, we finally have some effective alternatives, but let's face it, we're limited in our basic choices for dealing with termites. No matter how sentimental you are about living things, these bugs are trying to eat your house. So, we either have to kill them, block their access, or hide and disguise their food. The best approaches limit the use of insecticides, and thereby limit how much of it can end up in groundwater runoff or in contact with pets and humans.

The reason we are in this business is because of the horrific, costly damage termites can cause, and because many states require that some type of preconstruction termite-control work be done. (Pest-control operators refer to this work as pretreatment or "pretreats.") These states are mostly in the deep South, where termite pressure is the greatest. This list includes Arizona, Florida, Georgia, Louisiana, North Carolina, South Carolina, Texas, and Virginia. However, today there are some very interesting methods and products being used in the preconstruction market, including termite baits, borates (such as Bora-Care), and supplemental barrier systems like Impasse Termite Blocker.

While liquid termiticides still dominate the market, these newer products are starting to make life easier for builders and pest-control operators (PCOs), and they even offer a greener alternative to putting hundreds of gallons of insecticide under a home. These newer products have little impact on a builder's construction schedule and time. For PCOs, the new products mean more flexibility in scheduling the work. Previously, the PCO had to be on the jobsite just before the concrete truck arrived, and all workers had to be careful not to disrupt the termiticide barrier as they worked the concrete and perimeter soil. That said, today's termiticide technologies have clearly improved in recent years, so no matter what approach is used, homeowners can get long-lasting termite control. "Five years ago, we didn't use methods like Sentricon, the termite bait from Dow AgroSciences, or Bora-Care, the borate product from Nisus Corporation," said Ed Blumenthal,

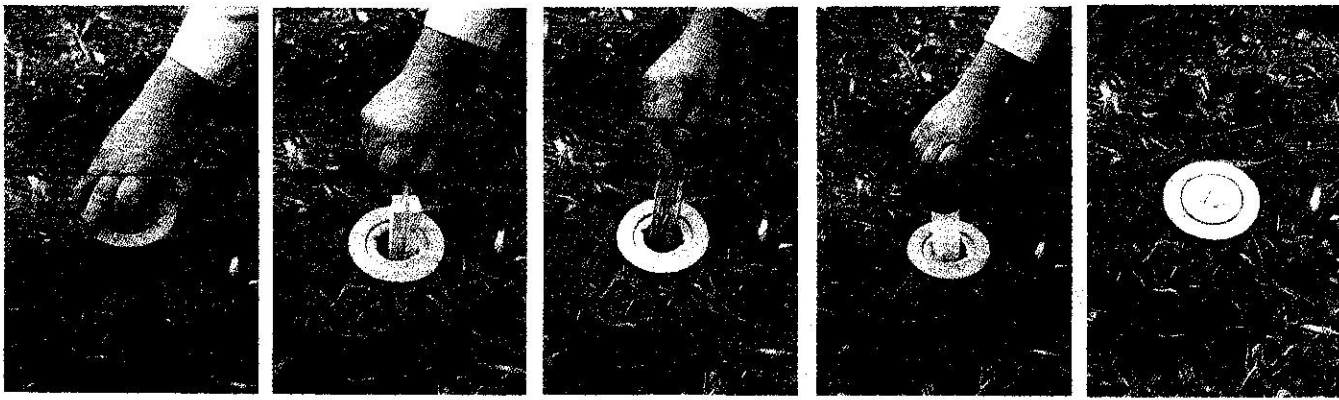
technical director from Orlando-based Massey Services, one of Florida's largest pest-control companies. "But today, we are now using a variety of products and methods that we have total confidence will stop termites."



**Subterranean termites are the most common wood-destroying insects in the United States. They are social insects that live in colonies with up to several hundred thousand individuals. Their tunnels can extend hundreds of feet underground to reach sources of food.**

Even with these termite-control techniques, termites cause approximately \$5 billion in damage to structures every year in this country. Terminix claims that termites cause more damage than fires. So, what approach to preconstruction termite control is now considered the best approach? Well, liquid termiticides are the market leader, but products like Sentricon and Bora-Care are making rapid inroads. Let's take a closer look.

Dow AgroSciences



Sentricon® System™ Dow AgroSciences

**From left:** The Sentricon® Termite Colony Elimination System should be installed by a certified contractor. Here, a baited container is inserted in the ground. The System is monitored, and if the bait indicates the presence of termites . . . a Sentricon Baitube™ device is installed. The Baitube contains termiticide that kills the termites.

### ☛ Liquid Termiticides

Liquid termiticides create a chemical barrier in the ground under and around a structure that will kill (or slowly poison) termites that try to enter the newly constructed home. These products are applied to the soil before pouring the slab or foundation. The goal here is to create a horizontal barrier that will keep the termites out. In addition, many states now require that after a slab is poured, PCOs need to create a vertical barrier around the home by applying a termiticide in the soil back-fill areas next to the foundation.

Builders and PCOs have an excellent array of products to choose from in the liquid termiticide category. This list now includes termiticides like Premise from Bayer Environmental Science; Termidor from BASF; Demon MAX and ProBuild TC from Syngenta; plus Talstar and Prevail from FMC. (These products are not listed in any particular order). Dursban TC was withdrawn from the termite market, including pretreats, on Dec. 31, 2005. Some of these products seem to work better in some sections of the country than in others, depending on weather, soil, and humidity conditions. Builders and PCOs need to rely on each other's local experience to come up with the best product for a select site.

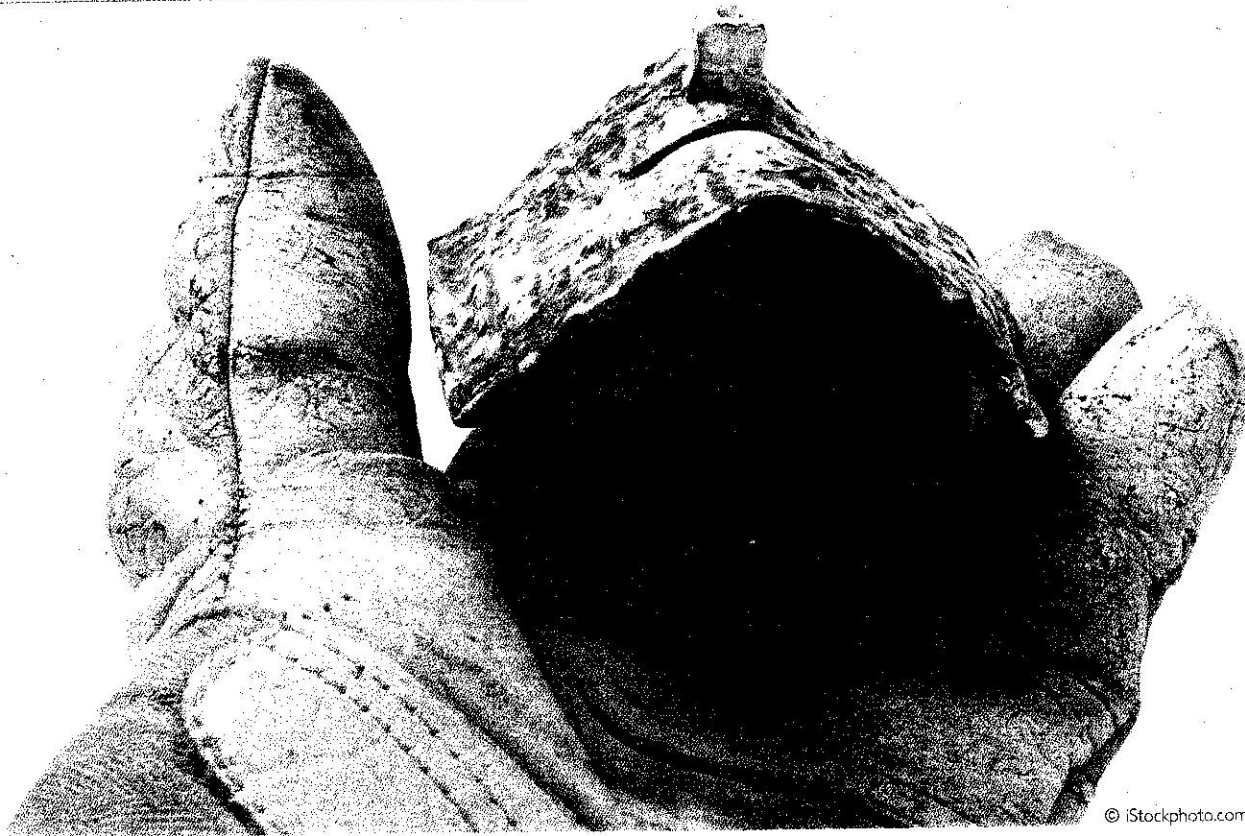
The advantages to liquid termiticides are that they provide a relatively quick way to control termites and protect a structure; plus, they are low maintenance and are relatively inexpensive compared to the damage termites could do to a typical home. But there are disadvantages, too. If the PCO should happen to miss the relatively small window of time before the foundation work is done, that home could receive no effective termite protection, unless another form of termiticide is used. Secondly, the termite barrier works by remaining unbroken and undisrupted. If it is disrupted and broken up by tradesmen disturbing the soil, the barrier becomes ineffective. Finally, liquid termiticides cannot be applied in the rain. So, because of the weather, the builder may be forced to alter his schedule or the pretreat work won't get done. "Ideally, we don't mess with the builders' production and time schedules. It's best if the builder doesn't have to call you or stop production," said Scott Fortson, from Terminix in Greenville, South Carolina. "The majority of the builders are

asking for ease of service." Steve Phillips, from Northwest Exterminating, located in Smyrna, Georgia, points out that many of his Georgia building customers are now making things easier by posting their schedules online. "Everyone can see what is going on and it makes everyone's life more manageable. We look at the builder's schedule and see that a certain lot or subdivision will be ready for pretreat on a certain day and we have to, therefore, do the termite work that day. We can schedule all of our pretreat work."

As for a treatment's effectiveness, SOS Exterminating in Arizona is a major pretreat company that also tracks its "re-treats" (returning to the home to halt the spread of termites). Though this information is not to be considered typical of the entire country, it does reflect the harsh Arizona market, and it's a window on how well treatments work overall. SOS has treated 16,000 homes with cypermethrin products (a synthetic insecticide that acts as a neurotoxin) during the last five years, and SOS has a re-treat rate of 7.22%. In other words, over 92% of pretreats did not require additional applications. The company has treated 34,000 homes with Talstar (another synthetic insecticide) in the last five years and has a re-treat rate of 6.01%. A total of 29,000 homes have been treated with Premise (the insecticide imidacloprid) and the re-treat rate is 2.22%. Based on a limited sample, Termidor (the insecticide fipronil) has been used on 2,000 homes and the re-treat rate is 0.84%. Combining insecticide with physical barriers achieves the best results: a total of 1,500 homes have received a combination of Premise and Impasse Termite Blocker, from Syngenta, and the re-treat rate is 0.0%.

### ☛ Termite Baits

Using termite bait as a pretreat tool is a very interesting concept, and it's one that is gaining favor around the country. Best of all, baiting limits the amount of pesticides in termite treatment and takes giant steps toward keeping insecticides out of groundwater runoff. Here's how it works: instead of applying a chemical barrier that is designed to exclude the termites from a food source, termites are offered food in the form of a wood product within a bait station. When termites enter the bait



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## TERMITICIDES, THE ENVIRONMENT, AND YOUR HEALTH

By Stefani Hines

Cypermethrin, imidacloprid, fipronil, hexaflumuron, the list of tongue-twisting termiticides goes on and on, each with its own biological mode of action and unique behavior in the environment. Though termiticides are engineered to affect termites in a way that has little or no impact on humans, it's not always that cut and dried. Termiticides should be treated with great care because they have the potential to affect mammals or bioaccumulate in fish and other food sources—or even affect humans through some as-yet-unknown or unexpected pathways. The ultimate solution to termite control is to build with termite-resistant materials or materials treated at the plant with low-toxicity termiticides (see “BluWood: Nontoxic, Whole-House Wood Treatment,” in News, this issue). To see the health effects that common termiticides can have, let's look at two commonly used pesticides: fipronil (Termidor) and hexaflumuron (Sentricon).

### FIPRONIL

To kill termites, fipronil interferes with a specific receptor in the insect's central nervous system. This receptor is different from the receptors found in humans, so fipronil has low neurotoxicity in humans (compared with other termiticides that affect humans more dramatically, such as organophosphates). That said, fipronil appears to affect hormonal processes in mammals, including the thyroid, and should be handled in strict adherence to the manufacturer's instructions.

### HEXAFLUMURON

Hexaflumuron is an insect growth regulator that interferes with the insect's molting process. Thanks to genetic engineering, hexaflumuron is in a class of newer pesticides that can target insect-specific, nonhuman biological pathways. Because this chemical is registered with the EPA as “reduced risk” (i.e., it has less acute poisoning risk; use rates can be lower), many standard human toxicity tests, such as low-dose, chronic-exposure, and reproductive tests have not been done, or they have been done on only a very limited scale. These initial tests show no reproductive effects in humans; however, hexaflumuron may generate abnormal liver cells.

### BEHAVIOR IN THE ENVIRONMENT

The longer a hazardous chemical persists in the environment, the greater the potential for negative public health impacts. Liquid-barrier termiticides like fipronil need longevity to maximize the home's termite protection. Fipronil itself breaks down relatively quickly, but the by-products of that biodegradation may be more toxic than the parent compound and much more persistent in the environment. Evidence is mounting that the fipronil by-products may bioaccumulate in fish. Hexaflumuron also appears to be persistent in the environment and highly toxic to aquatic invertebrates.

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Impasse® Termite Blocker

station, their presence is detected through periodic, scheduled inspections by a POC (monthly or quarterly), and the food source is replaced by termite bait. The bait is a slow-acting insecticide that allows the termites to feed and live long enough to take the bait back to its colony. This results in reduction or even elimination of the termite colony.

The bait stations (plastic cages in the shape of spikes) are placed in the ground around the structure that is to be protected after the landscaping has been installed. Dow's Sentricon is a market leader, but other products include Advance Termite Bait System from Whitmire Micro-Gen and Exterra from Ensystem. All three systems work on the same principle, but baits and station configurations change from brand to brand.

The advantages of the bait system are that these products are relatively environmentally friendly, with low exposure and toxicity to humans and pets. Secondly, there is no intrusion on the builder's schedule or time, as the work is done after the home is mostly completed. Finally, installation of bait systems is easy.

The disadvantages are that bait systems act slowly compared with liquid termiticides. Secondly, termites need to find the bait stations in the soil. Finally, this approach to termite control is more expensive because the homeowner has to pay a PCO to monitor that bait station. "Sentricon is an 'offensive' approach to termite control," said Northwest Exterminating's Steve Phillips. "Every other product we have is a defensive approach. Sentricon is the most convenient source of termite control for buildings, but it also provides the best protection because the longer it is in the ground, the better it is for everyone."

#### Impasse Termite Blocker

Impasse Termite Blocker is another recent product on the market. This product is made out of a construction-grade polymer and contains a termiticide that is locked inside. The Blockers are wrapped and secured around the home's utility penetrations and custom-fit to bath traps before the home's concrete slab is poured.

Impasse Termite Blocker is made out of a construction-grade polymer and contains a termiticide that is locked inside. The Blockers are wrapped and secured around the home's utility penetrations and custom-fit to bath traps before the home's concrete slab is poured. After the slab is poured, the Blockers are locked in place.

## REPELLENT TERMITICIDES VS. NONREPELLENT TERMITICIDES

There are two general types of termiticides: repellent termiticides and nonrepellent termiticides.

Repellent termiticides (such as pyrethroids) are fast-acting poisons that are toxic to termites but have low toxicity to pets and humans. Pyrethroid termiticides include Dragnet FT, Cynoff, and Talstar (from FMC), and Demon and Prelude (from Syngenta). Repellent termiticides do what they say: they repel termites and force them to seek food elsewhere. They can form a complete barrier to a home, they don't cost much, and they last for years. But termites can detect and avoid these poisons. Gaps in the barrier (caused by utility penetrations or footprints that disrupted the barrier after it was sprayed in place) can be exploited by termites.

Nonrepellent termiticides are also toxic to termites, but these poisons attack different aspects of the insect's nervous system, acting either upon contact or upon being consumed. Slow-acting, nonrepellent termiticides like imidacloprid (trade name, Premise) can also be carried by termites back to their nests. A nonrepellent termiticide like fipronil (trade name, Termidor) can be transferred among termites through communal feeding, so termites that didn't leave the nest can be killed.



poured. After the slab is poured, the Blockers are locked in place.

This product can be an important part of thorough pretreat work, because termites often find the openings between the utility penetrations and the slab itself. The downside to the product is that it can be costly and it takes some focused organization during the planning and installation processes. However, Impasse is experiencing increased use in the pretreat termite market. "Our pretreat business was basically nonexistent until we developed a relationship with Impasse and became confident enough in the product to sell it," says Del Lawson, from Modern Pest Control in Houston, Texas. The company now does 500 termite pretreat jobs a year with Impasse. "With Impasse, we can put it on and it will last forever," Lawson states. "Protecting the plumbing penetrations is important."

Mike Harrington, the branch manager for SOS Exterminating in Tucson, Arizona, is also sold on Impasse. The company does 80 to 100 installations of Impasse a month for Lennar Homes in the Tucson area. Harrington has found that by combining Impasse with Bayer's Premise, they can reduce their callbacks to zero.

SOS puts in Impasse and then treats around the patio of the home, the entryway, and the perimeter with Premise before the slab is poured. Normal pretreating would require approximately 280 gallons of termiticide under an average Arizona home, but using Premise and Impasse reduces the termiticide usage to 100 gallons.

● *Jerry Mix is the former editor/publisher of Pest Control magazine, a highly regarded pest-control industry trade magazine. Mix was recently elected to the Pest Control Hall of Fame.*

## THE RISE OF BORATE

**A**s a class of natural insecticides, borate is claiming a greater share of the market. Borate has long been known as an effective insecticide, but it is also naturally water soluble and easily washed away. However, recent work by chemical engineers has given it staying power in typical household applications. The borate market is dominated by Nisus Corporation, but borate products are also available from NovaGuard Technologies, located in Knoxville, Tennessee, and Redmond, Washington. NovaGuard's line of products includes EZ Bor.

Borate termiticides are applied during the dried-in phase of construction, when all structural wood and sheathing is in place, but prior to installing the insulation. The product is applied directly to the wood and concrete on walls, subfloors, sill plates, piers, and expansion joints. Bora-Care is also labeled for use around pipe chases and plumbing.

Be sure to use a borate product that has been rated as a "primary" treatment. Otherwise, you'll be required to treat the soil in addition to the house itself. Borate termiticides have caught on because builders and PCOs alike enjoy these advantages:

- Borates can make scheduling easier for both builders and PCOs.
- There are no weather delays with borates.
- Construction crews don't have to leave the jobsite when borates are being applied because of the product's relatively low toxicity.
- Because it is applied directly to the house structure, there is no need to apply hundreds of gallons of termiticide under and around a home.
- Modern borates are long lasting.

**BORATE DISADVANTAGES?** Code officials aren't always aware that borates can be used for pretreatment work, and builders are often slow to change to borates. But here is what Bert Snyder, from Palmetto Exterminating in Charleston, South Carolina, says about the use of Nisus's Bora-Care. While there are many borate products on the market, Bora-Care is the only borate product that has passed the EPA's stringent five-year efficacy requirements. "This is a great product. It's been our treating choice for the last seven years," Snyder indicates that he likes Bora-Care for several reasons, especially because its relatively low toxicity allows it to fit into a green product category. In addition, Bora-Care is a permanent product that will last the life of the wood. "Not only does it stop termites, but it also stops other forms of wood-destroying organisms, including wood-destroying fungi," he says.

"Builders like Bora-Care too," Snyder adds. "Bora-Care doesn't hold up the concrete trucks. Because we can combine termite and mold treatment, we are now going after builders who want a mold-control program in conjunction with the termite-control program. It gives the builders the option to be proactive with the mold and mildew issues." Snyder says that Palmetto is now marketing its mold program to every builder in South Carolina. This is an important factor for many builders because the state's climate is warm, moist, and humid.

Massey Services, in Orlando, is another pest-control firm that is using more Bora-Care. Massey's Ed Blumenthal indicates that the company has probably done 20,000 pretreat jobs with Bora-Care over the past couple of years. "Bora-Care is where we want to go environmentally, and we are comfortable with the protection it affords our customers," he states.



Nisus Corporation

**Bora-Care combines termite and mold treatment, so builders get the termite-control program in conjunction with a mold-control program.**