

Registration form

Wood Destroyers \$300

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Limited Time Offer price \$100 if you make a donation, see page 2 for instructions.

Rush service does not include overnight delivery or FedEx fees.

Start and finish dates: _____

You will have 90 days from this date in order to complete this course

Print Name _____

I have read and understood the disclaimer notice found on pages 2-4. Signature is required.

You can electronically sign with XXX

Signature _____

Address: _____

City _____ **State** _____ **Zip** _____

Phone:
Home (____) _____ **Work** (____) _____

Fax (____) _____ **Email** _____

License or Operator ID # _____ **Exp. Date** _____

Please circle/check which certification you are applying the course CEU's.

Commercial Applicator____ Residential Applicator____ Industrial Applicator____

Pesticide Handler____ Agricultural Applicator____ Adviser____ Other _____

Your certificate will be mailed to you in about two weeks.

Technical Learning College
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Special Donation Rate Instructions

Technical Learning College (TLC) is a Christian College and at various times, offers special deals if you make a donation to one of our selected ministries. For a minimum donation of \$200 to Reaching the Heart Ministry, you can save \$100 towards the price of this course and receive free Rush Service grading an additional \$50. Rush Service grading does not include FedEx or special delivery and this offer is only good for electronic download and not the printed version of the manual. If you need a printed version of the course manual, add an additional \$79.95 towards your donation. Rush Grading is not valid after 11:00 A.M. on Fridays or weekends or holidays.

Reaching the Heart is specially selected because they are non-denominational and they offer their services for no cost. If you need Christian counseling, please contact them for information.

Reaching the Heart Ministries

Our desire is that Biblical counseling be available, without cost to anyone who desires to come to freedom in Christ.

Reaching the Heart Ministries
203 N. Manzanita Dr. Suite A
Payson, AZ 85541

Website: <http://www.reachingtheheart.org/donate.htm>

Are you hurt, lonely, angry, abandoned, or feeling ignored are you unable to love or forgive? We want to offer you hope and freedom from past un-resolved deep seated problems. Reaching The Heart Ministries is a "Restoration" ministry. If you let us reach your heart and bring you to Jesus. He will care for your pain and heal your heart. Counseling appointments will be scheduled on a first come basis. Call today and get the help you need. It all starts with your phone call to schedule a consultation with Mike or Ellen.

Please call: 928-970-2439 (Mike - Director/Counselor) or
928-970-2618 (Ellen - Director/Counselor)

Instruction for Donation Proof

Please make a donation of a minimum of \$200 either two different ways, pay with your credit card to Reaching the Heart (PayPal) or write them a check.

Fax, e-mail or mail the PayPal receipt to TLC with the registration form. If you pay by check, please provide a copy of the check. Thank you.

Important Information about this Course (Disclaimer Notice)

I understand that it is my responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. I understand State laws and rules change on a frequent basis and I believe this course is currently accepted in my State for CEU or contact hour credit, if it is not, I will not hold Technical Learning College responsible. I also understand that this type of study program deals with dangerous conditions and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable for any errors or omissions or advice contained in this CEU education training course or for any violation or injury caused by this CEU education training course material. I will call or contact TLC if I need help or assistance and double-check to ensure my registration page and assignment has been received and graded.

This CEU course contains pesticide recommendations that are subject to change at any time. These recommendations are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. Due to constantly changing labels and product registration, some of the recommendations given in this writing may no longer be legal by the time you read them. If any information in these recommendations disagrees with the label, the recommendation must be disregarded. No endorsement is intended for products mentioned, nor is criticism meant for products not mentioned. The author and Technical Learning College (TLC) assume no liability resulting from the use of these recommendations.

This CEU course has been prepared to educate pesticide applicators and operators in general safety awareness of dealing with the often-complex and various pesticide treatment sprays, devices, methods, and applications. This course (manual) will cover general laws, regulations, required procedures and accepted policies relating to the use of pesticides and herbicides. It should be noted, however, that the regulation of pesticides and hazardous materials is an ongoing process and subject to change over time. For this reason, a list of resources is provided to assist in obtaining the most up-to-date information on various subjects. This manual is not a guidance document for applicators or operators who are involved with pesticides. It is not designed to meet the requirements of the United States Environmental Protection Agency or your local State environmental protection agency or health department. This course manual will provide general pesticide safety awareness and should not be used as a basis for pesticide treatment method/device guidance. This document is not a detailed pesticide informational manual or a source or remedy for poison control.

Technical Learning College or Technical Learning Consultants, Inc. makes no warranty, guarantee or representation as to the absolute correctness or appropriateness of the information in this manual and assumes no responsibility in connection with the implementation of this information. It cannot be assumed that this manual contains all measures and concepts required for specific conditions or circumstances. This document should be used for educational purposes only and is not considered a legal document. Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property or plants being treated. Avoid drift onto neighboring properties, especially gardens containing fruits and/or vegetables ready to be picked. Dispose of empty containers carefully. Follow label instructions for disposal. Never reuse containers. Make sure empty containers are not accessible to children or animals. Never dispose of containers where they may contaminate water supplies or natural waterways. Do not pour down sink or toilet. Consult your county agricultural commissioner for correct ways of disposing of excess pesticides. You should never burn pesticide containers. Individuals who are responsible for pesticide storage, mixing and application should obtain and comply with the most recent federal, state, and local regulations relevant to these sites and are urged to consult with the EPA and other appropriate federal, state and local agencies.

USE PESTICIDES WISELY: ALWAYS READ THE ENTIRE PESTICIDE LABEL CAREFULLY, FOLLOW ALL MIXING AND APPLICATION INSTRUCTIONS AND WEAR ALL RECOMMENDED PERSONAL PROTECTIVE GEAR AND CLOTHING. CONTACT YOUR STATE DEPARTMENT OF AGRICULTURE FOR ANY ADDITIONAL PESTICIDE USE REQUIREMENTS, RESTRICTIONS OR RECOMMENDATIONS. NOTICE: MENTION OF PESTICIDE PRODUCTS IN THIS COURSE DOES NOT CONSTITUTE ENDORSEMENT OF ANY MATERIAL OR HERB OR HERBAL SUPPLEMENT. ALWAYS FOLLOW THE PRODUCT'S LABEL INSTRUCTIONS.

Assignment Instructions

1. We will require all students to fax or e-mail a copy of their driver's license with the registration form.
2. You will need to pick one of the following four assignments to complete. This selection process is based upon your last name. If your last name begins with an A to E, you will pick assignment number 1, if your last name begins with the letter F to L, you are to complete assignment number 2 and if your last name begins with the letter M-Q, you will pick assignment number 3 and if your last name begins with the letter R-Z, you will pick assignment number 4.

Multiple Choice, Please select one answer and mark it on the answer key. The answer must come from the course text. (s) Means answer can be plural or singular.

Assignment #1 for all pest applicators whose last name begins with A-E you will find your assignment on pages 9-46.

Assignment #2 for all pest applicators whose last name begins starting with the letter F-L, your assignment is found on pages 47-83.

Assignment #3 for all pest applicators whose last name begins starting with the letter M-Q, your assignment is found on pages 85-122.

Assignment #4 for all pest applicators whose last name begins starting with the letter R-Z, your assignment is found on pages 123-160.

AFFIDAVIT OF EXAM COMPLETION

I affirm that I personally completed the entire text of the course. I also affirm that I completed the exam without assistance from any outside source. I understand that it is my responsibility to file or maintain my certificate of completion as required by the state or by the designation organization.

For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

Thank you...

Wood Destroyers Control Answer Key

Name _____

Phone# _____

Multiple Choice. Pick only one answer per question. Exactly as in text. Circle or Mark off, Underline or Bold the answer. Please circle or underline the number of the assignment version 1 or 2 or 3 or 4 or 5

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| 1. A B C D E F | 38. A B C D E F | 75. A B C D E F |
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| 4. A B C D E F | 41. A B C D E F | 78. A B C D E F |
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| 268. A B C D E F | 284. A B C D E F | 300. A B C D E F |

When you are finished with your assignment. Please fax this answer key and your registration page along with the customer survey to TLC.

We will require a photocopy of your driver's license.

Fax Number (928) 272-0747 Back-Up Fax (928) 468-0675

Rush Grading Service

If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of \$50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line.

CUSTOMER SERVICE RESPONSE CARD

Wood Destroyers Training Course

NAME: _____

E-MAIL _____ PHONE _____

PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.

1. Please rate the difficulty of your course.

Very Easy 0 1 2 3 4 5 Very Difficult

2. Please rate the difficulty of the testing process.

Very Easy 0 1 2 3 4 5 Very Difficult

3. Please rate the subject matter on the exam to your actual field or work.

Very Similar 0 1 2 3 4 5 Very Different

4. How did you hear about this Course? _____

5. What would you do to improve the Course?

6. How about the price of the course?

Poor _____ Fair _____ Average _____ Good _____ Great _____

7. How was your customer service?

Poor _____ Fair _____ Average _____ Good _____ Great _____

8. Any other concerns or comments.

Wood Destroyers Assignment #1 For Students Names A-E

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Write your answers on the Answer Key found in the front of this assignment.

1. We will require all students to fax or e-mail a copy of their driver's license with the registration form.
2. You will need to pick one of the following three assignments to complete. This selection process is based upon your last name. If your last name begins with an A to E, you will pick assignment number 1, if your last name begins with the letter F to L, you are to complete assignment number 2 and if your last name begins with the letter M-Q, you will pick assignment number 3 and if your last name begins with the letter R-Z, you will pick assignment number 4.

Multiple Choice, Please select one answer and mark it on the answer key. The answer must come from the course text. (s) Means answer can be plural or singular.

Understanding Wood

1. Wood, in the strict sense, is yielded by trees, which increase in diameter by the formation, between the existing wood and the inner bark, of _____ which envelop the entire stem, living branches, and roots.
A. Sap-staining D. New woody layers
B. Earlywood E. Oven-dried wood
C. Wooden structures F. None of the Above

Growth Rings

2. Where there are clear seasons, growth can occur in a discrete annual or _____, leading to growth rings; these can usually be most clearly seen on the end of a log, but are also visible on the other surfaces.
A. Protoplasmic contents D. Ultimate crushing strength
B. Greater the water content E. Growth ring
C. Seasonal pattern F. None of the Above
3. If these seasons are annual these growth rings are referred to as annual rings. Where there is no seasonal difference growth rings are likely to be _____.
A. Sap-staining D. Indistinct or absent
B. Earlywood E. Oven-dried wood
C. Wooden structures F. None of the Above
4. If there are differences within a growth ring, then the part of a growth ring nearest the center of the tree and formed early in the growing season when growth is rapid, is usually composed of _____.
A. Protoplasmic contents D. Ultimate crushing strength
B. Wider elements E. Growth ring
C. Spalting produced F. None of the Above

5. It is usually lighter in color than that near the outer portion of the ring, and is known as earlywood or springwood. The outer portion formed later in the season is then known as the _____ . However, there are major differences, depending on the kind of wood).

- A. Sap-staining
- B. Earlywood
- C. Wooden structures
- D. Strength of wood
- E. Latewood or summerwood
- F. None of the Above

Rot-Producing Fungi

6. Certain rot-producing fungi impart to _____ which thus become symptomatic of weakness; however an attractive effect known as spalting produced by this process is often considered a desirable characteristic.

- A. Protoplasmic contents
- B. The water content
- C. Spalting produced
- D. Ultimate crushing strength
- E. Wood characteristic colors
- F. None of the Above

7. Ordinary sap-staining is due to fungous growth, but does not necessarily produce a _____ .

- A. Sap-staining
- B. Earlywood
- C. Weakening effect
- D. Strength of wood
- E. Oven-dried wood
- F. None of the Above

Water Content

8. Water occurs in living wood in three conditions, namely: (1) in the cell walls, (2) in the protoplasmic contents of the cells, and (3) as free water in the _____ and spaces. In heartwood it occurs only in the first and last forms.

- A. Protoplasmic contents
- B. Water content
- C. Spalting
- D. Cell cavities
- E. Growth ring
- F. None of the Above

9. Wood that is thoroughly air-dried retains from 8-16% of water in the cell walls, and none, or practically none, in the other forms. Even oven-dried wood retains a small percentage of moisture, but for all except chemical purposes, may be considered _____ .

- A. Sap-staining
- B. Oldwood
- C. Wooden
- D. Strength of wood
- E. Absolutely dry
- F. None of the Above

10. The general effect of the water content upon the wood substance is to render it softer and more pliable. A similar effect of common observation is in the softening action of water on paper or cloth. Within certain limits, the greater the water content, the greater it's _____ .

- A. Protoplasmic
- B. Water content
- C. Spalting
- D. Ultimate crushing strength
- E. Softening effect
- F. None of the Above

11. _____ produces a decided increase in the strength of wood, particularly in small specimens.

- A. Sap-staining
- B. Seasoning
- C. Drying
- D. Baking
- E. Oven-drying wood
- F. None of the Above

12. The greatest increase due to drying is in the ultimate crushing strength and strength at elastic limit in endwise compression; these are followed by the _____ , and stress at elastic limit in cross-bending, while the modulus of elasticity is least affected.

- A. Protoplasmic content
- B. Greater the water content
- C. Spalting
- D. Ultimate crushing strength
- E. Modulus of rupture
- F. None of the Above

Wood Destroying Insects

13. Many insect pests are encouraged to take up residence in wooden structures by excessive _____. Termites, particularly the dampwood termites and subterranean termites, require moisture in their living quarters.

- A. Microorganisms
- B. Fungi
- C. Moisture conditions
- D. Water
- E. Soil
- F. None of the Above

14. Subterranean termites provide moisture for themselves by bringing moisture and soil up from their subsurface colonies and placing it within the wood as they feed on it or around the outside of wood to _____.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Bringing moisture
- F. None of the Above

15. In some cases, subterranean termites may be found separated from soil contact when sufficient moisture, in the _____, is found inside a structure.

- A. Termite colony
- B. Form of water leaks
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

16. The retention of moisture is not the _____ in the life of the termite.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Bringing moisture
- F. None of the Above

17. The warm, moist conditions that prevail within the closed system of the nest provide an ideal site for the growth of _____, particularly fungi, which provide a source of protein and vitamins essential to the termite.

- A. Termite colony
- B. Soil
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

18. The accumulation of termite fecal material in the nest, in turn, helps to promote the _____.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Growth of the fungi
- E. Bringing moisture
- F. None of the Above

19. The most striking fact of this intricately interdependent system is the delicacy with which it is balanced. It is not uncommon to discover the remains of a termite colony that is slowly being crowded out by the _____ that has for some reason progressed at such a rate that the termites could not keep up with it.

- A. Growth of fungi
- B. Soil
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

20. If sudden temperature shifts or other factors result in the _____ within the galleries, the termites may drown.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Accumulation of water
- F. None of the Above

21. A _____ are associated with excessive moisture and fungus problems in structures.
- A. Termite colony D. Moisture and fungus
 B. Number of beetles E. Particularly fungi
 C. Microorganisms F. None of the Above
22. The furniture beetle, an anobiid beetle, is commonly attracted to _____.
- A. Moisture content D. Termite fecal material
 B. Temperature shifts E. Moisture
 C. Moisture and fungus F. None of the Above
23. Anobiid larvae eat the wood, and the beetle may re-infest over many generations, reducing the _____.
- A. Termite colony D. Wood to little more than powder
 B. Soil E. Fungi
 C. Microorganisms F. None of the Above
24. Anobiid larvae will not survive in wood with a _____. The drier the wood, the slower their growth.
- A. Moisture content D. Moisture content below 20 percent
 B. Temperature shifts E. Moisture content below 12 percent
 C. Moisture and fungus F. None of the Above
25. Other families of beetles are also associated with _____ in structures, but with all these families, it is the fungus growth to which they are attracted.
- A. Termite colony D. Moisture and fungus
 B. Soil E. Excessive moisture
 C. Microorganisms F. None of the Above

These "fungus beetles" include:

26. _____—minute brown scavenger beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
27. _____—darkling beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
28. _____—the minute fungus beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
29. _____—the silken fungus beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
30. _____—flat bark beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above

31. _____ feed on fungus growth on wood, such as Poria, or may be present in damp foods where even tiny amounts of fungus growth or fungal spores are present.
- A. Genus or species D. These beetles and their larvae
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
32. The fungus beetles are not wood-damaging pests but are _____ and are a good indication that such problems are present.
- A. Hungry D. Associated with moisture problems
 B. Large E. Most concerned
 C. Friendly F. None of the Above
33. Many other insects infest and seriously damage wood. Many of these, such as the _____ and round- and flatheaded borers, are found alive most frequently in seasoned wood.
- A. Various bark beetles D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
34. The pest management professional is usually most concerned with those insects that _____.
- A. Damage seasoned lumber D. Have complete metamorphosis
 B. Reproduce E. Carry disease
 C. Fly F. None of the Above
35. These insects include representatives of the orders Hymenoptera (horntail or wood wasps, carpenter ants and bees) and _____.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
36. The members of these two orders develop by _____, advancing from eggs to larvae, pupae, and adults.
- A. Thin antennae D. Complete metamorphosis
 B. Broad sense E. Most concerned
 C. Good indication F. None of the Above
37. The characteristics of the damage done to wood by these insects are generally sufficient evidence to identify the insects to their family, but positive identification to _____ requires examination of the insect itself.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above

Powder Post Beetles

38. The term powder post beetle, used in the broad sense, applies to any of the _____ of three closely related families (Lyctidae, Bostrichidae, and Anobiidae) within the superfamily Bostrichoidea.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Wood-boring species
 C. Powder Post Beetles F. None of the Above

39. The common name is appropriate because the _____ reduce timbers to a mass of very fine, powderlike material.

- A. Genus or species
- B. Coleoptera (beetles)
- C. Powder Post Beetles
- D. Round- and flatheaded borers
- E. Larvae of these beetles
- F. None of the Above

40. The _____ do very little actual damage to wood, serving primarily a reproductive function.

- A. Genus or species
- B. Coleoptera (beetles)
- C. Powder Post Beetles
- D. Round- and flatheaded borers
- E. Larvae of these beetles
- F. None of the Above

41. There are _____, behavior, and nutrition among these groups, and these differences have led to the separation of the families.

- A. Few changes
- B. Beetles that show
- C. Good indications
- D. No changes
- E. Certain differences in structure
- F. None of the Above

Longhorned Beetles

42. Longhorned beetles are large (1/2 to 3 inches long), _____ with long, thin antennae that may be longer than their bodies.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Maggot-looking
- F. None of the Above

43. _____ usually lay their eggs on unseasoned, rough-sawn timbers or logs.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Maggots
- E. Reproductives
- F. None of the Above

44. The _____, called roundheaded borers, feed in the wood, boring large, oval-shaped holes as they move through it. Infestation usually takes place before the timber is used in structures.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Larvae
- E. Reproductives
- F. None of the Above

45. The _____ of some species take more than one year to complete their development, so they may still be feeding in the wood after it becomes part of a structure.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Larvae
- E. Reproductives
- F. None of the Above

46. Damage is usually limited to pine sapwood and can be recognized by the _____.

- A. Damage seasoned lumber
- B. Color
- C. Odor
- D. Ripples on the surface of the galleries
- E. Hollow sound
- F. None of the Above

47. The _____ will not lay eggs for re-infestation on this type of wood, so control is rarely called for.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

48. The exception to this is a species known as the _____ (Hylotrupes bajulus).

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Maggot-looking
- F. None of the Above

49. Old house borers will attack timbers in a building, so they are the only _____ requiring control measures.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Longhorned beetles
- E. Larvae of some species
- F. None of the Above

50. The _____ is about 3/4 inch long and grayish brown to black with two white patches on its wing covers.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Adult
- F. None of the Above

Black Carpenter Ants

51. Ants of the genus Camponotus often nest in wood. There are many different carpenter ant species, but only one poses a major pest problem (the _____ (Camponotus pennsylvanicus)).

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Black carpenter ant
- E. Larvae of some species
- F. None of the Above

52. The black carpenter ant varies from 1/8 to 1/2 inch in Length because of the presence in most colonies of _____.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Both "major" and "minor" workers
- F. None of the Above

53. _____ may construct their nests in hollow trees, logs, posts, porch pillars, hollow doors, and other timbers used in homes.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

54. The _____ do not consume the wood but simply hollow it out to form cavities for the nest. They are usually attracted to damp, decaying wood, but once the nest is started, they will also excavate sound wood as they enlarge the nest.

- A. Black carpenter ant (Ants)
- B. Roundheaded borers
- C. Old house borer
- D. Larva
- E. Maggots
- F. None of the Above

55. It is often quite common to find them nesting in existing voids that require no excavation; occasionally they start in an existing void and enlarge it as their need dictates. The presence of _____ suggests the potential for damage to wood.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

Biology

56. Carpenter ants are among the largest species that you'll find. Like other ant species, carpenter ants are social, i.e., they live in a colony and have several " _____ " or adult forms that perform different jobs in the colony.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Castes
- E. Queen(s)
- F. None of the Above

57. The _____ usually reaches 9/16 inch in length. The workers range in size from 1/4 to 7/16 inch. So, if you see different sized ants, they could all be from the same colony.

- A. Queen
- B. Pupae
- C. Swarmers
- D. King
- E. Reproductives
- F. None of the Above

58. All of these ants are _____ regardless of their size, so they do not grow.

- A. Adults
- B. Workers
- C. Females (queen)
- D. Species
- E. Swarmers
- F. None of the Above

59. Only the queen produces offspring in the nest. _____ are white, legless, and maggot-looking in appearance.

- A. Queens
- B. Pupae
- C. Swarmers
- D. Immature ants (larvae)
- E. Reproductives
- F. None of the Above

60. They remain in the nest and are fed by the workers. The larvae develop into _____, which are tan and capsule-shaped.

- A. Adults
- B. Workers
- C. Female (queen)
- D. Pupae
- E. Swarmers
- F. None of the Above

61. New adults emerge from these pupae. _____ will vary in color depending upon the species.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Adult ants
- E. Reproductives
- F. None of the Above

62. The _____, the species that most commonly nests in homes, is primarily black in color. Other carpenter ant species may be more reddish-brown to yellow in color.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Castes
- E. Queen(s)
- F. None of the Above

Life Cycle

63. In the spring, carpenter ants swarm, i.e., _____ emerge from the colony. The swarmer's sole purpose is reproduction.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Adults
- E. Winged adults
- F. None of the Above

64. Shortly after mating, the female (queen) loses her wings and searches out a cavity in wood or soil where she begins to lay eggs and produce _____.

- A. Her colony's first workers
- B. Workers
- C. Female (queen)
- D. The species
- E. Swarmers
- F. None of the Above

65. These workers care for the queen as she produces _____, and they assume the tasks of foraging for food, maintaining and expanding the nest, and caring for the young.
- A. Queens D. More offspring
 B. Pupae E. Reproductives
 C. Swarms F. None of the Above
66. After 3-6 years, the colony will contain 2000-3000 workers, and will start to produce _____. The swarms are actually produced in the fall, but they wait until the following spring to emerge.
- A. Adults D. Pupae
 B. Workers E. Swarms
 C. Female (queen) F. None of the Above
67. Swarming is not the only means for carpenter ants to produce new nests. "Satellite" colonies may be formed by workers that move out of the main nest, carrying _____ with them. Eventually, these secondary colonies produce their own reproductives.
- A. Queen D. Larvae and pupae
 B. Pupae E. Reproductives
 C. Swarms F. None of the Above

Carpenter Bees

68. The carpenter bee (*Xylocopa virginica*) _____ in that it is robust and black with some markings of yellow hair.
- A. Queen D. Resembles a bumblebee
 B. Tunnels E. Considered pests
 C. Nesting sites F. None of the Above
69. The dorsal surface of the abdomen lacks the yellow hair markings of _____ and is mostly devoid of any hair.
- A. Queen D. Bumblebee(s)
 B. Tunnels E. Considered pests
 C. Nesting sites F. None of the Above
70. These bees are _____ of wood because they excavate tunnels in softwood as sites for producing their brood.
- A. Queen-less D. Not a risk
 B. Tunnel makers E. Considered pests
 C. Nest makers F. None of the Above
71. Common _____ are posts, fence railings, porch support posts, wall siding, eaves, wooden shingles, windowsills, doors, wooden porch furniture, etc.
- A. Insects D. Wood
 B. Tunnels E. Mating sites
 C. Nesting sites F. None of the Above

Termite Introduction

72. There are about 2,500 termite species in the world. North America has _____, most in the southeast USA. Alaska is the only state without termites.
- A. Soft-bodied insects D. 41 termite species
 B. Subterranean termites E. Termites
 C. Protozoa (microorganisms) F. None of the Above

73. Florida's eastern subterranean termite colonies have about 250,000 members, but can have 1 million or more. A colony eats about 1 cubic foot of wood a year. _____ can have two million termites. The queen can lay 2,000 eggs per day and live as long as 50 years.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Australian colonies
- E. Termites
- F. None of the Above

74. Termite damage to residential and commercial buildings in the U.S. costs more than \$1 billion annually. _____, the most destructive of all termite species, account for 95% of the damage.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

75. Two _____ species, *Reticulitermes flavipes* (Kollar) and *R. tibialis* Banks, are commonly found in United States.

- A. Soft-bodied insects
- B. Subterranean termite
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

Feeding Habits

76. Subterranean termites feed mainly on wood and wood products containing cellulose. Termites have _____ in their intestine which provide enzymes to digest cellulose.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. 41 termite species
- E. Termites
- F. None of the Above

77. This relationship is beneficial to both species, since the _____ cause no harm and are provided with food and a protected environment by the termites.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

78. Although termites are _____, their hard, saw-toothed jaws work like shears and can bite off extremely small fragments of wood.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Wood borers
- E. Destructive
- F. None of the Above

79. These termites do not attack live trees, except for the _____. Termites often infest buildings and cause damage to lumber, wood panels, flooring, sheetrock, wallpaper, plastics, paper products, and fabric made of plant fibers.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Formosan termite
- E. Survivors
- F. None of the Above

80. _____ attack flooring, carpeting, art work, books, clothing, and furniture. The most serious damage involves the loss of structural strength.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

Biology

81. _____ are ground-dwelling social insects living in colonies. The two species found in United States have similar habitats. These termites have the ability to adjust the depth of their colony (nest) in soil depending on temperature and moisture requirements.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

82. The _____ may be 18-20 feet deep in the ground. The ground serves as a protection against extreme temperatures and provides a moisture reservoir.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

83. Termites reach wood or cellulose materials above ground by constructing and traveling through _____.

- A. Holes
- B. Tunnels
- C. Castles
- D. Swarming
- E. Earthen (mud) tubes
- F. None of the Above

84. The mature colony consists of _____ : a) reproductives (king and queen), b) soldiers, and c) workers. It takes about 4 to 5 years for a colony to reach its maximum size and it may consist of 60,000 to 200,000 workers.

- A. Colony
- B. Subterranean termites
- C. Three castes
- D. Swarms
- E. Survivors
- F. None of the Above

85. _____: A group of insects with a specific morphology and function within a colony of social insects.

- A. Colony
- B. Family
- C. Caste
- D. Swarms
- E. Survivors
- F. None of the Above

Reproduction

86. In spring and fall, the winged males and females emerge from their parent colonies to form new ones. This activity is called _____.

- A. Colony building
- B. Migration
- C. Castes
- D. Swarming
- E. Reproducing
- F. None of the Above

87. These _____ are dark brown to brownish black and have two pair of nearly equal size semitransparent wings extending well beyond the body.

- A. Winged reproductives
- B. Subterranean termites
- C. Castes
- D. Swarms
- E. Survivors
- F. None of the Above

88. The _____ are weak flyers and, unless aided by wind, fly only short distances. Many of them are devoured by birds, spiders, ants, and other predators.

- A. Queens
- B. Termites
- C. Castes
- D. Swarms
- E. Survivors
- F. None of the Above

89. _____ return to the ground and shed their wings. The wingless males and females pair off (male following female in tandem) until they find a source of wood and moisture in the soil.

- A. Queens
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

90. They dig soil near wood, enter the chamber and seal the opening. After mating, the _____ begins laying eggs. The royal queen is known to survive up to 25 years.

- A. Queen
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

Eggs

91. The _____ usually deposits 6 to 20 eggs during the first six months following the swarming flight and she may lay more than 60,000 eggs in her lifetime.

- A. Queen
- B. Termite
- C. Caste
- D. Fertilized female
- E. Survivor
- F. None of the Above

92. _____ are yellowish white and hatch after an incubation period of 50 to 60 days.

- A. Queen
- B. Termite
- C. Caste
- D. Fertilized female
- E. Survivor
- F. None of the Above

Workers

93. The first broods of _____ (young termites) generally develop into workers. Full grown workers are soft-bodied, wingless, blind, and creamy white. In early stages, they are fed predigested food by the king and queen.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

94. Once workers are able to digest wood, they begin providing food for the entire colony. At this time, the _____ cease feeding on wood.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

95. The workers undertake all the labor in the colony such as obtaining food, feeding other _____, excavating wood for chambers, and constructing tunnels. Workers mature within a year and live from 3 to 5 years.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

Soldiers

96. Soldiers are creamy white, soft-bodied, wingless, and blind. The head of the _____ is enormously elongated, brownish, hard, and equipped with two strong jaws.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

97. _____ must be fed by workers as they are incapable of feeding themselves. They are less numerous than workers and their sole function is to defend the colony against invaders such as ants.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

98. _____ mature within a year and live up to 5 years.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

99. Flying ants and _____ are often difficult to distinguish when these insects are seen around residential and commercial buildings.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

100. The main enemy of termites is Ants and the _____ can defend a small number of Ants.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

Termite Reproduction

101. The female assumes a "calling" position with her abdomen elevated at a right angle to the rest of her body. She releases a _____ which attracts nearby males. Once a male encounters a calling female, she moves off.

- A. Odor
- B. Tap
- C. Call
- D. Chemical messenger (pheromone)
- E. Hormone
- F. None of the Above

102. He follows close behind and they search for a suitable site for the establishment of a nest. As soon as the pair has located a suitable site, they excavate (with their jaws) a small chamber large enough for the two of them and then _____.

- A. Young queen matures
- B. Start a new colony
- C. Seal the entrance
- D. Find a suitable site
- E. Start dispersal flights
- F. None of the Above

103. _____ usually occurs within a few hours to weeks after the pair becomes established.

- A. Mating
- B. Cellulose for their nutrition
- C. Process continues
- D. Calling
- E. Maximum egg production
- F. None of the Above

104. The single female cannot start a new colony. _____ is dependent upon the survival of both sexes in the nest site and that she has successfully mated.

- A. Young queen matures
- B. Start a new colony
- C. After two molts
- D. Suitable site
- E. Establishment of a colony
- F. None of the Above

105. The pair continues to _____, and they usually mate periodically. The first eggs are laid within one to several weeks after mating, depending on the nutrition available to the female. When the first eggs hatch, the new nymphs are cared for by the young pair.

- A. Live together for life
- B. Mate
- C. Fight
- D. Relatively new structure
- E. Maximum egg production
- F. None of the Above

106. _____, the nymphs assume their role as workers and begin to feed and care for the original pair.

- A. Young queen matures
- B. Starting a new colony
- C. After two molts
- D. Building a suitable site
- E. Starting dispersal flights
- F. None of the Above

Development of the Colony

107. Development of the colony is very slow for several years. Eggs are _____. After the first group of eggs has been laid, there is a period of several months before another group is laid. This process continues for several years.

- A. White
- B. Cared for
- C. Not laid
- D. Placed in a new structure
- E. Hatched
- F. None of the Above

108. As the _____, she lays a greater number of eggs, and her abdomen becomes enlarged from developing eggs.

- A. Young queen matures
- B. Start a new colony
- C. After two molts
- D. Suitable site
- E. Start dispersal flights
- F. None of the Above

109. Eventually, a point is reached where the _____. That is, the queen has reached maximum egg production, and the loss of older individuals by death or swarming is approximately the same as the number of new individuals produced each year.

- A. Queen leaves
- B. Queen mates
- C. Process continues
- D. Colony size stabilizes
- E. Maximum egg production
- F. None of the Above

110. As the colony becomes even older a greater number of swarmers are produced each year. It requires a minimum of 3 to 4 years--and as much as 8 to 10 years--for a colony of our native subterranean termites to become large enough and strong enough to _____.

- A. Mate
- B. Start a new colony
- C. Molt
- D. Look for a suitable site
- E. Start dispersal flights
- F. None of the Above

Swarming

111. When swarming occurs in a relatively new structure, it is because it was built over or near a strong colony that was not _____.

- A. Considered safe
- B. Near ants
- C. For rent
- D. Relatively a new structure
- E. Maximum egg production
- F. None of the Above

112. Termites derive food from wood and other cellulosic materials. In nature, they feed exclusively on wood, _____ and passing most of the remaining components as waste.

- A. Dry wood
- B. Green wood
- C. Near water
- D. Primarily digesting out the cellulose
- E. And soil
- F. None of the Above

113. In man-invaded environments, termites attack many additional products and commodities. They still depend primarily on cellulose for their nutrition, but will _____ they encounter.

- A. Damage many materials
- B. Eat cellulose for their nutrition
- C. The process continues
- D. Build new structures
- E. Start over
- F. None of the Above

114. Damaged materials may include plastics, rubber, asphalt, metal, mortar and others. Wood products like paper are favorite foods of termites because they are nearly pure cellulose. Cotton, burlap and other plant fibers are _____ by termites as well.

- A. Rejected
- B. Preferred
- C. Eaten
- D. Actively consumed
- E. Ignored
- F. None of the Above

Fungi

115. Fungi also play a role in _____. Certain wood decay fungi are highly attractive to termites.

- A. Termite nutrition
- B. Cellulose for their nutrition
- C. Processing
- D. Finding a new structure
- E. Maximum egg production
- F. None of the Above

116. _____ is more easily digested by termites, and the fungus may provide a needed source of nitrogen.

- A. Source of nitrogen
- B. Fungus spores
- C. Moist galleries
- D. Partially decayed wood
- E. Wet wood
- F. None of the Above

117. Ultimately, _____ exhaust the nutritive value of wood for termites, and extensive decay in wood is of no benefit to foraging termites.

- A. Source of nitrogen
- B. Fungus spores
- C. Moist galleries
- D. Ants
- E. Wood-destroying fungi
- F. None of the Above

118. Conversely, when termites attack wood, they usually bring _____ on their bodies. When water or other liquid reaches the damaged wood, it is more easily trapped.

- A. Nitrogen
- B. Fungus spores
- C. Hormones
- D. Clothes
- E. Soil
- F. None of the Above

Moisture

119. _____ to the survival of termites. Subterranean termites obtain most of their moisture from the soil. They maintain contact with the soil in order to survive.

- A. Source of nitrogen is vital
- B. Fungus spores is vital
- C. Moisture is not vital
- D. Moisture is vital
- E. Sandy soil over a clay base is vital
- F. None of the Above

120. The type of soil has a great effect on the ability of subterranean termites to flourish. They generally prefer sandy soil over a clay base. They can and do survive in many _____, however.

- A. Other types of soil
- B. Areas
- C. Wood types
- D. Above-ground types of nests
- E. Types of Weather
- F. None of the Above

Tolerances

121. Termites have very little tolerance to _____, or extremes of hot and cold. But they often must forage far, sometimes above ground, from their initial workings to find food.

- A. Pesticides
- B. Wet conditions
- C. Dry conditions
- D. Ants
- E. Rap Music
- F. None of the Above

122. They move underground through tunnels. Whenever the termites leave the confines of the soil or the wood in which they are feeding, they _____ in which to move from the soil to the wood or the above-ground nest.

- A. Construct castles
- B. Operate equipment
- C. Develop plans
- D. Build above-ground nests
- E. Construct shelter tubes
- F. None of the Above

Subterranean Termites

123. When subterranean termites invade the wood of a structure that is separated from the soil by intervening concrete, masonry or other impervious material, they _____ over the surface to the wood.

- A. Construct castles
- B. Operate equipment
- C. Develop plans
- D. Build above-ground nests
- E. Construct shelter tubes
- F. None of the Above

124. Periodically, they return to the moist galleries. Contrary to published reports, shelter tubes do not necessarily conduct _____ from the soil to the wood.

- A. Nitrogen
- B. Dry air
- C. Moist galleries
- D. Moist air
- E. Water
- F. None of the Above

125. Shelter tubes also provide some protection from _____ and prevent excess water loss. The primary function of shelter tubes probably is protection from natural enemies.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Air movement
- F. None of the Above

126. Once termites have established contact with wood above ground and feeding progresses some distance from the initial shelter tunnel, they often _____ straight down from the wood. Evidence of tube building will be found directly below a suspended tube.

- A. Initial shelter tunnel
- B. Will drop shelter tubes
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

Castles

127. Under certain conditions a fourth type of tube is constructed. Called swarming tubes or swarming "castles" they are constructed as flight platforms for swarmers and they have many turret-like projects and _____ that vaguely resemble castle towers.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Flattened horizontal branches
- E. Heavily guarded
- F. None of the Above

128. They usually are _____ to a height of 4 to 8 inches (10-20 cm), but sometimes are found projecting from heavily infested wood above ground.

- A. Initial shelter tunnel
- B. Constructed on the ground
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

129. When swarmers are _____ via these tubes, or directly through a hole in wood or soil, the openings are heavily guarded by soldiers and workers.

- A. Attacking colonies
- B. Extend the damage
- C. Leaving the colony
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

130. The amount of damage that _____ of subterranean termites might inflict on a structure depends on many factors.

- A. Initial shelter tunnel
- B. An infestation
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

131. The number and size of the _____ and the quality of the environmental conditions (including the wood) are the most important.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

132. Damage usually _____ in houses built over a crawl space and with the sole plates of those houses built on concrete slabs.

- A. Initial shelter tunnel
- B. Starts at the mudsill
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

133. Given enough time, subterranean termites _____ into the wooden floor members, the interior trim and furnishings, and into the walls up to the roof timbers.

- A. Attacking colonies
- B. Will extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

Severe Damage

134. Severe damage by subterranean termites is not likely to occur in the first 8 or 10 years after construction. If treatment is undertaken with the _____, very little serious structural damage is ever likely to occur.

- A. Initial shelter tunnel
- B. Projecting
- C. Instantly recognized
- D. Crawl space
- E. First evidence of infestation
- F. None of the Above

135. Houses should be carefully inspected at least once a year in all regions. This will allow detection _____.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

136. Should evidence of termites be found, there is _____ or undue haste. Treatment within 6 months is recommended.

- A. Initial shelter tunnel
- B. No cause for extreme alarm
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

Communication in the Colony

137. Termites primarily communicate via chemicals called pheromones. Each colony develops its _____.

- A. Attacking colonies
- B. Damage
- C. Flight platforms
- D. Own characteristic odor
- E. Own characteristic defense
- F. None of the Above

138. Any intruder is _____ and an alarm pheromone is released that triggers the soldiers to attack the intruder.

- A. Easily probed
- B. Found
- C. Perceived
- D. Instantly recognized
- E. Recognizing the signs
- F. None of the Above

139. If a worker finds a new source of food, _____ to that food source by laying a chemical trail. The proportion of castes in the colony is also regulated chemically. Nymphs can develop into workers, soldiers, or reproductive adults, depending on colony needs.

- A. Sounds "food"
- B. It recruits others
- C. Could consume the equivalent
- D. Enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

140. Sound is another means of communication. Soldiers and workers _____ against tunnel walls. The vibrations are perceived by other termites in the colony and serve to mobilize the colony to defend itself.

- A. Easily probe
- B. May tunnel
- C. Vibrations are perceived
- D. Can bang their heads
- E. Recognize the signs
- F. None of the Above

141. Mutual exchange of _____ of colony members.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

Detection of Termites

142. It is important for homeowners to recognize the signs of a subterranean termite infestation. Subterranean termites _____ of winged termites (alates or swarmers), or by the presence of mud tubes and wood damage.

- A. Easily mate
- B. May eat
- C. Vibrations are perceived
- D. Amount of damage
- E. Recognize the signs
- F. None of the Above

143. Termites _____ that contains cellulose (the main component of wood), including wood paneling, paper products, cardboard boxes, art canvases, the paper covering of sheetrock, carpeting, etc.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

144. While _____, they may tunnel through non-cellulosic materials, such as plastic and foamboard.

- A. Probing
- B. They may tunnel
- C. Vibrations are perceived
- D. The amount of damage
- E. Foraging and feeding
- F. None of the Above

145. According to some research, a colony containing 60,000 workers _____ of one foot of a 2" x 4" piece of lumber in slightly over 5 months.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

146. In reality, the amount of damage that termites cause depends on many factors. In areas with cold winter temperatures, termite activity (and feeding) usually declines, but does not necessarily stop. From _____, serious termite damage usually takes about 3-8 years.

- A. Some
- B. A tunnel
- C. A practical perspective
- D. Amount of damage
- E. Recognizing the signs
- F. None of the Above

Look for these signs of termite feeding:

147. Wood that _____ when it is tapped with the handle of a screwdriver.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

148. Soft wood that is _____ with a knife or screwdriver.

- A. Easily probed
- B. Easily tunneled
- C. Vibrations are perceived
- D. Hardily probed
- E. Harden
- F. None of the Above

149. A _____ on the surface of damaged material.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

150. There is _____ the age of recently discovered damage. You need some reference point, i.e., some point in time when it was known that there was no damage to this particular wood.

- A. No accurate method for determining
- B. Easy method of determining
- C. Way to test
- D. Amount of damage
- E. Recognize the signs
- F. None of the Above

151. This is one reason why annual inspections (and keeping your records of these inspections) are invaluable. These inspections do not guarantee that there is _____ in visually-inaccessible areas, such as inside walls. However, they can reveal conditions that might suggest that damage does exist.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

Winged Termites

152. Large numbers of winged termites swarming from wood or the soil often are the first obvious sign of a _____.

- A. Termite swarms
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Nearby termite colony
- F. None of the Above

153. Swarming occurs in mature colonies that typically contain at least several thousand termites. A " _____ " is a group of adult male and female reproductives that leave their colony in an attempt to pair and initiate new colonies.

- A. Termite swarms
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

154. _____ is stimulated when temperature and moisture conditions are favorable, usually on warm days following rainfall.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

155. _____ typically occurs during daytime in the spring (March, April, and May), but swarms can occur indoors during other months.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Swarming
- F. None of the Above

156. Swarming occurs during a brief period (typically less than an hour), and _____ quickly shed their wings.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

157. _____ are attracted to light, and their shed wings in window sills, cobwebs, or on other surfaces often may be the only evidence that a swarm occurred indoors. The presence of winged termites or their shed wings inside a home should be a warning of a termite infestation.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

158. _____ have straight, bead-like antennae; a thick waist; and two pair of long, equal-length wings that break off easily.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

159. Winged termites can be differentiated from _____, which have elbowed antennae, a constricted waist, and two pair of unequal-length wings (forewings are larger than hind wings) that are not easily detached. Ants also generally are harder-bodied than termites.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged ants
- F. None of the Above

Mud Tubes

160. Other signs of _____ presence include mud tubes and mud protruding from cracks between boards and beams.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

161. _____ transport soil and water above ground to construct earthen runways (shelter tubes) that allow them to tunnel across exposed areas to reach wood.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

162. Shelter tubes protect them from the drying effects of air and from natural enemies, such as ants. These tubes usually are about 1/4 to 1 inch wide, and _____ use them as passageways between the soil and wood.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

163. To determine if an infestation is active, shelter tubes should be broken or scraped away and then monitored to determine whether the _____ repair them or construct new ones.

Houses should be inspected annually for mud tubes.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Mass Emergence

164. The mass emergence of _____ in the spring is often the first sign of an infestation. In the majority of cases, they emerge in homes near sources of heat - furnaces or water heaters.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

165. The appearance of _____ means that the infestation has been around for at least 3 or 4 years. Therefore it is likely some damage has already been done, so it is important to find where the termites have been feeding, how much damage has been done, and how much repair is needed.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

166. Other means of detecting infestations include knocking on walls, floors, sub-floor wood, joists, etc. and listening for the tapping of _____, and looking for shelter tubes on the outside of the building and under the sub-floor.

- A. Termite swarmers
- B. Soldiers
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

167. Because _____ have a constant demand for water, one should closely examine areas near moist soil, such as below dripping outside faucets, leaking underground sprinkler pipes and nozzles, and below downspouts.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

168. Where damage or _____ are suspected, prod with a sharp narrow implement to check the soundness of the supporting wood structure.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Termites
- F. None of the Above

169. The detection of _____ is best left to professionals who have the experience to do it thoroughly and accurately. Professionals like you.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Termite infestations
- E. Termite(s)
- F. None of the Above

170. _____ can enter a building from one or more points so it is important to locate all points of entry for control purposes.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

171. Outdoors, _____ can be detected by driving wooden stakes into the ground at varying distances from buildings and other wooden structures. Examine the stakes every 3 months for termites or signs of their feeding damage.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Evidence of Termite Infestations

172. Wood damaged by _____ can be readily penetrated with a screwdriver, ice pick, or knife. The wood easily breaks apart, revealing mud tubes attached to wood galleries or tunnels in an irregular pattern. The tunnels may contain broken mud particles with fecal materials. In the case of an active colony, white termites may be found in infested wood.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

173. The presence of _____, females, or their shed wings, particularly when the adults fly inside the building, indicates an infestation in the building.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

174. Another indication is the presence of mud or shelter tubes extending from the ground to woodwork or on foundation walls. _____ travel periodically via shelter tubes to their colony to obtain moisture and perform feeding duties.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

175. _____ build mud or shelter tubes from soil and wood particles, and coat them with a glue-like substance that they secrete. Each mud tube is about the diameter of a lead pencil.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Useful Information If Treatment is Necessary

176. If termite activity is suspected or found and _____ is necessary, it is important to outline the plan of the building, indicating sites of termite activity and treatment procedures.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. An insecticide treatment
- E. Continuous insecticide barrier
- F. None of the Above

Control Objectives

177. The goal is to establish a _____ between the termite colony (usually in the ground) and the wood in a building.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

178. Sometimes a secondary termite colony may exist above ground (in roof or other areas with a constant moisture supply) which _____.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

179. In most cases, an untrained homeowner or building manager should not attempt a _____. (But homeowners still try and some do a good job.)

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

180. Generally, termite treatments should be performed by professional pest control operators (PCOs). _____special tools such as hammer drills, sub-slab injectors, rodding devices, high pressure pumps, a power supply, protective equipment. Several insecticides are registered in United States for termite control. All of these insecticides control termites if properly applied.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Termite treatment requires
- E. Termite activity and treatment procedures
- F. None of the Above

The procedures described here are general guidelines, and the applicator must follow the insecticide label directions for dilution, application rate, and other relevant information.

Caution

181. Do not apply insecticides when soil is frozen or water-soaked (saturated). Frozen or saturated soil will _____for even distribution of insecticide.

- A. Requires additional treatment
- B. Not permit adequate absorption
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

182. Do not permit humans and pets to _____until dry.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

183. _____for termite control, always read, understand and follow all label directions.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

184. _____ in original containers, out of reach of children and do not contaminate food, feed and water.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

185. Do not plant garden food crops _____.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

186. Do not _____ in treated soil.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

Pre-Construction Treatment

187. Horizontal Barriers: In general, treat the footing trench with insecticide before pouring cement footings. After grading is completed, _____ to areas before pouring slab floors, slab-supported porches, patios, carports, and entrance platforms at the rate of 1 gallon per 10 square feet.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Apply diluted insecticide
- F. None of the Above

188. Vertical Barriers: Establish a _____ in areas such as around the bases of foundations, plumbing, utility entrances, and backfilled soil against foundation walls.

- A. Termite treatment
- B. Contact treated surfaces
- C. Chemical barrier
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

189. Treat crawl space areas either by _____. To produce a vertical barrier in soil, apply insecticide at the rate of 4 gallons per 10 linear feet per foot of depth. After treatment, cover the crawl space area with a layer of untreated soil or polyethylene sheeting.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Rodding or trenching procedures
- F. None of the Above

Post-Construction Treatment

190. _____ until locations of radiant heat pipes, water pipes, sewer lines, and electrical conduits are identified. Buildings requiring treatment generally fall into three categories: a) building on slab construction, b) building with crawl space, and c) building with a basement.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

191. There is a common belief that termites cannot penetrate slab foundations. Termites cannot penetrate _____ but they can enter through cracks as small as 1/64 of an inch.

- A. Solid concrete
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Building on Slab

192. Controlling termite infestation in a building on a _____ is especially difficult and hazardous. In this type of construction, heat ducts (pipes) are buried in the concrete and serious damage can occur when they are accidentally drilled for holes to inject insecticide solutions. Drilling through electrical conduits or plumbing imbedded in the floor is another problem.

- A. Slab
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

193. Treat the exterior of the _____ by digging a narrow and shallow trench about 6 inches wide along the outside of the foundation.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

194. Apply the diluted insecticide to the _____ at the rate of 4 gallons per 10 linear feet. Cover treated soil in the trench with a thin layer of untreated soil. For an inside barrier, drill slab and space holes about 1 foot apart and 6 inches from the wall.

- A. All holes
- B. Masonry voids
- C. Trench and soil
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

Applications

Building With a Basement and Crawl Space

195. Basement: For _____, drill the floor slab and space holes about one foot apart.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. An interior vertical barrier
- F. None of the Above

196. Drilling may be required along the foundation walls, along one side of partition walls, along both sides of _____, around sewer pipes, floor drains, conduits, and any crack in the basement floor.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

197. Using a sub-slab injector, inject the insecticide at the rate of 4 gallons per 10 linear feet. For an insecticide barrier around the _____, apply an insecticide by rodding and/or trenching.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

198. The rod holes should be spaced 1 to 1 1/2 feet apart to provide _____. If a trench is necessary, it should not be wider than 6 inches.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

199. Inject insecticide using rodding technique at the rate of 4 gallons per 10 linear feet. Cover the trench with _____.

- A. Soil
- B. Plastic
- C. Tarp
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Crawl Spaces

200. Establish _____ by rodding and/or trenching procedures. A shallow trench should not be wider than 6 inches.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

201. Space rod holes about 1 to 1 1/2 feet apart. Apply insecticide at the rate of 4 gallons per 10 linear feet per foot of depth. Do not treat soil in _____ with a broadcast insecticide spray.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Hollow Masonry Units of the Foundation Walls

202. Treat through masonry voids to provide a _____ at the top of the footing.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

203. When treatment is necessary, access holes must be drilled through mortar joints below the sill plate, as close as possible to the _____.

- A. Foundation
- B. Footing
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

204. Apply insecticide at the rate of 2 gallons per 10 linear feet. Plug _____ with mortar or any other special compound.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

Bath Traps

205. Soil may require insecticide treatment if it is exposed beneath and around plumbing/waste pipe entrances through a _____. Remove any wood or other debris and treat the soil by rodding or flooding with an insecticide solution.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Concrete slab
- F. None of the Above

Treatment Near Ponds, Wells, Cisterns, and Faulty Foundation Walls, Around Pipes or Utility Lines

206. _____ through rodding is discouraged in such situations. The suggested procedure is to make a trench and remove the soil to be treated onto a heavy plastic sheeting or similar material.

- A. Rodding
- B. Treat
- C. Insecticide applications
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

207. Treat the excavated soil with _____ at the rate of 4 gallons per 10 linear feet per foot of depth.

- A. Rodding
- B. Treat
- C. Insecticide
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

208. Mix the soil with _____ and replace it in the trench. Cover the treated soil with a thin layer of untreated soil. In the case of wells, ponds, and cisterns, if a rodding technique is necessary, the distance between the treated area and the water source should be 50 feet or more.

- A. Rodding
- B. Treat
- C. Insecticide
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

Wood Treatment

209. In addition to _____, it may be necessary to treat infested wood with insecticide spray or injection.

- A. Rodding
- B. Treat
- C. Insecticide spray
- D. Soil treatment
- E. Broadcast spray
- F. None of the Above

210. Applications are made to inaccessible areas by drilling and then injecting the _____.

- A. Insecticide solution
- B. Treat
- C. Insecticide spray
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

211. _____ must be limited to wood in attics, crawl spaces and unfinished basements or similar unoccupied areas.

- A. Rodding
- B. Treat
- C. Insecticide spray
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

212. Treatment of Secondary Subterranean Termite Colony
Apply insecticide to infested wood and void spaces with _____.

- A. Rodding
- B. Treat
- C. Insecticide spray
- D. A crack and crevice injector
- E. Broadcast spray
- F. None of the Above

Termite Control Treatments

213. Examples of termiticides used for soil treatment include _____, fipronil, fenvalerate, imidacloprid and permethrin.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Cypermethrin
- E. Cyfluthrin
- F. None of the Above

214. Any of these can be used to establish a chemical barrier that kills or repels termites. Label directions for these _____ should be followed closely for the concentration and rate of application to be used.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

215. The judgment and experience of the termite specialist is important when selecting the _____ that best suits the particular type of construction and the soil conditions.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

Pyrethroids

216. The pyrethroids are a large family of modern synthetic insecticides similar to the naturally derived _____.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Botanical pyrethrins
- E. Cyfluthrin
- F. None of the Above

217. They are highly repellent to termites, which may contribute to the effectiveness of the _____. They have been modified to increase their stability in the natural environment. They are widely used in agriculture, homes, and gardens.

- A. Rodding
- B. Termiticide barrier
- C. Insecticide spray
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

218. Some examples are bifenthrin, cyfluthrin, cypermethrin, _____, and permethrin. They may be applied alone or in combination with other insecticides.

- A. Permethrin
- B. Deltamethrin
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

219. _____ are formulated as emulsifiable concentrates (EC), wettable powders (WP), granulars (G), and aerosols.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

220. Certain _____ exhibit striking neurotoxicity in laboratory animals when administered by intravenous injection, and some are toxic by the oral route.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

221. Systemic toxicity by inhalation and dermal absorption are low, however—there have been very few systemic poisonings of humans by _____.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

222. Though limited absorption may account for the low toxicity of some _____, rapid biodegradation by mammalian liver enzymes (ester hydrolysis and oxidation) is probably the major factor responsible.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

223. Most _____ metabolites are promptly excreted, at least in part, by the kidney.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroid
- E. Cyfluthrin
- F. None of the Above

224. In response to dermal exposure, some persons may experience a skin sensitivity called _____.

- A. Paresthesia
- B. Sunburn sensation
- C. Future exposure
- D. As much residue as possible
- E. Pyrethroids
- F. None of the Above

225. The symptoms are similar to sunburn sensation of the face and especially the eyelids. Sweating, exposure to sun or heat, and application of water aggravate the disagreeable sensations. This is a _____ that dissipates within 24 hours.

- A. Paresthesia
- B. Sunburn sensation
- C. Future exposure
- D. As much residue as possible
- E. Temporary effect
- F. None of the Above

226. For first aid, wash with soap and water to remove _____, and then apply a vitamin E oil preparation or cream to the affected area.

- A. Paresthesia
- B. Sunburn sensation
- C. Future exposure
- D. As much residue as possible
- E. Pyrethroids
- F. None of the Above

227. _____ is caused more by pyrethroids whose chemical makeup includes cyano-groups: fenvalerate, cypermethrin, and fluvalinate.
A. Paresthesia D. As much residue as possible
B. Sunburn sensation E. Pyrethroids
C. Future exposure F. None of the Above

228. In addition to protecting themselves from future exposure, persons who have experienced _____ should choose a pyrethroid with a different active ingredient, as well as a wettable powder or microencapsulated formulation.
A. Paresthesia D. As much residue as possible
B. Sunburn sensation E. Pyrethroids
C. Future exposure F. None of the Above

About These Pesticides

229. _____ and pyrethroids are insecticides included in over 3,500 registered products, many of which are used widely in and around households, including on pets, in mosquito control, and in agriculture.
A. Permethrin D. Pyrethroids
B. Pyrethrins E. Cyfluthrin
C. Cypermethrin F. None of the Above

230. The use of pyrethrins and _____ has increased during the past decade with the declining use of organophosphate pesticides, which are more acutely toxic to birds and mammals than the pyrethroids.
A. Permethrin D. Pyrethroids
B. Bifenthrin E. Cyfluthrin
C. Cypermethrin F. None of the Above

231. This change to less acutely toxic pesticides, while generally beneficial, has introduced certain new issues. For example, residential uses of _____ may result in urban runoff, potentially exposing aquatic life to harmful levels in water and sediment.
A. Permethrin D. Pyrethrins and pyrethroids
B. Bifenthrin E. Cyfluthrin
C. Cypermethrin F. None of the Above

232. Pyrethrins are _____ derived from chrysanthemum flowers most commonly found in Australia and Africa. They work by altering nerve function, which causes paralysis in target insect pests, eventually resulting in death.
A. Permethrin D. Pyrethroids
B. Botanical insecticides E. Cyfluthrin
C. Cypermethrin F. None of the Above

233. Pyrethroids are synthetic chemical insecticides whose chemical structures are adapted from the chemical structures of the pyrethrins and act in a similar manner to _____.
A. Permethrin D. Pyrethroids
B. Bifenthrin E. Pyrethrins
C. Cypermethrin F. None of the Above

234. _____ are modified to increase their stability in sunlight.
A. Permethrin D. Pyrethroids
B. Bifenthrin E. Cyfluthrin
C. Cypermethrin F. None of the Above

235. Most pyrethrins and some pyrethroid products are formulated with synergists, such as _____ and MGK-264, to enhance the pesticidal properties of the product.

- A. Permethrin
- B. Piperonyl butoxide
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

236. These _____ have no pesticidal effects of their own but enhance the effectiveness of other chemicals.

- A. Permethrins
- B. Bifenthrins
- C. Cypermethrins
- D. Pyrethroids
- E. Synergists
- F. None of the Above

237. _____, a single pesticide active ingredient, contain six components that have insecticidal activity:

- A. Permethrin
- B. Pyrethrins
- C. Cypermethrin
- D. Pyrethroids
- E. Cyfluthrin
- F. None of the Above

Permethrin
General Information

238. Permethrin is a broad-spectrum _____ insecticide. It is available in dusts, emulsifiable concentrates, smokes, ULV concentrates, and wettable-powder formulations.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroid
- E. Cyfluthrin
- F. None of the Above

239. The historical development of the synthetic pesticides called _____ is based on the pyrethrins, which are derived from chrysanthemums.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Pyrethrins
- F. None of the Above

240. _____ are a "natural" environmental product that is of low toxicity to mammals. They are highly photolabile and degrade quickly in sunlight, and the cost of reapplying them has limited their widespread agricultural use.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Pyrethrins
- F. None of the Above

241. _____ have been synthesized to be similar to pyrethrins yet more stable in the environment. Evidence suggests that they have a very large margin of safety when used as directed by the label.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Pyrethrins
- F. None of the Above

242. Commercial pyrethroid products commonly use petroleum distillates as carriers. Some commercial products also contain _____ insecticides because the rapid paralytic effect of pyrethrins on insects ("quick knockdown") is not always lethal.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. OP or carbamate
- F. None of the Above

243. _____ are formulated as emulsifiable concentrates, wettable powders, granules, and concentrates for ULV application.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Pyrethrins
 - F. None of the Above

Borates

244. "_____" is a generic term for compounds containing the elements boron and oxygen. Boron never occurs alone naturally but as calcium and sodium borate ores in several places in the world.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate
- E. Wood preservatives
- F. None of the Above

245. _____ and other sodium borates are used in numerous products such as laundry additives, eye drops, fertilizers, and insecticides. Though the mechanisms of toxicity are not fully understood, boron is very toxic to insects and decay fungi that commonly damage wood in structures.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

246. At low levels, however, _____ is only minimally toxic, and perhaps beneficial, to humans, other mammals, and growing plants.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

247. Use of _____ for construction of homes and their wood-based contents appears to offer many advantages to today's environmentally sensitive world.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

248. Unlike most other _____ and organic insecticides that penetrate best in dry wood, borates are diffusible chemicals—they penetrate unseasoned wood by diffusion, a natural process.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

249. Wood moisture content and method and length of storage are the primary factors affecting penetration by diffusion. Properly done, _____ permit deep penetration of large timbers and refractory (difficult-to-treat) wood species that cannot be treated well by pressure.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Diffusion treatments
- E. Wood preservatives
- F. None of the Above

250. The diffusible property of _____ can be manipulated in many ways; suitable application methods range from complex automated industrial processes to simple brush or injection treatments.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borates
- E. Wood preservatives
- F. None of the Above

251. Application methods include momentary immersion by bulk dipping; pressure or combination pressure/diffusion treatment; treatment of composite boards and laminated products by treatment of the wood finish; hot and cold dip treatments and long soaking periods; spray or brush-on treatments with borate slurries or pastes; and placement of _____ in holes drilled in wood already in use.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

Organophosphates and Carbamates Pesticides

252. Organophosphates are _____ or thiophosphoric acid esters. When developed in the 1930s and 1940s, their original compounds were highly toxic to mammals.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

253. _____ manufactured since then are less toxic to mammals but toxic to target organisms, such as insects.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

254. Malathion, dibrom, chlorpyrifos, temephos, diazinon and terbufos are _____.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

255. Carbamates are esters of N-methyl carbamic acid. Aldicarb, carbaryl, propoxur, oxamyl and terbucarb are _____.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

256. Although these pesticides differ chemically, they act similarly. When applied to crops or directly to the soil as systemic insecticides, _____ and carbamates generally persist from only a few hours to several months.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

257. They have been fatal to large numbers of birds on turf and in agriculture, and negatively impacted breeding success in birds. Many _____ are highly toxic to aquatic organisms.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

258. These are two very large families of _____. Indeed, they have been the primary insecticides for the past 25 to 30 years. They range in toxicity from slightly to highly toxic. They are formulated in all kinds of ways from highly concentrated emulsifiable concentrates (ECs) to very dilute granular (G) formulations.

- A. Insecticides
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

259. These _____ are similar in their modes of action—they are all nervous system poisons. Insects and all other animals, including humans, have nervous systems that are susceptible.

- A. Carbamates
- B. Organophosphates
- C. Insecticide families
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

260. Both _____ are efficiently absorbed by inhalation, ingestion, and skin penetration. To a degree, the extent of poisoning depends on the rate at which the pesticide is absorbed.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Insecticide families
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

261. _____ break down chiefly by hydrolysis in the liver; rates of hydrolysis vary widely from one compound to another. With certain organophosphates whose breakdown is relatively slow, significant amounts may be temporarily stored in body fat.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

262. The organophosphates and _____ replaced the chlorinated hydrocarbons (e.g., chlordane, aldrin, and heptachlor) for all uses, including termite control.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

263. Examples of _____ are chlorpyrifos for termite control and diazinon for other household pests.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

264. An example of a _____ is carbaryl, also used for household and lawn pests.

- A. Carbamate
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

How can people be exposed to organophosphate and carbamate pesticides?

265. People can be exposed to organophosphates and _____ pesticides through accidental exposure during use.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

266. People can accidentally inhale the pesticides if they are in an area where they were recently applied. The _____ can be ingested with food or drinks that are contaminated.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

How can these pesticides exhaust affect my health?

267. _____ is an enzyme found in the nervous system, red blood cells and blood plasma.

- A. Carbamates
- B. Organophosphates
- C. Acetylcholinesterase
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

268. These pesticides damage nerve function by acting as _____ in the nervous system.

- A. Suspected carcinogens
- B. Acetylcholinesterase inhibitors
- C. Slowed heartbeat
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

269. Breathing - Short-term exposure can produce _____, headache, nausea, dizziness, loss of memory, weakness, tremor, diarrhea, sweating, salivation, tearing, constriction of pupils, and slowed heartbeat.

- A. Suspected carcinogens
- B. Muscle twitching
- C. Slowed heartbeat
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

270. Long-term exposure can produce delayed neurotoxicity, such as tingling and burning in the extremities. This delayed neurotoxicity can progress to _____ and is seldom reversible. Damage to the liver, kidney, immune system and bone marrow may occur. Some carbamates are also suspected carcinogens.

- A. Suspected carcinogens
- B. Paralysis
- C. Slowed heartbeat
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

What should I do if exposed to these pesticides?

271. If you think you were exposed to _____, contact your doctor. (Please, pesticides kill applicators all day long)

- A. Suspected carcinogens
- B. Acetylcholinesterase inhibitors
- C. Slowed heartbeat
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

Is there a medical test to show whether I was exposed to these pesticides?

272. The level of cholinesterase activity in red blood cells or plasma helps physicians determine exposure to these pesticides. However, other chemicals or disease states can alter _____.

- A. Suspected carcinogens
- B. Acetylcholinesterase inhibitors
- C. Slowed heartbeat
- D. Acetylcholinesterase activity
- E. Cholinesterase activity
- F. None of the Above

273. Urine or blood tests only apply if a person was exposed to a large quantity. Persons who will use these pesticides regularly should ask their physician to establish a _____ prior to prolonged use, followed by monthly monitoring.

- A. Suspected carcinogens
- B. Acetylcholinesterase inhibitors
- C. Baseline value
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

Pyrroles

274. Chlorfenapyr is the only termiticide from the pyrrole family of chemistry and is active primarily as a stomach poison with some contact activity. It is also _____.

- A. No observable effect
- B. Very low mammalian toxicity
- C. Infected foraging termites
- D. Non-repellent to termites
- E. Been obscured by tests
- F. None of the Above

275. _____ is registered as a termiticide under the tradename Phantom®.
A. Hormones D. Chlorfenapyr
B. IGR E. Gamma-aminobutyric acid (GABA)
C. Nematodes F. None of the Above

276. _____ acts on the mitochondria of cells and uncouples or inhibits oxidative phosphorylation, preventing the formation of the crucial energy molecule adenosine triphosphate (ATP). As a result, energy production in the cells shuts down, resulting in cellular and, ultimately, termite death.
A. Hormones D. Chlorfenapyr
B. IGR E. Gamma-aminobutyric acid (GABA)
C. Nematodes F. None of the Above

Fiproles (or Phenylpyrazoles)

277. _____ is the only insecticide in this new class, introduced in 1990 and registered in the U.S. in 1996. It is marketed as a termiticide under the tradename Termidor®.
A. Hormones D. Chlorfenapyr
B. IGR E. Fipronil
C. Nematodes F. None of the Above

278. This termiticide is a non-repellent material with contact and stomach activity. Fipronil works by blocking the _____ regulated chloride channel in neurons, thus disrupting the activity of the insect's central nervous system.
A. Hormones D. Chlorfenapyr
B. IGR E. Gamma-aminobutyric acid (GABA)
C. Nematodes F. None of the Above

Insect Growth Regulators

279. An insect growth regulator (_____) is a synthetic chemical that mimics insect hormones.
A. Hormones D. Chlorfenapyr
B. IGR E. Gamma-aminobutyric acid (GABA)
C. Nematodes F. None of the Above

280. _____ regulate a wide array of body and growth (physiological) functions. IGRs may interfere with molting, pupal emergence, or body wall formation.
A. Hormones D. Chlorfenapyr
B. IGR E. Gamma-aminobutyric acid (GABA)
C. Nematodes F. None of the Above

281. IGRs are often specific for an insect species or a group of very closely related species. They often have delayed effects because they are taken into the insect and stored until the insect reaches _____.
A. No observable effect D. Humidity accelerates
B. Very low mammalian toxicity E. The right growth stage
C. Infected foraging termites F. None of the Above

282. This may range from days to weeks or even months. For example, if the _____ stops the insect from molting and a given insect is exposed just after a molt, it would continue to function normally until the next molt before dying.
A. Hormones D. Chlorfenapyr
B. IGR E. Gamma-aminobutyric acid (GABA)
C. Nematodes F. None of the Above

283. In the case of termite control, the slow action of the IGR allows the chemical to be widely spread throughout the colony as the termite workers feed and groom one another. IGRs are, in general, environmentally safe and _____. Some examples are hexaflumuron, diflubenzuron, pyriproxyfen, and methoprene.

- A. No observable effect
- B. Very low mammalian toxicity
- C. Infected foraging termites
- D. Humidity accelerates
- E. Been obscured by tests
- F. None of the Above

Biotermiticides

284. Biotermiticides — such as fungi, nematodes, _____, and so forth—still need further research and development to maximize their potential.

- A. Hormones
- B. IGR
- C. Nematodes
- D. Chlorfenapyr
- E. Bacteria
- F. None of the Above

285. *Metarhizium anisopliae* can be injected into galleries, infested walls, and other moist areas where the humidity accelerates the fungal growth. Several forms of nematodes are sold for _____.

- A. No observable effect
- B. Very low mammalian toxicity
- C. Infected foraging termites
- D. Humidity accelerates
- E. Termite suppression
- F. None of the Above

286. _____ are applied to the soil or directly into mud tubes. As with all new methods of control, more research is needed to determine the advantages and limitations of such organisms.

- A. Hormones
- B. IGR
- C. Nematodes
- D. Chlorfenapyr
- E. Gamma-aminobutyric acid (GABA)
- F. None of the Above

287. Biotermiticide, which is derived from fungi, bacteria or nematodes, is injected into active gallery sites. It then develops on _____ and spreads among the colony.

- A. No observable effect
- B. The infected foraging termites
- C. Infected foraging ants
- D. Humidity accelerates
- E. Been obscured by tests
- F. None of the Above

288. Suitable temperature and moisture, early detection and avoidance are factors that determine _____. It may provide localized area control or, with optimum conditions, may suppress a colony.

- A. Hormones
- B. IGR
- C. Nematodes
- D. Chlorfenapyr
- E. This treatment's success
- F. None of the Above

289. Nematodes are roundworms, or threadworms (the Greek word *nema* means thread) in the phylum Nematoda. _____ inside the bodies of insects and other organisms, often with no observable effect on the hosts. Others cause effects ranging from minor discomfort to disease and death.

- A. No observable effect
- B. Very low mammalian toxicity
- C. Infected foraging termites
- D. Humidity accelerates
- E. Been obscured by tests
- F. None of the Above

290. Entomophilic _____ have affinities for insect hosts. Entomopathogenic nematodes (EPN) produce observable deleterious effects.

- A. Hormones
- B. IGR
- C. Nematodes
- D. Chlorfenapyr
- E. Gamma-aminobutyric acid (GABA)
- F. None of the Above

291. Certain entomopathogenic nematodes (EPN) are efficient biological control agents that can be used against subterranean termites. That fact has been obscured by tests that emphasized _____.

- A. No observable effect
- B. Very low mammalian toxicity
- C. Infected foraging termites
- D. Soil-drench (inundative) treatment methods
- E. Been obscured by tests
- F. None of the Above

292. Recent tests using _____ as inoculums in specially-designed nematode-optimized termite interceptors show that they reliably suppress even large, vigorous termite colonies.

- A. EPN
- B. IGR(s)
- C. Borates
- D. Molting process
- E. New methods of control
- F. None of the Above

293. Because EPN do not elicit complex avoidance reactions in termites exposed to them, repeated inoculations in _____ should succeed, over time, in eliminating termite colonies entirely.

- A. Liquid termiticide
- B. Such devices
- C. These agents
- D. Continuous insecticide distribution
- E. Bacillus thuringiensis or B.t.
- F. None of the Above

294. _____ should perform well as termite colony inoculants in all climates and environments suitable for termite propagation, without the need for exotic toxicant adjuncts.

- A. EPN
- B. IGR(s)
- C. Borates
- D. Molting process
- E. New methods of control
- F. None of the Above

295. Among the insect growth regulators are _____, juvenile hormone mimics (JHM) and chitin synthesis inhibitors (CSI).

- A. Liquid termiticide
- B. Borates
- C. These agents
- D. Juvenile hormone analogs (JHA)
- E. Bacillus thuringiensis or B.t.
- F. None of the Above

296. These products disrupt the termites by causing a specific response or behavior within the colony or by blocking the _____.

- A. EPN
- B. IGR(s)
- C. Borates
- D. Molting process
- E. New methods of control
- F. None of the Above

297. Remember that all insects, including termites, have an exoskeleton made primarily of chitin. In order to grow, they must periodically shed their chitinous exoskeletons and form new ones.

This process is called molting. A chitin _____ in the termite and, the next time a molt should occur prevents proper formation of the cuticle.

- A. Liquid termiticide
- B. Borates
- C. These agents
- D. Continuous insecticide distribution
- E. Synthesis inhibitor slowly builds up
- F. None of the Above

298. _____ are the slowest of the bait types but have greater impact on the colony.

- A. EPN
- B. IGR(s)
- C. Borates
- D. Molting process
- E. New methods of control
- F. None of the Above

299. In some cases _____ are released into the soil and in other cases they are injected into the above-ground termite galleries.

- A. Liquid termiticide
- B. Borates
- C. These agents
- D. Continuous insecticide distribution
- E. Bacillus thuringiensis or B.t.
- F. None of the Above

300. As with all new methods of control, _____ is needed to determine the advantages and limitations of such organisms.

- A. Rules
- B. More government
- C. More research
- D. Understanding
- E. New methods of control
- F. None of the Above

You are finished with your assignment...

Wood Destroyers Assignment #2 For Students Names F-L

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Write your answers on the Answer Key found in the front of this assignment.

1. We will require all students to fax or e-mail a copy of their driver's license with the registration form.
2. You will need to pick one of the following three assignments to complete. This selection process is based upon your last name. If your last name begins with an A to E, you will pick assignment number 1, if your last name begins with the letter F to L, you are to complete assignment number 2 and if your last name begins with the letter M-Q, you will pick assignment number 3 and if your last name begins with the letter R-Z, you will pick assignment number 4.

Multiple Choice, Please select one answer and mark it on the answer key. The answer must come from the course text. (s) Means answer can be plural or singular.

1. _____ is an example of a commonly used biological control agent.
A. Liquid termiticide D. Continuous insecticide distribution
B. Borates E. Bacillus thuringiensis or B.t.
C. These agents F. None of the Above

Foaming Agents

2. Foam formulations of soil-applied termiticides can deliver termiticide to areas difficult to reach with _____.
A. EPN D. Liquid formulations
B. IGR(s) E. New methods of control
C. Borates F. None of the Above
3. _____ are foamed for application in wall voids.
A. Liquid termiticide D. Continuous insecticide distribution
B. Borates E. Bacillus thuringiensis or B.t.
C. These agents F. None of the Above
4. Foams penetrate into hard-to-reach cavities and voids, and they improve _____.
A. EPN D. Termiticide distribution in soils
B. IGR(s) E. New methods of control
C. Borates F. None of the Above
5. The most difficult area to achieve uniform and _____ is under slabs, where the termite control specialist is unable to see the actual deposition of the termiticide.
A. Liquid termiticide D. Continuous insecticide distribution
B. Borates E. Bacillus thuringiensis or B.t.
C. These agents F. None of the Above
6. _____ can reduce the need for corrective treatments, especially under slabs. The liquid termiticide is combined with air to create uniform, small-diameter bubbles.
A. EPN D. Foam applications
B. IGR(s) E. New methods of control
C. Borates F. None of the Above

7. The foam carries the _____ in the spaces between the bubbles. As the foam breaks down it leaves a thin residue on the surfaces it had contact with.
- A. Liquid termiticide D. Continuous insecticide distribution
 B. Borates E. *Bacillus thuringiensis* or B.t.
 C. These agents F. None of the Above
8. The fact that foam is less dense than liquid enables it to dispense uniformly. _____ delays collapse of the bubbles, providing more time for the insecticide to reach desired areas.
- A. EPN D. The foaming agent
 B. IGR(s) E. New methods of control
 C. Borates F. None of the Above
9. Underneath a slab, gravity deposits most of the liquid on the soil, with a small portion of the residue on other surfaces (such as the underside of a concrete slab) in _____.
- A. Fumigants D. Fumigation
 B. Fumigators E. Fumigation crew
 C. Foams F. None of the Above
10. Foam treatments do not replace other _____ (they supplement these applications so that gaps left by conventional treatments can be successfully treated).
- A. Fumigants D. Fumigation
 B. Fumigators E. Fumigation crew
 C. Foams F. None of the Above
11. _____ are being used to treat—or retreat—critical areas such as unevenly filled porches, which liquids might not reach or cover uniformly.
- A. Fumigants D. Fumigation
 B. Fumigators E. Fumigation crew
 C. Foams F. None of the Above
12. _____ may be used in initial treatments to ensure the most complete termiticide barrier in critical as well as hard-to-reach areas, thus reducing the treatment failures that may occur with the use of soil-applied termiticides alone.
- A. Fumigants D. Fumigation
 B. Fumigators E. Fumigation crew
 C. Foams F. None of the Above

Fumigation

13. Pests that can be treated with _____ include drywood termites, Anobiid powder post beetles (usually in softwoods such as floor joists, etc.).
- A. Fumigants D. Fumigation
 B. Fumigators E. Fumigation crew
 C. Foams F. None of the Above
14. _____ (sapwood of hardwoods such as moldings, cabinets, and flooring), and old house borers (sapwood of softwoods in beams, rafters, etc.).
- A. Cissidae D. Tenebrionidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above

Advantages of Fumigation

15. Fumigation has several advantages over other pest control procedures: _____ are usually quick acting and eradicate the pest.
- A. Fumigants D. Fumigation
 B. Fumigators E. Fumigation crew
 C. Foams F. None of the Above

16. _____ diffuse through all parts of the structure or commodity being treated and thus reach pest harborages that cannot be reached with conventional pest control materials or techniques.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

17. For certain pests/commodities, _____ is the only practical method of control.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

Disadvantages of Fumigation

For several reasons, fumigation may not be the best means of pest control:

18. The control achieved through _____ is temporary. There is no residual action from fumigants, and as soon as the fumigation is completed, the structure or commodity is susceptible to re-infestation.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

19. _____ are toxic to humans and special precautions must be taken to protect fumigators and the occupants of fumigated structures.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

20. _____ must be applied in enclosed areas, so application requires additional labor.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

21. _____ must not be attempted by one person. Additional labor is required.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

22. Some commodities or pieces of equipment may be damaged by certain _____ and must be either removed or protected.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

23. The special training required for all members of the _____ adds to fumigation costs.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

24. Occupants of the structure being _____ usually must vacate the building for a number of hours. This may be inconvenient.

- A. Fumigants
- B. Fumigators
- C. Foams
- D. Fumigation
- E. Fumigation crew
- F. None of the Above

25. _____ requires special licenses and certification.
- A. Fumigants D. Fumigation
 - B. Fumigators E. Fumigation crew
 - C. Foams F. None of the Above

Bait Application

26. There are _____ on the market that add to the arsenal of tools available for managing termite populations and protecting structures.
- A. IGRs D. Food sharing (trophallaxis)
 - B. Several termite baits E. Chitin synthesis inhibitors (CSI)
 - C. Infected foraging termites F. None of the Above

27. Baits work on the principle that foraging termites _____, which eventually kills the termites and possibly the colony.
- A. Optimum conditions D. Will feed on a treated cellulose material
 - B. Primarily of chitin E. Ingested toxicants
 - C. Toxic material F. None of the Above

28. The _____ in the bait must kill slowly enough to allow foraging termites to return to the colony and spread the bait through food sharing (trophallaxis).
- A. IGRs D. Food sharing (trophallaxis)
 - B. Toxic material E. Chitin synthesis inhibitors (CSI)
 - C. Infected foraging termites F. None of the Above

29. Because dead termites repel other termites, the _____ also must kill slowly enough so that dead termites do not accumulate near the bait.
- A. Optimum conditions D. Chitin synthesis inhibitor
 - B. Primarily of chitin E. Ingested toxicants
 - C. Toxic material F. None of the Above

30. Baits control a colony locally—either eliminating it or suppressing it to the point that it no longer damages a structure. To be successful, the products must be _____, slow acting and readily consumed by termites.
- A. IGRs D. Food sharing (trophallaxis)
 - B. Non-repellent E. Chitin synthesis inhibitors (CSI)
 - C. Infected foraging termites F. None of the Above

31. Each type has unique features and is used differently in termite control programs. Ingested toxicants have the quickest effect, though _____ and learned avoidance may limit this type of product to termite reduction in localized areas.
- A. Optimum conditions D. Dose dependency
 - B. Primarily of chitin E. Ingested toxicants
 - C. Toxic material F. None of the Above

32. _____, derived from fungi, bacteria, or nematodes, are injected into active gallery sites. They then develop on the infected foraging termites and spread among the colony.
- A. IGRs D. Food sharing (trophallaxis)
 - B. Biotermiticides E. Chitin synthesis inhibitors (CSI)
 - C. Infected foraging termites F. None of the Above

33. Suitable temperature and moisture, _____, and avoidance are factors that determine this treatment's success. It may provide localized area control or, with optimum conditions, may suppress a colony.
- A. Optimum conditions D. Early detection
 - B. Primarily of chitin E. Ingested toxicants
 - C. Toxic material F. None of the Above

34. Among the insect growth regulators are juvenile hormone analogs (JHA), juvenile hormone mimics (JHM), and _____.

- A. IGRs
- B. Non-repellent
- C. Infected foraging termites
- D. Food sharing (trophallaxis)
- E. Chitin synthesis inhibitors (CSI)
- F. None of the Above

35. These products disrupt the termites _____ within the colony or by blocking the molting process. Remember that all insects, including termites, have an exoskeleton made primarily of chitin.

- A. Optimum conditions
- B. Primarily of chitin
- C. Toxic material
- D. By causing a specific response or behavior
- E. Ingested toxicants
- F. None of the Above

36. _____, they must periodically shed their chitinous exoskeletons and form new ones. This process is called molting.

- A. IGRs
- B. Non-repellent
- C. Infected foraging termites
- D. Food sharing (trophallaxis)
- E. Chitin synthesis inhibitors (CSI)
- F. None of the Above

37. A _____ slowly builds up in the termite and, the next time a molt occurs, prevents proper formation of the cuticle.

- A. Optimum conditions
- B. Primarily of chitin
- C. Toxic material
- D. Chitin synthesis inhibitor
- E. Ingested toxicants
- F. None of the Above

38. _____ are the slowest acting of the bait types.

- A. IGRs
- B. Non-repellent
- C. Infected foraging termites
- D. Food sharing (trophallaxis)
- E. Chitin synthesis inhibitors (CSI)
- F. None of the Above

Commercial Baiting Products

39. Sentricon™ System, developed by Dow AgroSciences for professional use, combines monitoring with the use of _____.

- A. Termite invasion
- B. Bait tubes
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

40. Stations are installed in areas where termites exist and around the perimeter of a structure and in the yard. Each station contains a wood stake and must be _____ for termite activity.

- A. Periodically monitored
- B. Bait tubes
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

41. After termites attack, the wood is removed and replaced with a bait tube. Termites from the wood must be transferred to the bait tube, which is left in the station until termite activity ceases. Then the _____ are replaced with new wood stakes and monitoring for new infestations resumes.

- A. Termite invasion
- B. Bait tubes
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

Longhorned Beetles

42. Longhorned beetles are large (1/2 to 3 inches long), _____ with long, thin antennae that may be longer than their bodies.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Maggot-looking
- F. None of the Above

43. _____ usually lay their eggs on unseasoned, rough-sawn timbers or logs.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Maggots
- E. Reproductives
- F. None of the Above

44. The _____, called roundheaded borers, feed in the wood, boring large, oval-shaped holes as they move through it. Infestation usually takes place before the timber is used in structures.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Larvae
- E. Reproductives
- F. None of the Above

45. The _____ of some species take more than one year to complete their development, so they may still be feeding in the wood after it becomes part of a structure.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Larvae
- E. Reproductives
- F. None of the Above

46. Damage is usually limited to pine sapwood and can be recognized by the _____.

- A. Damage seasoned lumber
- B. Color
- C. Odor
- D. Ripples on the surface of the galleries
- E. Hollow sound
- F. None of the Above

47. The _____ will not lay eggs for re-infestation on this type of wood, so control is rarely called for.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

48. The exception to this is a species known as the _____ (Hylotrupes bajulus).

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Maggot-looking
- F. None of the Above

49. Old house borers will attack timbers in a building, so they are the only _____ requiring control measures.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Longhorned beetles
- E. Larvae of some species
- F. None of the Above

50. The _____ is about 3/4 inch long and grayish brown to black with two white patches on its wing covers.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Adult
- F. None of the Above

Black Carpenter Ants

51. Ants of the genus *Camponotus* often nest in wood. There are many different carpenter ant species, but only one poses a major pest problem (the _____ (*Camponotus pennsylvanicus*)).

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Black carpenter ant
- E. Larvae of some species
- F. None of the Above

52. The black carpenter ant varies from 1/8 to 1/2 inch in Length because of the presence in most colonies of _____.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Both "major" and "minor" workers
- F. None of the Above

53. _____ may construct their nests in hollow trees, logs, posts, porch pillars, hollow doors, and other timbers used in homes.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

54. The _____ do not consume the wood but simply hollow it out to form cavities for the nest. They are usually attracted to damp, decaying wood, but once the nest is started, they will also excavate sound wood as they enlarge the nest.

- A. Black carpenter ant (Ants)
- B. Roundheaded borers
- C. Old house borer
- D. Larva
- E. Maggots
- F. None of the Above

55. It is often quite common to find them nesting in existing voids that require no excavation; occasionally they start in an existing void and enlarge it as their need dictates. The presence of _____ suggests the potential for damage to wood.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

Biology

56. Carpenter ants are among the largest species that you'll find. Like other ant species, carpenter ants are social, i.e., they live in a colony and have several " _____ " or adult forms that perform different jobs in the colony.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Castes
- E. Queen(s)
- F. None of the Above

57. The _____ usually reaches 9/16 inch in length. The workers range in size from 1/4 to 7/16 inch. So, if you see different sized ants, they could all be from the same colony.

- A. Queen
- B. Pupae
- C. Swarms
- D. King
- E. Reproductives
- F. None of the Above

58. All of these ants are _____ regardless of their size, so they do not grow.

- A. Adults
- B. Workers
- C. Females (queen)
- D. Species
- E. Swarms
- F. None of the Above

59. Only the queen produces offspring in the nest. _____ are white, legless, and maggot-looking in appearance.
- A. Queens D. Immature ants (larvae)
 B. Pupae E. Reproductives
 C. Swarms F. None of the Above
60. They remain in the nest and are fed by the workers. The larvae develop into _____, which are tan and capsule-shaped.
- A. Adults D. Pupae
 B. Workers E. Swarms
 C. Female (queen) F. None of the Above
61. New adults emerge from these pupae. _____ will vary in color depending upon the species.
- A. Queen D. Adult ants
 B. Pupae E. Reproductives
 C. Swarms F. None of the Above
62. The _____, the species that most commonly nests in homes, is primarily black in color. Other carpenter ant species may be more reddish-brown to yellow in color.
- A. Black carpenter ant D. Castes
 B. Roundheaded borers E. Queen(s)
 C. Old house borer F. None of the Above

Life Cycle

63. In the spring, carpenter ants swarm, i.e., _____ emerge from the colony. The swarmer's sole purpose is reproduction.
- A. Queen D. Adults
 B. Pupae E. Winged adults
 C. Swarms F. None of the Above
64. Shortly after mating, the female (queen) loses her wings and searches out a cavity in wood or soil where she begins to lay eggs and produce _____.
- A. Her colony's first workers D. The species
 B. Workers E. Swarms
 C. Female (queen) F. None of the Above
65. These workers care for the queen as she produces _____, and they assume the tasks of foraging for food, maintaining and expanding the nest, and caring for the young.
- A. Queens D. More offspring
 B. Pupae E. Reproductives
 C. Swarms F. None of the Above
66. After 3-6 years, the colony will contain 2000-3000 workers, and will start to produce _____. The swarms are actually produced in the fall, but they wait until the following spring to emerge.
- A. Adults D. Pupae
 B. Workers E. Swarms
 C. Female (queen) F. None of the Above
67. Swarming is not the only means for carpenter ants to produce new nests. "Satellite" colonies may be formed by workers that move out of the main nest, carrying _____ with them. Eventually, these secondary colonies produce their own reproductives.
- A. Queen D. Larvae and pupae
 B. Pupae E. Reproductives
 C. Swarms F. None of the Above

Carpenter Bees

68. The carpenter bee (*Xylocopa virginica*) _____ in that it is robust and black with some markings of yellow hair.

- A. Queen
- B. Tunnels
- C. Nesting sites
- D. Resembles a bumblebee
- E. Considered pests
- F. None of the Above

69. The dorsal surface of the abdomen lacks the yellow hair markings of _____ and is mostly devoid of any hair.

- A. Queen
- B. Tunnels
- C. Nesting sites
- D. Bumblebee(s)
- E. Considered pests
- F. None of the Above

70. These bees are _____ of wood because they excavate tunnels in softwood as sites for producing their brood.

- A. Queen-less
- B. Tunnel makers
- C. Nest makers
- D. Not a risk
- E. Considered pests
- F. None of the Above

71. Common _____ are posts, fence railings, porch support posts, wall siding, eaves, wooden shingles, windowsills, doors, wooden porch furniture, etc.

- A. Insects
- B. Tunnels
- C. Nesting sites
- D. Wood
- E. Mating sites
- F. None of the Above

Termite Introduction

72. There are about 2,500 termite species in the world. North America has _____, most in the southeast USA. Alaska is the only state without termites.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. 41 termite species
- E. Termites
- F. None of the Above

73. Florida's eastern subterranean termite colonies have about 250,000 members, but can have 1 million or more. A colony eats about 1 cubic foot of wood a year. _____ can have two million termites. The queen can lay 2,000 eggs per day and live as long as 50 years.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Australian colonies
- E. Termites
- F. None of the Above

74. Termite damage to residential and commercial buildings in the U.S. costs more than \$1 billion annually. _____, the most destructive of all termite species, account for 95% of the damage.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

75. Two _____ species, *Reticulitermes flavipes* (Kollar) and *R. tibialis* Banks, are commonly found in United States.

- A. Soft-bodied insects
- B. Subterranean termite
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

Feeding Habits

76. Subterranean termites feed mainly on wood and wood products containing cellulose. Termites have _____ in their intestine which provide enzymes to digest cellulose.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. 41 termite species
- E. Termites
- F. None of the Above

77. This relationship is beneficial to both species, since the _____ cause no harm and are provided with food and a protected environment by the termites.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

78. Although termites are _____, their hard, saw-toothed jaws work like shears and can bite off extremely small fragments of wood.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Wood borers
- E. Destructive
- F. None of the Above

79. These termites do not attack live trees, except for the _____. Termites often infest buildings and cause damage to lumber, wood panels, flooring, sheetrock, wallpaper, plastics, paper products, and fabric made of plant fibers.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Formosan termite
- E. Survivors
- F. None of the Above

80. _____ attack flooring, carpeting, art work, books, clothing, and furniture. The most serious damage involves the loss of structural strength.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

Biology

81. _____ are ground-dwelling social insects living in colonies. The two species found in United States have similar habitats. These termites have the ability to adjust the depth of their colony (nest) in soil depending on temperature and moisture requirements.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

82. The _____ may be 18-20 feet deep in the ground. The ground serves as a protection against extreme temperatures and provides a moisture reservoir.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

83. Termites reach wood or cellulose materials above ground by constructing and traveling through _____.

- A. Holes
- B. Tunnels
- C. Castles
- D. Swarming
- E. Earthen (mud) tubes
- F. None of the Above

84. The mature colony consists of _____ : a) reproductives (king and queen), b) soldiers, and c) workers. It takes about 4 to 5 years for a colony to reach its maximum size and it may consist of 60,000 to 200,000 workers.

- A. Colony
- B. Subterranean termites
- C. Three castes
- D. Swarmers
- E. Survivors
- F. None of the Above

85. _____ : A group of insects with a specific morphology and function within a colony of social insects.

- A. Colony
- B. Family
- C. Caste
- D. Swarmers
- E. Survivors
- F. None of the Above

Reproduction

86. In spring and fall, the winged males and females emerge from their parent colonies to form new ones. This activity is called _____.

- A. Colony building
- B. Migration
- C. Castes
- D. Swarming
- E. Reproducing
- F. None of the Above

87. These _____ are dark brown to brownish black and have two pair of nearly equal size semitransparent wings extending well beyond the body.

- A. Winged reproductives
- B. Subterranean termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

88. The _____ are weak flyers and, unless aided by wind, fly only short distances. Many of them are devoured by birds, spiders, ants, and other predators.

- A. Queens
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

89. _____ return to the ground and shed their wings. The wingless males and females pair off (male following female in tandem) until they find a source of wood and moisture in the soil.

- A. Queens
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

90. They dig soil near wood, enter the chamber and seal the opening. After mating, the _____ begins laying eggs. The royal queen is known to survive up to 25 years.

- A. Queen
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

Eggs

91. The _____ usually deposits 6 to 20 eggs during the first six months following the swarming flight and she may lay more than 60,000 eggs in her lifetime.

- A. Queen
- B. Termite
- C. Caste
- D. Fertilized female
- E. Survivor
- F. None of the Above

92. _____ are yellowish white and hatch after an incubation period of 50 to 60 days.
- A. Queen
 - B. Termite
 - C. Caste
 - D. Fertilized female
 - E. Survivor
 - F. None of the Above

Workers

93. The first broods of _____ (young termites) generally develop into workers. Full grown workers are soft-bodied, wingless, blind, and creamy white. In early stages, they are fed predigested food by the king and queen.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

94. Once workers are able to digest wood, they begin providing food for the entire colony. At this time, the _____ cease feeding on wood.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

95. The workers undertake all the labor in the colony such as obtaining food, feeding other _____, excavating wood for chambers, and constructing tunnels. Workers mature within a year and live from 3 to 5 years.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

Soldiers

96. Soldiers are creamy white, soft-bodied, wingless, and blind. The head of the _____ is enormously elongated, brownish, hard, and equipped with two strong jaws.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

97. _____ must be fed by workers as they are incapable of feeding themselves. They are less numerous than workers and their sole function is to defend the colony against invaders such as ants.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

98. _____ mature within a year and live up to 5 years.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

99. Flying ants and _____ are often difficult to distinguish when these insects are seen around residential and commercial buildings.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

100. The main enemy of termites is Ants and the _____ can defend a small number of Ants.
- A. Soldier(s) D. Newly hatched nymphs
 B. King and queen E. Caste members and immatures
 C. Swarming termites F. None of the Above

Termite Reproduction

101. The female assumes a "calling" position with her abdomen elevated at a right angle to the rest of her body. She releases a _____ which attracts nearby males. Once a male encounters a calling female, she moves off.

- A. Odor D. Chemical messenger (pheromone)
 B. Tap E. Hormone
 C. Call F. None of the Above

102. He follows close behind and they search for a suitable site for the establishment of a nest. As soon as the pair has located a suitable site, they excavate (with their jaws) a small chamber large enough for the two of them and then _____.

- A. Young queen matures D. Find a suitable site
 B. Start a new colony E. Start dispersal flights
 C. Seal the entrance F. None of the Above

103. _____ usually occurs within a few hours to weeks after the pair becomes established.

- A. Mating D. Calling
 B. Cellulose for their nutrition E. Maximum egg production
 C. Process continues F. None of the Above

104. The single female cannot start a new colony. _____ is dependent upon the survival of both sexes in the nest site and that she has successfully mated.

- A. Young queen matures D. Suitable site
 B. Start a new colony E. Establishment of a colony
 C. After two molts F. None of the Above

105. The pair continues to _____, and they usually mate periodically. The first eggs are laid within one to several weeks after mating, depending on the nutrition available to the female. When the first eggs hatch, the new nymphs are cared for by the young pair.

- A. Live together for life D. Relatively new structure
 B. Mate E. Maximum egg production
 C. Fight F. None of the Above

106. _____, the nymphs assume their role as workers and begin to feed and care for the original pair.

- A. Young queen matures D. Building a suitable site
 B. Starting a new colony E. Starting dispersal flights
 C. After two molts F. None of the Above

Development of the Colony

107. Development of the colony is very slow for several years. Eggs are _____. After the first group of eggs has been laid, there is a period of several months before another group is laid. This process continues for several years.

- A. White D. Placed in a new structure
 B. Cared for E. Hatched
 C. Not laid F. None of the Above

108. As the _____, she lays a greater number of eggs, and her abdomen becomes enlarged from developing eggs.

- A. Young queen matures
- B. Start a new colony
- C. After two molts
- D. Suitable site
- E. Start dispersal flights
- F. None of the Above

109. Eventually, a point is reached where the _____. That is, the queen has reached maximum egg production, and the loss of older individuals by death or swarming is approximately the same as the number of new individuals produced each year.

- A. Queen leaves
- B. Queen mates
- C. Process continues
- D. Colony size stabilizes
- E. Maximum egg production
- F. None of the Above

110. As the colony becomes even older a greater number of swarmers are produced each year. It requires a minimum of 3 to 4 years--and as much as 8 to 10 years--for a colony of our native subterranean termites to become large enough and strong enough to _____.

- A. Mate
- B. Start a new colony
- C. Molt
- D. Look for a suitable site
- E. Start dispersal flights
- F. None of the Above

Swarming

111. When swarming occurs in a relatively new structure, it is because it was built over or near a strong colony that was not _____.

- A. Considered safe
- B. Near ants
- C. For rent
- D. Relatively a new structure
- E. Maximum egg production
- F. None of the Above

112. Termites derive food from wood and other cellulosic materials. In nature, they feed exclusively on wood, _____ and passing most of the remaining components as waste.

- A. Dry wood
- B. Green wood
- C. Near water
- D. Primarily digesting out the cellulose
- E. And soil
- F. None of the Above

113. In man-invaded environments, termites attack many additional products and commodities. They still depend primarily on cellulose for their nutrition, but will _____they encounter.

- A. Damage many materials
- B. Eat cellulose for their nutrition
- C. The process continues
- D. Build new structures
- E. Start over
- F. None of the Above

114. Damaged materials may include plastics, rubber, asphalt, metal, mortar and others. Wood products like paper are favorite foods of termites because they are nearly pure cellulose. Cotton, burlap and other plant fibers are _____ by termites as well.

- A. Rejected
- B. Preferred
- C. Eaten
- D. Actively consumed
- E. Ignored
- F. None of the Above

Fungi

115. Fungi also play a role in _____. Certain wood decay fungi are highly attractive to termites.

- A. Termite nutrition
- B. Cellulose for their nutrition
- C. Processing
- D. Finding a new structure
- E. Maximum egg production
- F. None of the Above

116. _____ is more easily digested by termites, and the fungus may provide a needed source of nitrogen.

- A. Source of nitrogen
- B. Fungus spores
- C. Moist galleries
- D. Partially decayed wood
- E. Wet wood
- F. None of the Above

117. Ultimately, _____ exhaust the nutritive value of wood for termites, and extensive decay in wood is of no benefit to foraging termites.

- A. Source of nitrogen
- B. Fungus spores
- C. Moist galleries
- D. Ants
- E. Wood-destroying fungi
- F. None of the Above

118. Conversely, when termites attack wood, they usually bring _____ on their bodies. When water or other liquid reaches the damaged wood, it is more easily trapped.

- A. Nitrogen
- B. Fungus spores
- C. Hormones
- D. Clothes
- E. Soil
- F. None of the Above

Moisture

119. _____ to the survival of termites. Subterranean termites obtain most of their moisture from the soil. They maintain contact with the soil in order to survive.

- A. Source of nitrogen is vital
- B. Fungus spores is vital
- C. Moisture is not vital
- D. Moisture is vital
- E. Sandy soil over a clay base is vital
- F. None of the Above

120. The type of soil has a great effect on the ability of subterranean termites to flourish. They generally prefer sandy soil over a clay base. They can and do survive in many _____, however.

- A. Other types of soil
- B. Areas
- C. Wood types
- D. Above-ground types of nests
- E. Types of Weather
- F. None of the Above

Tolerances

121. Termites have very little tolerance to _____, or extremes of hot and cold. But they often must forage far, sometimes above ground, from their initial workings to find food.

- A. Pesticides
- B. Wet conditions
- C. Dry conditions
- D. Ants
- E. Rap Music
- F. None of the Above

122. They move underground through tunnels. Whenever the termites leave the confines of the soil or the wood in which they are feeding, they _____ in which to move from the soil to the wood or the above-ground nest.

- A. Construct castles
- B. Operate equipment
- C. Develop plans
- D. Build above-ground nests
- E. Construct shelter tubes
- F. None of the Above

Subterranean Termites

123. When subterranean termites invade the wood of a structure that is separated from the soil by intervening concrete, masonry or other impervious material, they _____ over the surface to the wood.

- A. Construct castles
- B. Operate equipment
- C. Develop plans
- D. Build above-ground nests
- E. Construct shelter tubes
- F. None of the Above

124. Periodically, they return to the moist galleries. Contrary to published reports, shelter tubes do not necessarily conduct _____ from the soil to the wood.

- A. Nitrogen
- B. Dry air
- C. Moist galleries
- D. Moist air
- E. Water
- F. None of the Above

125. Shelter tubes also provide some protection from _____ and prevent excess water loss. The primary function of shelter tubes probably is protection from natural enemies.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Air movement
- F. None of the Above

126. Once termites have established contact with wood above ground and feeding progresses some distance from the initial shelter tunnel, they often _____ straight down from the wood. Evidence of tube building will be found directly below a suspended tube.

- A. Initial shelter tunnel
- B. Will drop shelter tubes
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

Castles

127. Under certain conditions a fourth type of tube is constructed. Called swarming tubes or swarming "castles" they are constructed as flight platforms for swarmers and they have many turret-like projects and _____ that vaguely resemble castle towers.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Flattened horizontal branches
- E. Heavily guarded
- F. None of the Above

128. They usually are _____ to a height of 4 to 8 inches (10-20 cm), but sometimes are found projecting from heavily infested wood above ground.

- A. Initial shelter tunnel
- B. Constructed on the ground
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

129. When swarmers are _____ via these tubes, or directly through a hole in wood or soil, the openings are heavily guarded by soldiers and workers.

- A. Attacking colonies
- B. Extend the damage
- C. Leaving the colony
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

130. The amount of damage that _____ of subterranean termites might inflict on a structure depends on many factors.

- A. Initial shelter tunnel
- B. An infestation
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

131. The number and size of the _____ and the quality of the environmental conditions (including the wood) are the most important.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

132. Damage usually _____ in houses built over a crawl space and with the sole plates of those houses built on concrete slabs.

- A. Initial shelter tunnel
- B. Starts at the mudsill
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

133. Given enough time, subterranean termites _____ into the wooden floor members, the interior trim and furnishings, and into the walls up to the roof timbers.
- A. Attacking colonies
 - B. Will extend the damage
 - C. Flight platforms
 - D. Before damage is a problem
 - E. Heavily guarded
 - F. None of the Above

Severe Damage

134. Severe damage by subterranean termites is not likely to occur in the first 8 or 10 years after construction. If treatment is undertaken with the _____, very little serious structural damage is ever likely to occur.

- A. Initial shelter tunnel
- B. Projecting
- C. Instantly recognized
- D. Crawl space
- E. First evidence of infestation
- F. None of the Above

135. Houses should be carefully inspected at least once a year in all regions. This will allow detection _____.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

136. Should evidence of termites be found, there is _____ or undue haste. Treatment within 6 months is recommended.

- A. Initial shelter tunnel
- B. No cause for extreme alarm
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

Communication in the Colony

137. Termites primarily communicate via chemicals called pheromones. Each colony develops its _____.

- A. Attacking colonies
- B. Damage
- C. Flight platforms
- D. Own characteristic odor
- E. Own characteristic defense
- F. None of the Above

138. Any intruder is _____ and an alarm pheromone is released that triggers the soldiers to attack the intruder.

- A. Easily probed
- B. Found
- C. Perceived
- D. Instantly recognized
- E. Recognizing the signs
- F. None of the Above

139. If a worker finds a new source of food, _____ to that food source by laying a chemical trail. The proportion of castes in the colony is also regulated chemically. Nymphs can develop into workers, soldiers, or reproductive adults, depending on colony needs.

- A. Sounds "food"
- B. It recruits others
- C. Could consume the equivalent
- D. Enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

140. Sound is another means of communication. Soldiers and workers _____ against tunnel walls. The vibrations are perceived by other termites in the colony and serve to mobilize the colony to defend itself.

- A. Easily probe
- B. May tunnel
- C. Vibrations are perceived
- D. Can bang their heads
- E. Recognize the signs
- F. None of the Above

141. Mutual exchange of _____ of colony members.
- | | |
|---------------------------------|-------------------------------------|
| A. Sounds "hollow" | D. Foods enhances recognition |
| B. No damage | E. Actually feed on almost anything |
| C. Could consume the equivalent | F. None of the Above |

Detection of Termites

142. It is important for homeowners to recognize the signs of a subterranean termite infestation. Subterranean termites _____ of winged termites (alates or swarmers), or by the presence of mud tubes and wood damage.

- | | |
|-----------------------------|------------------------|
| A. Easily mate | D. Amount of damage |
| B. May eat | E. Recognize the signs |
| C. Vibrations are perceived | F. None of the Above |

143. Termites _____ that contains cellulose (the main component of wood), including wood paneling, paper products, cardboard boxes, art canvases, the paper covering of sheetrock, carpeting, etc.

- | | |
|---------------------------------|-------------------------------------|
| A. Sounds "hollow" | D. Foods enhances recognition |
| B. No damage | E. Actually feed on almost anything |
| C. Could consume the equivalent | F. None of the Above |

144. While _____, they may tunnel through non-cellulosic materials, such as plastic and foamboard.

- | | |
|-----------------------------|-------------------------|
| A. Probing | D. The amount of damage |
| B. They may tunnel | E. Foraging and feeding |
| C. Vibrations are perceived | F. None of the Above |

145. According to some research, a colony containing 60,000 workers _____ of one foot of a 2" x 4" piece of lumber in slightly over 5 months.

- | | |
|---------------------------------|-------------------------------------|
| A. Sounds "hollow" | D. Foods enhances recognition |
| B. No damage | E. Actually feed on almost anything |
| C. Could consume the equivalent | F. None of the Above |

146. In reality, the amount of damage that termites cause depends on many factors. In areas with cold winter temperatures, termite activity (and feeding) usually declines, but does not necessarily stop. From _____, serious termite damage usually takes about 3-8 years.

- | | |
|----------------------------|--------------------------|
| A. Some | D. Amount of damage |
| B. A tunnel | E. Recognizing the signs |
| C. A practical perspective | F. None of the Above |

Look for these signs of termite feeding:

147. Wood that _____ when it is tapped with the handle of a screwdriver.

- | | |
|---------------------------------|-------------------------------------|
| A. Sounds "hollow" | D. Foods enhances recognition |
| B. No damage | E. Actually feed on almost anything |
| C. Could consume the equivalent | F. None of the Above |

148. Soft wood that is _____ with a knife or screwdriver.

- | | |
|-----------------------------|----------------------|
| A. Easily probed | D. Hardily probed |
| B. Easily tunneled | E. Harden |
| C. Vibrations are perceived | F. None of the Above |

149. A _____ on the surface of damaged material.

- | | |
|---------------------------------|-------------------------------------|
| A. Sounds "hollow" | D. Foods enhances recognition |
| B. No damage | E. Actually feed on almost anything |
| C. Could consume the equivalent | F. None of the Above |

150. There is _____ the age of recently discovered damage. You need some reference point, i.e., some point in time when it was known that there was no damage to this particular wood.

- A. No accurate method for determining
- B. Easy method of determining
- C. Way to test
- D. Amount of damage
- E. Recognize the signs
- F. None of the Above

151. This is one reason why annual inspections (and keeping your records of these inspections) are invaluable. These inspections do not guarantee that there is _____ in visually-inaccessible areas, such as inside walls. However, they can reveal conditions that might suggest that damage does exist.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

Winged Termites

152. Large numbers of winged termites swarming from wood or the soil often are the first obvious sign of a _____.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Nearby termite colony
- F. None of the Above

153. Swarming occurs in mature colonies that typically contain at least several thousand termites. A " _____ " is a group of adult male and female reproductives that leave their colony in an attempt to pair and initiate new colonies.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

154. _____ is stimulated when temperature and moisture conditions are favorable, usually on warm days following rainfall.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

155. _____ typically occurs during daytime in the spring (March, April, and May), but swarms can occur indoors during other months.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Swarming
- F. None of the Above

156. Swarming occurs during a brief period (typically less than an hour), and _____ quickly shed their wings.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

157. _____ are attracted to light, and their shed wings in window sills, cobwebs, or on other surfaces often may be the only evidence that a swarm occurred indoors. The presence of winged termites or their shed wings inside a home should be a warning of a termite infestation.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

158. _____ have straight, bead-like antennae; a thick waist; and two pair of long, equal-length wings that break off easily.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

159. Winged termites can be differentiated from _____, which have elbowed antennae, a constricted waist, and two pair of unequal-length wings (forewings are larger than hind wings) that are not easily detached. Ants also generally are harder-bodied than termites.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged ants
- F. None of the Above

Mud Tubes

160. Other signs of _____ presence include mud tubes and mud protruding from cracks between boards and beams.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

161. _____ transport soil and water above ground to construct earthen runways (shelter tubes) that allow them to tunnel across exposed areas to reach wood.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

162. Shelter tubes protect them from the drying effects of air and from natural enemies, such as ants. These tubes usually are about 1/4 to 1 inch wide, and _____ use them as passageways between the soil and wood.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

163. To determine if an infestation is active, shelter tubes should be broken or scraped away and then monitored to determine whether the _____ repair them or construct new ones. Houses should be inspected annually for mud tubes.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Mass Emergence

164. The mass emergence of _____ in the spring is often the first sign of an infestation. In the majority of cases, they emerge in homes near sources of heat - furnaces or water heaters.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

165. The appearance of _____ means that the infestation has been around for at least 3 or 4 years. Therefore it is likely some damage has already been done, so it is important to find where the termites have been feeding, how much damage has been done, and how much repair is needed.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

166. Other means of detecting infestations include knocking on walls, floors, sub-floor wood, joists, etc. and listening for the tapping of _____, and looking for shelter tubes on the outside of the building and under the sub-floor.

- A. Termite swarmers
- B. Soldiers
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

167. Because _____ have a constant demand for water, one should closely examine areas near moist soil, such as below dripping outside faucets, leaking underground sprinkler pipes and nozzles, and below downspouts.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

168. Where damage or _____ are suspected, prod with a sharp narrow implement to check the soundness of the supporting wood structure.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Termites
- F. None of the Above

169. The detection of _____ is best left to professionals who have the experience to do it thoroughly and accurately. Professionals like you.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Termite infestations
- E. Termite(s)
- F. None of the Above

170. _____ can enter a building from one or more points so it is important to locate all points of entry for control purposes.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

171. Outdoors, _____ can be detected by driving wooden stakes into the ground at varying distances from buildings and other wooden structures. Examine the stakes every 3 months for termites or signs of their feeding damage.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Evidence of Termite Infestations

172. Wood damaged by _____ can be readily penetrated with a screwdriver, ice pick, or knife. The wood easily breaks apart, revealing mud tubes attached to wood galleries or tunnels in an irregular pattern. The tunnels may contain broken mud particles with fecal materials. In the case of an active colony, white termites may be found in infested wood.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

173. The presence of _____, females, or their shed wings, particularly when the adults fly inside the building, indicates an infestation in the building.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

174. Another indication is the presence of mud or shelter tubes extending from the ground to woodwork or on foundation walls. _____ travel periodically via shelter tubes to their colony to obtain moisture and perform feeding duties.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

175. _____ build mud or shelter tubes from soil and wood particles, and coat them with a glue-like substance that they secrete. Each mud tube is about the diameter of a lead pencil.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Useful Information If Treatment is Necessary

176. If termite activity is suspected or found and _____ is necessary, it is important to outline the plan of the building, indicating sites of termite activity and treatment procedures.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. An insecticide treatment
- E. Continuous insecticide barrier
- F. None of the Above

Control Objectives

177. The goal is to establish a _____ between the termite colony (usually in the ground) and the wood in a building.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

178. Sometimes a secondary termite colony may exist above ground (in roof or other areas with a constant moisture supply) which _____.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

179. In most cases, an untrained homeowner or building manager should not attempt a _____. (But homeowners still try and some do a good job.)

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

180. Generally, termite treatments should be performed by professional pest control operators (PCOs). _____ special tools such as hammer drills, sub-slab injectors, rodding devices, high pressure pumps, a power supply, protective equipment. Several insecticides are registered in United States for termite control. All of these insecticides control termites if properly applied.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Termite treatment requires
- E. Termite activity and treatment procedures
- F. None of the Above

The procedures described here are general guidelines, and the applicator must follow the insecticide label directions for dilution, application rate, and other relevant information.

Caution

181. Do not apply insecticides when soil is frozen or water-soaked (saturated). Frozen or saturated soil will _____ for even distribution of insecticide.

- A. Requires additional treatment
- B. Not permit adequate absorption
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

182. Do not permit humans and pets to _____ until dry.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

183. _____ for termite control, always read, understand and follow all label directions.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

184. _____ in original containers, out of reach of children and do not contaminate food, feed and water.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

185. Do not plant garden food crops _____.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

186. Do not _____ in treated soil.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

Pre-Construction Treatment

187. Horizontal Barriers: In general, treat the footing trench with insecticide before pouring cement footings. After grading is completed, _____ to areas before pouring slab floors, slab-supported porches, patios, carports, and entrance platforms at the rate of 1 gallon per 10 square feet.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Apply diluted insecticide
- F. None of the Above

188. Vertical Barriers: Establish a _____ in areas such as around the bases of foundations, plumbing, utility entrances, and backfilled soil against foundation walls.

- A. Termite treatment
- B. Contact treated surfaces
- C. Chemical barrier
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

189. Treat crawl space areas either by _____. To produce a vertical barrier in soil, apply insecticide at the rate of 4 gallons per 10 linear feet per foot of depth. After treatment, cover the crawl space area with a layer of untreated soil or polyethylene sheeting.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Rodding or trenching procedures
- F. None of the Above

Post-Construction Treatment

190. _____ until locations of radiant heat pipes, water pipes, sewer lines, and electrical conduits are identified. Buildings requiring treatment generally fall into three categories: a) building on slab construction, b) building with crawl space, and c) building with a basement.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

191. There is a common belief that termites cannot penetrate slab foundations. Termites cannot penetrate _____ but they can enter through cracks as small as 1/64 of an inch.

- A. Solid concrete
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Building on Slab

192. Controlling termite infestation in a building on a _____ is especially difficult and hazardous. In this type of construction, heat ducts (pipes) are buried in the concrete and serious damage can occur when they are accidentally drilled for holes to inject insecticide solutions. Drilling through electrical conduits or plumbing imbedded in the floor is another problem.

- A. Slab
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

193. Treat the exterior of the _____ by digging a narrow and shallow trench about 6 inches wide along the outside of the foundation.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

194. Apply the diluted insecticide to the _____ at the rate of 4 gallons per 10 linear feet. Cover treated soil in the trench with a thin layer of untreated soil. For an inside barrier, drill slab and space holes about 1 foot apart and 6 inches from the wall.

- A. All holes
- B. Masonry voids
- C. Trench and soil
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

Applications

Building With a Basement and Crawl Space

195. Basement: For _____, drill the floor slab and space holes about one foot apart.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. An interior vertical barrier
- F. None of the Above

196. Drilling may be required along the foundation walls, along one side of partition walls, along both sides of _____, around sewer pipes, floor drains, conduits, and any crack in the basement floor.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

197. Using a sub-slab injector, inject the insecticide at the rate of 4 gallons per 10 linear feet. For an insecticide barrier around the _____, apply an insecticide by rodding and/or trenching.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

198. The rod holes should be spaced 1 to 1 1/2 feet apart to provide _____. If a trench is necessary, it should not be wider than 6 inches.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

199. Inject insecticide using rodding technique at the rate of 4 gallons per 10 linear feet. Cover the trench with _____.

- A. Soil
- B. Plastic
- C. Tarp
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Crawl Spaces

200. Establish _____ by rodding and/or trenching procedures. A shallow trench should not be wider than 6 inches.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

201. Space rod holes about 1 to 1 1/2 feet apart. Apply insecticide at the rate of 4 gallons per 10 linear feet per foot of depth. Do not treat soil in _____ with a broadcast insecticide spray.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Hollow Masonry Units of the Foundation Walls

202. Treat through masonry voids to provide a _____ at the top of the footing.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

203. When treatment is necessary, access holes must be drilled through mortar joints below the sill plate, as close as possible to the _____.

- A. Foundation
- B. Footing
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

204. Apply insecticide at the rate of 2 gallons per 10 linear feet. Plug _____ with mortar or any other special compound.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

Bath Traps

205. Soil may require insecticide treatment if it is exposed beneath and around plumbing/waste pipe entrances through a _____. Remove any wood or other debris and treat the soil by rodding or flooding with an insecticide solution.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Concrete slab
- F. None of the Above

Treatment Near Ponds, Wells, Cisterns, and Faulty Foundation Walls, Around Pipes or Utility Lines

206. _____ through rodding is discouraged in such situations. The suggested procedure is to make a trench and remove the soil to be treated onto a heavy plastic sheeting or similar material.

- A. Rodding
- B. Treat
- C. Insecticide applications
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

207. Treat the excavated soil with _____ at the rate of 4 gallons per 10 linear feet per foot of depth.

- A. Rodding
- B. Treat
- C. Insecticide
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

208. Mix the soil with _____ and replace it in the trench. Cover the treated soil with a thin layer of untreated soil. In the case of wells, ponds, and cisterns, if a rodding technique is necessary, the distance between the treated area and the water source should be 50 feet or more.

- A. Rodding
- B. Treat
- C. Insecticide
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

Wood Treatment

209. In addition to _____, it may be necessary to treat infested wood with insecticide spray or injection.

- A. Rodding
- B. Treat
- C. Insecticide spray
- D. Soil treatment
- E. Broadcast spray
- F. None of the Above

210. Applications are made to inaccessible areas by drilling and then injecting the _____.

- A. Insecticide solution
- B. Treat
- C. Insecticide spray
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

211. _____ must be limited to wood in attics, crawl spaces and unfinished basements or similar unoccupied areas.

- A. Rodding
- B. Treat
- C. Insecticide spray
- D. Cover the treated soil
- E. Broadcast spray
- F. None of the Above

212. Treatment of Secondary Subterranean Termite Colony
Apply insecticide to infested wood and void spaces with_____.
- A. Rodding
 - B. Treat
 - C. Insecticide spray
 - D. A crack and crevice injector
 - E. Broadcast spray
 - F. None of the Above

Termite Control Treatments

213. Examples of termiticides used for soil treatment include _____, fipronil, fenvalerate, imidacloprid and permethrin.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Cypermethrin
 - E. Cyfluthrin
 - F. None of the Above
214. Any of these can be used to establish a chemical barrier that kills or repels termites. Label directions for these _____ should be followed closely for the concentration and rate of application to be used.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above
215. The judgment and experience of the termite specialist is important when selecting the _____ that best suits the particular type of construction and the soil conditions.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above

Pyrethroids

216. The pyrethroids are a large family of modern synthetic insecticides similar to the naturally derived _____.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Botanical pyrethrins
 - E. Cyfluthrin
 - F. None of the Above
217. They are highly repellent to termites, which may contribute to the effectiveness of the _____. They have been modified to increase their stability in the natural environment. They are widely used in agriculture, homes, and gardens.
- A. Rodding
 - B. Termiticide barrier
 - C. Insecticide spray
 - D. Cover the treated soil
 - E. Broadcast spray
 - F. None of the Above
218. Some examples are bifenthrin, cyfluthrin, cypermethrin, _____, and permethrin. They may be applied alone or in combination with other insecticides.
- A. Permethrin
 - B. Deltamethrin
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above
219. _____ are formulated as emusifiable concentrates (EC), wettable powders (WP), granulars (G), and aerosols.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above

220. Certain _____ exhibit striking neurotoxicity in laboratory animals when administered by intravenous injection, and some are toxic by the oral route.
- A. Permethrin D. Pyrethroids
 B. Bifenthrin E. Cyfluthrin
 C. Cypermethrin F. None of the Above
221. Systemic toxicity by inhalation and dermal absorption are low, however—there have been very few systemic poisonings of humans by _____.
- A. Permethrin D. Pyrethroids
 B. Bifenthrin E. Cyfluthrin
 C. Cypermethrin F. None of the Above
222. Though limited absorption may account for the low toxicity of some _____, rapid biodegradation by mammalian liver enzymes (ester hydrolysis and oxidation) is probably the major factor responsible.
- A. Permethrin D. Pyrethroids
 B. Bifenthrin E. Cyfluthrin
 C. Cypermethrin F. None of the Above
223. Most _____ metabolites are promptly excreted, at least in part, by the kidney.
- A. Permethrin D. Pyrethroid
 B. Bifenthrin E. Cyfluthrin
 C. Cypermethrin F. None of the Above
224. In response to dermal exposure, some persons may experience a skin sensitivity called _____.
- A. Paresthesia D. As much residue as possible
 B. Sunburn sensation E. Pyrethroids
 C. Future exposure F. None of the Above
225. The symptoms are similar to sunburn sensation of the face and especially the eyelids. Sweating, exposure to sun or heat, and application of water aggravate the disagreeable sensations. This is a _____ that dissipates within 24 hours.
- A. Paresthesia D. As much residue as possible
 B. Sunburn sensation E. Temporary effect
 C. Future exposure F. None of the Above
226. For first aid, wash with soap and water to remove _____, and then apply a vitamin E oil preparation or cream to the affected area.
- A. Paresthesia D. As much residue as possible
 B. Sunburn sensation E. Pyrethroids
 C. Future exposure F. None of the Above
227. _____ is caused more by pyrethroids whose chemical makeup includes cyano-groups: fenvalerate, cypermethrin, and fluvalinate.
- A. Paresthesia D. As much residue as possible
 B. Sunburn sensation E. Pyrethroids
 C. Future exposure F. None of the Above
228. In addition to protecting themselves from future exposure, persons who have experienced _____ should choose a pyrethroid with a different active ingredient, as well as a wettable powder or microencapsulated formulation.
- A. Paresthesia D. As much residue as possible
 B. Sunburn sensation E. Pyrethroids
 C. Future exposure F. None of the Above

About These Pesticides

229. _____ and pyrethroids are insecticides included in over 3,500 registered products, many of which are used widely in and around households, including on pets, in mosquito control, and in agriculture.
- A. Permethrin
 - B. Pyrethrins
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above
230. The use of pyrethrins and _____ has increased during the past decade with the declining use of organophosphate pesticides, which are more acutely toxic to birds and mammals than the pyrethroids.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above
231. This change to less acutely toxic pesticides, while generally beneficial, has introduced certain new issues. For example, residential uses of _____ may result in urban runoff, potentially exposing aquatic life to harmful levels in water and sediment.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Pyrethrins and pyrethroids
 - E. Cyfluthrin
 - F. None of the Above
232. Pyrethrins are _____ derived from chrysanthemum flowers most commonly found in Australia and Africa. They work by altering nerve function, which causes paralysis in target insect pests, eventually resulting in death.
- A. Permethrin
 - B. Botanical insecticides
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above
233. Pyrethroids are synthetic chemical insecticides whose chemical structures are adapted from the chemical structures of the pyrethrins and act in a similar manner to _____.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Pyrethrins
 - F. None of the Above
234. _____ are modified to increase their stability in sunlight.
- A. Permethrin
 - B. Bifenthrin
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above
235. Most pyrethrins and some pyrethroid products are formulated with synergists, such as _____ and MGK-264, to enhance the pesticidal properties of the product.
- A. Permethrin
 - B. Piperonyl butoxide
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above
236. These _____ have no pesticidal effects of their own but enhance the effectiveness of other chemicals.
- A. Permethrins
 - B. Bifenthrins
 - C. Cypermethrins
 - D. Pyrethroids
 - E. Synergists
 - F. None of the Above

237. _____, a single pesticide active ingredient, contain six components that have insecticidal activity:
- A. Permethrin
 - B. Pyrethrins
 - C. Cypermethrin
 - D. Pyrethroids
 - E. Cyfluthrin
 - F. None of the Above

Permethrin
General Information

238. Permethrin is a broad-spectrum _____ insecticide. It is available in dusts, emulsifiable concentrates, smokes, ULV concentrates, and wettable-powder formulations.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroid
- E. Cyfluthrin
- F. None of the Above

239. The historical development of the synthetic pesticides called _____ is based on the pyrethrins, which are derived from chrysanthemums.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Pyrethrins
- F. None of the Above

240. _____ are a "natural" environmental product that is of low toxicity to mammals. They are highly photolabile and degrade quickly in sunlight, and the cost of reapplying them has limited their widespread agricultural use.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Pyrethrins
- F. None of the Above

241. _____ have been synthesized to be similar to pyrethrins yet more stable in the environment. Evidence suggests that they have a very large margin of safety when used as directed by the label.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Pyrethrins
- F. None of the Above

242. Commercial pyrethroid products commonly use petroleum distillates as carriers. Some commercial products also contain _____ insecticides because the rapid paralytic effect of pyrethrins on insects ("quick knockdown") is not always lethal.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. OP or carbamate
- F. None of the Above

243. _____ are formulated as emulsifiable concentrates, wettable powders, granules, and concentrates for ULV application.

- A. Permethrin
- B. Bifenthrin
- C. Cypermethrin
- D. Pyrethroids
- E. Pyrethrins
- F. None of the Above

Borates

244. "_____" is a generic term for compounds containing the elements boron and oxygen. Boron never occurs alone naturally but as calcium and sodium borate ores in several places in the world.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate
- E. Wood preservatives
- F. None of the Above

245. _____ and other sodium borates are used in numerous products such as laundry additives, eye drops, fertilizers, and insecticides. Though the mechanisms of toxicity are not fully understood, boron is very toxic to insects and decay fungi that commonly damage wood in structures.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

246. At low levels, however, _____ is only minimally toxic, and perhaps beneficial, to humans, other mammals, and growing plants.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

247. Use of _____ for construction of homes and their wood-based contents appears to offer many advantages to today's environmentally sensitive world.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

248. Unlike most other _____ and organic insecticides that penetrate best in dry wood, borates are diffusible chemicals—they penetrate unseasoned wood by diffusion, a natural process.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

249. Wood moisture content and method and length of storage are the primary factors affecting penetration by diffusion. Properly done, _____ permit deep penetration of large timbers and refractory (difficult-to-treat) wood species that cannot be treated well by pressure.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Diffusion treatments
- E. Wood preservatives
- F. None of the Above

250. The diffusible property of _____ can be manipulated in many ways; suitable application methods range from complex automated industrial processes to simple brush or injection treatments.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borates
- E. Wood preservatives
- F. None of the Above

251. Application methods include momentary immersion by bulk dipping; pressure or combination pressure/diffusion treatment; treatment of composite boards and laminated products by treatment of the wood finish; hot and cold dip treatments and long soaking periods; spray or brush-on treatments with borate slurries or pastes; and placement of _____ in holes drilled in wood already in use.

- A. Borax
- B. Boron
- C. Fused borate rods
- D. Borate-treated wood
- E. Wood preservatives
- F. None of the Above

Organophosphates and Carbamates Pesticides

252. Organophosphates are _____ or thiophosphoric acid esters. When developed in the 1930s and 1940s, their original compounds were highly toxic to mammals.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

253. _____ manufactured since then are less toxic to mammals but toxic to target organisms, such as insects.
- A. Carbamates D. Phosphoric acid esters
 B. Organophosphates E. Highly concentrated emulsifiable concentrates (ECs)
 C. Chlorpyrifos F. None of the Above
254. Malathion, dibrom, chlorpyrifos, temephos, diazinon and terbufos are _____.
- A. Carbamates D. Phosphoric acid esters
 B. Organophosphates E. Highly concentrated emulsifiable concentrates (ECs)
 C. Chlorpyrifos F. None of the Above
255. Carbamates are esters of N-methyl carbamic acid. Aldicarb, carbaryl, propoxur, oxamyl and terbucarb are _____.
- A. Carbamates D. Phosphoric acid esters
 B. Organophosphates E. Highly concentrated emulsifiable concentrates (ECs)
 C. Chlorpyrifos F. None of the Above
256. Although these pesticides differ chemically, they act similarly. When applied to crops or directly to the soil as systemic insecticides, _____ and carbamates generally persist from only a few hours to several months.
- A. Carbamates D. Phosphoric acid esters
 B. Organophosphates E. Highly concentrated emulsifiable concentrates (ECs)
 C. Chlorpyrifos F. None of the Above
257. They have been fatal to large numbers of birds on turf and in agriculture, and negatively impacted breeding success in birds. Many _____ are highly toxic to aquatic organisms.
- A. Carbamates D. Phosphoric acid esters
 B. Organophosphates E. Highly concentrated emulsifiable concentrates (ECs)
 C. Chlorpyrifos F. None of the Above
258. These are two very large families of _____. Indeed, they have been the primary insecticides for the past 25 to 30 years. They range in toxicity from slightly to highly toxic. They are formulated in all kinds of ways from highly concentrated emulsifiable concentrates (ECs) to very dilute granular (G) formulations.
- A. Insecticides D. Phosphoric acid esters
 B. Organophosphates E. Highly concentrated emulsifiable concentrates (ECs)
 C. Chlorpyrifos F. None of the Above
259. These _____ are similar in their modes of action—they are all nervous system poisons. Insects and all other animals, including humans, have nervous systems that are susceptible.
- A. Carbamates D. Phosphoric acid esters
 B. Organophosphates E. Highly concentrated emulsifiable concentrates (ECs)
 C. Insecticide families F. None of the Above
260. Both _____ are efficiently absorbed by inhalation, ingestion, and skin penetration. To a degree, the extent of poisoning depends on the rate at which the pesticide is absorbed.
- A. Carbamates D. Insecticide families
 B. Organophosphates E. Highly concentrated emulsifiable concentrates (ECs)
 C. Chlorpyrifos F. None of the Above

261. _____ break down chiefly by hydrolysis in the liver; rates of hydrolysis vary widely from one compound to another. With certain organophosphates whose breakdown is relatively slow, significant amounts may be temporarily stored in body fat.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

262. The organophosphates and _____ replaced the chlorinated hydrocarbons (e.g., chlordane, aldrin, and heptachlor) for all uses, including termite control.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

263. Examples of _____ are chlorpyrifos for termite control and diazinon for other household pests.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

264. An example of a _____ is carbaryl, also used for household and lawn pests.

- A. Carbamate
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

How can people be exposed to organophosphate and carbamate pesticides?

265. People can be exposed to organophosphates and _____ pesticides through accidental exposure during use.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

266. People can accidentally inhale the pesticides if they are in an area where they were recently applied. The _____ can be ingested with food or drinks that are contaminated.

- A. Carbamates
- B. Organophosphates
- C. Chlorpyrifos
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

How can these pesticides exhaust affect my health?

267. _____ is an enzyme found in the nervous system, red blood cells and blood plasma.

- A. Carbamates
- B. Organophosphates
- C. Acetylcholinesterase
- D. Phosphoric acid esters
- E. Highly concentrated emulsifiable concentrates (ECs)
- F. None of the Above

268. These pesticides damage nerve function by acting as _____ in the nervous system.

- A. Suspected carcinogens
- B. Acetylcholinesterase inhibitors
- C. Slowed heartbeat
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

269. Breathing - Short-term exposure can produce _____, headache, nausea, dizziness, loss of memory, weakness, tremor, diarrhea, sweating, salivation, tearing, constriction of pupils, and slowed heartbeat.

- A. Suspected carcinogens
- B. Muscle twitching
- C. Slowed heartbeat
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

270. Long-term exposure can produce delayed neurotoxicity, such as tingling and burning in the extremities. This delayed neurotoxicity can progress to _____ and is seldom reversible. Damage to the liver, kidney, immune system and bone marrow may occur. Some carbamates are also suspected carcinogens.

- A. Suspected carcinogens
- B. Paralysis
- C. Slowed heartbeat
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

What should I do if exposed to these pesticides?

271. If you think you were exposed to _____, contact your doctor. (Please, pesticides kill applicators all day long)

- A. Suspected carcinogens
- B. Acetylcholinesterase inhibitors
- C. Slowed heartbeat
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

Is there a medical test to show whether I was exposed to these pesticides?

272. The level of cholinesterase activity in red blood cells or plasma helps physicians determine exposure to these pesticides. However, other chemicals or disease states can alter _____.

- A. Suspected carcinogens
- B. Acetylcholinesterase inhibitors
- C. Slowed heartbeat
- D. Acetylcholinesterase activity
- E. Cholinesterase activity
- F. None of the Above

273. Urine or blood tests only apply if a person was exposed to a large quantity. Persons who will use these pesticides regularly should ask their physician to establish a _____ prior to prolonged use, followed by monthly monitoring.

- A. Suspected carcinogens
- B. Acetylcholinesterase inhibitors
- C. Baseline value
- D. Delayed neurotoxicity
- E. Cholinesterase activity
- F. None of the Above

Pyrrroles

274. Chlorfenapyr is the only termiticide from the pyrrole family of chemistry and is active primarily as a stomach poison with some contact activity. It is also _____.

- A. No observable effect
- B. Very low mammalian toxicity
- C. Infected foraging termites
- D. Non-repellent to termites
- E. Been obscured by tests
- F. None of the Above

275. _____ is registered as a termiticide under the tradename Phantom®.

- A. Hormones
- B. IGR
- C. Nematodes
- D. Chlorfenapyr
- E. Gamma-aminobutyric acid (GABA)
- F. None of the Above

276. _____ acts on the mitochondria of cells and uncouples or inhibits oxidative phosphorylation, preventing the formation of the crucial energy molecule adenosine triphosphate (ATP). As a result, energy production in the cells shuts down, resulting in cellular and, ultimately, termite death.

- A. Hormones
- B. IGR
- C. Nematodes
- D. Chlorfenapyr
- E. Gamma-aminobutyric acid (GABA)
- F. None of the Above

Fiproles (or Phenylpyrazoles)

277. _____ is the only insecticide in this new class, introduced in 1990 and registered in the U.S. in 1996. It is marketed as a termiticide under the tradename Termidor®.

- A. Hormones
- B. IGR
- C. Nematodes
- D. Chlorfenapyr
- E. Fipronil
- F. None of the Above

278. This termiticide is a non-repellent material with contact and stomach activity. Fipronil works by blocking the _____ regulated chloride channel in neurons, thus disrupting the activity of the insect's central nervous system.

- A. Hormones D. Chlorfenapyr
- B. IGR E. Gamma-aminobutyric acid (GABA)
- C. Nematodes F. None of the Above

Insect Growth Regulators

279. An insect growth regulator (_____) is a synthetic chemical that mimics insect hormones.

- A. Hormones D. Chlorfenapyr
- B. IGR E. Gamma-aminobutyric acid (GABA)
- C. Nematodes F. None of the Above

280. _____ regulate a wide array of body and growth (physiological) functions. IGRs may interfere with molting, pupal emergence, or body wall formation.

- A. Hormones D. Chlorfenapyr
- B. IGR E. Gamma-aminobutyric acid (GABA)
- C. Nematodes F. None of the Above

281. IGRs are often specific for an insect species or a group of very closely related species. They often have delayed effects because they are taken into the insect and stored until the insect reaches _____.

- A. No observable effect D. Humidity accelerates
- B. Very low mammalian toxicity E. The right growth stage
- C. Infected foraging termites F. None of the Above

282. This may range from days to weeks or even months. For example, if the _____ stops the insect from molting and a given insect is exposed just after a molt, it would continue to function normally until the next molt before dying.

- A. Hormones D. Chlorfenapyr
- B. IGR E. Gamma-aminobutyric acid (GABA)
- C. Nematodes F. None of the Above

283. In the case of termite control, the slow action of the IGR allows the chemical to be widely spread throughout the colony as the termite workers feed and groom one another. IGRs are, in general, environmentally safe and _____. Some examples are hexaflumuron, diflubenzuron, pyriproxyfen, and methoprene.

- A. No observable effect D. Humidity accelerates
- B. Very low mammalian toxicity E. Been obscured by tests
- C. Infected foraging termites F. None of the Above

Biotermiticides

284. Biotermiticides — such as fungi, nematodes, _____, and so forth—still need further research and development to maximize their potential.

- A. Hormones D. Chlorfenapyr
- B. IGR E. Bacteria
- C. Nematodes F. None of the Above

285. *Metarhizium anisopliae* can be injected into galleries, infested walls, and other moist areas where the humidity accelerates the fungal growth. Several forms of nematodes are sold for _____.

- A. No observable effect D. Humidity accelerates
- B. Very low mammalian toxicity E. Termite suppression
- C. Infected foraging termites F. None of the Above

286. _____ are applied to the soil or directly into mud tubes. As with all new methods of control, more research is needed to determine the advantages and limitations of such organisms.
A. Hormones D. Chlorfenapyr
B. IGR E. Gamma-aminobutyric acid (GABA)
C. Nematodes F. None of the Above

287. Biotermiticide, which is derived from fungi, bacteria or nematodes, is injected into active gallery sites. It then develops on _____ and spreads among the colony.
A. No observable effect D. Humidity accelerates
B. The infected foraging termites E. Been obscured by tests
C. Infected foraging ants F. None of the Above

288. Suitable temperature and moisture, early detection and avoidance are factors that determine _____. It may provide localized area control or, with optimum conditions, may suppress a colony.
A. Hormones D. Chlorfenapyr
B. IGR E. This treatment's success
C. Nematodes F. None of the Above

289. Nematodes are roundworms, or threadworms (the Greek word nema means thread) in the phylum Nematoda. _____ inside the bodies of insects and other organisms, often with no observable effect on the hosts. Others cause effects ranging from minor discomfort to disease and death.
A. No observable effect D. Humidity accelerates
B. Very low mammalian toxicity E. Been obscured by tests
C. Infected foraging termites F. None of the Above

290. Entomophilic _____ have affinities for insect hosts. Entomopathogenic nematodes (EPN) produce observable deleterious effects.
A. Hormones D. Chlorfenapyr
B. IGR E. Gamma-aminobutyric acid (GABA)
C. Nematodes F. None of the Above

291. Certain entomopathogenic nematodes (EPN) are efficient biological control agents that can be used against subterranean termites. That fact has been obscured by tests that emphasized _____.
A. No observable effect D. Soil-drench (inundative) treatment methods
B. Very low mammalian toxicity E. Been obscured by tests
C. Infected foraging termites F. None of the Above

292. Recent tests using _____ as inoculums in specially-designed nematode-optimized termite interceptors show that they reliably suppress even large, vigorous termite colonies.
A. EPN D. Molting process
B. IGR(s) E. New methods of control
C. Borates F. None of the Above

293. Because EPN do not elicit complex avoidance reactions in termites exposed to them, repeated inoculations in _____ should succeed, over time, in eliminating termite colonies entirely.
A. Liquid termiticide D. Continuous insecticide distribution
B. Such devices E. Bacillus thuringiensis or B.t.
C. These agents F. None of the Above

294. _____ should perform well as termite colony inoculants in all climates and environments suitable for termite propagation, without the need for exotic toxicant adjuncts.
- A. EPN D. Molting process
 B. IGR(s) E. New methods of control
 C. Borates F. None of the Above
295. Among the insect growth regulators are _____, juvenile hormone mimics (JHM) and chitin synthesis inhibitors (CSI).
- A. Liquid termiticide D. Juvenile hormone analogs (JHA)
 B. Borates E. Bacillus thuringiensis or B.t.
 C. These agents F. None of the Above
296. These products disrupt the termites by causing a specific response or behavior within the colony or by blocking the _____.
- A. EPN D. Molting process
 B. IGR(s) E. New methods of control
 C. Borates F. None of the Above
297. Remember that all insects, including termites, have an exoskeleton made primarily of chitin. In order to grow, they must periodically shed their chitinous exoskeletons and form new ones. This process is called molting. A chitin _____ in the termite and, the next time a molt should occur, prevents proper formation of the cuticle.
- A. Liquid termiticide D. Continuous insecticide distribution
 B. Borates E. Synthesis inhibitor slowly builds up
 C. These agents F. None of the Above
298. _____ are the slowest of the bait types but have greater impact on the colony.
- A. EPN D. Molting process
 B. IGR(s) E. New methods of control
 C. Borates F. None of the Above
299. In some cases _____ are released into the soil and in other cases they are injected into the above-ground termite galleries.
- A. Liquid termiticide D. Continuous insecticide distribution
 B. Borates E. Bacillus thuringiensis or B.t.
 C. These agents F. None of the Above
300. As with all new methods of control, _____ is needed to determine the advantages and limitations of such organisms.
- A. Rules D. Understanding
 B. More government E. New methods of control
 C. More research F. None of the Above

You are finished with your assignment...

Wood Destroyers Assignment #3 For Students Names M-Q

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Write your answers on the Answer Key found in the front of this assignment.

1. We will require all students to fax or e-mail a copy of their driver's license with the registration form.
2. You will need to pick one of the following three assignments to complete. This selection process is based upon your last name. If your last name begins with an A to E, you will pick assignment number 1, if your last name begins with the letter F to L, you are to complete assignment number 2 and if your last name begins with the letter M-Q, you will pick assignment number 3 and if your last name begins with the letter R-Z, you will pick assignment number 4.

Multiple Choice, Please select one answer and mark it on the answer key. The answer must come from the course text. (s) Means answer can be plural or singular.

Commercial Baiting Products

1. Sentricon™ System, developed by Dow AgroSciences for professional use, combines monitoring with the use of _____.
A. Termite invasion D. An integrated program of monitoring
B. Bait tubes E. Permanent stations
C. Foraging pseudergates F. None of the Above
2. Stations are installed in areas where termites exist and around the perimeter of a structure and in the yard. Each station contains a wood stake and must be _____ for termite activity.
A. Periodically monitored D. An integrated program of monitoring
B. Bait tubes E. Permanent stations
C. Foraging pseudergates F. None of the Above
3. After termites attack, the wood is removed and replaced with a bait tube. Termites from the wood must be transferred to the bait tube, which is left in the station until termite activity ceases. Then the _____ are replaced with new wood stakes and monitoring for new infestations resumes.
A. Termite invasion D. An integrated program of monitoring
B. Bait tubes E. Permanent stations
C. Foraging pseudergates F. None of the Above
4. Thus, the Sentricon™ System protects property through _____, baiting when termites are present and resuming monitoring when termites are no longer present. The active ingredient in the Sentricon™ System is hexaflumuron, a chitin synthesis inhibitor.
A. Termite invasion D. An integrated program of monitoring
B. Bait tubes E. Permanent stations
C. Foraging pseudergates F. None of the Above

5. The philosophy behind the Sentricon™ System is that foraging pseudergates will feed on the bait, return to the colony and pass the bait to other colony members through _____.
- Dow AgroSciences claims that with the Sentricon™ System, colony elimination is possible.
- A. Termite invasion
 - B. Bait tubes
 - C. Foraging pseudergates
 - D. Trophallaxis
 - E. Permanent stations
 - F. None of the Above

FirstLine™ Termite Bait Stations

6. FMC Corporation manufactures bait stations for suppression of subterranean termite colonies. The FirstLine™ aboveground termite bait station is applied directly to_____.

- A. Termite invasion
- B. Bait tubes
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Active termite infestations
- F. None of the Above

7. It is placed above ground, inside or outside, at the leading edge of_____. Another product, the FirstLine™ GT in-ground bait station, is placed in the ground in areas conducive to termite attack and acts as a first line of defense against termite invasion of a structure.

- A. Termite invasion
- B. Bait tubes
- C. Foraging pseudergates
- D. Active termite mud tubes
- E. Permanent stations
- F. None of the Above

8. There are two types of these in-ground bait stations. One type has wood stakes for monitoring the presence of termites. The other type has_____.

- A. Termite invasion
- B. Cardboard treated with sulfluramid
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

9. _____are placed in areas where termites are present or very close to monitoring stations that have been attacked by termites.

- A. Termite invasion
- B. Bait tubes
- C. Bait stations
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

10. The active ingredient in FirstLine™ termite bait stations is sulfluramid, a slow-acting stomach poison. The philosophy behind the FirstLine™ products is that many termites will feed on the bait and over time will die.

- A. Bait stations
- B. Bait tubes
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

11. Research with these bait stations demonstrates that reduction of the termite population is possible, but not elimination. FMC Corporation also markets Interceptor™, an on-the-wall application. This product is placed over a_____. The tube is broken open to allow termites to have access to the bait. The active ingredient is sulfluramid.

- A. Termite invasion
- B. Bait tubes
- C. Termite tube
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

Exterra® Termite Interception and Baiting System

12. Ensystem Incorporated manufactures a _____called Exterra® Termite Interception and Baiting System.

- A. Termite invasion
- B. Bait tubes
- C. Foraging pseudergates
- D. Termite baiting system
- E. Permanent stations
- F. None of the Above

Wood Destroying Insects

13. Many insect pests are encouraged to take up residence in wooden structures by excessive _____. Termites, particularly the dampwood termites and subterranean termites, require moisture in their living quarters.

- A. Microorganisms
- B. Fungi
- C. Moisture conditions
- D. Water
- E. Soil
- F. None of the Above

14. Subterranean termites provide moisture for themselves by bringing moisture and soil up from their subsurface colonies and placing it within the wood as they feed on it or around the outside of wood to _____.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Bringing moisture
- F. None of the Above

15. In some cases, subterranean termites may be found separated from soil contact when sufficient moisture, in the _____, is found inside a structure.

- A. Termite colony
- B. Form of water leaks
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

16. The retention of moisture is not the _____ in the life of the termite.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Bringing moisture
- F. None of the Above

17. The warm, moist conditions that prevail within the closed system of the nest provide an ideal site for the growth of _____, particularly fungi, which provide a source of protein and vitamins essential to the termite.

- A. Termite colony
- B. Soil
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

18. The accumulation of termite fecal material in the nest, in turn, helps to promote the _____.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Growth of the fungi
- E. Bringing moisture
- F. None of the Above

19. The most striking fact of this intricately interdependent system is the delicacy with which it is balanced. It is not uncommon to discover the remains of a termite colony that is slowly being crowded out by the _____ that has for some reason progressed at such a rate that the termites could not keep up with it.

- A. Growth of fungi
- B. Soil
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

20. If sudden temperature shifts or other factors result in the _____ within the galleries, the termites may drown.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Accumulation of water
- F. None of the Above

21. A _____ are associated with excessive moisture and fungus problems in structures.
- A. Termite colony D. Moisture and fungus
 B. Number of beetles E. Particularly fungi
 C. Microorganisms F. None of the Above
22. The furniture beetle, an anobiid beetle, is commonly attracted to _____.
- A. Moisture content D. Termite fecal material
 B. Temperature shifts E. Moisture
 C. Moisture and fungus F. None of the Above
23. Anobiid larvae eat the wood, and the beetle may re-infest over many generations, reducing the _____.
- A. Termite colony D. Wood to little more than powder
 B. Soil E. Fungi
 C. Microorganisms F. None of the Above
24. Anobiid larvae will not survive in wood with a _____. The drier the wood, the slower their growth.
- A. Moisture content D. Moisture content below 20 percent
 B. Temperature shifts E. Moisture content below 12 percent
 C. Moisture and fungus F. None of the Above
25. Other families of beetles are also associated with _____ in structures, but with all these families, it is the fungus growth to which they are attracted.
- A. Termite colony D. Moisture and fungus
 B. Soil E. Excessive moisture
 C. Microorganisms F. None of the Above

These "fungus beetles" include:

26. _____—minute brown scavenger beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
27. _____—darkling beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
28. _____—the minute fungus beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
29. _____—the silken fungus beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
30. _____—flat bark beetles.
- A. Cisidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above

31. _____ feed on fungus growth on wood, such as Poria, or may be present in damp foods where even tiny amounts of fungus growth or fungal spores are present.
- A. Genus or species D. These beetles and their larvae
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
32. The fungus beetles are not wood-damaging pests but are _____ and are a good indication that such problems are present.
- A. Hungry D. Associated with moisture problems
 B. Large E. Most concerned
 C. Friendly F. None of the Above
33. Many other insects infest and seriously damage wood. Many of these, such as the _____ and round- and flatheaded borers, are found alive most frequently in seasoned wood.
- A. Various bark beetles D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
34. The pest management professional is usually most concerned with those insects that _____.
- A. Damage seasoned lumber D. Have complete metamorphosis
 B. Reproduce E. Carry disease
 C. Fly F. None of the Above
35. These insects include representatives of the orders Hymenoptera (horntail or wood wasps, carpenter ants and bees) and _____.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
36. The members of these two orders develop by _____, advancing from eggs to larvae, pupae, and adults.
- A. Thin antennae D. Complete metamorphosis
 B. Broad sense E. Most concerned
 C. Good indication F. None of the Above
37. The characteristics of the damage done to wood by these insects are generally sufficient evidence to identify the insects to their family, but positive identification to _____ requires examination of the insect itself.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above

Powder Post Beetles

38. The term powder post beetle, used in the broad sense, applies to any of the _____ of three closely related families (Lyctidae, Bostrichidae, and Anobiidae) within the superfamily Bostrichoidea.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Wood-boring species
 C. Powder Post Beetles F. None of the Above

39. The common name is appropriate because the _____ reduce timbers to a mass of very fine, powderlike material.

- A. Genus or species
- B. Coleoptera (beetles)
- C. Powder Post Beetles
- D. Round- and flatheaded borers
- E. Larvae of these beetles
- F. None of the Above

40. The _____ do very little actual damage to wood, serving primarily a reproductive function.

- A. Genus or species
- B. Coleoptera (beetles)
- C. Powder Post Beetles
- D. Round- and flatheaded borers
- E. Larvae of these beetles
- F. None of the Above

41. There are _____, behavior, and nutrition among these groups, and these differences have led to the separation of the families.

- A. Few changes
- B. Beetles that show
- C. Good indications
- D. No changes
- E. Certain differences in structure
- F. None of the Above

Longhorned Beetles

42. Longhorned beetles are large (1/2 to 3 inches long), _____ with long, thin antennae that may be longer than their bodies.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Maggot-looking
- F. None of the Above

43. _____ usually lay their eggs on unseasoned, rough-sawn timbers or logs.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Maggots
- E. Reproductives
- F. None of the Above

44. The _____, called roundheaded borers, feed in the wood, boring large, oval-shaped holes as they move through it. Infestation usually takes place before the timber is used in structures.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Larvae
- E. Reproductives
- F. None of the Above

45. The _____ of some species take more than one year to complete their development, so they may still be feeding in the wood after it becomes part of a structure.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Larvae
- E. Reproductives
- F. None of the Above

46. Damage is usually limited to pine sapwood and can be recognized by the _____.

- A. Damage seasoned lumber
- B. Color
- C. Odor
- D. Ripples on the surface of the galleries
- E. Hollow sound
- F. None of the Above

47. The _____ will not lay eggs for re-infestation on this type of wood, so control is rarely called for.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

48. The exception to this is a species known as the _____ (Hylotrupes bajulus).

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Maggot-looking
- F. None of the Above

49. Old house borers will attack timbers in a building, so they are the only _____ requiring control measures.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Longhorned beetles
- E. Larvae of some species
- F. None of the Above

50. The _____ is about 3/4 inch long and grayish brown to black with two white patches on its wing covers.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Adult
- F. None of the Above

Black Carpenter Ants

51. Ants of the genus Camponotus often nest in wood. There are many different carpenter ant species, but only one poses a major pest problem (the _____ (Camponotus pennsylvanicus)).

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Black carpenter ant
- E. Larvae of some species
- F. None of the Above

52. The black carpenter ant varies from 1/8 to 1/2 inch in Length because of the presence in most colonies of _____.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Conspicuous beetles
- E. Both "major" and "minor" workers
- F. None of the Above

53. _____ may construct their nests in hollow trees, logs, posts, porch pillars, hollow doors, and other timbers used in homes.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

54. The _____ do not consume the wood but simply hollow it out to form cavities for the nest. They are usually attracted to damp, decaying wood, but once the nest is started, they will also excavate sound wood as they enlarge the nest.

- A. Black carpenter ant (Ants)
- B. Roundheaded borers
- C. Old house borer
- D. Larva
- E. Maggots
- F. None of the Above

55. It is often quite common to find them nesting in existing voids that require no excavation; occasionally they start in an existing void and enlarge it as their need dictates. The presence of _____ suggests the potential for damage to wood.

- A. Carpenter ants
- B. Old house borers
- C. Lay their eggs
- D. Adult beetle
- E. Larvae of some species
- F. None of the Above

Biology

56. Carpenter ants are among the largest species that you'll find. Like other ant species, carpenter ants are social, i.e., they live in a colony and have several " _____ " or adult forms that perform different jobs in the colony.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Castes
- E. Queen(s)
- F. None of the Above

57. The _____ usually reaches 9/16 inch in length. The workers range in size from 1/4 to 7/16 inch. So, if you see different sized ants, they could all be from the same colony.

- A. Queen
- B. Pupae
- C. Swarmers
- D. King
- E. Reproductives
- F. None of the Above

58. All of these ants are _____ regardless of their size, so they do not grow.

- A. Adults
- B. Workers
- C. Females (queen)
- D. Species
- E. Swarmers
- F. None of the Above

59. Only the queen produces offspring in the nest. _____ are white, legless, and maggot-looking in appearance.

- A. Queens
- B. Pupae
- C. Swarmers
- D. Immature ants (larvae)
- E. Reproductives
- F. None of the Above

60. They remain in the nest and are fed by the workers. The larvae develop into _____, which are tan and capsule-shaped.

- A. Adults
- B. Workers
- C. Female (queen)
- D. Pupae
- E. Swarmers
- F. None of the Above

61. New adults emerge from these pupae. _____ will vary in color depending upon the species.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Adult ants
- E. Reproductives
- F. None of the Above

62. The _____, the species that most commonly nests in homes, is primarily black in color. Other carpenter ant species may be more reddish-brown to yellow in color.

- A. Black carpenter ant
- B. Roundheaded borers
- C. Old house borer
- D. Castes
- E. Queen(s)
- F. None of the Above

Life Cycle

63. In the spring, carpenter ants swarm, i.e., _____ emerge from the colony. The swarmer's sole purpose is reproduction.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Adults
- E. Winged adults
- F. None of the Above

64. Shortly after mating, the female (queen) loses her wings and searches out a cavity in wood or soil where she begins to lay eggs and produce _____.

- A. Her colony's first workers
- B. Workers
- C. Female (queen)
- D. The species
- E. Swarmers
- F. None of the Above

65. These workers care for the queen as she produces _____, and they assume the tasks of foraging for food, maintaining and expanding the nest, and caring for the young.
- A. Queens D. More offspring
 B. Pupae E. Reproductives
 C. Swarms F. None of the Above
66. After 3-6 years, the colony will contain 2000-3000 workers, and will start to produce _____. The swarms are actually produced in the fall, but they wait until the following spring to emerge.
- A. Adults D. Pupae
 B. Workers E. Swarms
 C. Female (queen) F. None of the Above
67. Swarming is not the only means for carpenter ants to produce new nests. "Satellite" colonies may be formed by workers that move out of the main nest, carrying _____ with them. Eventually, these secondary colonies produce their own reproductives.
- A. Queen D. Larvae and pupae
 B. Pupae E. Reproductives
 C. Swarms F. None of the Above

Carpenter Bees

68. The carpenter bee (*Xylocopa virginica*) _____ in that it is robust and black with some markings of yellow hair.
- A. Queen D. Resembles a bumblebee
 B. Tunnels E. Considered pests
 C. Nesting sites F. None of the Above
69. The dorsal surface of the abdomen lacks the yellow hair markings of _____ and is mostly devoid of any hair.
- A. Queen D. Bumblebee(s)
 B. Tunnels E. Considered pests
 C. Nesting sites F. None of the Above
70. These bees are _____ of wood because they excavate tunnels in softwood as sites for producing their brood.
- A. Queen-less D. Not a risk
 B. Tunnel makers E. Considered pests
 C. Nest makers F. None of the Above
71. Common _____ are posts, fence railings, porch support posts, wall siding, eaves, wooden shingles, windowsills, doors, wooden porch furniture, etc.
- A. Insects D. Wood
 B. Tunnels E. Mating sites
 C. Nesting sites F. None of the Above

Termite Introduction

72. There are about 2,500 termite species in the world. North America has _____, most in the southeast USA. Alaska is the only state without termites.
- A. Soft-bodied insects D. 41 termite species
 B. Subterranean termites E. Termites
 C. Protozoa (microorganisms) F. None of the Above

73. Florida's eastern subterranean termite colonies have about 250,000 members, but can have 1 million or more. A colony eats about 1 cubic foot of wood a year. _____ can have two million termites. The queen can lay 2,000 eggs per day and live as long as 50 years.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Australian colonies
- E. Termites
- F. None of the Above

74. Termite damage to residential and commercial buildings in the U.S. costs more than \$1 billion annually. _____, the most destructive of all termite species, account for 95% of the damage.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

75. Two _____ species, *Reticulitermes flavipes* (Kollar) and *R. tibialis* Banks, are commonly found in United States.

- A. Soft-bodied insects
- B. Subterranean termite
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

Feeding Habits

76. Subterranean termites feed mainly on wood and wood products containing cellulose. Termites have _____ in their intestine which provide enzymes to digest cellulose.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. 41 termite species
- E. Termites
- F. None of the Above

77. This relationship is beneficial to both species, since the _____ cause no harm and are provided with food and a protected environment by the termites.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

78. Although termites are _____, their hard, saw-toothed jaws work like shears and can bite off extremely small fragments of wood.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Wood borers
- E. Destructive
- F. None of the Above

79. These termites do not attack live trees, except for the _____. Termites often infest buildings and cause damage to lumber, wood panels, flooring, sheetrock, wallpaper, plastics, paper products, and fabric made of plant fibers.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Formosan termite
- E. Survivors
- F. None of the Above

80. _____ attack flooring, carpeting, art work, books, clothing, and furniture. The most serious damage involves the loss of structural strength.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

Biology

81. _____ are ground-dwelling social insects living in colonies. The two species found in United States have similar habitats. These termites have the ability to adjust the depth of their colony (nest) in soil depending on temperature and moisture requirements.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

82. The _____ may be 18-20 feet deep in the ground. The ground serves as a protection against extreme temperatures and provides a moisture reservoir.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

83. Termites reach wood or cellulose materials above ground by constructing and traveling through _____.

- A. Holes
- B. Tunnels
- C. Castles
- D. Swarming
- E. Earthen (mud) tubes
- F. None of the Above

84. The mature colony consists of _____ : a) reproductives (king and queen), b) soldiers, and c) workers. It takes about 4 to 5 years for a colony to reach its maximum size and it may consist of 60,000 to 200,000 workers.

- A. Colony
- B. Subterranean termites
- C. Three castes
- D. Swarms
- E. Survivors
- F. None of the Above

85. _____: A group of insects with a specific morphology and function within a colony of social insects.

- A. Colony
- B. Family
- C. Caste
- D. Swarms
- E. Survivors
- F. None of the Above

Reproduction

86. In spring and fall, the winged males and females emerge from their parent colonies to form new ones. This activity is called _____.

- A. Colony building
- B. Migration
- C. Castes
- D. Swarming
- E. Reproducing
- F. None of the Above

87. These _____ are dark brown to brownish black and have two pair of nearly equal size semitransparent wings extending well beyond the body.

- A. Winged reproductives
- B. Subterranean termites
- C. Castes
- D. Swarms
- E. Survivors
- F. None of the Above

88. The _____ are weak flyers and, unless aided by wind, fly only short distances. Many of them are devoured by birds, spiders, ants, and other predators.

- A. Queens
- B. Termites
- C. Castes
- D. Swarms
- E. Survivors
- F. None of the Above

89. _____ return to the ground and shed their wings. The wingless males and females pair off (male following female in tandem) until they find a source of wood and moisture in the soil.

- A. Queens
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

90. They dig soil near wood, enter the chamber and seal the opening. After mating, the _____ begins laying eggs. The royal queen is known to survive up to 25 years.

- A. Queen
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

Eggs

91. The _____ usually deposits 6 to 20 eggs during the first six months following the swarming flight and she may lay more than 60,000 eggs in her lifetime.

- A. Queen
- B. Termite
- C. Caste
- D. Fertilized female
- E. Survivor
- F. None of the Above

92. _____ are yellowish white and hatch after an incubation period of 50 to 60 days.

- A. Queen
- B. Termite
- C. Caste
- D. Fertilized female
- E. Survivor
- F. None of the Above

Workers

93. The first broods of _____ (young termites) generally develop into workers. Full grown workers are soft-bodied, wingless, blind, and creamy white. In early stages, they are fed predigested food by the king and queen.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

94. Once workers are able to digest wood, they begin providing food for the entire colony. At this time, the _____ cease feeding on wood.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

95. The workers undertake all the labor in the colony such as obtaining food, feeding other _____, excavating wood for chambers, and constructing tunnels. Workers mature within a year and live from 3 to 5 years.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

Soldiers

96. Soldiers are creamy white, soft-bodied, wingless, and blind. The head of the _____ is enormously elongated, brownish, hard, and equipped with two strong jaws.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

97. _____ must be fed by workers as they are incapable of feeding themselves. They are less numerous than workers and their sole function is to defend the colony against invaders such as ants.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

98. _____ mature within a year and live up to 5 years.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

99. Flying ants and _____ are often difficult to distinguish when these insects are seen around residential and commercial buildings.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

100. The main enemy of termites is Ants and the _____ can defend a small number of Ants.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

Termite Reproduction

101. The female assumes a "calling" position with her abdomen elevated at a right angle to the rest of her body. She releases a _____ which attracts nearby males. Once a male encounters a calling female, she moves off.

- A. Odor
- B. Tap
- C. Call
- D. Chemical messenger (pheromone)
- E. Hormone
- F. None of the Above

102. He follows close behind and they search for a suitable site for the establishment of a nest. As soon as the pair has located a suitable site, they excavate (with their jaws) a small chamber large enough for the two of them and then _____.

- A. Young queen matures
- B. Start a new colony
- C. Seal the entrance
- D. Find a suitable site
- E. Start dispersal flights
- F. None of the Above

103. _____ usually occurs within a few hours to weeks after the pair becomes established.

- A. Mating
- B. Cellulose for their nutrition
- C. Process continues
- D. Calling
- E. Maximum egg production
- F. None of the Above

104. The single female cannot start a new colony. _____ is dependent upon the survival of both sexes in the nest site and that she has successfully mated.

- A. Young queen matures
- B. Start a new colony
- C. After two molts
- D. Suitable site
- E. Establishment of a colony
- F. None of the Above

105. The pair continues to _____, and they usually mate periodically. The first eggs are laid within one to several weeks after mating, depending on the nutrition available to the female. When the first eggs hatch, the new nymphs are cared for by the young pair.

- A. Live together for life
- B. Mate
- C. Fight
- D. Relatively new structure
- E. Maximum egg production
- F. None of the Above

106. _____, the nymphs assume their role as workers and begin to feed and care for the original pair.

- A. Young queen matures
- B. Starting a new colony
- C. After two molts
- D. Building a suitable site
- E. Starting dispersal flights
- F. None of the Above

Development of the Colony

107. Development of the colony is very slow for several years. Eggs are _____. After the first group of eggs has been laid, there is a period of several months before another group is laid. This process continues for several years.

- A. White
- B. Cared for
- C. Not laid
- D. Placed in a new structure
- E. Hatched
- F. None of the Above

108. As the _____, she lays a greater number of eggs, and her abdomen becomes enlarged from developing eggs.

- A. Young queen matures
- B. Start a new colony
- C. After two molts
- D. Suitable site
- E. Start dispersal flights
- F. None of the Above

109. Eventually, a point is reached where the _____. That is, the queen has reached maximum egg production, and the loss of older individuals by death or swarming is approximately the same as the number of new individuals produced each year.

- A. Queen leaves
- B. Queen mates
- C. Process continues
- D. Colony size stabilizes
- E. Maximum egg production
- F. None of the Above

110. As the colony becomes even older a greater number of swarmers are produced each year. It requires a minimum of 3 to 4 years--and as much as 8 to 10 years--for a colony of our native subterranean termites to become large enough and strong enough to _____.

- A. Mate
- B. Start a new colony
- C. Molt
- D. Look for a suitable site
- E. Start dispersal flights
- F. None of the Above

Swarming

111. When swarming occurs in a relatively new structure, it is because it was built over or near a strong colony that was not _____.

- A. Considered safe
- B. Near ants
- C. For rent
- D. Relatively a new structure
- E. Maximum egg production
- F. None of the Above

112. Termites derive food from wood and other cellulosic materials. In nature, they feed exclusively on wood, _____ and passing most of the remaining components as waste.

- A. Dry wood
- B. Green wood
- C. Near water
- D. Primarily digesting out the cellulose
- E. And soil
- F. None of the Above

113. In man-invaded environments, termites attack many additional products and commodities. They still depend primarily on cellulose for their nutrition, but will _____ they encounter.

- A. Damage many materials
- B. Eat cellulose for their nutrition
- C. The process continues
- D. Build new structures
- E. Start over
- F. None of the Above

114. Damaged materials may include plastics, rubber, asphalt, metal, mortar and others. Wood products like paper are favorite foods of termites because they are nearly pure cellulose. Cotton, burlap and other plant fibers are _____ by termites as well.

- A. Rejected
- B. Preferred
- C. Eaten
- D. Actively consumed
- E. Ignored
- F. None of the Above

Fungi

115. Fungi also play a role in _____. Certain wood decay fungi are highly attractive to termites.

- A. Termite nutrition
- B. Cellulose for their nutrition
- C. Processing
- D. Finding a new structure
- E. Maximum egg production
- F. None of the Above

116. _____ is more easily digested by termites, and the fungus may provide a needed source of nitrogen.

- A. Source of nitrogen
- B. Fungus spores
- C. Moist galleries
- D. Partially decayed wood
- E. Wet wood
- F. None of the Above

117. Ultimately, _____ exhaust the nutritive value of wood for termites, and extensive decay in wood is of no benefit to foraging termites.

- A. Source of nitrogen
- B. Fungus spores
- C. Moist galleries
- D. Ants
- E. Wood-destroying fungi
- F. None of the Above

118. Conversely, when termites attack wood, they usually bring _____ on their bodies. When water or other liquid reaches the damaged wood, it is more easily trapped.

- A. Nitrogen
- B. Fungus spores
- C. Hormones
- D. Clothes
- E. Soil
- F. None of the Above

Moisture

119. _____ to the survival of termites. Subterranean termites obtain most of their moisture from the soil. They maintain contact with the soil in order to survive.

- A. Source of nitrogen is vital
- B. Fungus spores is vital
- C. Moisture is not vital
- D. Moisture is vital
- E. Sandy soil over a clay base is vital
- F. None of the Above

120. The type of soil has a great effect on the ability of subterranean termites to flourish. They generally prefer sandy soil over a clay base. They can and do survive in many _____, however.

- A. Other types of soil
- B. Areas
- C. Wood types
- D. Above-ground types of nests
- E. Types of Weather
- F. None of the Above

Tolerances

121. Termites have very little tolerance to _____, or extremes of hot and cold. But they often must forage far, sometimes above ground, from their initial workings to find food.

- A. Pesticides
- B. Wet conditions
- C. Dry conditions
- D. Ants
- E. Rap Music
- F. None of the Above

122. They move underground through tunnels. Whenever the termites leave the confines of the soil or the wood in which they are feeding, they _____ in which to move from the soil to the wood or the above-ground nest.

- A. Construct castles
- B. Operate equipment
- C. Develop plans
- D. Build above-ground nests
- E. Construct shelter tubes
- F. None of the Above

Subterranean Termites

123. When subterranean termites invade the wood of a structure that is separated from the soil by intervening concrete, masonry or other impervious material, they _____ over the surface to the wood.

- A. Construct castles
- B. Operate equipment
- C. Develop plans
- D. Build above-ground nests
- E. Construct shelter tubes
- F. None of the Above

124. Periodically, they return to the moist galleries. Contrary to published reports, shelter tubes do not necessarily conduct _____ from the soil to the wood.

- A. Nitrogen
- B. Dry air
- C. Moist galleries
- D. Moist air
- E. Water
- F. None of the Above

125. Shelter tubes also provide some protection from _____ and prevent excess water loss. The primary function of shelter tubes probably is protection from natural enemies.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Air movement
- F. None of the Above

126. Once termites have established contact with wood above ground and feeding progresses some distance from the initial shelter tunnel, they often _____ straight down from the wood. Evidence of tube building will be found directly below a suspended tube.

- A. Initial shelter tunnel
- B. Will drop shelter tubes
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

Castles

127. Under certain conditions a fourth type of tube is constructed. Called swarming tubes or swarming "castles" they are constructed as flight platforms for swarmers and they have many turret-like projects and _____ that vaguely resemble castle towers.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Flattened horizontal branches
- E. Heavily guarded
- F. None of the Above

128. They usually are _____ to a height of 4 to 8 inches (10-20 cm), but sometimes are found projecting from heavily infested wood above ground.

- A. Initial shelter tunnel
- B. Constructed on the ground
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

129. When swarmers are _____ via these tubes, or directly through a hole in wood or soil, the openings are heavily guarded by soldiers and workers.

- A. Attacking colonies
- B. Extend the damage
- C. Leaving the colony
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

130. The amount of damage that _____ of subterranean termites might inflict on a structure depends on many factors.

- A. Initial shelter tunnel
- B. An infestation
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

131. The number and size of the _____ and the quality of the environmental conditions (including the wood) are the most important.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

132. Damage usually _____ in houses built over a crawl space and with the sole plates of those houses built on concrete slabs.

- A. Initial shelter tunnel
- B. Starts at the mudsill
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

133. Given enough time, subterranean termites _____ into the wooden floor members, the interior trim and furnishings, and into the walls up to the roof timbers.

- A. Attacking colonies
- B. Will extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

Severe Damage

134. Severe damage by subterranean termites is not likely to occur in the first 8 or 10 years after construction. If treatment is undertaken with the _____, very little serious structural damage is ever likely to occur.

- A. Initial shelter tunnel
- B. Projecting
- C. Instantly recognized
- D. Crawl space
- E. First evidence of infestation
- F. None of the Above

135. Houses should be carefully inspected at least once a year in all regions. This will allow detection _____.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

136. Should evidence of termites be found, there is _____ or undue haste. Treatment within 6 months is recommended.

- A. Initial shelter tunnel
- B. No cause for extreme alarm
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

Communication in the Colony

137. Termites primarily communicate via chemicals called pheromones. Each colony develops its _____.

- A. Attacking colonies
- B. Damage
- C. Flight platforms
- D. Own characteristic odor
- E. Own characteristic defense
- F. None of the Above

138. Any intruder is _____ and an alarm pheromone is released that triggers the soldiers to attack the intruder.

- A. Easily probed
- B. Found
- C. Perceived
- D. Instantly recognized
- E. Recognizing the signs
- F. None of the Above

139. If a worker finds a new source of food, _____ to that food source by laying a chemical trail. The proportion of castes in the colony is also regulated chemically. Nymphs can develop into workers, soldiers, or reproductive adults, depending on colony needs.

- A. Sounds "food"
- B. It recruits others
- C. Could consume the equivalent
- D. Enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

140. Sound is another means of communication. Soldiers and workers _____ against tunnel walls. The vibrations are perceived by other termites in the colony and serve to mobilize the colony to defend itself.

- A. Easily probe
- B. May tunnel
- C. Vibrations are perceived
- D. Can bang their heads
- E. Recognize the signs
- F. None of the Above

141. Mutual exchange of _____ of colony members.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

Detection of Termites

142. It is important for homeowners to recognize the signs of a subterranean termite infestation. Subterranean termites _____ of winged termites (alates or swarmers), or by the presence of mud tubes and wood damage.

- A. Easily mate
- B. May eat
- C. Vibrations are perceived
- D. Amount of damage
- E. Recognize the signs
- F. None of the Above

143. Termites _____ that contains cellulose (the main component of wood), including wood paneling, paper products, cardboard boxes, art canvases, the paper covering of sheetrock, carpeting, etc.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

144. While _____, they may tunnel through non-cellulosic materials, such as plastic and foamboard.

- A. Probing
- B. They may tunnel
- C. Vibrations are perceived
- D. The amount of damage
- E. Foraging and feeding
- F. None of the Above

145. According to some research, a colony containing 60,000 workers _____ of one foot of a 2" x 4" piece of lumber in slightly over 5 months.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

146. In reality, the amount of damage that termites cause depends on many factors. In areas with cold winter temperatures, termite activity (and feeding) usually declines, but does not necessarily stop. From _____, serious termite damage usually takes about 3-8 years.

- A. Some
- B. A tunnel
- C. A practical perspective
- D. Amount of damage
- E. Recognizing the signs
- F. None of the Above

Look for these signs of termite feeding:

147. Wood that _____ when it is tapped with the handle of a screwdriver.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

148. Soft wood that is _____ with a knife or screwdriver.

- A. Easily probed
- B. Easily tunneled
- C. Vibrations are perceived
- D. Hardily probed
- E. Harden
- F. None of the Above

149. A _____ on the surface of damaged material.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

150. There is _____ the age of recently discovered damage. You need some reference point, i.e., some point in time when it was known that there was no damage to this particular wood.

- A. No accurate method for determining
- B. Easy method of determining
- C. Way to test
- D. Amount of damage
- E. Recognize the signs
- F. None of the Above

151. This is one reason why annual inspections (and keeping your records of these inspections) are invaluable. These inspections do not guarantee that there is _____ in visually-inaccessible areas, such as inside walls. However, they can reveal conditions that might suggest that damage does exist.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

Winged Termites

152. Large numbers of winged termites swarming from wood or the soil often are the first obvious sign of a _____.

- A. Termite swarms
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Nearby termite colony
- F. None of the Above

153. Swarming occurs in mature colonies that typically contain at least several thousand termites. A " _____ " is a group of adult male and female reproductives that leave their colony in an attempt to pair and initiate new colonies.

- A. Termite swarms
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

154. _____ is stimulated when temperature and moisture conditions are favorable, usually on warm days following rainfall.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

155. _____ typically occurs during daytime in the spring (March, April, and May), but swarms can occur indoors during other months.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Swarming
- F. None of the Above

156. Swarming occurs during a brief period (typically less than an hour), and _____ quickly shed their wings.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

157. _____ are attracted to light, and their shed wings in window sills, cobwebs, or on other surfaces often may be the only evidence that a swarm occurred indoors. The presence of winged termites or their shed wings inside a home should be a warning of a termite infestation.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

158. _____ have straight, bead-like antennae; a thick waist; and two pair of long, equal-length wings that break off easily.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

159. Winged termites can be differentiated from _____, which have elbowed antennae, a constricted waist, and two pair of unequal-length wings (forewings are larger than hind wings) that are not easily detached. Ants also generally are harder-bodied than termites.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged ants
- F. None of the Above

Mud Tubes

160. Other signs of _____ presence include mud tubes and mud protruding from cracks between boards and beams.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

161. _____ transport soil and water above ground to construct earthen runways (shelter tubes) that allow them to tunnel across exposed areas to reach wood.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

162. Shelter tubes protect them from the drying effects of air and from natural enemies, such as ants. These tubes usually are about 1/4 to 1 inch wide, and _____ use them as passageways between the soil and wood.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

163. To determine if an infestation is active, shelter tubes should be broken or scraped away and then monitored to determine whether the _____ repair them or construct new ones. Houses should be inspected annually for mud tubes.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Mass Emergence

164. The mass emergence of _____ in the spring is often the first sign of an infestation. In the majority of cases, they emerge in homes near sources of heat - furnaces or water heaters.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

165. The appearance of _____ means that the infestation has been around for at least 3 or 4 years. Therefore it is likely some damage has already been done, so it is important to find where the termites have been feeding, how much damage has been done, and how much repair is needed.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

166. Other means of detecting infestations include knocking on walls, floors, sub-floor wood, joists, etc. and listening for the tapping of _____, and looking for shelter tubes on the outside of the building and under the sub-floor.

- A. Termite swarmers
- B. Soldiers
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

167. Because _____ have a constant demand for water, one should closely examine areas near moist soil, such as below dripping outside faucets, leaking underground sprinkler pipes and nozzles, and below downspouts.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

168. Where damage or _____ are suspected, prod with a sharp narrow implement to check the soundness of the supporting wood structure.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Termites
- F. None of the Above

169. The detection of _____ is best left to professionals who have the experience to do it thoroughly and accurately. Professionals like you.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Termite infestations
- E. Termite(s)
- F. None of the Above

170. _____ can enter a building from one or more points so it is important to locate all points of entry for control purposes.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

171. Outdoors, _____ can be detected by driving wooden stakes into the ground at varying distances from buildings and other wooden structures. Examine the stakes every 3 months for termites or signs of their feeding damage.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Evidence of Termite Infestations

172. Wood damaged by _____ can be readily penetrated with a screwdriver, ice pick, or knife. The wood easily breaks apart, revealing mud tubes attached to wood galleries or tunnels in an irregular pattern. The tunnels may contain broken mud particles with fecal materials. In the case of an active colony, white termites may be found in infested wood.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

173. The presence of _____, females, or their shed wings, particularly when the adults fly inside the building, indicates an infestation in the building.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

174. Another indication is the presence of mud or shelter tubes extending from the ground to woodwork or on foundation walls. _____ travel periodically via shelter tubes to their colony to obtain moisture and perform feeding duties.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

175. _____ build mud or shelter tubes from soil and wood particles, and coat them with a glue-like substance that they secrete. Each mud tube is about the diameter of a lead pencil.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Useful Information If Treatment is Necessary

176. If termite activity is suspected or found and _____ is necessary, it is important to outline the plan of the building, indicating sites of termite activity and treatment procedures.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. An insecticide treatment
- E. Continuous insecticide barrier
- F. None of the Above

Control Objectives

177. The goal is to establish a _____ between the termite colony (usually in the ground) and the wood in a building.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

178. Sometimes a secondary termite colony may exist above ground (in roof or other areas with a constant moisture supply) which _____.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

179. In most cases, an untrained homeowner or building manager should not attempt a _____. (But homeowners still try and some do a good job.)

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

180. Generally, termite treatments should be performed by professional pest control operators (PCOs). _____special tools such as hammer drills, sub-slab injectors, rodding devices, high pressure pumps, a power supply, protective equipment. Several insecticides are registered in United States for termite control. All of these insecticides control termites if properly applied.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Termite treatment requires
- E. Termite activity and treatment procedures
- F. None of the Above

The procedures described here are general guidelines, and the applicator must follow the insecticide label directions for dilution, application rate, and other relevant information.

Caution

181. Do not apply insecticides when soil is frozen or water-soaked (saturated). Frozen or saturated soil will _____for even distribution of insecticide.

- A. Requires additional treatment
- B. Not permit adequate absorption
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

182. Do not permit humans and pets to _____until dry.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

183. _____for termite control, always read, understand and follow all label directions.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

184. _____ in original containers, out of reach of children and do not contaminate food, feed and water.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

185. Do not plant garden food crops _____.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

186. Do not _____ in treated soil.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

Pre-Construction Treatment

187. Horizontal Barriers: In general, treat the footing trench with insecticide before pouring cement footings. After grading is completed, _____ to areas before pouring slab floors, slab-supported porches, patios, carports, and entrance platforms at the rate of 1 gallon per 10 square feet.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Apply diluted insecticide
- F. None of the Above

188. Vertical Barriers: Establish a _____ in areas such as around the bases of foundations, plumbing, utility entrances, and backfilled soil against foundation walls.

- A. Termite treatment
- B. Contact treated surfaces
- C. Chemical barrier
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

189. Treat crawl space areas either by _____. To produce a vertical barrier in soil, apply insecticide at the rate of 4 gallons per 10 linear feet per foot of depth. After treatment, cover the crawl space area with a layer of untreated soil or polyethylene sheeting.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Rodding or trenching procedures
- F. None of the Above

Post-Construction Treatment

190. _____ until locations of radiant heat pipes, water pipes, sewer lines, and electrical conduits are identified. Buildings requiring treatment generally fall into three categories: a) building on slab construction, b) building with crawl space, and c) building with a basement.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

191. There is a common belief that termites cannot penetrate slab foundations. Termites cannot penetrate _____ but they can enter through cracks as small as 1/64 of an inch.

- A. Solid concrete
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Building on Slab

192. Controlling termite infestation in a building on a _____ is especially difficult and hazardous. In this type of construction, heat ducts (pipes) are buried in the concrete and serious damage can occur when they are accidentally drilled for holes to inject insecticide solutions. Drilling through electrical conduits or plumbing imbedded in the floor is another problem.

- A. Slab
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

193. Treat the exterior of the _____ by digging a narrow and shallow trench about 6 inches wide along the outside of the foundation.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

194. Apply the diluted insecticide to the _____ at the rate of 4 gallons per 10 linear feet. Cover treated soil in the trench with a thin layer of untreated soil. For an inside barrier, drill slab and space holes about 1 foot apart and 6 inches from the wall.

- A. All holes
- B. Masonry voids
- C. Trench and soil
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

Applications

Building With a Basement and Crawl Space

195. Basement: For _____, drill the floor slab and space holes about one foot apart.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. An interior vertical barrier
- F. None of the Above

196. Drilling may be required along the foundation walls, along one side of partition walls, along both sides of _____, around sewer pipes, floor drains, conduits, and any crack in the basement floor.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

197. Using a sub-slab injector, inject the insecticide at the rate of 4 gallons per 10 linear feet. For an insecticide barrier around the _____, apply an insecticide by rodding and/or trenching.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

198. The rod holes should be spaced 1 to 1 1/2 feet apart to provide _____. If a trench is necessary, it should not be wider than 6 inches.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

199. Inject insecticide using rodding technique at the rate of 4 gallons per 10 linear feet. Cover the trench with _____.

- A. Soil
- B. Plastic
- C. Tarp
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Wood Preservatives

200. Wood preservatives must meet two broad criteria: (1) They must provide the desired wood protection in the intended end use, and (2) they must do so without presenting unreasonable risks to people or the environment. Because wood preservatives are _____, the U.S. Environmental Protection Agency (EPA) is responsible for their regulation.

- A. EPA regulation
- B. Restricted use
- C. PCP
- D. Considered to be a type of pesticide
- E. Not regulated as pesticide
- F. None of the Above

201. Federal law requires that before selling or distributing a preservative in the United States, a company must obtain registration from EPA. Before registering a new pesticide or new use for a _____, EPA must first ensure that the preservative can be used with a reasonable certainty of no harm to human health and without posing unreasonable risks to the environment. To make such determinations, EPA requires more than 100 different scientific studies and tests from applicants.

- A. Registered preservative
- B. Preservative
- C. Creosote
- D. Non-pressure treatments
- E. Restricted-use pesticides
- F. None of the Above

202. Some preservatives are classified as “restricted use” by the EPA and these can be used only in certain applications and can be applied only by certified pesticide applicators. Restricted use refers to the chemical preservative and not to the_____.

- A. EPA regulation
- B. Restricted use
- C. Treated wood product
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

203. The general consumer may buy and use wood products treated with restricted-use pesticides; EPA does not consider treated wood a _____nor is it regulated as a pesticide.

- A. Toxic substance
- B. Preservative
- C. Creosote
- D. Non-pressure treatments
- E. Restricted-use pesticides
- F. None of the Above

204. Although treated wood is _____, there are limitations on how some types of treated wood should be used.

- A. EPA regulation
- B. Restricted use
- C. PCP
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

205. Consumer Information Sheets (EPA-approved) are available from retailers of _____-, pentachlorophenol-, and inorganic-arsenical-treated wood products.

- A. High toxicity
- B. Sodium salt
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol (PCP)
- F. None of the Above

206. The commercial wood treater is bound by the EPA regulation and can treat wood only for _____ that is allowed for that preservative.

- A. EPA regulation
- B. Restricted use
- C. An end use
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

207. Some preservatives that are _____are available to the general consumer for non-pressure treatments.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Not classified as restricted by EPA
- F. None of the Above

208. It is the responsibility of the end user to apply these preservatives in a manner that is consistent with the_____. Registration of preservatives is under constant review by the EPA, and a responsible State or Federal agency should be consulted as to the current status of any preservative.

- A. EPA regulation
- B. Restricted use
- C. EPA-approved labeling
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

Penta or Pentachlorophenol

209. Penta or Pentachlorophenol (PCP) is an organochlorine compound used as a pesticide and a disinfectant. First produced in the 1930s, it is marketed under many trade names. It can be found in two forms: PCP itself or as the _____, which dissolves easily in water.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol (PCP)
- F. None of the Above

210. In the past, _____ has been used as a herbicide, insecticide, fungicide, algacide, disinfectant and as an ingredient in antifouling paint.

- A. EPA regulation
- B. Restricted use
- C. PCP
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

211. Some applications were in agricultural seeds (for nonfood uses), leather, masonry, wood preservation, cooling tower water, rope and paper mill system. Its use has been significantly declined due to the high toxicity of _____ and its slow biodegradation.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

212. There are two general methods for preserving wood. The pressure process method involves placing wood in a pressure-treating vessel where it is immersed in _____ and then subjected to applied pressure.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

213. In the non-pressure process method, _____ is applied by spraying, brushing, dipping, and soaking.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

214. Utility companies save millions of dollars in replacement poles, because the life of these poles increases from approximately 7 years for an untreated pole to about 35 years for a _____ pole.

- A. Preservative-treated
- B. Preservative
- C. Creosote
- D. Non-pressure treatments
- E. Restricted-use pesticides
- F. None of the Above

215. _____ has been detected in surface waters and sediments, rainwater, drinking water, aquatic organisms, soil, and food, as well as in human milk, adipose tissue, and urine.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

216. As PCP is generally used for its properties as a biocidal agent, there is considerable concern about adverse ecosystem effects in areas of _____ contamination.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

217. Releases to the environment are decreasing as a result of _____ and changing use methods.

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

218. _____ is still released to surface waters from the atmosphere by wet deposition, from soil by run off and leaching, and from manufacturing and processing facilities.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

219. _____ is released directly into the atmosphere via volatilization from treated wood products and during production.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

220. Finally, releases to the soil can be by leaching from treated wood products, atmospheric deposition in precipitation (such as rain and snow), _____ and at hazardous waste sites.

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

221. Since the early 1980s, the purchase and use of PCP in the U.S has not been available to the general public. Nowadays most of the _____ used in the U.S is restricted to the treatment of utility poles and railroad ties.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

222. In the United States, any drinking water supply with a _____ concentration exceeding the MCL, 1 ppb, must be notified by the water supplier to the public. Disposal of PCP and PCP contaminated substances are regulated under RCRA as a F-listed hazardous waste.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

223. What are the key points for parents and consumers concerned about exposure from structures made of CCA-treated wood?

If you are concerned about potential exposure to arsenic, sealants, when applied at least once a year, have been shown to reduce _____ from the wood.

- A. MCQ or MCA
- B. CCA-treated wood
- C. Dis-lodgeable arsenic
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

224. Oil or water-based, penetrating sealants or stains are preferred. As always, parents and other caretakers should follow these precautions for children who play on or near decks. Always wash hands thoroughly after contact with _____, especially prior to eating and drinking, and ensure that food does not come into direct contact with any treated wood.

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

225. Consumers should follow manufacturer recommendations when handling the wood, including the same precautions that workers should take: wear gloves when handling wood, wear goggles and dust masks when sawing and sanding, always wash hands before eating, and never burn _____.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. All three preservatives
- F. None of the Above

226. The majority of exposure that is estimated to occur to children is from hand-to-mouth activities (i.e., children touching the surface of _____ and then putting his/her hand in his/her mouth). This activity is most prevalent in children aged 1 to 6 years of age.

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

Precautions and Personal Protection Measures

227. Wood treated with modern preservatives is generally safe to handle given appropriate handling precautions and personal protection measures. However, treated wood may present certain hazards in some circumstances such as during combustion or where loose wood dust particles or _____ are generated or where treated wood comes into direct contact with food and agriculture.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. Other fine toxic residues
- F. None of the Above

228. Preservatives containing _____ in the form of very small particles have recently been introduced to the market, usually with "micronized" or "micro" trade names and designations such as MCQ or MCA.

- A. MCQ or MCA
- B. CCA-treated wood
- C. Copper
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

229. While the manufacturers represent that these products are safe and EPA has registered these products, some groups have expressed concerns regarding exposure to engineered sub-micron and _____.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. All three preservatives
- F. None of the Above

230. Material safety data sheets and safe handling guidelines are required by law to be provided by suppliers of wood preservative chemicals and treated wood products. This information should be obtained and reviewed before handling and using _____ and treated wood products

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

Re-Registration Eligibility Decisions (RED)

231. EPA has completed its re-registration eligibility decisions (RED) for the heavy duty wood preservatives _____, pentachlorophenol, and creosote.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. All three preservatives
- F. None of the Above

232. In general, EPA has determined that the compounds contribute benefits to society and are eligible for reregistration provided the mitigation measures and associated label changes identified in the _____ are implemented and required data are submitted.

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

233. In its risk assessments, the Agency identified risks of concern associated with occupational exposure (i.e., treatment plant workers) to all three preservatives and ecological exposure to _____.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. Pentachlorophenol and creosote
- F. None of the Above

Chromated Copper Arsenate (CCA)

234. Chromated copper arsenate (CCA) is a chemical wood preservative containing _____.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. Chromium, copper and arsenic
- E. All three preservatives
- F. None of the Above

235. _____ is used in pressure treated wood to protect wood from rotting due to insects and microbial agents.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

236. EPA has classified CCA as a restricted use product, for use only by certified pesticide applicators.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

237. _____ has been used to pressure treat lumber since the 1940s. Since the 1970s, the majority of the wood used in outdoor residential settings has been CCA-treated wood.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

238. Pressure treated wood containing _____ is no longer being produced for use in most residential settings, including decks and playsets.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

239. Pesticide manufacturers to voluntarily phased out certain _____ use for wood products around the home and in children's play areas.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

240. Effective December 31, 2003, no wood treater or manufacturer may treat wood with _____ for residential uses, with certain exceptions.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

Handling Precautions

241. Avoid frequent or _____ of sawdust from treated wood. When sawing, sanding, and machining treated wood, wear a dust mask.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Prolonged inhalation
- E. Should not be used in the interiors of farm buildings
- F. None of the Above

242. Avoid frequent or _____ with creosote- or pentachlorophenol-treated wood.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Accordance with state and Federal regulations
- E. Should not be used in the interiors of farm buildings
- F. None of the Above

243. When handling creosote- or pentachlorophenol-treated wood, wear long-sleeved shirts and long pants and _____ (for example, gloves that are vinyl coated).

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Accordance with state and Federal regulations
- E. Use gloves impervious to the chemicals
- F. None of the Above

244. Because preservatives or sawdust may accumulate on clothes, they should _____. Wash work clothes separately from other household clothing.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Be laundered before reuse
- E. Should not be used in the interiors of farm buildings
- F. None of the Above

245. Treated wood _____, fireplaces, or residential boilers, because toxic chemicals may be produced as part of the smoke and ashes.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Accordance with state and Federal regulations
- E. Should not be burned in open fires or in stoves
- F. None of the Above

246. Treated wood from commercial or industrial use (such as construction sites) may be burned only in commercial or industrial incinerators or boilers in _____.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Accordance with state and Federal regulations
- E. Should not be used in the interiors of farm buildings
- F. None of the Above

247. CCA-treated wood can be disposed of with regular municipal trash (municipal solid waste, not yard waste) in many areas. However, state or local laws _____. For more information, please contact the waste management agency for your state.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. May be stricter than federal requirements
- E. All three preservatives
- F. None of the Above

248. Wood treated with pentachlorophenol or creosote should not be used in the interiors of farm buildings where there _____ or livestock that may crib (bite) or lick the wood.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. May be direct contact with domestic animals
- E. Should not be used in the interiors of farm buildings
- F. None of the Above

249. In interiors of farm buildings where domestic animals or livestock are unlikely to crib (bite) or lick the wood, creosote- or pentachlorophenol-treated wood may be used for building components that are in ground contact and _____ and where two coats of an appropriate sealer are applied. Sealers may be applied at the installation site.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Are subject to decay or insect infestation
- E. Should not be used in the interiors of farm buildings
- F. None of the Above

250. Urethane, shellac, latex epoxy enamel, and varnish are acceptable sealers for _____.
- A. Pressure treatment
 - B. Three broad categories
 - C. Long-term resistance to organisms
 - D. Durability of test products
 - E. Each has different effectiveness
 - F. None of the Above

251. _____ and coal-tar pitch emulsion are effective sealers for creosote-treated wood-block flooring. Urethane, epoxy, and shellac are acceptable sealers for all creosote-treated wood.
- A. Untreated
 - B. Preservative(s)
 - C. Wood preservative(s)
 - D. Copper
 - E. Coal-tar pitch
 - F. None of the Above

Chemical Preservatives

252. Before a wood preservative can be approved for pressure treatment of structural members, it must be evaluated to ensure that it provides the _____ and that it does not greatly reduce the strength properties of the wood. The EPA typically does not evaluate how well a wood preservative protects the wood.

- A. Pressure treatment
- B. Necessary durability
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

253. Traditionally this evaluation has been conducted through the _____ of the AWPA. The AWPA Book of Standards lists a series of laboratory and field exposure tests that must be conducted when evaluating new wood preservatives.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Standardization process
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

254. The _____ are compared with those of established durable products and nondurable controls.

- A. Pressure treatment
- B. Three broad categories
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

Two General Classes

255. Wood preservatives have traditionally been divided into two general classes: (1) Oil-type or oil-borne preservatives, such as _____, and (2) waterborne preservatives that are applied as water solutions or with water as the carrier.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Creosote and petroleum solutions of pentachlorophenol
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

256. Many different chemicals are in each of these classes, and _____ in various exposure conditions.

- A. Pressure treatment
- B. Three broad categories
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

257. Some _____ can be formulated so that they can be delivered with either water or oil-type carriers.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

258. Chemical preservatives can be classified into _____: water-borne preservatives, oil-borne preservatives, and light organic solvent preservatives (LOSPs).

- A. Pressure treatment
- B. Three broad categories
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

259. Timber or lumber that is treated with a preservative generally have it applied through vacuum and/or pressure treatment. The _____ used to pressure-treat timber are classified as pesticides.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

260. _____ provides long-term resistance to organisms that cause deterioration. If it is applied correctly, it extends the productive life of timber by five to ten times.

- A. Pressure treatment
- B. Treating timber
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

261. If left _____, wood that is exposed to moisture or soil for sustained periods of time will become weakened by various types of fungi, bacteria or insects.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

Waterborne Preservatives

262. Waterborne preservatives are often used when cleanliness and paintability of the treated wood are required. Formulations intended for use outdoors _____ to leaching and very good performance in service.

- A. Pressure treatment
- B. Have shown high resistance
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

263. Waterborne preservatives are included in specifications for items such as lumber, timber, posts, building foundations, poles, and piling. Because water is added to the wood in the treatment process, _____ after installation unless the wood is kiln-dried after treatment.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Some drying and shrinkage will occur
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

264. Copper is the _____ in many wood preservative formulations used in ground contact because of its excellent fungicidal properties and low mammalian toxicity.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Primary biocide
- F. None of the Above

265. Because some types of fungi are copper tolerant, _____ often include a co-biocide to provide further protection.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Preservative formulations
- F. None of the Above

266. _____ are a restricted-use pesticide.

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Inorganic arsenicals
- F. None of the Above

267. _____ is the most common solvent carrier in preservative formulations due to its availability and low cost.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

268. _____ do however have the drawback that they swell timber, leading to increased twisting, splitting and checking than alternatives.

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

Acid Copper Chromate (ACC)

269. Acid copper chromate (ACC) contains 31.8% copper oxide and 68.2% chromium trioxide (_____).

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

270. The solid, paste, liquid concentrate, or treating solution can be made of copper sulfate, potassium dichromate, or _____.

- A. AWPA P5
- B. Alternatives
- C. Sodium dichromate
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

271. Tests on stakes and posts exposed to decay and termite attack indicate that wood well impregnated with _____ generally provides acceptable service.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

272. Some specimens placed in ground contact have shown vulnerability to attack by copper-tolerant fungi. _____ has often been used for treatment of wood in cooling towers. Its current uses are restricted to applications similar to those of chromated copper arsenate (CCA).

- A. AWPA P5
- B. ACC
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

273. _____ must be used at low treating temperatures (38 to 66 °C (100 to 150 °F)) because they are unstable at higher temperatures. This restriction may involve some difficulty when higher temperatures are needed to obtain good treating results in woods such as Douglas-fir.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

Ammoniacal Copper Zinc Arsenate (ACZA)

274. _____ is commonly used on the West Coast of North America for the treatment of Douglas-fir.

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

275. The penetration of Douglas-fir heartwood is improved with ACZA because of the chemical composition and stability of treating at elevated temperatures. Wood treated with _____ performs and has characteristics similar to those of wood treated with CCA.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

276. ACZA should contain approximately 50% copper oxide, 25% zinc oxide, and 25% arsenic pentoxide dissolved in a solution of ammonia in water (_____). The weight of ammonia is at least 1.38 times the weight of copper oxide.

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

277. To aid in solution, ammonium bicarbonate is added (at least equal to 0.92 times the weight of copper oxide). _____ replaced an earlier formulation, ammoniacal copper arsenate (ACA) that was used for many years in the United States and Canada.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

Chromated Copper Arsenate (CCA)

278. Chromated copper arsenate or CCA, is a _____ that protects wood from rotting due to insects and microbial agents.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chemical preservative
- E. AWPA P5
- F. None of the Above

279. CCA contains _____, chromium and copper. CCA has been used to pressure treat lumber used for decks, playgrounds (playsets) and other outdoor uses since the 1930's.

- A. AWPA P5
- B. Arsenic
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

280. Since the 1970's, the majority of the wood used in residential settings was _____-treated wood.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

281. _____ is a registered chemical pesticide that is subject to U.S. Environmental Protection Agency's (EPA's) regulation under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

282. The playground equipment made with wood treated with _____ is the jurisdictional responsibility of the CPSC and would be subject to the rules of the CPSC's Federal Hazardous Substances Act if found to be a hazardous substance.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

283. Chromated copper arsenate (CCA) is a wood preservative used for timber treatment since the mid-1930s. It is a mix of copper, _____, and arsenic formulated as oxides or salts.

- A. ACZA
- B. ACC and CCA
- C. Chromium
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

284. It preserves the wood from decay fungi, wood attacking insects, including termites, and marine borers. It also improves the _____ and may assist paint adherence in the long term.

- A. Pressure treatment
- B. Three broad categories
- C. Long-term resistance to organisms
- D. Weather-resistance of treated timber
- E. Each has different effectiveness
- F. None of the Above

Tanalith" "SupaTimber" and "Celcure"

285. _____ is known by many trade names, including the worldwide brands "Tanalith" "SupaTimber" and "Celcure".

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

286. The _____ acts as a chemical fixing agent and has little or no preserving properties; it helps the other chemicals to fix in the timber, binding them through chemical complexes to the wood's cellulose and lignin. The copper acts primarily to protect the wood against decay fungi and bacteria, while the arsenic is the main insecticidal component of CCA.

- A. ACZA
- B. ACC and CCA
- C. Chromium
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

287. CCA is widely used around the world as a heavy duty preservative, often as an alternative to creosote, and pentachlorophenol. Other water-borne preservatives like CCA include alkaline copper quaternary compounds (_____), copper azole (CuAz), ammoniacal copper zinc arsenate (ACZA), copper citrate, and copper HDO (CuHDO)

- A. ACZA
- B. ACC and CCA
- C. ACQ
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

288. Recognized for the greenish tint it imparts to timber, _____ is a preservative that has been extremely common for many decades. Over time small amounts of the CCA chemicals, mainly the arsenic, may leach out of the treated timber.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

289. This is particularly the case in acidic environments. The chemicals may leach from the wood into surrounding soil, resulting in concentrations higher than naturally occurring background levels. A study found that 12–13 percent of the _____ leached from treated wood buried in compost during a 12-month period.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

290. On the other hand there have been many other studies _____ that show leaching to be as low as 0.5 ppm (red pine poles in service,) or up to 14 ppm (treated pine in garden beds).

- A. Pressure treatment
- B. Have shown high resistance
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

291. Soil contamination due to the presence of _____-treated wood after 45 years is minimal. Should any chemicals leach from the wood they are likely to bind to soil particles, especially in soils with clay or soils that are more alkaline than neutral.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

292. A number of countries have reviewed _____ during recent years and have looked at limiting the public exposure to CCA-treated timber by restricting its application in residential situations.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

Endangered Species Act

293. When Congress passed the Endangered Species Act (ESA) in 1973, it recognized that our _____ is of "esthetic, ecological, educational, recreational, and scientific value to our Nation and its people." It further expressed concern that many of our nation's native plants and animals were in danger of becoming extinct.

- A. Adequate concern
- B. Threatened
- C. Primary responsibility
- D. Rich natural heritage
- E. Conservation programs
- F. None of the Above

294. The purpose of the ESA is to _____ and the ecosystems upon which they depend. It is administered by the U.S. Fish and Wildlife Service and the Commerce Department's National Marine Fisheries Service (NMFS).

- A. Conserve to the extent practicable
- B. Are eligible for listing
- C. Threatened with extinction
- D. Protect and recover imperiled species
- E. Endangered species and threatened species
- F. None of the Above

295. The FWS has _____ for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and fish such as salmon.

- A. Adequate concern
- B. Threatened
- C. Primary responsibility
- D. Conserve endangered species and threatened species
- E. Maintain conservation programs
- F. None of the Above

296. Under the ESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or _____.

- A. Conserve to the extent practicable
- B. Are eligible for listing
- C. Threatened with extinction
- D. A significant portion of its range
- E. Endangered species and threatened species
- F. None of the Above

297. " _____ " means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened.

- A. Adequate concern
- B. Threatened
- C. Primary responsibility
- D. Conserve endangered species and threatened species
- E. Maintain conservation programs
- F. None of the Above

298. For the purposes of the ESA, Congress defined species to include subspecies, varieties, and, for vertebrates, _____

- A. Conserve to the extent practicable
- B. Are eligible for listing
- C. Threatened with extinction
- D. Primary responsibility
- E. Endangered species and threatened species
- F. None of the Above

299. The United States has pledged itself as a sovereign state in the international community to _____ the various species of fish or wildlife and plants facing extinction, pursuant to—migratory bird treaties with Canada and Mexico; (B) the Migratory and Endangered Bird Treaty with Japan; (C) the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere; (D) the International Convention for the Northwest Atlantic Fisheries; (E) the International Convention for the High Seas Fisheries of the North Pacific Ocean; (F) the Convention on International Trade in Endangered Species of Wild Fauna and Flora; and (G) other international agreements;

- A. Conserve to the extent practicable
- B. Are eligible for listing
- C. Threatened with extinction
- D. Primary responsibility
- E. Endangered species and threatened species
- F. None of the Above

300. Encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nation's international commitments and to _____, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants.

- A. Better safeguarding
- B. Threatened
- C. Primary responsibility
- D. Conserve endangered species and threatened species
- E. Maintain conservation programs
- F. None of the Above

You are finished with your Exam.....

Wood Destroyers Assignment #4 For Students Names R-Z

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Write your answers on the Answer Key found in the front of this assignment.

1. We will require all students to fax or e-mail a copy of their driver's license with the registration form.
2. You will need to pick one of the following three assignments to complete. This selection process is based upon your last name. If your last name begins with an A to E, you will pick assignment number 1, if your last name begins with the letter F to L, you are to complete assignment number 2 and if your last name begins with the letter M-Q, you will pick assignment number 3 and if your last name begins with the letter R-Z, you will pick assignment number 4.

Multiple Choice, Please select one answer and mark it on the answer key. The answer must come from the course text. (s) Means answer can be plural or singular.

Commercial Baiting Products

1. Sentricon™ System, developed by Dow AgroSciences for professional use, combines monitoring with the use of _____.
A. Termite invasion D. An integrated program of monitoring
B. Bait tubes E. Permanent stations
C. Foraging pseudergates F. None of the Above
2. Stations are installed in areas where termites exist and around the perimeter of a structure and in the yard. Each station contains a wood stake and must be _____ for termite activity.
A. Periodically monitored D. An integrated program of monitoring
B. Bait tubes E. Permanent stations
C. Foraging pseudergates F. None of the Above
3. After termites attack, the wood is removed and replaced with a bait tube. Termites from the wood must be transferred to the bait tube, which is left in the station until termite activity ceases. Then the _____ are replaced with new wood stakes and monitoring for new infestations resumes.
A. Termite invasion D. An integrated program of monitoring
B. Bait tubes E. Permanent stations
C. Foraging pseudergates F. None of the Above
4. Thus, the Sentricon™ System protects property through _____, baiting when termites are present and resuming monitoring when termites are no longer present. The active ingredient in the Sentricon™ System is hexaflumuron, a chitin synthesis inhibitor.
A. Termite invasion D. An integrated program of monitoring
B. Bait tubes E. Permanent stations
C. Foraging pseudergates F. None of the Above

5. The philosophy behind the Sentricon™ System is that foraging pseudergates will feed on the bait, return to the colony and pass the bait to other colony members through _____.
- Dow AgroSciences claims that with the Sentricon™ System, colony elimination is possible.
- A. Termite invasion
 - B. Bait tubes
 - C. Foraging pseudergates
 - D. Trophallaxis
 - E. Permanent stations
 - F. None of the Above

FirstLine™ Termite Bait Stations

6. FMC Corporation manufactures bait stations for suppression of subterranean termite colonies. The FirstLine™ aboveground termite bait station is applied directly to_____.

- A. Termite invasion
- B. Bait tubes
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Active termite infestations
- F. None of the Above

7. It is placed above ground, inside or outside, at the leading edge of_____. Another product, the FirstLine™ GT in-ground bait station, is placed in the ground in areas conducive to termite attack and acts as a first line of defense against termite invasion of a structure.

- A. Termite invasion
- B. Bait tubes
- C. Foraging pseudergates
- D. Active termite mud tubes
- E. Permanent stations
- F. None of the Above

8. There are two types of these in-ground bait stations. One type has wood stakes for monitoring the presence of termites. The other type has_____.

- A. Termite invasion
- B. Cardboard treated with sulfluramid
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

9. _____are placed in areas where termites are present or very close to monitoring stations that have been attacked by termites.

- A. Termite invasion
- B. Bait tubes
- C. Bait stations
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

10. The active ingredient in FirstLine™ termite bait stations is sulfluramid, a slow-acting stomach poison. The philosophy behind the FirstLine™ products is that many termites will feed on the bait and over time will die.

- A. Bait stations
- B. Bait tubes
- C. Foraging pseudergates
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

11. Research with these bait stations demonstrates that reduction of the termite population is possible, but not elimination. FMC Corporation also markets Interceptor™, an on-the-wall application. This product is placed over a_____. The tube is broken open to allow termites to have access to the bait. The active ingredient is sulfluramid.

- A. Termite invasion
- B. Bait tubes
- C. Termite tube
- D. An integrated program of monitoring
- E. Permanent stations
- F. None of the Above

Exterra® Termite Interception and Baiting System

12. Ensystem Incorporated manufactures a _____called Exterra® Termite Interception and Baiting System.

- A. Termite invasion
- B. Bait tubes
- C. Foraging pseudergates
- D. Termite baiting system
- E. Permanent stations
- F. None of the Above

Wood Destroying Insects

13. Many insect pests are encouraged to take up residence in wooden structures by excessive _____. Termites, particularly the dampwood termites and subterranean termites, require moisture in their living quarters.

- A. Microorganisms
- B. Fungi
- C. Moisture conditions
- D. Water
- E. Soil
- F. None of the Above

14. Subterranean termites provide moisture for themselves by bringing moisture and soil up from their subsurface colonies and placing it within the wood as they feed on it or around the outside of wood to _____.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Bringing moisture
- F. None of the Above

15. In some cases, subterranean termites may be found separated from soil contact when sufficient moisture, in the _____, is found inside a structure.

- A. Termite colony
- B. Form of water leaks
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

16. The retention of moisture is not the _____ in the life of the termite.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Bringing moisture
- F. None of the Above

17. The warm, moist conditions that prevail within the closed system of the nest provide an ideal site for the growth of _____, particularly fungi, which provide a source of protein and vitamins essential to the termite.

- A. Termite colony
- B. Soil
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

18. The accumulation of termite fecal material in the nest, in turn, helps to promote the _____.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Growth of the fungi
- E. Bringing moisture
- F. None of the Above

19. The most striking fact of this intricately interdependent system is the delicacy with which it is balanced. It is not uncommon to discover the remains of a termite colony that is slowly being crowded out by the _____ that has for some reason progressed at such a rate that the termites could not keep up with it.

- A. Growth of fungi
- B. Soil
- C. Microorganisms
- D. Moisture and fungus
- E. Particularly fungi
- F. None of the Above

20. If sudden temperature shifts or other factors result in the _____ within the galleries, the termites may drown.

- A. Moisture content
- B. Temperature shifts
- C. Moisture and fungus
- D. Termite fecal material
- E. Accumulation of water
- F. None of the Above

21. A _____ are associated with excessive moisture and fungus problems in structures.
- A. Termite colony D. Moisture and fungus
 B. Number of beetles E. Particularly fungi
 C. Microorganisms F. None of the Above
22. The furniture beetle, an anobiid beetle, is commonly attracted to _____.
- A. Moisture content D. Termite fecal material
 B. Temperature shifts E. Moisture
 C. Moisture and fungus F. None of the Above
23. Anobiid larvae eat the wood, and the beetle may re-infest over many generations, reducing the _____.
- A. Termite colony D. Wood to little more than powder
 B. Soil E. Fungi
 C. Microorganisms F. None of the Above
24. Anobiid larvae will not survive in wood with a _____. The drier the wood, the slower their growth.
- A. Moisture content D. Moisture content below 20 percent
 B. Temperature shifts E. Moisture content below 12 percent
 C. Moisture and fungus F. None of the Above
25. Other families of beetles are also associated with _____ in structures, but with all these families, it is the fungus growth to which they are attracted.
- A. Termite colony D. Moisture and fungus
 B. Soil E. Excessive moisture
 C. Microorganisms F. None of the Above

These "fungus beetles" include:

26. _____—minute brown scavenger beetles.
- A. Cistidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
27. _____—darkling beetles.
- A. Cistidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
28. _____—the minute fungus beetles.
- A. Cistidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
29. _____—the silken fungus beetles.
- A. Cistidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above
30. _____—flat bark beetles.
- A. Cistidae D. Tenebriodidae
 B. Cucujidae E. Cryptophagidae
 C. Lathridiidae F. None of the Above

31. _____ feed on fungus growth on wood, such as Poria, or may be present in damp foods where even tiny amounts of fungus growth or fungal spores are present.
- A. Genus or species D. These beetles and their larvae
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
32. The fungus beetles are not wood-damaging pests but are _____ and are a good indication that such problems are present.
- A. Hungry D. Associated with moisture problems
 B. Large E. Most concerned
 C. Friendly F. None of the Above
33. Many other insects infest and seriously damage wood. Many of these, such as the _____ and round- and flatheaded borers, are found alive most frequently in seasoned wood.
- A. Various bark beetles D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
34. The pest management professional is usually most concerned with those insects that _____.
- A. Damage seasoned lumber D. Have complete metamorphosis
 B. Reproduce E. Carry disease
 C. Fly F. None of the Above
35. These insects include representatives of the orders Hymenoptera (horntail or wood wasps, carpenter ants and bees) and _____.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above
36. The members of these two orders develop by _____, advancing from eggs to larvae, pupae, and adults.
- A. Thin antennae D. Complete metamorphosis
 B. Broad sense E. Most concerned
 C. Good indication F. None of the Above
37. The characteristics of the damage done to wood by these insects are generally sufficient evidence to identify the insects to their family, but positive identification to _____ requires examination of the insect itself.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Larvae of these beetles
 C. Powder Post Beetles F. None of the Above

Powder Post Beetles

38. The term powder post beetle, used in the broad sense, applies to any of the _____ of three closely related families (Lyctidae, Bostrichidae, and Anobiidae) within the superfamily Bostrichoidea.
- A. Genus or species D. Round- and flatheaded borers
 B. Coleoptera (beetles) E. Wood-boring species
 C. Powder Post Beetles F. None of the Above

39. The common name is appropriate because the _____ reduce timbers to a mass of very fine, powderlike material.

- A. Genus or species
- B. Coleoptera (beetles)
- C. Powder Post Beetles
- D. Round- and flatheaded borers
- E. Larvae of these beetles
- F. None of the Above

40. The _____ do very little actual damage to wood, serving primarily a reproductive function.

- A. Genus or species
- B. Coleoptera (beetles)
- C. Powder Post Beetles
- D. Round- and flatheaded borers
- E. Larvae of these beetles
- F. None of the Above

41. There are _____, behavior, and nutrition among these groups, and these differences have led to the separation of the families.

- A. Few changes
- B. Beetles that show
- C. Good indications
- D. No changes
- E. Certain differences in structure
- F. None of the Above

What Information Must Be Displayed?

42. The following three types of information must be displayed at a central location before a pesticide is applied: Pesticide-specific application information, which must include: the location and description of the area to be treated, product name, _____, and active ingredient(s) of the pesticide, time and date the pesticide is scheduled to be applied, and restricted-entry interval for the pesticide.

- A. Worker Protection Standard or WPS
- B. Pesticide-related ordinances
- C. EPA registration number
- D. Restricted-entry intervals or REIs
- E. Personal
- F. None of the Above

43. _____, which must include the name, telephone number and address of the nearest emergency medical facility.

- A. Worker Protection Standard or WPS
- B. Restricted-entry intervals or REIs
- C. Emergency information
- D. EPA registration number
- E. Agricultural Use Requirements
- F. None of the Above

44. A pesticide safety poster, which must be either the _____ safety poster developed by EPA or an equivalent poster that contains the concepts listed in Criteria for Pesticide Safety Poster.

- A. Worker
- B. Restricted-entry intervals or REIs
- C. Pesticide-related ordinances
- D. Worker Protection Standard or WPS
- E. EPA registration Requirements
- F. None of the Above

Where Must the Information Be Displayed?

45. Display the required information together in a central location on your agricultural establishment where it is readily accessible and can be easily seen and read by _____.

- A. Worker Protection Standard or WPS
- B. Appropriately trained and equipped handlers
- C. Nursery workers
- D. Workers or handlers
- E. EPA registration Requirements
- F. None of the Above

Timing of Displaying Application Information

46. If _____ are on your establishment at the start of an application, display the required pesticide-specific information before the application takes place.

- A. EPA registration number
- B. Appropriately trained and equipped handlers
- C. Nursery workers
- D. Only handlers
- E. Workers or handlers
- F. None of the Above

47. If _____ are not on your establishment at the start of an application, display pesticide-specific information no later than the beginning of their first work period.
- A. Workers or handlers
 - B. Appropriately trained Workers
 - C. Nursery workers
 - D. Only handlers
 - E. EPA registration Requirements
 - F. None of the Above

48. Continue to display pesticide-specific information when _____ are on your establishment until at least 30 days after the restricted-entry interval expires.
- A. Appropriately trained Workers
 - B. Appropriately trained and equipped handlers
 - C. Nursery workers
 - D. Only handlers
 - E. Workers or handlers
 - F. None of the Above

49. Continue to display pesticide-specific information when _____ are on your establishment until at least 30 days after the end of the application, if there is no restricted-entry interval for the pesticide.
- A. Workers or handlers
 - B. Appropriately trained and equipped handlers
 - C. Nursery workers
 - D. Only handlers
 - E. Supervisors
 - F. None of the Above

Other Responsibilities

50. Inform _____ where the information is located.
- A. Supervisors
 - B. Appropriately trained and equipped handlers
 - C. Nursery workers
 - D. Only handlers
 - E. Workers or handlers
 - F. None of the Above

51. Allow _____ free, unhampered access to the information.
- A. Workers or handlers
 - B. Appropriately trained and equipped handlers
 - C. Nursery workers
 - D. Only handlers
 - E. Crop handlers
 - F. None of the Above

52. Be sure that the poster, _____, and application information remain legible during the time they are posted.
- A. Workers or handlers
 - B. Appropriately trained and equipped handlers
 - C. Nursery workers
 - D. Only handlers
 - E. Crop handlers
 - F. None of the Above

53. Promptly inform _____ if there is any change in the information on emergency medical facilities and update the emergency information listed with the poster.
- A. Workers or handlers
 - B. Appropriately trained and equipped handlers
 - C. Supervisors
 - D. Workers
 - E. Only handlers
 - F. None of the Above

Restrictions During Applications

54. In areas being treated with pesticides, allow entry only to _____.
- A. Workers or handlers
 - B. Supervisors
 - C. Appropriately trained and equipped handlers
 - D. Only handlers
 - E. Nursery workers
 - F. None of the Above

55. Keep nursery workers at least 100 feet away from nursery areas being treated.
- A. Workers or handlers
 - B. Appropriately trained and equipped handlers
 - C. Nursery workers
 - D. Only handlers
 - E. Nursery workers
 - F. None of the Above

56. Allow _____ to be in a greenhouse during a pesticide application, until labeling-listed air concentration level is met or, if no such level, until after 2 hours of ventilation with fans. (Also see nursery restrictions and greenhouse restrictions)

- A. Workers or handlers
- B. Appropriately trained and equipped handlers
- C. Nursery workers
- D. Only handlers
- E. Supervisors
- F. None of the Above

57. Restricted-Entry Intervals (REIs) During any REI, do not allow _____ to enter a treated area and contact anything treated with the pesticide to which the REI applies. (Also see early entry by workers)

- A. Workers or handlers
- B. Appropriately trained and equipped handlers
- C. Workers
- D. Only handlers
- E. Nursery workers
- F. None of the Above

Notice About Applications

58. _____ and post treated areas if the pesticide labeling requires.

- A. Provide to handlers
- B. Enter the establishment
- C. Call or e-mail
- D. Just before application
- E. Orally warn workers
- F. None of the Above

59. Otherwise, either _____ or post entrances to treated areas. Tell workers which method is in effect.

- A. Provide to handlers
- B. Enter the establishment
- C. Orally warn workers
- D. Just before application
- E. Identify
- F. None of the Above

Posted Warning Signs

60. Post legible 14" x 16" WPS-design signs just before application; keep posted during REI; remove _____ and within 3 days after the end of the REI.

- A. Posters
- B. Before workers enter
- C. After orally warning workers
- D. Just before application
- E. All of the Above
- F. None of the Above

61. Post signs _____ at all entrances to treated areas, including entrances from labor camps.

- A. Provided to handlers
- B. And then enter the establishment
- C. And then orally warn workers
- D. Just before application
- E. So they can be seen
- F. None of the Above

Oral Warnings

62. Before each application, _____ who are on the establishment (in a manner they can understand): location and description of treated area, REI, and not to enter during REI.

- A. Provide to handlers
- B. Tell workers
- C. Orally warn workers with signage
- D. Just before application tell employees
- E. So they can be seen
- F. None of the Above

Life Cycle

63. In the spring, carpenter ants swarm, i.e., _____ emerge from the colony. The swarmer's sole purpose is reproduction.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Adults
- E. Winged adults
- F. None of the Above

64. Shortly after mating, the female (queen) loses her wings and searches out a cavity in wood or soil where she begins to lay eggs and produce _____.

- A. Her colony's first workers
- B. Workers
- C. Female (queen)
- D. The species
- E. Swarmers
- F. None of the Above

65. These workers care for the queen as she produces _____, and they assume the tasks of foraging for food, maintaining and expanding the nest, and caring for the young.

- A. Queens
- B. Pupae
- C. Swarmers
- D. More offspring
- E. Reproductives
- F. None of the Above

66. After 3-6 years, the colony will contain 2000-3000 workers, and will start to produce _____. The swarmers are actually produced in the fall, but they wait until the following spring to emerge.

- A. Adults
- B. Workers
- C. Female (queen)
- D. Pupae
- E. Swarmers
- F. None of the Above

67. Swarming is not the only means for carpenter ants to produce new nests. "Satellite" colonies may be formed by workers that move out of the main nest, carrying _____ with them. Eventually, these secondary colonies produce their own reproductives.

- A. Queen
- B. Pupae
- C. Swarmers
- D. Larvae and pupae
- E. Reproductives
- F. None of the Above

Carpenter Bees

68. The carpenter bee (*Xylocopa virginica*) _____ in that it is robust and black with some markings of yellow hair.

- A. Queen
- B. Tunnels
- C. Nesting sites
- D. Resembles a bumblebee
- E. Considered pests
- F. None of the Above

69. The dorsal surface of the abdomen lacks the yellow hair markings of _____ and is mostly devoid of any hair.

- A. Queen
- B. Tunnels
- C. Nesting sites
- D. Bumblebee(s)
- E. Considered pests
- F. None of the Above

70. These bees are _____ of wood because they excavate tunnels in softwood as sites for producing their brood.

- A. Queen-less
- B. Tunnel makers
- C. Nest makers
- D. Not a risk
- E. Considered pests
- F. None of the Above

71. Common _____ are posts, fence railings, porch support posts, wall siding, eaves, wooden shingles, windowsills, doors, wooden porch furniture, etc.

- A. Insects
- B. Tunnels
- C. Nesting sites
- D. Wood
- E. Mating sites
- F. None of the Above

Termite Introduction

72. There are about 2,500 termite species in the world. North America has _____, most in the southeast USA. Alaska is the only state without termites.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. 41 termite species
- E. Termites
- F. None of the Above

73. Florida's eastern subterranean termite colonies have about 250,000 members, but can have 1 million or more. A colony eats about 1 cubic foot of wood a year. _____ can have two million termites. The queen can lay 2,000 eggs per day and live as long as 50 years.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Australian colonies
- E. Termites
- F. None of the Above

74. Termite damage to residential and commercial buildings in the U.S. costs more than \$1 billion annually. _____, the most destructive of all termite species, account for 95% of the damage.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

75. Two _____ species, *Reticulitermes flavipes* (Kollar) and *R. tibialis* Banks, are commonly found in United States.

- A. Soft-bodied insects
- B. Subterranean termite
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

Feeding Habits

76. Subterranean termites feed mainly on wood and wood products containing cellulose. Termites have _____ in their intestine which provide enzymes to digest cellulose.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. 41 termite species
- E. Termites
- F. None of the Above

77. This relationship is beneficial to both species, since the _____ cause no harm and are provided with food and a protected environment by the termites.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Protozoans
- E. Termites
- F. None of the Above

78. Although termites are _____, their hard, saw-toothed jaws work like shears and can bite off extremely small fragments of wood.

- A. Soft-bodied insects
- B. Subterranean termites
- C. Protozoa (microorganisms)
- D. Wood borers
- E. Destructive
- F. None of the Above

79. These termites do not attack live trees, except for the _____. Termites often infest buildings and cause damage to lumber, wood panels, flooring, sheetrock, wallpaper, plastics, paper products, and fabric made of plant fibers.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Formosan termite
- E. Survivors
- F. None of the Above

80. _____ attack flooring, carpeting, art work, books, clothing, and furniture. The most serious damage involves the loss of structural strength.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

Biology

81. _____ are ground-dwelling social insects living in colonies. The two species found in United States have similar habitats. These termites have the ability to adjust the depth of their colony (nest) in soil depending on temperature and moisture requirements.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

82. The _____ may be 18-20 feet deep in the ground. The ground serves as a protection against extreme temperatures and provides a moisture reservoir.

- A. Colony
- B. Subterranean termites
- C. Castes
- D. Swarming
- E. Survivors
- F. None of the Above

83. Termites reach wood or cellulose materials above ground by constructing and traveling through _____.

- A. Holes
- B. Tunnels
- C. Castles
- D. Swarming
- E. Earthen (mud) tubes
- F. None of the Above

84. The mature colony consists of _____ : a) reproductives (king and queen), b) soldiers, and c) workers. It takes about 4 to 5 years for a colony to reach its maximum size and it may consist of 60,000 to 200,000 workers.

- A. Colony
- B. Subterranean termites
- C. Three castes
- D. Swarms
- E. Survivors
- F. None of the Above

85. _____: A group of insects with a specific morphology and function within a colony of social insects.

- A. Colony
- B. Family
- C. Caste
- D. Swarms
- E. Survivors
- F. None of the Above

Reproduction

86. In spring and fall, the winged males and females emerge from their parent colonies to form new ones. This activity is called _____.

- A. Colony building
- B. Migration
- C. Castes
- D. Swarming
- E. Reproducing
- F. None of the Above

87. These _____ are dark brown to brownish black and have two pair of nearly equal size semitransparent wings extending well beyond the body.

- A. Winged reproductives
- B. Subterranean termites
- C. Castes
- D. Swarms
- E. Survivors
- F. None of the Above

88. The _____ are weak flyers and, unless aided by wind, fly only short distances. Many of them are devoured by birds, spiders, ants, and other predators.

- A. Queens
- B. Termites
- C. Castes
- D. Swarms
- E. Survivors
- F. None of the Above

89. _____ return to the ground and shed their wings. The wingless males and females pair off (male following female in tandem) until they find a source of wood and moisture in the soil.

- A. Queens
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

90. They dig soil near wood, enter the chamber and seal the opening. After mating, the _____ begins laying eggs. The royal queen is known to survive up to 25 years.

- A. Queen
- B. Termites
- C. Castes
- D. Swarmers
- E. Survivors
- F. None of the Above

Eggs

91. The _____ usually deposits 6 to 20 eggs during the first six months following the swarming flight and she may lay more than 60,000 eggs in her lifetime.

- A. Queen
- B. Termite
- C. Caste
- D. Fertilized female
- E. Survivor
- F. None of the Above

92. _____ are yellowish white and hatch after an incubation period of 50 to 60 days.

- A. Queen
- B. Termite
- C. Caste
- D. Fertilized female
- E. Survivor
- F. None of the Above

Workers

93. The first broods of _____ (young termites) generally develop into workers. Full grown workers are soft-bodied, wingless, blind, and creamy white. In early stages, they are fed predigested food by the king and queen.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

94. Once workers are able to digest wood, they begin providing food for the entire colony. At this time, the _____ cease feeding on wood.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

95. The workers undertake all the labor in the colony such as obtaining food, feeding other _____, excavating wood for chambers, and constructing tunnels. Workers mature within a year and live from 3 to 5 years.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

Soldiers

96. Soldiers are creamy white, soft-bodied, wingless, and blind. The head of the _____ is enormously elongated, brownish, hard, and equipped with two strong jaws.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

97. _____ must be fed by workers as they are incapable of feeding themselves. They are less numerous than workers and their sole function is to defend the colony against invaders such as ants.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

98. _____ mature within a year and live up to 5 years.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

99. Flying ants and _____ are often difficult to distinguish when these insects are seen around residential and commercial buildings.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

100. The main enemy of termites is Ants and the _____ can defend a small number of Ants.

- A. Soldier(s)
- B. King and queen
- C. Swarming termites
- D. Newly hatched nymphs
- E. Caste members and immatures
- F. None of the Above

Termite Reproduction

101. The female assumes a "calling" position with her abdomen elevated at a right angle to the rest of her body. She releases a _____ which attracts nearby males. Once a male encounters a calling female, she moves off.

- A. Odor
- B. Tap
- C. Call
- D. Chemical messenger (pheromone)
- E. Hormone
- F. None of the Above

102. He follows close behind and they search for a suitable site for the establishment of a nest. As soon as the pair has located a suitable site, they excavate (with their jaws) a small chamber large enough for the two of them and then _____.

- A. Young queen matures
- B. Start a new colony
- C. Seal the entrance
- D. Find a suitable site
- E. Start dispersal flights
- F. None of the Above

103. _____ usually occurs within a few hours to weeks after the pair becomes established.

- A. Mating
- B. Cellulose for their nutrition
- C. Process continues
- D. Calling
- E. Maximum egg production
- F. None of the Above

104. The single female cannot start a new colony. _____ is dependent upon the survival of both sexes in the nest site and that she has successfully mated.

- A. Young queen matures
- B. Start a new colony
- C. After two molts
- D. Suitable site
- E. Establishment of a colony
- F. None of the Above

105. The pair continues to _____, and they usually mate periodically. The first eggs are laid within one to several weeks after mating, depending on the nutrition available to the female. When the first eggs hatch, the new nymphs are cared for by the young pair.

- A. Live together for life
- B. Mate
- C. Fight
- D. Relatively new structure
- E. Maximum egg production
- F. None of the Above

106. _____, the nymphs assume their role as workers and begin to feed and care for the original pair.
- | | |
|--------------------------|-------------------------------|
| A. Young queen matures | D. Building a suitable site |
| B. Starting a new colony | E. Starting dispersal flights |
| C. After two molts | F. None of the Above |

Development of the Colony

107. Development of the colony is very slow for several years. Eggs are _____. After the first group of eggs has been laid, there is a period of several months before another group is laid. This process continues for several years.

- | | |
|--------------|------------------------------|
| A. White | D. Placed in a new structure |
| B. Cared for | E. Hatched |
| C. Not laid | F. None of the Above |

108. As the _____, she lays a greater number of eggs, and her abdomen becomes enlarged from developing eggs.

- | | |
|------------------------|----------------------------|
| A. Young queen matures | D. Suitable site |
| B. Start a new colony | E. Start dispersal flights |
| C. After two molts | F. None of the Above |

109. Eventually, a point is reached where the _____. That is, the queen has reached maximum egg production, and the loss of older individuals by death or swarming is approximately the same as the number of new individuals produced each year.

- | | |
|----------------------|---------------------------|
| A. Queen leaves | D. Colony size stabilizes |
| B. Queen mates | E. Maximum egg production |
| C. Process continues | F. None of the Above |

110. As the colony becomes even older a greater number of swarmers are produced each year. It requires a minimum of 3 to 4 years--and as much as 8 to 10 years--for a colony of our native subterranean termites to become large enough and strong enough to _____.

- | | |
|-----------------------|-----------------------------|
| A. Mate | D. Look for a suitable site |
| B. Start a new colony | E. Start dispersal flights |
| C. Molt | F. None of the Above |

Swarming

111. When swarming occurs in a relatively new structure, it is because it was built over or near a strong colony that was not _____.

- | | |
|--------------------|-------------------------------|
| A. Considered safe | D. Relatively a new structure |
| B. Near ants | E. Maximum egg production |
| C. For rent | F. None of the Above |

112. Termites derive food from wood and other cellulosic materials. In nature, they feed exclusively on wood, _____ and passing most of the remaining components as waste.

- | | |
|---------------|--|
| A. Dry wood | D. Primarily digesting out the cellulose |
| B. Green wood | E. And soil |
| C. Near water | F. None of the Above |

113. In man-invaded environments, termites attack many additional products and commodities. They still depend primarily on cellulose for their nutrition, but will _____they encounter.

- | | |
|--------------------------------------|-------------------------|
| A. Damage many materials | D. Build new structures |
| B. Eat cellulose for their nutrition | E. Start over |
| C. The process continues | F. None of the Above |

114. Damaged materials may include plastics, rubber, asphalt, metal, mortar and others. Wood products like paper are favorite foods of termites because they are nearly pure cellulose. Cotton, burlap and other plant fibers are _____ by termites as well.

- A. Rejected
- B. Preferred
- C. Eaten
- D. Actively consumed
- E. Ignored
- F. None of the Above

Fungi

115. Fungi also play a role in _____. Certain wood decay fungi are highly attractive to termites.

- A. Termite nutrition
- B. Cellulose for their nutrition
- C. Processing
- D. Finding a new structure
- E. Maximum egg production
- F. None of the Above

116. _____ is more easily digested by termites, and the fungus may provide a needed source of nitrogen.

- A. Source of nitrogen
- B. Fungus spores
- C. Moist galleries
- D. Partially decayed wood
- E. Wet wood
- F. None of the Above

117. Ultimately, _____ exhaust the nutritive value of wood for termites, and extensive decay in wood is of no benefit to foraging termites.

- A. Source of nitrogen
- B. Fungus spores
- C. Moist galleries
- D. Ants
- E. Wood-destroying fungi
- F. None of the Above

118. Conversely, when termites attack wood, they usually bring _____ on their bodies. When water or other liquid reaches the damaged wood, it is more easily trapped.

- A. Nitrogen
- B. Fungus spores
- C. Hormones
- D. Clothes
- E. Soil
- F. None of the Above

Moisture

119. _____ to the survival of termites. Subterranean termites obtain most of their moisture from the soil. They maintain contact with the soil in order to survive.

- A. Source of nitrogen is vital
- B. Fungus spores is vital
- C. Moisture is not vital
- D. Moisture is vital
- E. Sandy soil over a clay base is vital
- F. None of the Above

120. The type of soil has a great effect on the ability of subterranean termites to flourish. They generally prefer sandy soil over a clay base. They can and do survive in many _____, however.

- A. Other types of soil
- B. Areas
- C. Wood types
- D. Above-ground types of nests
- E. Types of Weather
- F. None of the Above

Tolerances

121. Termites have very little tolerance to _____, or extremes of hot and cold. But they often must forage far, sometimes above ground, from their initial workings to find food.

- A. Pesticides
- B. Wet conditions
- C. Dry conditions
- D. Ants
- E. Rap Music
- F. None of the Above

122. They move underground through tunnels. Whenever the termites leave the confines of the soil or the wood in which they are feeding, they _____ in which to move from the soil to the wood or the above-ground nest.

- A. Construct castles
- B. Operate equipment
- C. Develop plans
- D. Build above-ground nests
- E. Construct shelter tubes
- F. None of the Above

Subterranean Termites

123. When subterranean termites invade the wood of a structure that is separated from the soil by intervening concrete, masonry or other impervious material, they _____ over the surface to the wood.

- A. Construct castles
- B. Operate equipment
- C. Develop plans
- D. Build above-ground nests
- E. Construct shelter tubes
- F. None of the Above

124. Periodically, they return to the moist galleries. Contrary to published reports, shelter tubes do not necessarily conduct _____ from the soil to the wood.

- A. Nitrogen
- B. Dry air
- C. Moist galleries
- D. Moist air
- E. Water
- F. None of the Above

125. Shelter tubes also provide some protection from _____ and prevent excess water loss. The primary function of shelter tubes probably is protection from natural enemies.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Air movement
- F. None of the Above

126. Once termites have established contact with wood above ground and feeding progresses some distance from the initial shelter tunnel, they often _____ straight down from the wood. Evidence of tube building will be found directly below a suspended tube.

- A. Initial shelter tunnel
- B. Will drop shelter tubes
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

Castles

127. Under certain conditions a fourth type of tube is constructed. Called swarming tubes or swarming "castles" they are constructed as flight platforms for swarmers and they have many turret-like projects and _____ that vaguely resemble castle towers.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Flattened horizontal branches
- E. Heavily guarded
- F. None of the Above

128. They usually are _____ to a height of 4 to 8 inches (10-20 cm), but sometimes are found projecting from heavily infested wood above ground.

- A. Initial shelter tunnel
- B. Constructed on the ground
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

129. When swarmers are _____ via these tubes, or directly through a hole in wood or soil, the openings are heavily guarded by soldiers and workers.

- A. Attacking colonies
- B. Extend the damage
- C. Leaving the colony
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

130. The amount of damage that _____ of subterranean termites might inflict on a structure depends on many factors.

- A. Initial shelter tunnel
- B. An infestation
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

131. The number and size of the _____ and the quality of the environmental conditions (including the wood) are the most important.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

132. Damage usually _____ in houses built over a crawl space and with the sole plates of those houses built on concrete slabs.

- A. Initial shelter tunnel
- B. Starts at the mudsill
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

133. Given enough time, subterranean termites _____ into the wooden floor members, the interior trim and furnishings, and into the walls up to the roof timbers.

- A. Attacking colonies
- B. Will extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

Severe Damage

134. Severe damage by subterranean termites is not likely to occur in the first 8 or 10 years after construction. If treatment is undertaken with the _____, very little serious structural damage is ever likely to occur.

- A. Initial shelter tunnel
- B. Projecting
- C. Instantly recognized
- D. Crawl space
- E. First evidence of infestation
- F. None of the Above

135. Houses should be carefully inspected at least once a year in all regions. This will allow detection _____.

- A. Attacking colonies
- B. Extend the damage
- C. Flight platforms
- D. Before damage is a problem
- E. Heavily guarded
- F. None of the Above

136. Should evidence of termites be found, there is _____ or undue haste. Treatment within 6 months is recommended.

- A. Initial shelter tunnel
- B. No cause for extreme alarm
- C. Is instantly recognized
- D. Built over a crawl space
- E. Might inflict on a structure
- F. None of the Above

Communication in the Colony

137. Termites primarily communicate via chemicals called pheromones. Each colony develops its _____.

- A. Attacking colonies
- B. Damage
- C. Flight platforms
- D. Own characteristic odor
- E. Own characteristic defense
- F. None of the Above

138. Any intruder is _____ and an alarm pheromone is released that triggers the soldiers to attack the intruder.

- A. Easily probed
- B. Found
- C. Perceived
- D. Instantly recognized
- E. Recognizing the signs
- F. None of the Above

139. If a worker finds a new source of food, _____ to that food source by laying a chemical trail. The proportion of castes in the colony is also regulated chemically. Nymphs can develop into workers, soldiers, or reproductive adults, depending on colony needs.

- A. Sounds "food"
- B. It recruits others
- C. Could consume the equivalent
- D. Enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

140. Sound is another means of communication. Soldiers and workers _____ against tunnel walls. The vibrations are perceived by other termites in the colony and serve to mobilize the colony to defend itself.

- A. Easily probe
- B. May tunnel
- C. Vibrations are perceived
- D. Can bang their heads
- E. Recognize the signs
- F. None of the Above

141. Mutual exchange of _____ of colony members.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

Detection of Termites

142. It is important for homeowners to recognize the signs of a subterranean termite infestation. Subterranean termites _____ of winged termites (alates or swarmers), or by the presence of mud tubes and wood damage.

- A. Easily mate
- B. May eat
- C. Vibrations are perceived
- D. Amount of damage
- E. Recognize the signs
- F. None of the Above

143. Termites _____ that contains cellulose (the main component of wood), including wood paneling, paper products, cardboard boxes, art canvases, the paper covering of sheetrock, carpeting, etc.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

144. While _____, they may tunnel through non-cellulosic materials, such as plastic and foamboard.

- A. Probing
- B. They may tunnel
- C. Vibrations are perceived
- D. The amount of damage
- E. Foraging and feeding
- F. None of the Above

145. According to some research, a colony containing 60,000 workers _____ of one foot of a 2" x 4" piece of lumber in slightly over 5 months.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

146. In reality, the amount of damage that termites cause depends on many factors. In areas with cold winter temperatures, termite activity (and feeding) usually declines, but does not necessarily stop. From _____, serious termite damage usually takes about 3-8 years.

- A. Some
- B. A tunnel
- C. A practical perspective
- D. Amount of damage
- E. Recognizing the signs
- F. None of the Above

Look for these signs of termite feeding:

147. Wood that _____ when it is tapped with the handle of a screwdriver.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

148. Soft wood that is _____ with a knife or screwdriver.

- A. Easily probed
- B. Easily tunneled
- C. Vibrations are perceived
- D. Hardily probed
- E. Harden
- F. None of the Above

149. A _____ on the surface of damaged material.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

150. There is _____ the age of recently discovered damage. You need some reference point, i.e., some point in time when it was known that there was no damage to this particular wood.

- A. No accurate method for determining
- B. Easy method of determining
- C. Way to test
- D. Amount of damage
- E. Recognize the signs
- F. None of the Above

151. This is one reason why annual inspections (and keeping your records of these inspections) are invaluable. These inspections do not guarantee that there is _____ in visually-inaccessible areas, such as inside walls. However, they can reveal conditions that might suggest that damage does exist.

- A. Sounds "hollow"
- B. No damage
- C. Could consume the equivalent
- D. Foods enhances recognition
- E. Actually feed on almost anything
- F. None of the Above

Winged Termites

152. Large numbers of winged termites swarming from wood or the soil often are the first obvious sign of a _____.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Nearby termite colony
- F. None of the Above

153. Swarming occurs in mature colonies that typically contain at least several thousand termites. A " _____ " is a group of adult male and female reproductives that leave their colony in an attempt to pair and initiate new colonies.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

154. _____ is stimulated when temperature and moisture conditions are favorable, usually on warm days following rainfall.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

155. _____ typically occurs during daytime in the spring (March, April, and May), but swarms can occur indoors during other months.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Swarming
- F. None of the Above

156. Swarming occurs during a brief period (typically less than an hour), and _____ quickly shed their wings.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

157. _____ are attracted to light, and their shed wings in window sills, cobwebs, or on other surfaces often may be the only evidence that a swarm occurred indoors. The presence of winged termites or their shed wings inside a home should be a warning of a termite infestation.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

158. _____ have straight, bead-like antennae; a thick waist; and two pair of long, equal-length wings that break off easily.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

159. Winged termites can be differentiated from _____, which have elbowed antennae, a constricted waist, and two pair of unequal-length wings (forewings are larger than hind wings) that are not easily detached. Ants also generally are harder-bodied than termites.

- A. Termite swarmers
- B. Alates quickly
- C. Subterranean termites
- D. Alate emergence
- E. Winged ants
- F. None of the Above

Mud Tubes

160. Other signs of _____ presence include mud tubes and mud protruding from cracks between boards and beams.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

161. _____ transport soil and water above ground to construct earthen runways (shelter tubes) that allow them to tunnel across exposed areas to reach wood.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

162. Shelter tubes protect them from the drying effects of air and from natural enemies, such as ants. These tubes usually are about 1/4 to 1 inch wide, and _____ use them as passageways between the soil and wood.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

163. To determine if an infestation is active, shelter tubes should be broken or scraped away and then monitored to determine whether the _____ repair them or construct new ones. Houses should be inspected annually for mud tubes.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Mass Emergence

164. The mass emergence of _____ in the spring is often the first sign of an infestation. In the majority of cases, they emerge in homes near sources of heat - furnaces or water heaters.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

165. The appearance of _____ means that the infestation has been around for at least 3 or 4 years. Therefore it is likely some damage has already been done, so it is important to find where the termites have been feeding, how much damage has been done, and how much repair is needed.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

166. Other means of detecting infestations include knocking on walls, floors, sub-floor wood, joists, etc. and listening for the tapping of _____, and looking for shelter tubes on the outside of the building and under the sub-floor.

- A. Termite swarmers
- B. Soldiers
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

167. Because _____ have a constant demand for water, one should closely examine areas near moist soil, such as below dripping outside faucets, leaking underground sprinkler pipes and nozzles, and below downspouts.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Winged termites
- F. None of the Above

168. Where damage or _____ are suspected, prod with a sharp narrow implement to check the soundness of the supporting wood structure.

- A. Termite swarmers
- B. Alates
- C. Subterranean termites
- D. Alate emergence
- E. Termites
- F. None of the Above

169. The detection of _____ is best left to professionals who have the experience to do it thoroughly and accurately. Professionals like you.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Termite infestations
- E. Termite(s)
- F. None of the Above

170. _____ can enter a building from one or more points so it is important to locate all points of entry for control purposes.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

171. Outdoors, _____ can be detected by driving wooden stakes into the ground at varying distances from buildings and other wooden structures. Examine the stakes every 3 months for termites or signs of their feeding damage.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Evidence of Termite Infestations

172. Wood damaged by _____ can be readily penetrated with a screwdriver, ice pick, or knife. The wood easily breaks apart, revealing mud tubes attached to wood galleries or tunnels in an irregular pattern. The tunnels may contain broken mud particles with fecal materials. In the case of an active colony, white termites may be found in infested wood.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

173. The presence of _____, females, or their shed wings, particularly when the adults fly inside the building, indicates an infestation in the building.

- A. Swarmer(s)
- B. Alates
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

174. Another indication is the presence of mud or shelter tubes extending from the ground to woodwork or on foundation walls. _____ travel periodically via shelter tubes to their colony to obtain moisture and perform feeding duties.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

175. _____ build mud or shelter tubes from soil and wood particles, and coat them with a glue-like substance that they secrete. Each mud tube is about the diameter of a lead pencil.

- A. Swarmer(s)
- B. Workers
- C. Subterranean termites
- D. Females
- E. Termite(s)
- F. None of the Above

Useful Information If Treatment is Necessary

176. If termite activity is suspected or found and _____ is necessary, it is important to outline the plan of the building, indicating sites of termite activity and treatment procedures.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. An insecticide treatment
- E. Continuous insecticide barrier
- F. None of the Above

Control Objectives

177. The goal is to establish a _____ between the termite colony (usually in the ground) and the wood in a building.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

178. Sometimes a secondary termite colony may exist above ground (in roof or other areas with a constant moisture supply) which _____.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

179. In most cases, an untrained homeowner or building manager should not attempt a _____. (But homeowners still try and some do a good job.)

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

180. Generally, termite treatments should be performed by professional pest control operators (PCOs). _____special tools such as hammer drills, sub-slab injectors, rodding devices, high pressure pumps, a power supply, protective equipment. Several insecticides are registered in United States for termite control. All of these insecticides control termites if properly applied.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Termite treatment requires
- E. Termite activity and treatment procedures
- F. None of the Above

The procedures described here are general guidelines, and the applicator must follow the insecticide label directions for dilution, application rate, and other relevant information.

Caution

181. Do not apply insecticides when soil is frozen or water-soaked (saturated). Frozen or saturated soil will _____for even distribution of insecticide.

- A. Requires additional treatment
- B. Not permit adequate absorption
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

182. Do not permit humans and pets to _____until dry.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

183. _____for termite control, always read, understand and follow all label directions.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

184. _____ in original containers, out of reach of children and do not contaminate food, feed and water.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

185. Do not plant garden food crops _____.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Termite activity and treatment procedures
- F. None of the Above

186. Do not _____ in treated soil.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

Pre-Construction Treatment

187. Horizontal Barriers: In general, treat the footing trench with insecticide before pouring cement footings. After grading is completed, _____to areas before pouring slab floors, slab-supported porches, patios, carports, and entrance platforms at the rate of 1 gallon per 10 square feet.

- A. Requires additional treatment
- B. Termite control
- C. Several insecticides
- D. Even distribution of insecticide
- E. Apply diluted insecticide
- F. None of the Above

188. Vertical Barriers: Establish a _____ in areas such as around the bases of foundations, plumbing, utility entrances, and backfilled soil against foundation walls.

- A. Termite treatment
- B. Contact treated surfaces
- C. Chemical barrier
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

189. Treat crawl space areas either by _____. To produce a vertical barrier in soil, apply insecticide at the rate of 4 gallons per 10 linear feet per foot of depth. After treatment, cover the crawl space area with a layer of untreated soil or polyethylene sheeting.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Rodding or trenching procedures
- F. None of the Above

Post-Construction Treatment

190. _____ until locations of radiant heat pipes, water pipes, sewer lines, and electrical conduits are identified. Buildings requiring treatment generally fall into three categories: a) building on slab construction, b) building with crawl space, and c) building with a basement.

- A. Termite treatment
- B. Contact treated surfaces
- C. Keep all pesticides
- D. Vertical Barriers
- E. Continuous insecticide barrier
- F. None of the Above

191. There is a common belief that termites cannot penetrate slab foundations. Termites cannot penetrate _____ but they can enter through cracks as small as 1/64 of an inch.

- A. Solid concrete
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Building on Slab

192. Controlling termite infestation in a building on a _____ is especially difficult and hazardous. In this type of construction, heat ducts (pipes) are buried in the concrete and serious damage can occur when they are accidentally drilled for holes to inject insecticide solutions. Drilling through electrical conduits or plumbing imbedded in the floor is another problem.

- A. Slab
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

193. Treat the exterior of the _____ by digging a narrow and shallow trench about 6 inches wide along the outside of the foundation.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

194. Apply the diluted insecticide to the _____ at the rate of 4 gallons per 10 linear feet. Cover treated soil in the trench with a thin layer of untreated soil. For an inside barrier, drill slab and space holes about 1 foot apart and 6 inches from the wall.

- A. All holes
- B. Masonry voids
- C. Trench and soil
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

Applications

Building With a Basement and Crawl Space

195. Basement: For _____, drill the floor slab and space holes about one foot apart.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. An interior vertical barrier
- F. None of the Above

196. Drilling may be required along the foundation walls, along one side of partition walls, along both sides of _____, around sewer pipes, floor drains, conduits, and any crack in the basement floor.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

197. Using a sub-slab injector, inject the insecticide at the rate of 4 gallons per 10 linear feet. For an insecticide barrier around the _____, apply an insecticide by rodding and/or trenching.

- A. Foundation
- B. Basement
- C. Crawl space area
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

198. The rod holes should be spaced 1 to 1 1/2 feet apart to provide _____. If a trench is necessary, it should not be wider than 6 inches.

- A. All holes
- B. Masonry voids
- C. Vertical barriers
- D. Continuous chemical barrier
- E. Load-bearing wall
- F. None of the Above

199. Inject insecticide using rodding technique at the rate of 4 gallons per 10 linear feet. Cover the trench with _____.

- A. Soil
- B. Plastic
- C. Tarp
- D. Exterior of foundation walls
- E. Untreated soil
- F. None of the Above

Wood Preservatives

200. Wood preservatives must meet two broad criteria: (1) They must provide the desired wood protection in the intended end use, and (2) they must do so without presenting unreasonable risks to people or the environment. Because wood preservatives are _____, the U.S. Environmental Protection Agency (EPA) is responsible for their regulation.

- A. EPA regulation
- B. Restricted use
- C. PCP
- D. Considered to be a type of pesticide
- E. Not regulated as pesticide
- F. None of the Above

201. Federal law requires that before selling or distributing a preservative in the United States, a company must obtain registration from EPA. Before registering a new pesticide or new use for a _____, EPA must first ensure that the preservative can be used with a reasonable certainty of no harm to human health and without posing unreasonable risks to the environment. To make such determinations, EPA requires more than 100 different scientific studies and tests from applicants.

- A. Registered preservative
- B. Preservative
- C. Creosote
- D. Non-pressure treatments
- E. Restricted-use pesticides
- F. None of the Above

202. Some preservatives are classified as "restricted use" by the EPA and these can be used only in certain applications and can be applied only by certified pesticide applicators. Restricted use refers to the chemical preservative and not to the _____.

- A. EPA regulation
- B. Restricted use
- C. Treated wood product
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

203. The general consumer may buy and use wood products treated with restricted-use pesticides; EPA does not consider treated wood a _____ nor is it regulated as a pesticide.

- A. Toxic substance
- B. Preservative
- C. Creosote
- D. Non-pressure treatments
- E. Restricted-use pesticides
- F. None of the Above

204. Although treated wood is _____, there are limitations on how some types of treated wood should be used.

- A. EPA regulation
- B. Restricted use
- C. PCP
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

205. Consumer Information Sheets (EPA-approved) are available from retailers of _____-, pentachlorophenol-, and inorganic-arsenical-treated wood products.

- A. High toxicity
- B. Sodium salt
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol (PCP)
- F. None of the Above

206. The commercial wood treater is bound by the EPA regulation and can treat wood only for _____ that is allowed for that preservative.

- A. EPA regulation
- B. Restricted use
- C. An end use
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

207. Some preservatives that are _____ are available to the general consumer for non-pressure treatments.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Not classified as restricted by EPA
- F. None of the Above

208. It is the responsibility of the end user to apply these preservatives in a manner that is consistent with the _____. Registration of preservatives is under constant review by the EPA, and a responsible State or Federal agency should be consulted as to the current status of any preservative.

- A. EPA regulation
- B. Restricted use
- C. EPA-approved labeling
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

Penta or Pentachlorophenol

209. Penta or Pentachlorophenol (PCP) is an organochlorine compound used as a pesticide and a disinfectant. First produced in the 1930s, it is marketed under many trade names. It can be found in two forms: PCP itself or as the _____, which dissolves easily in water.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol (PCP)
- F. None of the Above

210. In the past, _____ has been used as a herbicide, insecticide, fungicide, algacide, disinfectant and as an ingredient in antifouling paint.

- A. EPA regulation
- B. Restricted use
- C. PCP
- D. Registration of preservatives
- E. Not regulated as pesticide
- F. None of the Above

211. Some applications were in agricultural seeds (for nonfood uses), leather, masonry, wood preservation, cooling tower water, rope and paper mill system. Its use has been significantly declined due to the high toxicity of _____ and its slow biodegradation.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

212. There are two general methods for preserving wood. The pressure process method involves placing wood in a pressure-treating vessel where it is immersed in _____ and then subjected to applied pressure.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

213. In the non-pressure process method, _____ is applied by spraying, brushing, dipping, and soaking.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

214. Utility companies save millions of dollars in replacement poles, because the life of these poles increases from approximately 7 years for an untreated pole to about 35 years for a _____ pole.

- A. Preservative-treated
- B. Preservative
- C. Creosote
- D. Non-pressure treatments
- E. Restricted-use pesticides
- F. None of the Above

215. _____ has been detected in surface waters and sediments, rainwater, drinking water, aquatic organisms, soil, and food, as well as in human milk, adipose tissue, and urine.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

216. As PCP is generally used for its properties as a biocidal agent, there is considerable concern about adverse ecosystem effects in areas of _____ contamination.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

217. Releases to the environment are decreasing as a result of _____ and changing use methods.

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

218. _____ is still released to surface waters from the atmosphere by wet deposition, from soil by run off and leaching, and from manufacturing and processing facilities.

- A. High toxicity of PCP
- B. Sodium salt of PCP
- C. Creosote
- D. Non-pressure treatments
- E. Penta or Pentachlorophenol or (PCP)
- F. None of the Above

219. _____ is released directly into the atmosphere via volatilization from treated wood products and during production.
- A. High toxicity of PCP D. Non-pressure treatments
 B. Sodium salt of PCP E. Penta or Pentachlorophenol or (PCP)
 C. Creosote F. None of the Above
220. Finally, releases to the soil can be by leaching from treated wood products, atmospheric deposition in precipitation (such as rain and snow), _____ and at hazardous waste sites.
- A. MCQ or MCA D. Treated wood
 B. CCA-treated wood E. Wood preservative chemicals
 C. REDs F. None of the Above
221. Since the early 1980s, the purchase and use of PCP in the U.S has not been available to the general public. Nowadays most of the _____ used in the U.S is restricted to the treatment of utility poles and railroad ties.
- A. High toxicity of PCP D. Non-pressure treatments
 B. Sodium salt of PCP E. Penta or Pentachlorophenol or (PCP)
 C. Creosote F. None of the Above
222. In the United States, any drinking water supply with a _____ concentration exceeding the MCL, 1 ppb, must be notified by the water supplier to the public. Disposal of PCP and PCP contaminated substances are regulated under RCRA as a F-listed hazardous waste.
- A. High toxicity of PCP D. Non-pressure treatments
 B. Sodium salt of PCP E. Penta or Pentachlorophenol or (PCP)
 C. Creosote F. None of the Above
223. What are the key points for parents and consumers concerned about exposure from structures made of CCA-treated wood?
 If you are concerned about potential exposure to arsenic, sealants, when applied at least once a year, have been shown to reduce _____ from the wood.
- A. MCQ or MCA D. Treated wood
 B. CCA-treated wood E. Wood preservative chemicals
 C. Dis-lodgeable arsenic F. None of the Above
224. Oil or water-based, penetrating sealants or stains are preferred. As always, parents and other caretakers should follow these precautions for children who play on or near decks. Always wash hands thoroughly after contact with _____, especially prior to eating and drinking, and ensure that food does not come into direct contact with any treated wood.
- A. MCQ or MCA D. Treated wood
 B. CCA-treated wood E. Wood preservative chemicals
 C. REDs F. None of the Above
225. Consumers should follow manufacturer recommendations when handling the wood, including the same precautions that workers should take: wear gloves when handling wood, wear goggles and dust masks when sawing and sanding, always wash hands before eating, and never burn _____.
- A. Chromated arsenicals D. CCA treated wood
 B. Modern preservatives E. All three preservatives
 C. Concerns regarding exposure F. None of the Above
226. The majority of exposure that is estimated to occur to children is from hand-to-mouth activities (i.e., children touching the surface of _____ and then putting his/her hand in his/her mouth). This activity is most prevalent in children aged 1 to 6 years of age.
- A. MCQ or MCA D. Treated wood
 B. CCA-treated wood E. Wood preservative chemicals
 C. REDs F. None of the Above

Precautions and Personal Protection Measures

227. Wood treated with modern preservatives is generally safe to handle given appropriate handling precautions and personal protection measures. However, treated wood may present certain hazards in some circumstances such as during combustion or where loose wood dust particles or _____ are generated or where treated wood comes into direct contact with food and agriculture.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. Other fine toxic residues
- F. None of the Above

228. Preservatives containing _____ in the form of very small particles have recently been introduced to the market, usually with "micronized" or "micro" trade names and designations such as MCQ or MCA.

- A. MCQ or MCA
- B. CCA-treated wood
- C. Copper
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

229. While the manufacturers represent that these products are safe and EPA has registered these products, some groups have expressed concerns regarding exposure to engineered sub-micron and _____.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. All three preservatives
- F. None of the Above

230. Material safety data sheets and safe handling guidelines are required by law to be provided by suppliers of wood preservative chemicals and treated wood products. This information should be obtained and reviewed before handling and using _____ and treated wood products

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

Re-Registration Eligibility Decisions (RED)

231. EPA has completed its re-registration eligibility decisions (RED) for the heavy duty wood preservatives _____, pentachlorophenol, and creosote.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. All three preservatives
- F. None of the Above

232. In general, EPA has determined that the compounds contribute benefits to society and are eligible for reregistration provided the mitigation measures and associated label changes identified in the _____ are implemented and required data are submitted.

- A. MCQ or MCA
- B. CCA-treated wood
- C. REDs
- D. Treated wood
- E. Wood preservative chemicals
- F. None of the Above

233. In its risk assessments, the Agency identified risks of concern associated with occupational exposure (i.e., treatment plant workers) to all three preservatives and ecological exposure to _____.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA treated wood
- E. Pentachlorophenol and creosote
- F. None of the Above

Chromated Copper Arsenate (CCA)

234. Chromated copper arsenate (CCA) is a chemical wood preservative containing _____.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. Chromium, copper and arsenic
- E. All three preservatives
- F. None of the Above

235. _____ is used in pressure treated wood to protect wood from rotting due to insects and microbial agents.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

236. EPA has classified CCA as a restricted use product, for use only by certified pesticide applicators.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

237. _____ has been used to pressure treat lumber since the 1940s. Since the 1970s, the majority of the wood used in outdoor residential settings has been CCA-treated wood.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

238. Pressure treated wood containing _____ is no longer being produced for use in most residential settings, including decks and playsets.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

239. Pesticide manufacturers to voluntarily phased out certain _____ use for wood products around the home and in children's play areas.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

240. Effective December 31, 2003, no wood treater or manufacturer may treat wood with _____ for residential uses, with certain exceptions.

- A. Chromated arsenicals
- B. Modern preservatives
- C. Concerns regarding exposure
- D. CCA
- E. All three preservatives
- F. None of the Above

Handling Precautions

241. Avoid frequent or _____ of sawdust from treated wood. When sawing, sanding, and machining treated wood, wear a dust mask.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Prolonged inhalation
- E. Should not be used in the interiors of farm buildings
- F. None of the Above

242. Avoid frequent or _____ with creosote- or pentachlorophenol-treated wood.

- A. Prolonged skin contact
- B. Wash work clothes separately
- C. Wear a dust mask
- D. Accordance with state and Federal regulations
- E. Should not be used in the interiors of farm buildings
- F. None of the Above

243. When handling creosote- or pentachlorophenol-treated wood, wear long-sleeved shirts and long pants and _____ (for example, gloves that are vinyl coated).
- A. Prolonged skin contact
 - B. Wash work clothes separately
 - C. Wear a dust mask
 - D. Accordance with state and Federal regulations
 - E. Use gloves impervious to the chemicals
 - F. None of the Above
244. Because preservatives or sawdust may accumulate on clothes, they should _____. Wash work clothes separately from other household clothing.
- A. Prolonged skin contact
 - B. Wash work clothes separately
 - C. Wear a dust mask
 - D. Be laundered before reuse
 - E. Should not be used in the interiors of farm buildings
 - F. None of the Above
245. Treated wood _____, fireplaces, or residential boilers, because toxic chemicals may be produced as part of the smoke and ashes.
- A. Prolonged skin contact
 - B. Wash work clothes separately
 - C. Wear a dust mask
 - D. Accordance with state and Federal regulations
 - E. Should not be burned in open fires or in stoves
 - F. None of the Above
246. Treated wood from commercial or industrial use (such as construction sites) may be burned only in commercial or industrial incinerators or boilers in _____.
- A. Prolonged skin contact
 - B. Wash work clothes separately
 - C. Wear a dust mask
 - D. Accordance with state and Federal regulations
 - E. Should not be used in the interiors of farm buildings
 - F. None of the Above
247. CCA-treated wood can be disposed of with regular municipal trash (municipal solid waste, not yard waste) in many areas. However, state or local laws _____. For more information, please contact the waste management agency for your state.
- A. Chromated arsenicals
 - B. Modern preservatives
 - C. Concerns regarding exposure
 - D. May be stricter than federal requirements
 - E. All three preservatives
 - F. None of the Above
248. Wood treated with pentachlorophenol or creosote should not be used in the interiors of farm buildings where there _____ or livestock that may crib (bite) or lick the wood.
- A. Prolonged skin contact
 - B. Wash work clothes separately
 - C. Wear a dust mask
 - D. May be direct contact with domestic animals
 - E. Should not be used in the interiors of farm buildings
 - F. None of the Above
249. In interiors of farm buildings where domestic animals or livestock are unlikely to crib (bite) or lick the wood, creosote- or pentachlorophenol-treated wood may be used for building components that are in ground contact and _____ and where two coats of an appropriate sealer are applied. Sealers may be applied at the installation site.
- A. Prolonged skin contact
 - B. Wash work clothes separately
 - C. Wear a dust mask
 - D. Are subject to decay or insect infestation
 - E. Should not be used in the interiors of farm buildings
 - F. None of the Above
250. Urethane, shellac, latex epoxy enamel, and varnish are acceptable sealers for _____.
- A. Pressure treatment
 - B. Three broad categories
 - C. Long-term resistance to organisms
 - D. Durability of test products
 - E. Each has different effectiveness
 - F. None of the Above
251. _____ and coal-tar pitch emulsion are effective sealers for creosote-treated wood-block flooring. Urethane, epoxy, and shellac are acceptable sealers for all creosote-treated wood.
- A. Untreated
 - B. Preservative(s)
 - C. Wood preservative(s)
 - D. Copper
 - E. Coal-tar pitch
 - F. None of the Above

Chemical Preservatives

252. Before a wood preservative can be approved for pressure treatment of structural members, it must be evaluated to ensure that it provides the _____ and that it does not greatly reduce the strength properties of the wood. The EPA typically does not evaluate how well a wood preservative protects the wood.

- A. Pressure treatment
- B. Necessary durability
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

253. Traditionally this evaluation has been conducted through the _____ of the AWPA. The AWPA Book of Standards lists a series of laboratory and field exposure tests that must be conducted when evaluating new wood preservatives.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Standardization process
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

254. The _____ are compared with those of established durable products and nondurable controls.

- A. Pressure treatment
- B. Three broad categories
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

Two General Classes

255. Wood preservatives have traditionally been divided into two general classes: (1) Oil-type or oil-borne preservatives, such as _____, and (2) waterborne preservatives that are applied as water solutions or with water as the carrier.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Creosote and petroleum solutions of pentachlorophenol
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

256. Many different chemicals are in each of these classes, and _____ in various exposure conditions.

- A. Pressure treatment
- B. Three broad categories
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

257. Some _____ can be formulated so that they can be delivered with either water or oil-type carriers.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

258. Chemical preservatives can be classified into _____: water-borne preservatives, oil-borne preservatives, and light organic solvent preservatives (LOSPs).

- A. Pressure treatment
- B. Three broad categories
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

259. Timber or lumber that is treated with a preservative generally have it applied through vacuum and/or pressure treatment. The _____ used to pressure-treat timber are classified as pesticides.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

260. _____ provides long-term resistance to organisms that cause deterioration. If it is applied correctly, it extends the productive life of timber by five to ten times.

- A. Pressure treatment
- B. Treating timber
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

261. If left _____, wood that is exposed to moisture or soil for sustained periods of time will become weakened by various types of fungi, bacteria or insects.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

Waterborne Preservatives

262. Waterborne preservatives are often used when cleanliness and paintability of the treated wood are required. Formulations intended for use outdoors _____ to leaching and very good performance in service.

- A. Pressure treatment
- B. Have shown high resistance
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

263. Waterborne preservatives are included in specifications for items such as lumber, timber, posts, building foundations, poles, and piling. Because water is added to the wood in the treatment process, _____ after installation unless the wood is kiln-dried after treatment.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Some drying and shrinkage will occur
- E. Coal-tar pitch and coal-tar pitch emulsion
- F. None of the Above

264. Copper is the _____ in many wood preservative formulations used in ground contact because of its excellent fungicidal properties and low mammalian toxicity.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Primary biocide
- F. None of the Above

265. Because some types of fungi are copper tolerant, _____ often include a co-biocide to provide further protection.

- A. Untreated
- B. Preservative(s)
- C. Wood preservative(s)
- D. Copper
- E. Preservative formulations
- F. None of the Above

266. _____ are a restricted-use pesticide.

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Inorganic arsenicals
- F. None of the Above

267. _____ is the most common solvent carrier in preservative formulations due to its availability and low cost.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

268. _____ do however have the drawback that they swell timber, leading to increased twisting, splitting and checking than alternatives.

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

Acid Copper Chromate (ACC)

269. Acid copper chromate (ACC) contains 31.8% copper oxide and 68.2% chromium trioxide (_____).

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

270. The solid, paste, liquid concentrate, or treating solution can be made of copper sulfate, potassium dichromate, or_____.

- A. AWPA P5
- B. Alternatives
- C. Sodium dichromate
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

271. Tests on stakes and posts exposed to decay and termite attack indicate that wood well impregnated with _____ generally provides acceptable service.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

272. Some specimens placed in ground contact have shown vulnerability to attack by copper-tolerant fungi. _____ has often been used for treatment of wood in cooling towers. Its current uses are restricted to applications similar to those of chromated copper arsenate (CCA).

- A. AWPA P5
- B. ACC
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

273. _____ must be used at low treating temperatures (38 to 66 °C (100 to 150 °F)) because they are unstable at higher temperatures. This restriction may involve some difficulty when higher temperatures are needed to obtain good treating results in woods such as Douglas-fir.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

Ammoniacal Copper Zinc Arsenate (ACZA)

274. _____ is commonly used on the West Coast of North America for the treatment of Douglas-fir.

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

275. The penetration of Douglas-fir heartwood is improved with ACZA because of the chemical composition and stability of treating at elevated temperatures. Wood treated with _____ performs and has characteristics similar to those of wood treated with CCA.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

276. ACZA should contain approximately 50% copper oxide, 25% zinc oxide, and 25% arsenic pentoxide dissolved in a solution of ammonia in water (_____). The weight of ammonia is at least 1.38 times the weight of copper oxide.

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

277. To aid in solution, ammonium bicarbonate is added (at least equal to 0.92 times the weight of copper oxide). _____ replaced an earlier formulation, ammoniacal copper arsenate (ACA) that was used for many years in the United States and Canada.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

Chromated Copper Arsenate (CCA)

278. Chromated copper arsenate or CCA, is a _____ that protects wood from rotting due to insects and microbial agents.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chemical preservative
- E. AWPA P5
- F. None of the Above

279. CCA contains _____, chromium and copper. CCA has been used to pressure treat lumber used for decks, playgrounds (playsets) and other outdoor uses since the 1930's.

- A. AWPA P5
- B. Arsenic
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

280. Since the 1970's, the majority of the wood used in residential settings was _____ - treated wood.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

281. _____ is a registered chemical pesticide that is subject to U.S. Environmental Protection Agency's (EPA's) regulation under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

- A. AWPA P5
- B. Alternatives
- C. Treating solution
- D. Chromated copper arsenate (CCA)
- E. Ammoniacal Copper Zinc Arsenate (ACZA)
- F. None of the Above

282. The playground equipment made with wood treated with _____ is the jurisdictional responsibility of the CPSC and would be subject to the rules of the CPSC's Federal Hazardous Substances Act if found to be a hazardous substance.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

283. Chromated copper arsenate (CCA) is a wood preservative used for timber treatment since the mid-1930s. It is a mix of copper, _____, and arsenic formulated as oxides or salts.

- A. ACZA
- B. ACC and CCA
- C. Chromium
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

284. It preserves the wood from decay fungi, wood attacking insects, including termites, and marine borers. It also improves the _____ and may assist paint adherence in the long term.

- A. Pressure treatment
- B. Three broad categories
- C. Long-term resistance to organisms
- D. Weather-resistance of treated timber
- E. Each has different effectiveness
- F. None of the Above

Tanalith" "SupaTimber" and "Celcure"

285. _____ is known by many trade names, including the worldwide brands "Tanalith" "SupaTimber" and "Celcure".

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

286. The _____ acts as a chemical fixing agent and has little or no preserving properties; it helps the other chemicals to fix in the timber, binding them through chemical complexes to the wood's cellulose and lignin. The copper acts primarily to protect the wood against decay fungi and bacteria, while the arsenic is the main insecticidal component of CCA.

- A. ACZA
- B. ACC and CCA
- C. Chromium
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

287. CCA is widely used around the world as a heavy duty preservative, often as an alternative to creosote, and pentachlorophenol. Other water-borne preservatives like CCA include alkaline copper quaternary compounds (_____), copper azole (CuAz), ammoniacal copper zinc arsenate (ACZA), copper citrate, and copper HDO (CuHDO)

- A. ACZA
- B. ACC and CCA
- C. ACQ
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

288. Recognized for the greenish tint it imparts to timber, _____ is a preservative that has been extremely common for many decades. Over time small amounts of the CCA chemicals, mainly the arsenic, may leach out of the treated timber.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

289. This is particularly the case in acidic environments. The chemicals may leach from the wood into surrounding soil, resulting in concentrations higher than naturally occurring background levels. A study found that 12–13 percent of the _____ leached from treated wood buried in compost during a 12-month period.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

290. On the other hand there have been many other studies _____ that show leaching to be as low as 0.5 ppm (red pine poles in service,) or up to 14 ppm (treated pine in garden beds).

- A. Pressure treatment
- B. Have shown high resistance
- C. Long-term resistance to organisms
- D. Durability of test products
- E. Each has different effectiveness
- F. None of the Above

291. Soil contamination due to the presence of _____-treated wood after 45 years is minimal. Should any chemicals leach from the wood they are likely to bind to soil particles, especially in soils with clay or soils that are more alkaline than neutral.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

292. A number of countries have reviewed _____ during recent years and have looked at limiting the public exposure to CCA-treated timber by restricting its application in residential situations.

- A. ACZA
- B. ACC and CCA
- C. ACC
- D. Chromated copper arsenate or CCA
- E. AWPA P5
- F. None of the Above

Endangered Species Act

293. When Congress passed the Endangered Species Act (ESA) in 1973, it recognized that our _____ is of "esthetic, ecological, educational, recreational, and scientific value to our Nation and its people." It further expressed concern that many of our nation's native plants and animals were in danger of becoming extinct.

- A. Adequate concern
- B. Threatened
- C. Primary responsibility
- D. Rich natural heritage
- E. Conservation programs
- F. None of the Above

294. The purpose of the ESA is to _____ and the ecosystems upon which they depend. It is administered by the U.S. Fish and Wildlife Service and the Commerce Department's National Marine Fisheries Service (NMFS).

- A. Conserve to the extent practicable
- B. Are eligible for listing
- C. Threatened with extinction
- D. Protect and recover imperiled species
- E. Endangered species and threatened species
- F. None of the Above

295. The FWS has _____ for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and fish such as salmon.

- A. Adequate concern
- B. Threatened
- C. Primary responsibility
- D. Conserve endangered species and threatened species
- E. Maintain conservation programs
- F. None of the Above

296. Under the ESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or _____.

- A. Conserve to the extent practicable
- B. Are eligible for listing
- C. Threatened with extinction
- D. A significant portion of its range
- E. Endangered species and threatened species
- F. None of the Above

297. "_____ " means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened.

- A. Adequate concern
- B. Threatened
- C. Primary responsibility
- D. Conserve endangered species and threatened species
- E. Maintain conservation programs
- F. None of the Above

298. For the purposes of the ESA, Congress defined species to include subspecies, varieties, and, for vertebrates, _____.

- A. Conserve to the extent practicable
- B. Are eligible for listing
- C. Threatened with extinction
- D. Primary responsibility
- E. Endangered species and threatened species
- F. None of the Above

299. The United States has pledged itself as a sovereign state in the international community to _____ the various species of fish or wildlife and plants facing extinction, pursuant to— migratory bird treaties with Canada and Mexico; (B) the Migratory and Endangered Bird Treaty with Japan; (C) the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere; (D) the International Convention for the Northwest Atlantic Fisheries; (E) the International Convention for the High Seas Fisheries of the North Pacific Ocean; (F) the Convention on International Trade in Endangered Species of Wild Fauna and Flora; and (G) other international agreements;

- A. Conserve to the extent practicable
- B. Are eligible for listing
- C. Threatened with extinction
- D. Primary responsibility
- E. Endangered species and threatened species
- F. None of the Above

300. Encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nation's international commitments and to _____, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants.

- A. Better safeguarding
- B. Threatened
- C. Primary responsibility
- D. Conserve endangered species and threatened species
- E. Maintain conservation programs
- F. None of the Above

You are finished with your Exam...