Treatment of Existing Termite Infestations

Ridding existing structures of termite infestations, plus making them resistant to future infestation, is a major goal of termite control. Generally, buildings become infested because, during construction, little or no attention was paid to the preventive measures that would have made the structures resistant to termites. It is in such buildings that termites cause heavy damage each year.

To control termite infestations in existing buildings, observe the same principles that are recommended for the prevention of infestation during the construction of new buildings. That is, eliminate conditions that favor the development of termite colonies in the soil and conditions that permit the passage of termites from the soil to the woodwork of the building. This is important, because termites in the woodwork of a building die if they are prevented from maintaining contact with the soil or other sources of moisture.

Inspection

Each job should start with a thorough inspection. Such an inspection and record keeping will help you avoid legal entanglements, provide proper explanation of the needed work to the owner, help you price the job properly and help you or your employees do the job properly.

For a proper inspection, you need a strong light, a sharp probing tool (e.g., ice pick, leather awl or screwdriver), a tape measure, coveralls, a hard hat, kneepads, graph paper and inspection sheets. A moisture meter may be helpful. Specially trained termite-detection dogs have been useful in locating difficult-to find colonies. A sketch drawn to scale showing the structure's ground area is very helpful in planning the work and should be kept in your files. It should show all details for treatment and should include the location and spread of the infestation found.

The inspection of both inside and outside walls for termite shelter tubes should be carried out carefully, particularly when the tubes are near soil or in basements or crawl spaces. Check for the presence of swarmers or their shed wings.

Tapping exposed wood by hitting along the grain is also necessary, particularly if foundation walls are of hollow-block construction. Termites frequently enter wood through the voids in the blocks and are very hard to detect. Soundings will tell you where the wood has been damaged or if the wood is easily damaged. If either occurs, probe further for tunnels or the brown, pasty substance, called mastic that termites leave.

Many other pests, including insects and fungi, damage wood. You should be able to distinguish damage caused by termites from that caused by these other wood-destroying pests; this is essential if you are to correctly assess a situation and properly advise your customer.

Walls constructed of stone, concrete, cinder blocks, hollow tile, or brick may develop cracks through which termites can pass to sills and other wood members; carefully inspect such walls. Earth-filled porches and steps account for more cases of termite attack than any other building feature.

Check wood paneling and other wall finishings on basement walls, wood partition walls, and other wood construction in the basement, which extends from masonry to the sills or joists.

Note plumbing and utility fixture entrances and passages through the basement floor and the foundation.

Determine the presence of wells, whether driven or dug, and their distance from the building.

Investigate and make records of springs, sumps, drainage tiles or anything which might be contaminated or transport pesticides away from the treatment area.

Even if an infestation is found, the inspection should be complete and thorough to ensure all points of entry and damage have been found. A light infestation may escape detection even with careful inspection.

Measure inside and outside to make sure that there are no hidden or blind rooms, or double walls.

You and your customer should discuss the report and agree on a course of action. If chemical control is warranted, remember that termiticides used to prevent subterranean termite infestations may also be used to control existing infestations in buildings. The purpose of chemical control is to form vertical and horizontal barriers of treated soil between termites in the soil and voids in the structure. We will now discuss some ways of controlling termites by chemical treatment in existing buildings.

Again, many of the same principles recommended for preventing infestations apply to chemical control of existing infestations. In addition to controlling existing termites, you want to provide a continuous chemical barrier against future termite attack. Greater caution is required, however, because of the presence of plumbing, ductwork, and electrical wiring, and because the building is probably occupied by people and/or pets. During application, you should have an assistant constantly checking for leaks in the basement or other areas where termiticides should not enter.

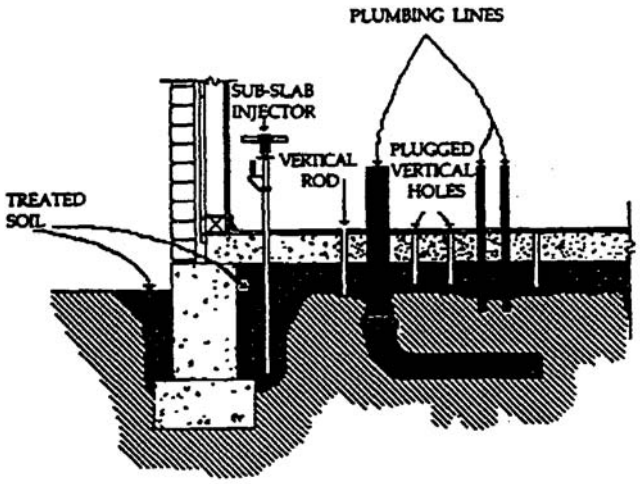
Slab-on-Ground Houses

Termite infestations in houses built with a slab on the ground present serious control problems. It is difficult to place chemicals in the soil beneath such floors, where they will be effective. Applications can be made by subslab injection or trenching or both. Treat along the outside of the foundation and, where necessary, just beneath the slab on the inside of foundation walls. Treatment may also be required just beneath the slab along both sides of interior footing and supported walls, along one side of interior partitions, and along all crack and expansion joints.

One way to do this is to drill a series of vertical holes, about 1/2 of an inch in diameter, through the concrete slab close to the points where the termites are or where they may be entering. Space the holes about 6 inches away from the wall and approximately 18 inches apart to ensure a continuous chemical barrier of the underlying soil (Figure 23).

Do not apply termiticides until you have identified the location of heat or air conditioning ducts, vents, water and sewer lines, and electrical conduits. Extreme caution must be taken to avoid contaminating these structural elements and airways. If termiticides were injected into duct systems, the residents of the household may be subject to long-term inhalation exposure to the insecticides.

Figure 23. Treatment under concrete slab with vertical rodding at joints, cracks and openings around plumbing.



Another method of slab treatment is to drill through the exterior foundation walls to the soil just underneath the slab. You then introduce the chemical through these holes. This method, most often needed under bathrooms or kitchens, is complicated and requires the use of horizontal rods (Figure 24).

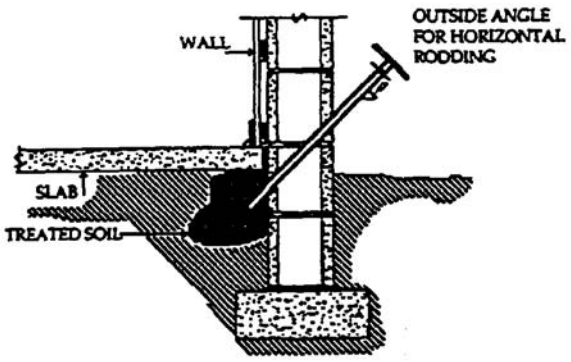


Figure 24. Horizontal rodding through exterior wall.

Take extra caution to prevent drilling into plumbing, electrical outlets or heating ducts that may be imbedded in concrete. Injection of termiticides into these areas must be avoided.

For shallow foundations (1 foot deep or less), dig a trench 6 inches wide along the outside of the foundation wall. Do not dig below the bottom of the foundation. Apply the emulsion to the trench at the recommended label rate for each 10 linear feet and return the soil to the trench.

For foundations deeper than 1 foot, use the rates given for basement houses later in this chapter.

Structures With Ducts in the Slab

Applying a termiticide to an existing structure with intraslab or subslab air circulation ducts must be done with great care. Intraslab ducts are completely encased in the slab (Figure 25). The ducts of a subslab system rest on a vapor barrier, with the concrete poured on top (Figure 26). Take extra precautions when treating a structure with one of these systems; puncturing a duct or allowing termiticide to leak into these ducts results in serious problems. If a mistake is made, there are corrective measures. However, they are expensive and the applicator may never be able to alleviate the customer's fears.

Figure 25. Intraslab air duct system.

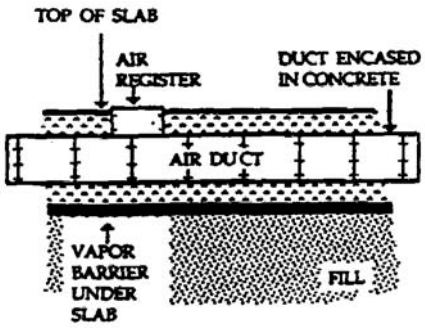
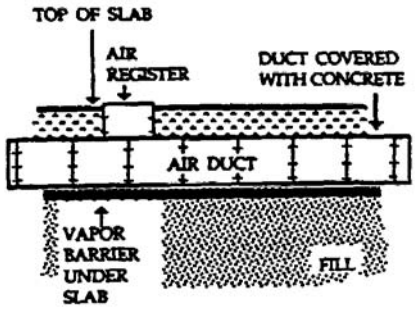


Figure 26. Subslab air duct system.



When inspecting for termites in a structure with air ducts in the slab, you should include some additional procedures. Try to obtain a diagram or blueprint of the duct systems. Determine what the ducts are constructed of, and how tight the joints are. Make measurements of the depth, width and location of the ducts. Inspect the ducts carefully, using a mirror and a flashlight, for soil deposits and evidence of breaks in the ducts. Swarmers coming from the ducts also indicate a break in the integrity of the ductwork. Discuss evidence of breaks in the ductwork with the homeowner, as this may lead to termiticide leakage.

The termiticide needs to be applied beneath the slab, under or around the ducts. Special tools – subslab injectors – are made for injecting the chemical beneath the slab. They are available with a rubber seal that presses against the sides of the hole drilled in the concrete to avoid leakage up on top of the slab. The holes should be drilled carefully (Figure 27) and must not puncture the ducts. The chemical should be applied at reduced pressure to keep the chemical from being forced into the ducts. Rather than using a subslab injector, you may choose to apply the chemical by gravity feed for an additional margin of safety.

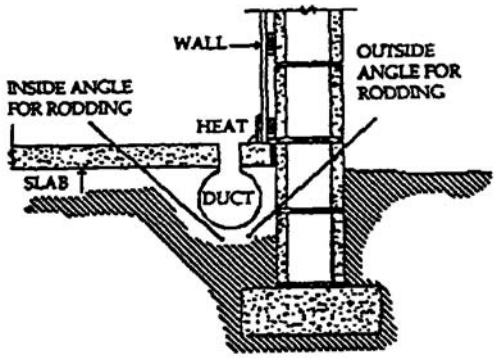


Figure 27. Subslab perimeter heat duct showing the angles needed to rod the termiticide.

During and after treatment, check the ducts for signs of the termiticide. Turn on the heating system and check for odors. If you detect an odor, turn the system off and determine the source of the odor. Leakage in the ducts must be removed. If the odor is from the moist soil, it may persist for several days. The applicator must refer to the termiticide manufacturer for cleanup and odor-deactivation procedures.

Raised Cement Porches, Terraces, Entrance Slabs, Sidewalks and Driveways

All of these that are either filled with soil or on the soil must have the soil adjacent to the foundation treated to control infestations. Treatment may be carried out by drilling through the concrete or tunneling under the concrete next to the foundation wall. No untreated soil should come in contact with

any wooden portion of the structure. Holes should be drilled 12 to 18 inches apart, but in some soils 30 to 36 inches is not uncommon. Thorough treatment of the soil along the foundation is the goal.

Crawl Space Houses

Buildings with crawl spaces usually can be treated easily and effectively. In general, the following procedures can be used:

Dig trenches 6 to 8 inches wide adjacent to and around all piers and along both the inside and outside of all foundation walls. For poured concrete foundations, the trench needs to be only 3 to 4 inches deep. For brick and hollow block masonry foundations, it should be at least 12 inches deep. Where the footing is more than 12 inches deep, make crowbar, pipe or rod holes about 1 foot apart and extend them from the bottom of the trench to the footing. This will prevent termites from gaining hidden entry to the building through voids in these types of foundations. The trench should not be dug below the foundation. Rods shorter than the normal (3- or 4-foot) can be used. Cover treated soil with a layer of untreated soil or another suitable barrier such as polyethylene sheeting.

Piers, chimney bases and utility entrances should also be treated. Treatment at the label rate for each 10 linear feet for each foot of depth will soak the soil for thorough coverage. If the trench is deep, apply the chemical to alternate layers of soil, each about 6 inches thick. Do not make overall broadcast applications in crawl spaces of existing structures.

Basement Houses

Where footings are greater than 1 foot of depth from the grade to the bottom of the foundation, application can be made by trenching or rodding or both at the suggested rate of emulsion for each 10 linear feet per foot of depth. Treat along the outside of foundation walls and, if necessary, beneath the basement floor along the inside of foundation walls as well as along interior load-bearing walls, conduits and piers.

Foundations With Holes, Cracks, Voids or of Stone or Rubble

Stone and rubble foundations, found mainly in older structures, are particularly susceptible to termite attack primarily because of gaps between the stones. The gaps may never have been filled with mortar or the mortar may have deteriorated. Termites can exploit these gaps and tunnel within the wall. A second hazard often associated with these foundations is that the floor joists may be close to the fill, as in the crawl space, or embedded in the foundation. A third condition that an applicator may find is a porch or crawl space without ventilation, which results in damp soil and an ideal hidden location for tubes being built up from the soil to the joists.

Mechanical Alterations

Mechanical alterations may consist of several important repairs. Using mortar to seal gaps between the stones. This sealing operation may go as far as completely facing the wall. Build an access door to inaccessible areas. Install ventilation louvers. Remove soil if it is too close to joists. If there is structural damage, use treated wood when making repairs.

Termiticide Treatments

Interior (soil under the floor) and exterior termiticide application down to the footing is essential. When conducting soil treatments on the exterior, you must be careful that the foundation will not allow seepage into the structure. If you are not confident the foundation will hold the termiticide, do not rod or flood a trench. Trenching, treating the excavated soil and then shoveling the treated backfill into the trench will lower the risk of chemical seepage into critical areas of the structure. Even so, an assistant should be inside looking for leaks during the application. Rodding at the bottom of the trench may be necessary to reach the footing; however, inject the termiticide under low pressure. Treating foundations and wall voids is not recommended as it may lead directly to seepage.

Multiple Brick, Concrete Blocks, Hollow Tile, Etc.

All of these are common and must be horizontally drilled. Holes must be placed in the mortar joints to obtain necessary chemical penetration.

Brick foundations that are at least two bricks thick have headers – bricks laid at right angles periodically – that can stop the flow of a termiticide. Basement construction of multiple-brick foundations should be treated below grade level from the inside and above grade level from the outside. Holes placed every 16 inches at the end of every two stretchers – bricks laid with the 8-inch side out – are adequate. It may be necessary to treat each section of the foundation under conditions such as heavy infestation, moisture problems or construction features.

The voids in hollow-tile walls run horizontally, so a chemical treatment cannot reach below the point where you treat. Do not drill through the tile directly, for it is easily cracked. A thorough grade-level pesticide application to obtain good soil coverage on both sides of the foundation (i.e., where there is a crawl space) is one of the best methods of treatment. This is also true for fieldstone foundations. Little can be done to treat voids, so complete treatment of the soil is of the utmost importance. Fieldstone foundations must be patched and all cracks and voids must be filled before treatment; still, the soil must be removed, treated on a tarp and then backfilled into the trench.

Houses With Wells, Cisterns, Springs, High Water Table or Near Ponds, Lakes or Streams

It is your responsibility to apply the termiticide without contaminating water supplies. Take special precautions if wells, cisterns or springs are located near the treatment area. You should know the restrictions placed on termiticide application by state or local pesticide regulations regarding the minimum acceptable distance between wells and sources of pollution. You must comply with these regulations and label directions for the chemical being used.

The insecticides presently used move very little once they are deposited on the soil and the emulsion has dried. Movement is usually the result of the emulsion flooding through underground channels, such as those left by old tree roots, through soil that tends to crack severely during periods of drought, or through rock crevices.

Faulty wells are probably the most common cause of contamination. These faults permit surface water to enter the well, usually along the supply pipes that lead into the dwelling. Wells may be constructed in a variety of ways. Casing materials is an important factor to consider. Wells may be cased with steel tubing, stone, concrete or even drainage tiles. Older wells are particularly vulnerable to contamination because the casing may have deteriorated and thus may no longer seal the well from contamination. This is a particular problem with stone-, concrete- and tile-cased wells, which are poorly sealed to begin with. Because it is difficult for the PMP to detect defective well construction or a faulty well, request the well be tested for coliform bacteria by the health department prior to treatment. A positive test indicates that surface runoff is entering the well. This also indicates that the termiticide may also enter the well and the application should not be made.

The well's location, distance from the structure, depth and location of the supply line must all be recorded during the pretreatment inspection. It is especially important to ask about the location of water wells and cisterns, because the well may be buried and cannot be seen. The inspection should determine runoff patterns, note the slope of the land and the location of paved surfaces. This is especially important if the treatment is to take place uphill of the well, because most shallow groundwater flows in roughly the same direction as the land slopes. The soil type and permeability, seasonal height of water tables and depth of foundation footings need to be known. The permeability of soils and seasonal height of water tables can sometimes be obtained from the U.S. Department of Agriculture's (USDA) soil surveys for individual counties. If there are no published surveys available for a particular site, representatives of the USDA Soil Conservation Service may have detailed site information from mapping work in progress. Local well drillers, drainage contractors and builders are good sources of information of the depth of the water table. Some important information published in soil surveys includes the permeability of soils to a depth of five feet, the soil texture (amount of gravel, sand, silt and clay typically found in soils) and the percent

organic matter found in soils. Generally, the coarser the soil (that is, the more sand and gravel found in the soil), the more permeable it will be. Conversely, the more organic matter in soil, the more it will hold water.

Treatment Procedures Near the Well and Supply Lines

The soil nearest the well should not be treated by rodding even under reduced pressure. Trench the soil along the foundation and apply the termiticide solution at the recommended rates. Mix the termiticides with the loose soil as you refill the trench.

An alternative method requires removing the soil from the trench and placing it on a waterproof tarp. Apply the termiticide to the soil on the tarp and mix. The treated backfill is then placed back into the trench. You could also line the trench with polyethylene prior to replacing the treated backfill. The polyethylene lining is another method of preventing movement of the termiticide during an application. Cover all treated soil according to label directions.

Extreme care is needed when applying a termiticide around the water supply line. The termiticide may follow the pipe and reach the well. Uncover the supply pipe from the structure out toward the well for a short distance so that seepage along the pipe can be detected. Use the treated back fill or the polyethylene lining application technique to apply the termiticide along the foundation near the supply pipe.

Be especially careful to apply only the amount of chemical needed and apply it slowly enough to let the soil hold it. Do not treat soil that is water-saturated or frozen. Avoid flooding and runoff.

Finally, it may not be possible to solve the customer's problem safely with a termiticide application. Consider mechanical alterations to the structure to the extent it is economically feasible.

Treatment Odors

The most common complaint about termite treatments is the chemical odor that may linger afterwards. Although the chemicals themselves have little odor, the solvents, emulsifiers, impurities and related compounds in the formulation can create odors that will often disturb the customer. Under various conditions these odors can be strong, offensive and long lasting, a situation that leads to many problems, complaints, and even lawsuits.

Clients should be informed that there may be some odors associated with the treatment for three or four days. To prevent odor build-up when treating structures, the structure must be ventilated. Windows and doors should be open, and fans can be used to circulate air. Air conditioners should be turned off, and close off upstairs doors when possible.

Seal any uncapped masonry voids before or immediately after treatment. Aerosol foam insulation, strips of roofing material or tarpaper anchored by roofing cement, or solid bricks or caps can be used to seal the voids.

Crawl spaces pose special problems. Install vents if they are not present. If there is excess moisture or dampness, postpone treatments until the soil dries. If a clump of soil squeezed in your hand retains its shape without flaking or falling apart, the soil is probably too wet. Remember, most labels have strong statements about treating wet or frozen soil. The excess moisture causes the odors to linger for several days. Treated soil can be covered with a layer of untreated soil, and vapor barriers can be placed over treated soil. There are also masking or odor reducing products that can be added to the spray tank.

Caulk, fill or seal openings through the floor of a crawl space, such as plumbing, air vents and bath traps. Take special care if there is a furnace or ductwork in the crawl space. All ductwork must be sealed, and some types of systems may not be treatable without major odor problems. If ductwork is accidentally treated with one of the new termiticides, there are ways of decontaminating the site, but they are very expensive. If you have any concern with a potential odor problem, seek additional help before treatment, and explain the problem to the customer.

Operate pumps at pressures between 25 to 50 psi to minimize splashing. Plug all holes after injection, and seal all visible cracks in basement or masonry walls. It is a good practice to have an assistant inside a basement to warn of any seepage problems. Use dehumidifiers in basements to remove moisture and speed drying. For extreme odor problems, activated charcoal filters can be placed on ventilating fare or in the furnace and ducts.