

GILLEN PEST CONTROL

Termites

A Homeowner's Guide

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4/13/2017

The purpose of this ebook is to educate and inform homeowners on the habits of termites, how to recognize evidence of termites, and termite treatment options.

Protect what is yours!

Our homes are, for most of us, the largest investment we have. Even more importantly, our homes are where our loved ones live. Few of life's duties are as important as protecting home and family.

The phrase "protect your home" can mean many things. For some, it means security. Are the locks the correct type? Do they function correctly? Perhaps the condition of the roof is your first thought. A leaking roof could cause damage that is expensive to repair. For many, fire safety comes to mind. Have the batteries in the smoke detectors been changed in the last six months?

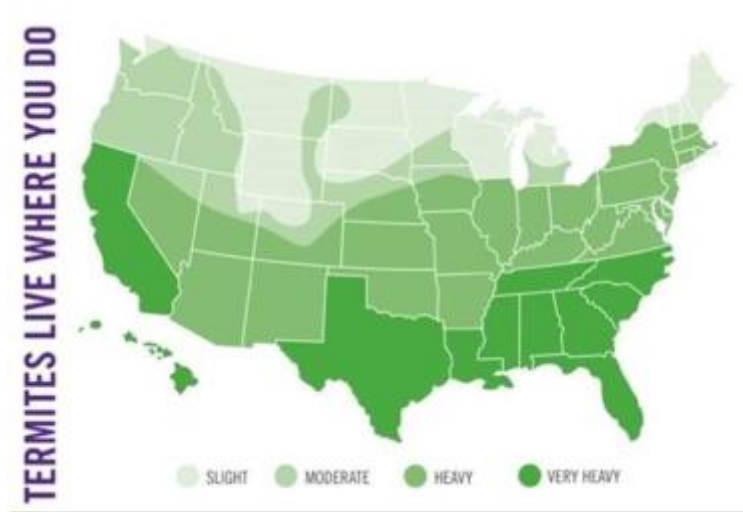
These issues are important to every home owner. However, there may be another, much more insidious danger lurking under your home: Termites.

Termites: A Homeowner's Guide is intended to inform you about the danger and damage these tiny insects in the Gulf Coast of Texas bring, educate you about what you can do to protect your home, and empower you to make good decisions to protect what is yours!

Beneficial... to a point

With over 2,600 species of termites in the world, termites outweigh all humans on Earth. Termites, you may be surprised to learn, are considered beneficial insects... ecologically, that is. They are important and beneficial to the health of forests because they decompose plant fibers in dead trees and make new soil. They also help aerate the soil by tunneling. It is when they try to "decompose" our homes that they cease to be "beneficial."

Our area, the Gulf Coast of Texas, has very heavy termite pressure due to our excellent climate. Termite pressure is the threat level to your home based on the species, the number of colonies, and the size of the colonies.



As this map illustrates, even cooler climates than ours have termites. You would have to move to Canada to escape these pests. In the Gulf Coast of Texas, there are three economically important termite species: Drywood Termite (*Kaloterms* spp.), Formosan Termites (*Coptotermes formosanus*), and Native Subterranean Termites (*Reticulitermes flavipes*). The native subterranean termites are the most economically important of the species because they are distributed across so much of the nation. Here, they are very common and, consequently, significant. In fact, statistically, one in 30 homes in our area is attacked by termites every year.

The age of your home is irrelevant to termites. I recall visiting two homes on the same day, both with termite infestations: one built in 1883 and the other under construction! It would be safe to say that if you own a home, the question is not if, but when, your home will be attacked by termites.

The extent of the damage is dependent on several things. The longer termites infest a structure, the aggressiveness of the colony, and the number of colonies present will determine the amount of damage done, as will construction type. Termites do \$5 billion in damage each year, which exceeds fires and floods. For an individual, the damage could range from very little to thousands of dollars. Therefore, identifying the presence of termites early will prevent more serious (and costly) damage. Homeowner's insurance normally does not cover termite damage, so it pays to be proactive.

Some biology

Termites often live in colonies of over 250,000. While that is frightening enough for homeowners, even more disturbing is the fact that there have been over 20 colonies per acre reported in Texas. It is not uncommon to find structures infested with termites from

more than one colony. We will discuss this more fully when we talk about swarmers. Termites live in a caste system and are very social biologically.

Scientists have spent entire careers studying these tiny but destructive creatures. A conversation with an entomologist might include words such as pseudergate and nasutes, but for the purposes of this publication, members of the termite colony can be divided into four general types: the king and queen, workers, soldiers, and reproductive swarmers.

Royalty

The king and queen mate for life and can live for up to 45 years. The queen, whose only role is to lay eggs, can lay up to 30,000 eggs every day. That's 30,000 eggs per day times 365 days per year times 45 years... a lot of eggs! The queen is so busy laying eggs that she depends on workers to feed her, care for the eggs, and even move her. Her abdomen is so distended she is unable to move herself and is many times the size of the worker.

Workers

While you will rarely see the workers, they do all the real work of the colony... that is, if you don't consider laying thousands of eggs each day work. The workers forage for food, maintain the nest, and care for the eggs, juveniles, and the queen. They are the only members of the colony to consume cellulose, which is the structural component of wood, and therefore, are the ones who do all the damage caused by the colony.

(Hold the CTRL button while clicking the link to access the video in YouTube)

https://www.youtube.com/watch?v=5uH_BPAZskk&feature=youtu.be

Workers also feed and groom the other members of the colony (busy little guys!) They feed the other members through a process called trophallaxis. For readers with strong stomachs, trophallaxis can be defined as feeding by regurgitation. Enough said.

Soldiers

As you might have guessed, soldiers provide security for the colony. They are up to three times larger than the workers and can be recognized by their large head and highly modified mandibles.



They are unable to feed themselves and their large mandibles - pincer-like appendages - are for defensive purposes. The soldiers cause no damage... unless you are an ant. The soldiers keep ants, a natural enemy of termites, from invading the colony. They also keep termites of other colonies from entering the tunnel system. Soldiers may use their large heads to stop invaders by blocking the tunnels.

Swarmers

Winged reproductives, also known as alates, or swarmers, are incomplete insects and have one purpose: starting a new colony by leaving their own colony and mating.

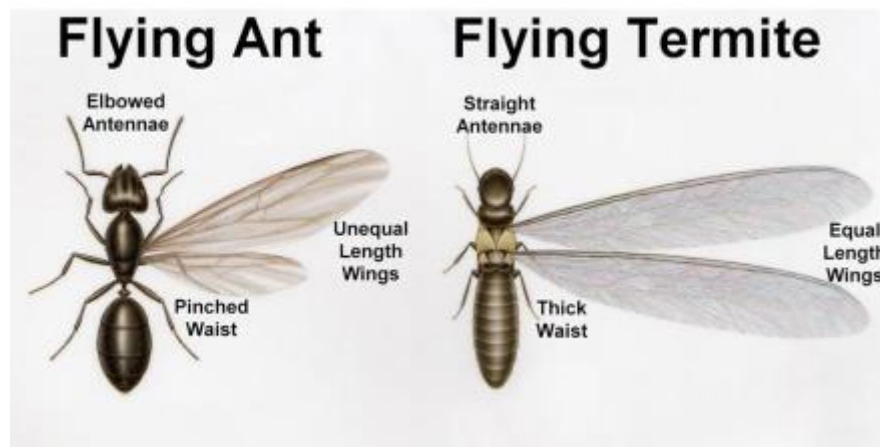


The high number of colonies per acre and the presence of multiple colonies in a structure may be explained by the fact that many reproductives emerge from each colony, and they tend to reproduce or start a new colony near their birth colony. Colonies do not attract other colonies, but the presence of one may lead to others.

Substantially different in appearance from workers and soldiers, these members of the colony are often the first warning to homeowners that termites are present. Because they emerge from the same tunnel system that workers use, their presence inside a structure may indicate the existence of termites.



Due to their body shape, they are often confused with winged ants, but recognizing the difference can save you money by avoiding the costly damage termites cause.



The color is the easiest way to differentiate between ants and termites. Termite swarmers are black, and swarming or flying ants are generally red or brown.

Another way to tell the difference is to study the body, preferably through a magnifying glass. A winged ant has three distinct body parts: head, abdomen and thorax. The

termite swarmer appears to have two: head and body, or you could say the termite is thick waisted.

A third clue is the ease of breaking the wings. Since the termite swarmer will begin to burrow into the ground after mating, its wings break off easily. Conversely, ant wings are well anchored. Additionally, termite swarmer wings are twice the length of his body and clear to white in appearance, as opposed to brown wings the same length as the body on an ant.

It is not uncommon to find, in a home infested with termites, piles of broken wings on window sills where swarmers attempting to get outside were attracted to the sunlight. The flight of termite swarmers is triggered by environmental conditions, often a sunny spring day after a rain. The presence of white winged, narrow bodied black insects in the windows on the sunny side of your house, numbering in dozens or even hundreds, is a clue hard to miss.

The black, two-segment body with clear or white wings twice the length of the body might fly but will more likely be seen walking on the floor or in the windows. They want to go outside to find a mate, but if they are in a structure, they probably cannot escape. They generally will have their wings when they emerge but will lose them easily.

Termites live underground and search for food randomly and continuously. Even when a source of food - the cellulose in wood - is found, they continue to forage, creating tunnels through the soil.

Because worker termites are blind and cannot communicate through sound, they use chemical signals known as pheromones. Different signals are sent with different chemicals. After finding a promising source of food, they line the tunnel with a chemical trail. Danger is signaled with a different pheromone.

A colony, through its continuous search for food, can cover an area the size of a football field. The target is the root system of dead trees (they do not attack growing wood), stumps, and far too often, our homes.

Termites often enter homes through plumbing penetrations. We might wonder how, out of an entire house, they are able to find that pipe penetrating the slab of the house and tunnel in between the pipe and the concrete. They only need 1/32 of an inch to enter.

Just as they look for stumps and use the root system as a guide, they tend to follow straight lines such as pipes or slabs. While they prefer to tunnel through the soil, they will leave the ground if they believe a food source is nearby. In these cases, they will build a shelter tube for defense from ants and heat, two natural dangers for them.

Workers have a high fluid content so dehydration or desiccation is life threatening. Shelter tubes keep humidity high in the colony by allowing moisture from deep in the soil to rise into the tunnel system. When the humidity in the colony is too high due to a high water table, they open tubes to the outside, allowing the humidity to escape and fresh air in. These shelter tubes are often the first clue of infestation a homeowner sees.



Some ants build similar shelter tubes, but they are not structurally as strong. Tapping the tube with a screwdriver or probe is a good test. If the tube crumbles with light tapping, it is probably an ant tube. Ants pouring out of the broken tube is another clue! If you must break the tube open because it won't crumble, you may have a termite tube.

In order to keep enemies out, termite workers line these shelter tubes with a saliva based mastic that makes the tube structurally sound, water tight, and defensive. In some cases, usually under a pier and beam structure, they can rise straight up from the ground to the structure.



Often, we find these tubes on slab foundations. It is not uncommon for the shelter tube to be visible from the soil level to the lowest course of bricks or the wood siding. The mortar at the lowest course of bricks or a crack in the concrete slab may provide sufficient space for termites to enter a structure. Any penetration of the slab such as a bath trap or plumbing penetration may provide an avenue of entrance for termites.

Bath traps

When the slab is poured for the construction of a home, a plastic bucket with the bottom removed - or worse, a square wooden form - is placed around the plumbing entry for a bathtub on the ground floor, so that the concrete does not closely encircle the pipe. This is done to keep movement of the slab from breaking the pipe.

This is generally the only place in the slab where there is no concrete and makes it an easy entry point for termites. If the builder uses a wooden form for the bath trap, it should be removed after the concrete is cured. If it is left, not only is an easy entry point created, but food for the colony is left as well.



Ask your termite treatment professional to check on this!

Inspecting your home

Termite inspectors spend many years honing their skills. Being a termite inspector is much like being a detective. In a home infested with termites, the inspector must determine how and where the termites entered, if there are multiple entry points, discover any conducive conditions, and look for above ground moisture sources.



Trained pest control operators should do more than solve an existing pest problem. Pointing out situations that may lead to pest problems and suggesting corrective action to avoid those issues are also integral parts of the service.

Every home is different, the issues around and within it are different, and each termite colony may be very different in its entry point. It takes years of experience to thoroughly understand termite biology, behavior, and construction types.

Certainly, we can teach termite biology to our employees, and we do. We can educate them about different construction methods, and we do that, too. The best teacher, though, is experience.

I recall a situation many years ago where termite swarmers appeared two years in a row at a home we had treated. The swarmers appeared each year in a wet bar with a ceramic tile floor in the center of the home.

My hard-working and conscientious employees treated the wet bar twice. When swarmers appeared the next year, they asked me to join them. They hoped I would find what they had missed. Next to the walk-in wet bar was an unusually large and oddly shaped closet. This intrigued me.

After we had spent much time with my technician, I asked the homeowner if, by chance, the original construction plans for the house were available. Fortunately, they were, and they revealed that the odd-shaped closet was to have been a bathroom.

With permission from the owner, we pulled back the carpet and found that not only was there a large, unused plumbing penetration, but more disturbing, the builder had covered the hole with a piece of plywood. Easy entry for termites and food to reward them! The owner is still our client and has not had termites in 20 years.

I tell you this story to illustrate the need for a professional when dealing with termites. I believe every homeowner should have his/her home inspected at least annually by a professional. That is part of the service our company and other reputable companies provide.

That does not mean, however, that you can't check your own home for obvious signs of termite infestation. Let's make a cursory inspection of your home.

We will start outside by walking around your home. Make certain that you can see at least six inches of your slab above grade level - the level of the soil.



Should you find any areas where the grade level is too high, remove some soil so that at least six inches of the foundation is exposed. Some landscaping companies will pile mulch against the wall of the home for attractive plantings. Do **NOT** let them do this. When the soil or mulch is too high, it could hide a termite shelter tube.



Also, look for anything sitting against the foundation that might hide termite activity. A dog house, a stack of fire wood, or a trellis could hide or camouflage termite activity. **Never** stack firewood next to your slab. Besides possibly hiding termite activity, the wood - especially if it is moist from sitting on the ground - is a very attractive source of termite food. Incidentally, it can become a great place for snakes and rodents to nest, as well.

Look for cracks in the slab since termites can enter a structure through a crack. Be aware of the footprint of the slab. Often, the patio of a house is poured separately from the slab, creating a cold joint or gap between the two concrete pours. There is usually a spacer or a piece of wood between the pours.

Should the patio ever be enclosed or a room added, it would be easy to forget that there is a cold joint inside the structure. We will discuss this further when we start to inspect inside. For the present, just look for signs of any enclosed patios or room additions.

Now that you have checked the foundation, let's look a little further away from the house. If there is a tree stump, planter box, out building or any other structure near your home, inspect it as well. If you find termites within a few feet of your home, they will eventually make their way to you.

Solar shadowing

There is an interesting phenomenon called solar shadowing that plays an important role in using the termites' own biology to defeat them. Termites, as explained earlier, travel underground looking for food. Millions of years of foraging have enabled termites to sense the differences in soil temperatures when they pass under anything that shades the soil - making it cooler than soil exposed directly to the radiation of the sun. This is called solar shadowing.

Scientists have discovered that because of the need for moisture in the colony (but not too much), they generally tend to linger at the margins. Thanks to this knowledge we can use their behavior against them (more about that later).

Exterior inspection reminders

Let's review what the exterior inspection included.

1. Look for and remove soil grade that is too high to see at least six inches of the slab.
2. Look for and remove anything that is next to or leaning against the slab.
3. Look for any cracks in the foundation.
4. Look for any cold joints.
5. Check any structures near the home.

Now, that you have completed the exterior perimeter of your home and made corrections to any deficiency you found, it is time to go inside.

Interior inspection

While the exterior inspection is mainly aimed at finding evidence that termites might have entered your home, the interior inspection is looking for evidence of damage.

If your exterior inspection indicated a cold joint or crack, try to inspect the interior walls along that joint carefully. These are the most common areas of attack. Look at all of your interior walls carefully, especially those that are inside the exterior of the house, above a cold joint or crack and near a bathtub on the ground floor.

Look for any pin hole-sized penetrations of the sheetrock with dirt protruding. Since termites build their shelter tubes when exiting wood or sheetrock, they will seal any opening with dirt plugs.



Sheetrock, the most common interior product in our houses, has paper on both sides. As termites work through the studs in the wall, they follow the grain of the wood. The grain often curves toward one side of the wood. This leads the termite workers out of the wood and into the paper backing on the sheetrock.

After penetrating the paper, they will eat through the sheetrock and into the paper on the other side. When they realize that they have created an opening that ants and fresh air might enter, they will plug the hole with the soil they have carried from the ground for this purpose.



We frequently find a series of these holes, or “breakouts.” They may follow each other in a straight, vertical line. Following the grain of the stud, they may curve toward the sheet rock and go through the same procedure of tunneling through it and plugging the opening.



Once you have inspected the interior walls over any cold joint or crack and carefully inspected the interior walls on the perimeter of the house, move to the bathroom area. I say "area" because evidence of termites entering through the bath trap may appear in an adjoining room.

The bath trap for a common bathtub is located under the controls for the water. Some quality builders will install a door to allow access to the trap. Unfortunately, many don't. If there is no access door or panel, don't panic. The access is for the plumber to do repairs, and I hope you won't need those for a long time. A termite inspector doesn't have to see in the trap; it's just quicker if he can.

If you are unable to inspect the bath trap, the next best thing to do is carefully inspect all the walls around the bathtub. The walls to inspect might include a cabinet in the bathroom or a closet in the next room. If your home has interior walls of paneling, the inspection process is possible but must be far more meticulous.

Check all of the joints in the wood carefully. You may find exposed tunnels where two pieces of wood join. If you have a sunken room, it is critical that you inspect the walls of that room and the rooms adjoining it. Construction processes vary, but sunken rooms are notorious for being termite entry points. An annual inspection by a professional will give you peace of mind and possibly save you from the costs of repairing termite damage.

Now that you have completed your personal inspection, remember to do it at least once between the annual professional inspections!

I hope your inspection revealed nothing to be concerned about, but if you found anything that might be evidence of termites, read on!

I should note that it is possible to find damage or evidence of a previous infestation without finding termites. We do not always know why a colony abandons a feeding site. Perhaps a lawn treatment killed enough workers to discourage them, or maybe, fire ants - a natural enemy - drove them away.

Just because they left, do not assume that they will not return. If you find evidence of previous damage or infestation and no evidence of previous treatment, I would suggest a preventive treatment.

You think you might have termites

While there are many things a do-it-yourselfer can attempt, treating termites is not recommended. A great deal of technical training and experience is necessary to recognize the factors conducive to determining locations of termite activity and identifying points of ingress.

While visiting a home improvement store, I noticed a "Do It Yourself" termite treatment package. Professional pest control operators are required by law to read, understand and follow label directions of any product used, so reading labels, like inspecting every slab I approach for termites, is a habit with me.

Out of curiosity, I read the label on this product. I was shocked to find this phrase in small print: "Not intended as a substitute for professional treatment." I guess the assumption was that no one would actually read the instructions!

If you believe you have termites or want to make certain you don't, call a professional. Schedule the inspection at a time when you can be there. Termite treatments are not inexpensive, so you want to find a professional with whom you are comfortable. This is a relationship that could last several years.

A reputable termite specialist is well-educated, knowledgeable, highly experienced, and willing to explain the biology of termites and various treatment methods, as well as offer a professional recommendation.

Ask questions! Ask to be shown what the inspection revealed. There are, I regret to say, disreputable termite treatment companies and dishonest sales personnel and technicians. Some companies even go door to door offering "free" termite inspections. I am always suspicious of door to door sales people, doubly so of exterminators.

Should you find yourself speaking with one of these unsolicited visitors, make sure you insist on being shown any evidence of termites as claimed. A reputable pest control operator wants to show you those findings and will explain your options.

Pest control service and termite control are not commodities. With all due respect to those in the gasoline business, a gallon of gas from one station is substantially the same as another. It is a commodity. Cheaper is only good for commodities.

Pest control and termite control treatments vary widely by region and by company. The company philosophy, technician education, and experience will vary between companies and even between employees. Further, termite treatments by their very nature are long-term propositions.

If the company you hire is the cheapest but goes out of business tomorrow, any guarantee you paid for is worthless. We in the industry call these "orphaned" accounts. Asking how long the company has been in business is a good way to see if it has an experienced owner and staff. My company has been in business for over 50 years. You can't stay in business that long without providing good service.

Treatment types for native subterranean termites

A NOTE TO THE READER:

Some termites, such as Drywoods, or other pests, may require the tenting and fumigation of the structure. Fumigation is generally not used to treat the

subterranean termites we are discussing today. For that reason I am not including tenting or fumigation in the “Treatment types” section of this book.

Generally speaking, there are three types of treatments for native subterranean termites in an existing structure: exclusion, liquids, and baits.

Exclusion is limited to pier and beam structures. A structure sitting on blocks is susceptible to termites building shelter tubes on those blocks and into the wood members. Exclusion is a treatment made by placing a metal sheet, larger than the top of the block, between the structure and the block on which it sits. These were widely used many years ago.



The edges of the exclusion device are bent down slightly, so that termites cannot build a tube around that edge. These shields can be installed during construction or retrofitted. This type of treatment is not practical in most cases and has extremely limited value.

Another, older technology is the liquid treatment. This requires that a trench be dug all the way around the structure, next to the slab. Then, hundreds of gallons of chemicals are poured into the trench.

Once that is done, the soil that was removed must be treated and placed in the trench. The chemicals bond with the soil, creating a chemical barrier that termites must cross to reach the structure.

Where an obstacle exists to the trench, such as a patio, driveway, or sidewalk, holes must be drilled every 12 to 18 inches and chemicals pumped into the holes. This adds to the cost. It is time consuming, noisy, and unsightly.

Some chemicals are “repellant,” meaning termites are repelled and will not cross the barrier. Others are “non-repellant,” allowing termites to pass through it and die from the contact.

Although these products will work for a while, they have some major drawbacks. Since the chemical bonds with the soil - actually becoming part of the soil - any movement of the soil due to man or nature reduces efficacy. With the clay soils in our area, dry periods can cause the soil to pull away from the slab. When this occurs, the chemical barrier is also pulled away.

In seasons of drought, I have seen the water-tight termite shelter tubes built right against the slab and past the chemically treated soil that pulled away from the slab. Further, the mechanical movement of soil during planting or movement due to water can defeat the chemicals. Consequently, this procedure is intrusive and leaves the colony to continue finding a way around the barrier. Liquid treatments must be replaced every three to seven years.

The most effective technology today is baiting. This technology, as far as termites are concerned, is relatively new (20 years can be considered “new” in the pest control world) and is much better for the environment than pouring hundreds of gallons of solution into the soil around your home. It is far less intrusive than digging a trench around your home, and it has proven to be very effective.

While there are several baits on the market today, the recognized leader is DowAgrosciences’ Sentricon Termite Elimination System. Now celebrating 20 years of protecting structures like the White House, Independence Hall, the Statue of Liberty, the Texas State Capitol, and millions of homes, this product actually kills the **entire colony!** It is the only product that can make that claim.

It also is the only termite product to receive the President’s Green Chemistry Award.

The way most baits work is by placing them in ground stations around the structure. I mentioned earlier that I would explain how solar shadowing and the termites’ own biology could be used against them. Here's how!

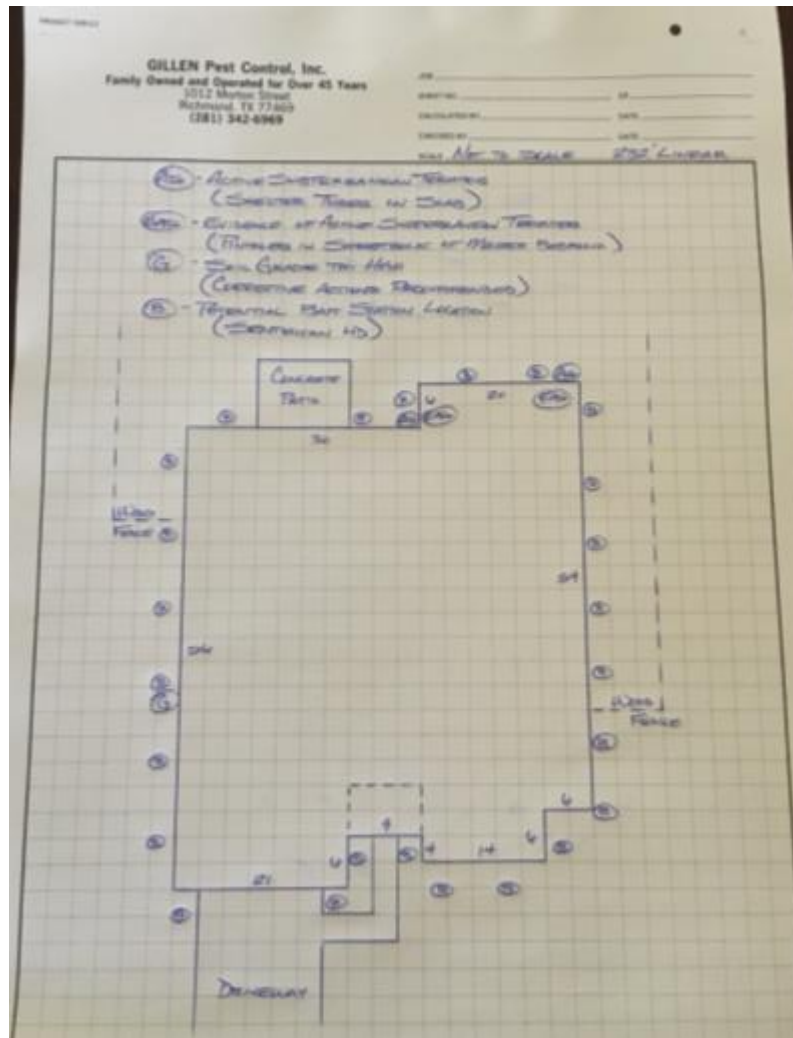
DowAgrosciences researchers knew because of solar shadowing that termites like to stay generally at the margins of the temperatures, right around the edge of the structure. Too hot, they will move under the structure. Too cold, they will move out of the shadow. The researchers also knew that termites feed randomly and continuously,

so they designed the system to place the in-ground stations around the structure at about its drip line and spaced them about 10 feet apart.



Aspen and Southern Yellow Pine - a commonly used wood in construction - are delicacies to native subterranean termites. At 50-52% cellulose, which is what termites eat, these are among the termites most sought after wood. One could say that Southern Yellow Pine is like a ribeye to a termite. The bait matrix in Sentricon would be a filet mignon to a termite since it contains 70% cellulose. Consequently, termites like the bait in the Sentricon system better than wood. Scientists at Dow AgroSciences designed a system that uses solar shadowing to determine optimal distances from the structure, the termite's feeding pattern to calculate the distance between bait stations, and high cellulose to make the bait more attractive than your home to create the best bait on the market.

Technicians are required to draw accurate, detailed diagrams of structures including measurements and locations of infestations clearly marked and explained before a treatment begins.



Knowing they had a product that worked well, they needed a system that guaranteed only the best managed and operated pest control firms would install and maintain the system to the highest standards. The pest control companies authorized to install and service Sentricon systems are carefully vetted for financial stability and high service ethics to avoid “orphaned” termite treatments and assure the highest quality of service to Sentricon clients.

The standards are quite high. Only 3% of the pest control companies in the United States carry the coveted “Certified Sentricon Specialist” title. They tend to be established companies with outstanding reputations and financial stability. That protects you.

In conclusion

I hope this book has been helpful to you in learning how to protect what is yours. Your biggest investment - the place your family lives - is extremely important and taking care of it even more so. I hope you will remember to:

*Be observant

*Hire the best

*Go for quality

*Protect your home!



GARY GILLEN

Gary Gillen is a second-generation pest control operator in Richmond, Texas. His father, Jimmie Gillen, started the company in 1963. Gary and his wife, Janice, own and operate the company today. Growing up in the pest control industry has given him unique insights and a historical perspective accumulated during a lifetime of pest control experience.

Gary currently serves on the Board of Directors of the Texas Pest Control Association, which represents the interests of Texas Pest Control Operators and provides information and education to the industry and consumers. He served from 1996 to 2001 as the Vice Chair of the Texas Structural Pest Control Board -- the licensing and regulatory agency for pest control operators in Texas at that time.