TERMITES

Pillar To Post Continuing Education Program

PILLARTOPOST

HOME INSPECTORS

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Chapter 1

CHAPTER 1
Overview and Objectives

Chapter 1

Overview and Objectives

Termites cause damage to buildings. Some estimate that the annual damage is over $2 billion North America wide. Part of the reason that the damage statistics are so high is that the termites can go undetected for a long period of time. You won't see them out in the open. The good news is that they can be detected and they can be dealt with.

This presentation looks at the different types of termites, how they damage a home and how they can be dealt with.

This course will teach you:

- about the damage termites can cause.
- how termites can be detected.
- solutions to the termite problem.

By the end of this session you should -

- be able to describe characteristics of different termite species.
- be able to recognize the different type of species damage.
- be able to calm the fear that termites instill in buyers.
- understand the hurdles involved with a termite inspection.
- understand the hurdles involved with termite treatment methods and the implications for your buyer.
- understand what they do
- understand the regional implications of different termite species.
- understand your clients concern about termites in a home.
- understand the difference between chemical treatments and fumigation techniques and how this relates to the clients.
- understand why insurance companies are afraid of termites.

- understand the concerns with structural damages that may occur.
- understand what shelter tubes, mud tubes and frass are.
- understand the implications of termite damage to a home.
- understand what can be done to prevent and cure the home of Termite Infestation.

This knowledge will:

- help you to calm buyer's fears about termites.
- show your clients that you are a knowledgeable professional.

Chapter 2

CHAPTER 2
Introduction to Termites

Chapter 2

Introduction to Termites

What are Termites?

To the untrained eye, termites look like white ants. In fact, many people incorrectly call them white ants. To an entomologist, they are completely different and they are not technically ants at all. For the rest of us, we don't care so much about the taxonomy, we just want them out of our house.

Many wood destroying insects damage wood by boring holes and removing wood to create nests. This is what carpenter ants do. Termites are wood destroying insects like powder post beetles and carpenter ants but they are different in that they actually consume the wood. In nature, termites perform an important roll as recyclers of dead wood and plants.

It is this diet of wood that makes termites such a problem. If they go undetected, they will continue to eat wood framing and other cellulose. The damage will spread.

The good news is that if termites have gotten into some wood framing, it takes a long time before it causes enough damage to affect the structure. Early detection is important.

Where do the Live?

Termite colonies are usually deep in the soil. In some cases a very large dead tree lying on the ground could house an entire colony. Termites need moisture to live. They cannot survive on the surface for very long.

You don't usually get to see termites because they live in the ground. Termites affecting a house are not usually visible either because they stay inside the wood and chew their way along the grain below the surface.

A Closer Look

Termites are social insects. There are different types of termites in the colony each type is born with its own special purpose. In the world of entomology, this is called a "caste system". There are physical differences between termites of different castes; the differences making them specialized for the tasks. For example –

- **Queens** lay eggs. There can be several queen termites in a colony. They are much longer than the other termites. Long abdomens mean they can lay thousands of eggs at a time.
- **Kings** are responsible only for reproduction and remains in proximity to a queen.
- **Workers** are the main caste in the colony. They do the foraging for food.
- **Soldiers** protect the nest from attack from ants. The soldiers are stronger and with stronger armor. They may have larger jaws. There are even some species where the soldiers can secrete noxious liquids as another defense against attack.

Types of Termites

In North America, there are three major species of termites that are of economic significance –

1. Subterranean termites
2. Formosan termites
3. Drywood termites

Let's have a look at each of these species.

Subterranean Termite

The subterranean termite is the most common species in north America. Subterranean termites are creamy white in color. The photo to the right is a subterranean termite.

A mature colony has anywhere from 60,000 to 300,000 workers. This means that an average colony can consume about one foot of 2X4 in 118 days.

Subterranean means "underground" and indeed subterranean termites build colonies underground. The workers forage for food (wood). Once they find a source, others follow. Termites can get through a crack as small as 1/32 inch, through a crack in a concrete slab, through a joint between foundation wall and floor slab etc.

Once a termite worker has found a path into the structure of the house, there is plenty of food. As we already pointed out, termites eat cellulose and the wood structural components of a house are ideal.

Subterranean termites cannot expose their bodies to open air for any length of time or they dehydrate and die. This is why you never see termites. For the most part, they stay hidden in the soil. When they get into a piece of wood in your house such as structural framing or hardwood floors, they eat the wood along the grain length and never come to the surface. You can see how easily extensive damage can result before there is any notice of termite activity.

Shelter Tubes: Subterranean termites build shelter tubes. Shelter tubes are tunnels made of mud that run along a surface. For example, if a subterranean termite has to get from the soil up to wood siding on your house, the termite must walk up an exposed section of foundation all. Rather than doing this, the termites

build a mud tunnel from the ground up to the siding, across the foundation. Shelter tubes are often the first clue a homeowner has that there is termite activity.

They Need Water: Subterranean termites need water to survive. This is easily accommodated because the workers continually return to the soil. That is, they don't live in your house they just come in to eat! It is possible for subterranean termites to survive in the house if there is a constant source of moisture such as a plumbing leak but ultimately they will return to the colony. What this means is that if you can create a barrier to termites getting into the house, you need not worry about the termites that are already in the house because they will ultimately die if they can't get back to the soil.

Winged Termites: At times of the year (usually in the spring), it is possible to see a winged termite. These are called "winged reproductives". These winged reproductives are obviously able to survive in the open for a period of time. In nature, the winged reproductives swarm and then land a distance away from the colony. When they land, they shed their wings and look for mate and attempt to form a new colony. For the homeowner, the presence of winged reproductives will alert you to the fact that there is termite activity. In fact, it is likely that the termite activity is a few years old because this is usually how long it takes before a colony will produce winged reproductives.

Formosan Termite

Formosan termites are an exotic species accidentally introduces to the United States from China. They are similar to standard subterranean termites but they are not the same genus. The practical difference are as follows:

- they are larger and much more aggressive
- they often form colonies of over 2 million
- they can establish secondary colonies in moist wood in a house (if there is a roof leak for example) and do not need to return to the soil as long as the supply of moisture stays.

Formosan Termites are often called "super termites" because of their destructive power. They can be found in humid coastal and subtropical regions such as Hawaii, Florida, South Carolina, Georgia, Louisiana.

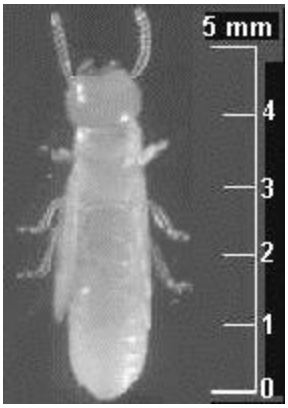
Drywood Termite

Drywood termites are different in that they can survive with less moisture than the subterranean termites. They do not require constant contact with the soil. This means they can infest and create colonies in attics, exterior wood members etc.

They still need moisture so they are usually found in the humid coastal and subtropical regions.

They do not build shelter tubes like the subterranean termites.

Their colonies are much smaller so damage is usually localized to smaller areas however it is not uncommon to have several small colonies in one building or structure.



Check Your Knowledge

Answer the questions below in the spaces provided

1. **True or False? Termites are ants – white ants.**

2. **Where do subterranean termites live?**

_____

3. **What is a shelter tube?**

_____

4. **List the three types of termites that can be found in North America:**

_____

_____

_____

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Chapter 3

CHAPTER 3
Termite Damage

Chapter 3

Termite Damage

Termites can create a lot of damage if left unchecked. There are two key reasons that they are such a problem: They stay in the ground or in the wood so you don't often see them and they consume wood rather than just excavate for a nest. In short, they are invisible and voracious.

It seems like the key to minimizing damage is recognizing termite damage when you see it and periodic inspection. Let's look at termite damage and how to recognize it.

Shelter Tubes

Since termites can't expose themselves to air, they build shelter tubes. Shelter tubes are little mud highways for termites. If termites have to get from the soil to a piece of wood that is not in contact with the soil, the termites can build a line of mud from the soil, to the piece of wood. The line of mud is about the diameter of a pencil and is hollow inside. This picture shows a series of shelter tubes running from the soil, up the foundation wall to the wood structure of a house. There are termites running up and down inside these shelter tubes.

The picture on the right shows a shelter tube running up the side of a post.

The picture below is a close-up of a shelter tube that is broken open.

Winged Reproductives

In the last section we discussed winged reproductives. The winged termite is part of the life cycle of a termite colony. Winged termites, or maybe just the wings, will tip you off that you have a termite colony near or in your home. The wings are small a papery, 3/8 – ½ inch long. These might show up in late spring.

Damaged Wood

While termites tend to excavate and consume wood below the surface, you may see areas where the damage has come to the surface

This photo shows termite damage. In this case, the wood was probed to reveal the damage beneath the surface.

Termites in New Homes

Termites have been found in buildings as early as 4 days after construction. This is very uncommon however.

Termite prevention can be incorporated into the construction of a new home in a termite prone area. Chemical barriers and mechanical barriers both help.

This photo shows a mechanical termite barrier. This piece of bent metal goes on top of the foundation with the smaller bend facing out and down. Termites building a shelter tube up a wall of a foundation can't get past this piece of metal.

One of the key items in termite preventative construction is to design a home that can be easily inspected for termites and shelter tubes. This increases the chances of early detection.

Hidden Damage

By their very nature, termites keep concealed. The damage they cause tends to be concealed too. Termite damage will not usually be evident by visually inspecting finish surfaces.

Termite detection by an expert includes – knowledge that termites are present in the area and a thorough inspection that may include invasive techniques that may damage surfaces.

Termites may not be evident during a visual inspection by a home inspector.

Check Your Knowledge

Answer the questions below in the spaces provided

1. **What is a shelter tube?**

   _____

   _____

2. **Termite activity tends to be**
   a) **On the surface of wood structural components**
   b) **Inside wood**
   c) **Underground only**
   d) **Evident on finish surfaces in the home**

3. **What is a mechanical termite barrier?**

   _____

   _____

Chapter 4

CHAPTER 4
Getting Rid of Termites

Chapter 4

Getting Rid of Termites

Now that we know what kinds of termites are common in North America and we know the kind of damage they can cause, let's look at how to get rid of them. Just as there are several different types of termites, there are several remediation strategies.

The common termite remediation strategies are:

- Chemical Treatment – common for Subterranean and Formosan termites
- Baiting Systems – common for Subterranean and Formosan termites
- Fumigation – common for Drywood Termites
- Removal – common for Drywood Termites

Chemical Treatment

A chemical treatment is the most common treatment type for subterranean termites. The goal of a subterranean termite chemical treatment is to establish a continuous termiticide barrier between the termite colony (usually in the soil) and wood in a building. This is done by placing termiticide in the soil around the foundation. A chemical termite treatment is generally good for five years. Some of the older and more toxic chemicals were good for much longer than this.

A successful treatment requires that there are no areas of wood soil contact that could create a "termite bridge" over the treated soil. For example, a wood deck attached to the house with wood support posts embedded in the ground creates a path for termites that bypasses the chemical treatment.

An experienced contractor is important for a successful treatment.

Baiting System

In-Ground Baiting Systems are fast becoming a popular method of treatment for subterranean termites. A subterranean termite baiting system involves placement of cellulose (wood material) bait stations at strategic locations around the perimeter of the home.

Worker termites, which constantly forage for food to feed their colony, locate the cellulose bait stations and leave special scent trails to summon other workers to the food source.

The cellulose material in the bait station is then replaced with a chemical inhibitor which retards the molting process in termites, preventing them from growing. The "carrier termites" then bring the chemical back to the colony and spread the inhibitor throughout the remainder of the colony. As a result of the growth inhibitor the colony will die.

Fumigation

Fumigation is for drywood termites. As we discussed, drywood termites my exist in upper levels of the home. If the colony is localized and visible, the sections of wood are removed (see removal section). If there are multiple colonies or the colonies are not accessible or visible, fumigation may be the only option.

A fumigation tent encloses the entire structure. A fumigation gas is released inside the tent to kill the termites and the colony. The fumigant can get into cracks and crevices where termite colonies may exist. If done properly, fumigation ensures the elimination of all detected and undetected termites in the structure.

As you can imaging, this is a complicated and involved procedure that is done my experts specializing in fumigation. Obviously, there can be no people or pets in the

home at the time. Even food must be removed from the home or enclosed in special bags.

Removal

If drywood termite infestation is isolated to an area, it is probably more cost effective to remove the infested wood members. For example, in this photo it appears that the damage and infestation is isolated to this one member. This can be removed and replaced.

Local Chemical Injection

Sometimes drywood termites can be treated by injecting or applying chemicals directly to the offending wood members. Borates have been used successfully as well as other termiticides.

Check Your Knowledge

Answer the questions below in the spaces provided

1. **List the four common methods of termite remediation -**

   _____
   _____
   _____
   _____

2. **Which is the most common treatment method for subterranean termites?**

   _____

3. **If the home has drywood termites and there may be multiple colonies or colonies in concealed areas, what is the best remediation technique?**

   _____

Chapter 5

CHAPTER 5
CEP Quiz

CEP Quiz – Termites - Name_____

1. Termite Infestation in a home could cause structural damage.

   ☐ True ☐ False

2. A typical termite family is made up of:

   a) Mom, Dad and Siblings

   b) Reproducers, Workers and Soldiers

   c) Borates

   d) Mud tubes and Shelter tubes

3. The Subterranean termite is the most common type of termite in North America?

   ☐ True ☐ False

4. The *main* concern for a home buyer regarding termite infestation is:

   a) disease

   b) the mess left behind from shelter tubes

   c) holes on painted surfaces

   d) structural damage that may occur

5. The Formosan termite is sometimes called a *"Super Termite".*

   ☐ True ☐ False

6. The main difference between Drywood Termites and Subterranean Termites is:

   a) Drywood Termites do *not* require any soil contact

   b) Drywood Termites can feed and nest in wood with low moisture content

   c) Drywood Termites generally have smaller colonies

   d) All of the above

7. Which of the following might indicate that a home has termites?

   a) sagging support structures

   b) Presence of winged reproductives during spring

   c) shelter tubes

   d) all of the above

8. It is possible to find termites in a new home.

   ☐ True ☐ False

9. Removing wood to soil contact can reduce potential for Termite entry into a home.

   ☐ True ☐ False

10. Which of the following is a termite prevention or remediation technique:

   a) removing *all* things made of wood from the home

   b) leaving doors and windows open

   c) leaving all lights on

   d) Borates and Wood injection

Chapter 6

CHAPTER 6

Presentation Evaluation

Presentation Evaluation – Structural Deficiencies

TECHNICAL CONTENT	Excellent	Average	Poor	No Opinion
Presenter's knowledge of subject matter	○	○	○	○
Ability to keep you interested	○	○	○	○
Discussion / overview / recap	○	○	○	○
How well did this course meet your expectations?	○	○	○	○

Comments:

_____

_____

ORAL PRESENTATION	Excellent	Average	Poor	No Opinion
Explanation of objectives	○	○	○	○
Voice (volume, clarity, speed)	○	○	○	○
Answers question clearly	○	○	○	○

Comments:

_____

_____

VISUAL PRESENTATION	Excellent	Average	Poor	No Opinion
Voice (volume, clarity, speed)	○	○	○	○
Answers question clearly	○	○	○	○
Effectiveness of visual aids	○	○	○	○
Presenter's eye contact	○	○	○	○

Comments:

_____

_____

MATERIAL HANDOUTS	Excellent	Average	Poor	No Opinion
Effectiveness of handouts	○	○	○	○

Comments:

_____

_____

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