

Registration form

Agricultural Pesticide Supplement \$100.00
48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL \$50.00
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 and 4. Signature is required.

Signature _____

Address: _____

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

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

Fax (_____) _____ **Email** _____

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

Class/Grade _____

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 PO Box 3060, Chino Valley, AZ 86323
Toll Free (866) 557-1746 Fax (928) 272-0747 E-Mail info@tlch2o.com

If you've paid on the Internet, please write your Customer # _____

We'll e-mail you the certificate of completion. Please provide an e-mail address.

Important Information about this Course (Disclaimer Notice)

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 a 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.

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, death, neglect, damage caused by this CEU education training or course material suggestion or error. It is my responsibility to 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.

CUSTOMER SERVICE RESPONSE CARD

Agricultural Pesticide Supplement Training Course

NAME: _____

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.

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.

You can obtain a printed version of the course manual from TLC for an additional \$69.95 plus shipping charges.

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.

Grading Information

In order to maintain the integrity of our courses we do not distribute test scores, percentages or questions missed. Our exams are based upon pass/fail criteria with the benchmark for successful completion set at 70%. Once you pass the exam, your record will reflect a successful completion and a certificate will be issued to you.

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.

Do not solely depend on TLC's Approval list for it may be outdated.

Some States and many employers require the final exam to be proctored.

<http://www.abctlc.com/downloads/PDF/PROCTORFORM.pdf>

A second certificate of completion for a second State Agency \$25 processing fee.

All downloads are electronically tracked and monitored for security purposes.

No refunds.

Agricultural Pesticide Supplement 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

- | | | |
|-----------------|-----------------|------------------|
| 1. A B C D E F | 35. A B C D E F | 69. A B C D E F |
| 2. A B C D E F | 36. A B C D E F | 70. A B C D E F |
| 3. A B C D E F | 37. A B C D E F | 71. A B C D E F |
| 4. A B C D E F | 38. A B C D E F | 72. A B C D E F |
| 5. A B C D E F | 39. A B C D E F | 73. A B C D E F |
| 6. A B C D E F | 40. A B C D E F | 74. A B C D E F |
| 7. A B C D E F | 41. A B C D E F | 75. A B C D E F |
| 8. A B C D E F | 42. A B C D E F | 76. A B C D E F |
| 9. A B C D E F | 43. A B C D E F | 77. A B C D E F |
| 10. A B C D E F | 44. A B C D E F | 78. A B C D E F |
| 11. A B C D E F | 45. A B C D E F | 79. A B C D E F |
| 12. A B C D E F | 46. A B C D E F | 80. A B C D E F |
| 13. A B C D E F | 47. A B C D E F | 81. A B C D E F |
| 14. A B C D E F | 48. A B C D E F | 82. A B C D E F |
| 15. A B C D E F | 49. A B C D E F | 83. A B C D E F |
| 16. A B C D E F | 50. A B C D E F | 84. A B C D E F |
| 17. A B C D E F | 51. A B C D E F | 85. A B C D E F |
| 18. A B C D E F | 52. A B C D E F | 86. A B C D E F |
| 19. A B C D E F | 53. A B C D E F | 87. A B C D E F |
| 20. A B C D E F | 54. A B C D E F | 88. A B C D E F |
| 21. A B C D E F | 55. A B C D E F | 89. A B C D E F |
| 22. A B C D E F | 56. A B C D E F | 90. A B C D E F |
| 23. A B C D E F | 57. A B C D E F | 91. A B C D E F |
| 24. A B C D E F | 58. A B C D E F | 92. A B C D E F |
| 25. A B C D E F | 59. A B C D E F | 93. A B C D E F |
| 26. A B C D E F | 60. A B C D E F | 94. A B C D E F |
| 27. A B C D E F | 61. A B C D E F | 95. A B C D E F |
| 28. A B C D E F | 62. A B C D E F | 96. A B C D E F |
| 29. A B C D E F | 63. A B C D E F | 97. A B C D E F |
| 30. A B C D E F | 64. A B C D E F | 98. A B C D E F |
| 31. A B C D E F | 65. A B C D E F | 99. A B C D E F |
| 32. A B C D E F | 66. A B C D E F | 100. A B C D E F |
| 33. A B C D E F | 67. A B C D E F | |
| 34. A B C D E F | 68. A B C D E F | |

Assignment Instructions

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

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 7-20.

Assignment #2 for all pest applicators whose last name begins starting with the letter F-L, your assignment is found on pages 21-34.

Assignment #3 for all pest applicators whose last name begins starting with the letter M-Q, your assignment is found on pages 35-48.

Assignment #4 for all pest applicators whose last name begins starting with the letter R-Z, your assignment is found on pages 49-63.

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.

We will e-mail you the certificate of completion. Please provide an e-mail address.

Agricultural Pesticide Supplement 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.

Agricultural Pesticide Components

1. In evaluating pesticides for reregistration, EPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and _____ of each pesticide.
A. Biomagnify
B. Synthetic version
C. Pesticides for reregistration
D. Bigger drivers
E. Environmental effects
F. None of the Above
2. The Agency develops any mitigation measures or regulatory controls needed to effectively reduce each _____. EPA then reregisters pesticides that can be used without posing unreasonable risks to human health or the environment.
A. Persistent toxins
B. Persistence
C. Pesticide's risks
D. Toxin
E. Adverse risks
F. None of the Above
3. When a _____ is eligible for reregistration, EPA explains the basis for its decision in a Reregistration Eligibility Decision (RED) document.
A. Pesticide
B. Synthetic pesticide
C. Pesticide for registration
D. Product
E. Chemical
F. None of the Above
4. **Organophosphate Pesticides** - These pesticides affect the nervous system by disrupting the enzyme that regulates _____, a neurotransmitter.
A. Cells
B. Nerves
C. Blood flow
D. Acetylcholine
E. Folic acid
F. None of the Above
5. **Carbamate Pesticides** affect the nervous system by disrupting an enzyme that regulates _____, a neurotransmitter. The enzyme effects are usually reversible. There are several subgroups within the carbamates.
A. Cells
B. Nerves
C. Blood flow
D. Acetylcholine
E. Folic acid
F. None of the Above

6. **Organochlorine Insecticides** were commonly used in the past, but many have been removed from the market due to their health and environmental effects and their persistence (e.g. DDT and _____).

- A. Persistent toxins
- B. Their persistence
- C. Organochlorine pesticides
- D. Chlordane
- E. Adverse effects
- F. None of the Above

7. **Pyrethroid Pesticides** were developed as a synthetic version of the naturally occurring pesticide pyrethrin, which is found in chrysanthemums. They have been modified to increase their _____ in the environment. Some synthetic pyrethroids are toxic to the nervous system.

- A. Power
- B. Killing ability
- C. Genetics
- D. Toxins
- E. Stability
- F. None of the Above

Environmental Effects

Effects on Non-target Species

8. A number of the _____ have been banned from most uses worldwide, and globally they are controlled via the Stockholm Convention on persistent organic pollutants. These include: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex and toxaphene.

- A. Persistent toxins
- B. Controlled pesticides
- C. Organochlorine pesticides
- D. Toxic pesticides
- E. Adverse effects
- F. None of the Above

DDT

9. One of the bigger drivers in the development of new insecticides has been the desire to replace toxic and _____.

- A. Odorous pesticides
- B. Synthetic versions
- C. Pesticide reregistration
- D. Irksome insecticides
- E. Powerful pesticides
- F. None of the Above

10. DDT was introduced as a _____ to the lead and arsenic compounds. Some insecticides have been banned due to the fact that they are persistent toxins which have adverse effects on animals and/or humans.

- A. Toxic alternative
- B. Safer alternative
- C. Organochlorine pesticides
- D. Replacement
- E. Cheaper product
- F. None of the Above

11. Also, DDT may _____, which causes progressively higher concentrations in the body fat of animals farther up the food chain. The near-worldwide ban on agricultural use of DDT and related chemicals has allowed some of these birds, such as the peregrine falcon, to recover in recent years.

- A. Biomagnify
- B. Increase
- C. Fade
- D. Not control pests
- E. Kill everything
- F. None of the Above

Pollinator Decline

12. Insecticides can kill bees and may be a cause of _____, the loss of bees that pollinate plants, and colony collapse disorder (CCD), in which worker bees from a beehive or Western honey bee colony abruptly disappear. Loss of pollinators will mean a reduction in crop yields.

- A. Pollinator decline
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

13. Sublethal doses of insecticides (i.e. imidacloprid and other neonicotinoids) affect _____ of bees.
- A. Frequently unachievable
 - B. Foraging behavior
 - C. Pesticide application
 - D. Reproduction
 - E. Honey production
 - F. None of the Above

IPM Methods (Types of Pest Control)

14. Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a _____.

- A. Crop sanitation
- B. Pest control action
- C. Erecting insect barriers
- D. Action threshold
- E. Sublethal doses of insecticides
- F. None of the Above

15. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to _____ by the most economical means, and with the least possible hazard to people, property, and the environment.

- A. Please homeowners
- B. Control pests
- C. Apply insecticides
- D. Apply sublethal doses of insecticides
- E. Manage pest damage
- F. None of the Above

The four steps include:

Set Action Thresholds

16. Before taking any pest control action, IPM first sets a(n) _____, a point at which pest populations or environmental conditions indicate that pest control action must be taken.

- A. Set Point
- B. Pest control action
- C. Insect barriers
- D. Action threshold
- E. Sublethal dose of insecticide
- F. None of the Above

Monitor and Identify Pests

17. Not all insects, weeds, and other living organisms require control. Many organisms are _____, and some are even beneficial.

- A. Easy to control
- B. Innocuous
- C. Pests
- D. Reproducing
- E. Friendly
- F. None of the Above

Control

18. Once monitoring, identification, and action thresholds indicate that pest control is required, and preventive methods are no longer effective or available, IPM programs then evaluate the proper _____ both for effectiveness and risk.

- A. Control method
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

Six Basic Components

An IPM system is designed around six basic components: The US Environmental Protection Agency has a useful set of IPM principles.

19. Acceptable pest levels: The emphasis is on control, _____. IPM holds that wiping out an entire pest population is often impossible, and the attempt can be economically expensive, environmentally unsafe, and frequently unachievable.

- A. Frequently unachievable
- B. Frequently achievable
- C. Pesticide application
- D. Not eradication
- E. Most economical means
- F. None of the Above

20. Preventive cultural practices: Selecting varieties best for local growing conditions, and maintaining healthy crops, is the first line of defense, together with plant quarantine and _____ ' such as crop sanitation (e.g. removal of diseased plants to prevent spread of infection).

- A. Cultural techniques
- B. Pest control actions
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

21. Monitoring: _____ is essential, as is a thorough knowledge of the behavior and reproductive cycles of target pests.

- A. Spraying
- B. Control
- C. Pesticide application
- D. Sublethal doses of insecticides
- E. Most economical means
- F. None of the Above

22. Mechanical controls: Should a pest reach an unacceptable level, mechanical methods are the first options to consider. They include simple hand-picking, _____, using traps, vacuuming, and tillage to disrupt breeding.

- A. Crop sanitation
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Spraying
- F. None of the Above

23. Biological controls: Biological insecticides, derived from naturally occurring microorganisms (e.g.: Bt, entomopathogenic fungi and _____), also fit in this category.

- A. PCP
- B. Biocide
- C. Entomopathogenic fungi
- D. Synthetic chemicals
- E. Entomopathogenic nematodes
- F. None of the Above

24. Responsible Pesticide Use: Synthetic pesticides are generally only used as required and often only at specific times in a pests life cycle.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

Classes of Agricultural Insecticides

25. The classification of insecticides is done in several different ways:

Contact insecticides are toxic to insects brought into direct contact. Efficacy is often related to the quality of pesticide application, with _____(such as aerosols) often improving performance.

- A. PCP
- B. Biocide
- C. Small droplets
- D. Synthetic chemicals
- E. An insecticide will be toxic
- F. None of the Above

26. Inorganic insecticides are manufactured with metals and include _____, copper compounds and fluorine compounds, which are now seldom used, and sulfur, which is commonly used.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Arsenates
- E. Systemic insecticide(s)
- F. None of the Above

27. Mode of action—how the pesticide kills or inactivates a pest—is another way of classifying insecticides. _____ is important in predicting whether an insecticide will be toxic to unrelated species, such as fish, birds and mammals.

- A. PCP
- B. Biocide
- C. Mode of action
- D. Synthetic chemicals
- E. An insecticide will be toxic
- F. None of the Above

28. _____, such as nicotine, pyrethrum and neem extracts are made by plants as defenses against insects. Nicotine based insecticides have been barred in the U.S. since 2001 to prevent residues from contaminating foods.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Natural insecticides
- E. Systemic insecticide(s)
- F. None of the Above

29. _____ are synthetic chemicals which comprise the largest numbers of pesticides available for use today.

- A. PCP
- B. Biocide
- C. Organic insecticides
- D. Synthetic chemicals
- E. An insecticide will be toxic
- F. None of the Above

30. Plant-Incorporated Protectants (PIP) are insecticidal substances produced by plants after genetic modification. For instance, a gene that codes for a specific _____ is introduced into a crop plant's genetic material. Then, the plant manufactures the protein.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

31. Since the _____ is incorporated into the plant, additional applications at least of the same compound are not required.

- A. PCP
- B. Biocide
- C. Entomopathogenic fungi
- D. Synthetic chemicals
- E. Insecticide will be toxic
- F. None of the Above

32. _____ are incorporated by treated plants. Insects ingest the insecticide while feeding on the plants.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

33. _____, e.g. arsenic have been used as insecticides; they are poisonous and very rarely used now by farmers.

- A. PCPs
- B. Biocides
- C. Heavy metals
- D. Synthetic chemicals
- E. Borates
- F. None of the Above

Penta or Pentachlorophenol

34. 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. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

35. _____ 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. PCP
- B. Biocide
- C. Borates
- D. Synthetic chemicals
- E. Heavy metals
- F. None of the Above

36. As _____ is generally used for its properties as a biocidal agent, there is considerable concern about adverse ecosystem effects in areas of PCP contamination.
- | | |
|-------------|------------------------------|
| A. Sulfur | D. Insecticidal substance(s) |
| B. Nicotine | E. Systemic insecticide(s) |
| C. PCP | F. None of the Above |

Pyrroles

37. Chlorfenapyr is the only termiticide from the _____ and is active primarily as a stomach poison with some contact activity. It is also non-repellent to termites.
- | | |
|----------------------------|----------------------------|
| A. Diflubenzuron | D. Pyrethroid pesticide(s) |
| B. Systemic insecticide(s) | E. Chlorfenapyr |
| C. Acaricide/insecticide | F. None of the Above |

38. _____ acts on the mitochondria of cells and uncouples or inhibits oxidative phosphorylation, preventing the formation of the crucial energy molecule adenosine triphosphate (ATP).
- | | |
|----------------------------|----------------------------|
| A. Diflubenzuron | D. Pyrethroid pesticide(s) |
| B. Systemic insecticide(s) | E. Chlorfenapyr |
| C. Acaricide/insecticide | F. None of the Above |

Pyrethroids

39. To mimic the insecticidal activity of the natural compound pyrethrum another class of pesticides, pyrethroid pesticides, has been developed. These are non-persistent, which is a sodium channel modulators, and are much less acutely toxic than _____.
- | | |
|----------------------------|------------------------------------|
| A. Diflubenzuron | D. Pyrethroid pesticide(s) |
| B. Systemic insecticide(s) | E. Organophosphates and carbamates |
| C. Acaricide/insecticide | F. None of the Above |

Neonicotinoids

40. Neonicotinoids are synthetic analogues of the natural insecticide nicotine (with a much lower acute mammalian toxicity and greater field persistence). These chemicals are _____.
- | | |
|----------------------------|----------------------------|
| A. Diflubenzuron | D. Pyrethroid pesticide(s) |
| B. Systemic insecticide(s) | E. Chlorfenapyr |
| C. Acaricide/insecticide | F. None of the Above |

41. Broad-spectrum—systemic insecticides, they have a rapid action (minutes-hours). They are applied as sprays, drenches, seed and soil treatments—often as substitutes for _____. Treated insects exhibit leg tremors, rapid wing motion, stylet withdrawal (aphids), disoriented movement, paralysis and death.
- | | |
|----------------------------|------------------------------------|
| A. Diflubenzuron | D. Pyrethroid pesticide(s) |
| B. Systemic insecticide(s) | E. Organophosphates and carbamates |
| C. Acaricide/insecticide | F. None of the Above |

Diflubenzuron

42. Diflubenzuron is an insecticide of the benzamide class. It is used in forest management and on field crops to selectively control insect pests. The mechanism of action of _____ involves inhibiting the production of chitin which is used by an insect to build its exoskeleton.
- | | |
|----------------------------|----------------------------|
| A. Diflubenzuron | D. Pyrethroid pesticide(s) |
| B. Systemic insecticide(s) | E. Chlorfenapyr |
| C. Acaricide/insecticide | F. None of the Above |

43. Diflubenzuron is an acaricide/insecticide (_____) used to control many leaf eating larvae of insects feeding on agricultural, forest and ornamental plants (e.g. gypsy moths, mosquito larvae, rust mites).

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Insect growth regulator
- F. None of the Above

44. _____ is used primarily on cattle, citrus, cotton, mushrooms, ornamentals, standing water, forestry trees and in programs to control mosquito larvae and gypsy moth populations.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

45. Formulations include a soluble concentrate, flowable concentrate, wettable powder and a pelleted/tableted. _____ is applied by airblast, aircraft and hydraulic sprayers.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

Agricultural Application Section

46. Aerial application, commonly called **crop dusting**, involves spraying crops with fertilizers, pesticides, and fungicides from an agricultural aircraft. The specific spreading of fertilizer is also known as _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Aerial topdressing
- F. None of the Above

Understanding the Dangers of Drift

47. Droplet size depends primarily upon the _____, nozzle design and orientation, and the surface tension of the spray solution.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Spray pressure
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

48. The size of granular materials depends upon the _____ and can be controlled to some extent by screening.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Particular formulation
- F. None of the Above

49. In the case of sprays, _____ is generally increased by reducing pressures or increasing nozzle size.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

50. The use of surfactants tends to lower the surface tension of a spray solution and usually results in a smaller droplet size than when the same formulation is used without a _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

51. High wind velocities obviously increase the drift hazard as they carry the small droplets and particles away from their intended target. In many cases the distance can run into several miles. _____ tend to be least turbulent just before sunrise or just after sunset.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Winds
- F. None of the Above

Vapor Drift (Volatilization)

52. Most cases of 2,4-D injury to cotton result from _____ of an ester-containing formulation of 2,4-D.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

53. Vapor drift injury results when the herbicide volatilizes and the vapors move to a susceptible crop such as cotton. Injury from vapor drift can occur at rather long distances from the _____.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Sprayed area
- F. None of the Above

54. Hot temperatures, moist soils, and temperature inversions all increase the potential for vapor drift. Vapor drift is not movement of material caused by _____.

- A. Granular material(s)
- B. Wind
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

Spray Calibration and Vortex

55. Fixed-wing aircraft and helicopters exhibit similar _____ (wingtip vortex and main rotor vortex).

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

56. Since the airflow patterns around and in the wake of each aircraft are sufficiently different, each type and series of aircraft _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Needs testing
- F. None of the Above

57. If the horsepower of the engine is changed, the type of propeller or wingtip shape will change the _____.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

58. Generalizations can be used to guide the operator on nozzle placement or granular disseminator adjustment. However, _____ is needed to check the effect of each feature added to the aircraft.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Pattern testing
- F. None of the Above

59. Pattern tests should be made in calm air to avoid cross-wind distortion. If wind is unavoidable, the tests should be made in a direction_____.
- A. Cross-wind distortion D. Compared to vapor drift injury
 B. Parallel to the wind E. In relation to droplet size
 C. Drift hazard F. None of the Above
60. Testing should be carried out in winds less than 3 MPH at all times. The best time for this is in the early morning before the sun heats up the ground, creating_____.
- A. Drops D. Airflow patterns
 B. Eddies and inversions E. Drift
 C. Vapor drift F. None of the Above

Discharge Calibration

61. Having installed the desired type, size and number of nozzles, the output of the system should be checked to see that the correct discharge in gallons per minute is taking place. If the pump can be run at operating speed with the aircraft stationary, _____can be checked with a measuring container and stop watch. Boom pressure must remain constant.
- A. Spray system run D. First mark
 B. Stationary test E. Nozzle discharge
 C. Correct discharge F. None of the Above
62. If this _____ cannot be done, the aircraft should be parked and the tank(s) filled with water to a suitable mark.
- A. Spray system run D. First mark
 B. Stationary test E. Nozzle discharge
 C. Correct discharge F. None of the Above
63. The aircraft can then be flown and the _____ for a timed period (30, 60, 90 or 120 seconds).
- A. Spray system run D. First mark
 B. Stationary test E. Nozzle discharge
 C. Correct discharge F. None of the Above
64. The aircraft should then be brought back to the same point used previously and the amount of water determined by reading the tank scale(s) or refilling to the _____ using measuring devices.
- A. Spray system run D. First mark
 B. Stationary test E. Nozzle discharge
 C. Correct discharge F. None of the Above

**Prior Warnings
 Notify Beekeepers**

65. Notify beekeepers about the meetings. Program operational guidelines, environmental impact statements, environmental assessments (EA), State laws, and/or pesticide labels may also require that beekeepers in the area be notified of control programs. Members of the public, not directly involved with the spray operation, may also be affected by an aerial pesticide application so the contractor/farmer may have a mandatory obligation to issue “_____” to any person or organization that might be affected or concerned.
- A. Electronic track guidance D. Spray pressure
 B. Prior warnings E. Hyperbolic lines of constant phase
 C. Blocked nozzles F. None of the Above

66. Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites. Where particularly toxic materials are to be used, it may be necessary to warn the emergency services, and the local environment and water authorities. The product label should give _____ on prior warning and who to contact.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Precise advice
- E. Require no external reference
- F. None of the Above

Accurate Aerial Spraying

67. Accurate aerial spraying over undulating rangelands and forest tracts is more difficult to achieve than when treating smaller crop areas and in these circumstances _____ may be financially justified.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Spray pressure
- E. Hyperbolic lines of constant phase
- F. None of the Above

68. Both the self-contained Inertial Navigation System (INS) and the Doppler System require no _____ during flight, but the size and complexity of these units confines their use to large aircraft. These systems are not precise enough for smaller-scale agricultural spraying.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. External reference input
- E. Require no external reference
- F. None of the Above

69. Systems working with external references are also available. Positional information is received from a series of transmitting stations around the world, which produce hyperbolic lines of constant phase, which can be _____ into navigational guidance.

- A. Electronic track guidance
- B. Prior warning
- C. Given
- D. Converted onboard
- E. Provided
- F. None of the Above

70. Such systems eliminate the need for _____, and constantly monitor and evaluate the spray process.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Sued or held liable
- E. Require no external reference
- F. None of the Above

Sprayer Field Settings

71. During a flight, spray pressure, _____ above the crop can be adjusted if necessary however, as the pilot has to concentrate on flying the aircraft he may only occasionally check the spraying system.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Output and aircraft height
- E. Hyperbolic lines of constant phase
- F. None of the Above

72. The use of artificial targets within the treated crop is strongly recommended to check and evaluate _____ as well as confirm the lane separation distances.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Spray deposit efficiency
- E. Require no external reference
- F. None of the Above

73. This is where the ground staff can report back to the pilot, via the radio, any problems with the spraying system such as blocked nozzles or _____.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Spray pressure
- E. Incorrectly operating atomizers
- F. None of the Above

Pesticide Storage

74. Unused pesticide must be returned to store. Distressed or damaged containers _____ into clean replacement containers, which are fully labeled.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Must be emptied
- E. Require no external reference
- F. None of the Above

75. Store stock control must ensure that existing chemicals are used first before recently purchased similar new products. Good stock control and _____ will mean that waste concentrate and diluted spray are kept to a minimum.

- A. Electronic track guidance
- B. Proper labels
- C. Current labels
- D. Careful planning
- E. Accurate planning
- F. None of the Above

76. Where old or obsolete chemical products have to be disposed of, an approved contractor must be used. Chemicals for disposal _____ wherever possible and fully labeled.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Must be secure in their original containers
- E. Require no external reference
- F. None of the Above

77. Pesticides should be shielded from direct exposure to the environment, e.g., light, temperature extremes, and humidity. Such conditions may cause _____ and thus decrease the effectiveness of the pesticide. Improperly stored pesticides are more hazardous to handle and may violate federal regulations.

- A. Explosions
- B. Chemical decomposition
- C. Fire
- D. Spray pressure
- E. Hyperbolic lines of constant phase
- F. None of the Above

78. Another concern of the applicator is the possibility of being sued or held liable for pesticide contamination of surface or _____.

- A. Disposed of
- B. Returned to store
- C. Eliminated
- D. Groundwater due to improper storage
- E. Require no external reference
- F. None of the Above

Applicator, Worker or Handler Health Surveillance

79. Where label recommendations demand applicator, worker or handler health surveillance, a _____ for each individual applicator, worker or handler to cover name health details and previous health history.

- A. Set of PPE
- B. Doctor
- C. Special Nurse
- D. Record
- E. Separate record must be prepared
- F. None of the Above

80. Exposure periods must be listed to include the date of the _____ to a particular product, together with any recommendations coming from the clinical practitioner responsible for the monitoring program.

- A. Check according
- B. Maximum protection
- C. Is limited
- D. Initial exposure
- E. Examination
- F. None of the Above

81. Applicator, worker or handler contact with other chemical products during the monitoring period must also be recorded. All staff involved with the _____ should be submitted for health checks on a regular basis.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Label recommendations
- E. Precise spray cut-off
- F. None of the Above

Personal Protective Equipment

82. PPE is only as good as its use and maintenance and must be provided and used on a strictly individual basis. To make sure that safety equipment gives _____, applicator, worker or handler training is important.

- A. Checked according
- B. Maximum protection
- C. Is limited
- D. Sense of security
- E. Safety
- F. None of the Above

83. Wearing protective clothing does not guarantee applicator, worker or handler protection. When chemical loading or handling equipment becomes defective through wear or damage _____.

- A. From spray operation
- B. When handling equipment
- C. From capturing drift fallout
- D. Label recommendations
- E. Or stolen
- F. None of the Above

84. Specialist equipment such as respirators must be checked according to the manufacturer's recommendation. Checks must be more frequent when working conditions are severe. _____ and corrected before further use.

- A. Checked according
- B. Maximum protection
- C. Is limited
- D. Faults must be recorded
- E. Always check
- F. None of the Above

Buffer Zones

85. A buffer zone is an untreated area wide enough to _____ to the sprayed area.

- A. Spray
- B. Handle equipment
- C. Capture fallout
- D. Capture drift fallout adjacent
- E. Precise spray cut-off
- F. None of the Above

86. Nozzle type, droplet size, product dose, dilution and spray technique should be considered when this _____.

- A. Check
- B. Maximum protection
- C. System is limited
- D. Unsprayed barrier (buffer) width is determined
- E. Sedimenting spray droplets is determined
- F. None of the Above

87. For aircraft spraying the buffer zone needs to be wider than for ground spraying as it is more difficult to make a _____ with an aircraft operating at speed.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Landing
- E. Precise spray cut-off
- F. None of the Above

88. The width of a buffer zone is also influenced by the pesticide product type and by the presence of adjacent waterways. For example, a buffer zone of 5,000 meters is recommended for certain organochlorine insecticides. This distance is considered adequate to capture _____ following the completion of a spray run.

- A. Buffer droplets
- B. Drift
- C. Is limited
- D. Unsprayed barrier (buffer)
- E. Sedimenting spray droplets
- F. None of the Above

89. Some pesticides are highly toxic to aquatic life so that spray drift fallout over water should be carefully avoided with products with this classification. The product label should provide application details, which should include nozzle selection, volume applied, and _____. When ULV applications are to be made using rotary atomizers, liquid flow regulation and atomizer rotational speed should also be stated on the label.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Label recommendations
- E. Application timing
- F. None of the Above

Agricultural Aircraft Equipment Section

90. Equipment for aerial pesticide application _____ to either fixed or rotary wing aircraft. Regardless of the choice, there are at least a few general features which should be considered.

- A. Is checked according
- B. Is not limited
- C. Is limited
- D. For spraying is
- E. For flying or gliding
- F. None of the Above

These are as follows:

91. Pilot's fresh air supply--Filtered air for the pilot to breathe is necessary because it is nearly impossible for the pilot to avoid flying back through some of the swath of previous flight passes. If a filtered-air helmet is not available, the pilot should at least _____.

- A. Should be stacked
- B. Hold his breath
- C. Recognize the outline
- D. Be sure to indicate
- E. Wear an approved respirator
- F. None of the Above

92. Fuselage features--Enclosed fuselages should be fitted with cleanout panels for the regular removal of corrosive sprays and dusts. Spray pumps, filters, and control valves _____ for maintenance and repair.

- A. Always record the location
- B. Close proximity
- C. Be in a sensitive area
- D. Easily accessible
- E. Should be easily accessible
- F. None of the Above

93. Maintenance--The seasonal use of agricultural aircraft might suggest a _____ and repair during the idle, off-season periods. However, the critical demands of agricultural flying call for all the regular maintenance checks at all required intervals to ensure that the aircraft is in first class order at all times.

- A. Shutdown
- B. Pattern of inspection
- C. Recognize the outline
- D. Check
- E. Recording
- F. None of the Above

94. Two of the _____ of fixed wing aircraft are a high speed of application and a large payload capacity per dollar invested. Maneuverability is adequate, though not equal to the rotary wing aircraft. One of the limitations of fixed wing equipment is the necessity of a designated landing area, which may not always be in close proximity to the application area.

- A. Benefits
- B. Disadvantages
- C. Sensitive areas
- D. Easily accessible cockpit
- E. Wings
- F. None of the Above

Boundary Flagging

95. On the program map, be sure to indicate the location of all boundary flagging used in the block. Global information systems technology may be available for the project that _____ for boundary flagging.

- A. Should be stacked
- B. Obstruct
- C. Recognize the outline
- D. May replace the need
- E. Critical demands
- F. None of the Above

Boundary Flag Placement

96. Boundary flags should be placed as follows, _____ on the program maps:
Place flags 25 to 30 feet down each side from the corner of the spray block

- A. Fly over the location
- B. Close proximity
- C. And record the location
- D. Easily accessible
- E. Draw a picture
- F. None of the Above

97. Place flags so they are easily visible from the air for at _____

- A. Least five miles
- B. Least half mile
- C. Recognize the outline
- D. Least ten miles
- E. Least one mile
- F. None of the Above

98. Place orange flags around sensitive area perimeters with (use as many flags as needed to be able to recognize the outline of the _____ from the air)

- A. State
- B. Sensitive area
- C. Recognized outline
- D. Farm
- E. Critical area
- F. None of the Above

Object Free Areas (OFAs) and Pesticide Storage

99. If the pesticide storage area is at an airport, then **do not** place the dike and tank too close to a runway, for safety reasons and to maintain _____.

- A. And record the location
- B. Close proximity to Spill kit
- C. The required the object free area
- D. Easily accessible PPE
- E. An accessible spill kit
- F. None of the Above

100. Consider where aircraft can be safely loaded that _____ other aircraft using the airport. Diking Tanks Containment dikes (berms) may be required by local or State pesticide regulators or program guidelines. Be aware that many times the diking **must** be made of a certain material or grade.

- A. Identify
- B. Obstruct
- C. Recognize the outline of
- D. Will not obstruct
- E. List critical demands
- F. None of the Above

2017 Changes to EPA's Farm Worker Protection Standard

In late 2015 the Environmental Protection Agency issued the long awaited revision to the Worker Protection Standard (WPS). Although it is now technically active it will not be enforced until 2017 but the original WPS will still be enforced until the end of 2016. Please keep in mind that the WPS covers both restricted use AND general use pesticides.

This course contains EPA's federal rule requirements. Please be aware that each state implements pesticide regulations that may be more stringent than EPA's regulations and these frequently are changed. Check with your state environmental/pesticide agency for more information.

You are finished with your assignment.

Agricultural Pesticide Supplement 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.

Agricultural Aircraft Equipment Section

1. Equipment for aerial pesticide application _____ to either fixed or rotary wing aircraft. Regardless of the choice, there are at least a few general features which should be considered.
A. Is checked according
B. Is not limited
C. Is limited
D. For spraying is
E. For flying or gliding
F. None of the Above

These are as follows:

2. Pilot's fresh air supply--Filtered air for the pilot to breathe is necessary because it is nearly impossible for the pilot to avoid flying back through some of the swath of previous flight passes. If a filtered-air helmet is not available, the pilot should at least _____.
A. Should be stacked
B. Hold his breath
C. Recognize the outline
D. Be sure to indicate
E. Wear an approved respirator
F. None of the Above
3. Fuselage features--Enclosed fuselages should be fitted with cleanout panels for the regular removal of corrosive sprays and dusts. Spray pumps, filters, and control valves _____ for maintenance and repair.
A. Always record the location
B. Close proximity
C. Be in a sensitive area
D. Easily accessible
E. Should be easily accessible
F. None of the Above
4. Maintenance--The seasonal use of agricultural aircraft might suggest a _____ and repair during the idle, off-season periods. However, the critical demands of agricultural flying call for all the regular maintenance checks at all required intervals to ensure that the aircraft is in first class order at all times.
A. Shutdown
B. Pattern of inspection
C. Recognize the outline
D. Check
E. Recording
F. None of the Above

5. Two of the _____ of fixed wing aircraft are a high speed of application and a large payload capacity per dollar invested. Maneuverability is adequate, though not equal to the rotary wing aircraft. One of the limitations of fixed wing equipment is the necessity of a designated landing area, which may not always be in close proximity to the application area.
- A. Benefits
 - B. Disadvantages
 - C. Sensitive areas
 - D. Easily accessible cockpit
 - E. Wings
 - F. None of the Above

Boundary Flagging

6. On the program map, be sure to indicate the location of all boundary flagging used in the block. Global information systems technology may be available for the project that _____ for boundary flagging.
- A. Should be stacked
 - B. Obstruct
 - C. Recognize the outline
 - D. May replace the need
 - E. Critical demands
 - F. None of the Above

Boundary Flag Placement

7. Boundary flags should be placed as follows, _____ on the program maps:
Place flags 25 to 30 feet down each side from the corner of the spray block
- A. Fly over the location
 - B. Close proximity
 - C. And record the location
 - D. Easily accessible
 - E. Draw a picture
 - F. None of the Above
8. Place flags so they are easily visible from the air for at _____
- A. Least five miles
 - B. Least half mile
 - C. Recognize the outline
 - D. Least ten miles
 - E. Least one mile
 - F. None of the Above
9. Place orange flags around sensitive area perimeters with (use as many flags as needed to be able to recognize the outline of the _____ from the air)
- A. State
 - B. Sensitive area
 - C. Recognized outline
 - D. Farm
 - E. Critical area
 - F. None of the Above

Object Free Areas (OFAs) and Pesticide Storage

10. If the pesticide storage area is at an airport, then **do not** place the dike and tank too close to a runway, for safety reasons and to maintain _____.
- A. And record the location
 - B. Close proximity to Spill kit
 - C. The required the object free area
 - D. Easily accessible PPE
 - E. An accessible spill kit
 - F. None of the Above
11. Consider where aircraft can be safely loaded that _____ other aircraft using the airport. Diking Tanks Containment dikes (berms) may be required by local or State pesticide regulators or program guidelines. Be aware that many times the diking **must** be made of a certain material or grade.
- A. Identify
 - B. Obstruct
 - C. Recognize the outline of
 - D. Will not obstruct
 - E. List critical demands
 - F. None of the Above

Dry Pesticide Formulations

12. Keep dry pesticide formulations dry; **do not** let them get damp or wet. A hangar, warehouse, or other suitable building at the airport, or enclosed van, truck, or trailer _____.
- A. And record the location
 - B. In close proximity
 - C. Park in a sensitive area
 - D. That is easily accessible
 - E. Contains an accessible spill kit
 - F. None of the Above

13. If suitable enclosed storage facilities are **not** available at or near the loading site, then pesticide material stored outside of buildings _____ on pallets and protected with waterproof covers.

- A. Should be stacked
- B. Obstruct
- C. Cover with a tarp
- D. Be sure to indicate
- E. Place pesticides
- F. None of the Above

Pesticide Spill Kit

14. Every pesticide storage and loading area site should have _____ to contain and clean up accidental leaks or spills. To create a spill kit, collect and/or order and assemble the items listed. Use the 50-gallon garbage cans to hold the spill kit contents.

- A. Applicators assigned
- B. Ventilation
- C. PPE
- D. Easily accessible MSDS
- E. An accessible spill kit
- F. None of the Above

Kytoons®

15. The use of Kytoons®, light, mirrors, or electronic or DGPS guidance allows for considerable extension of the flight lines. However, there are limitations **other than** the guidance system, such as the chance of adverse weather conditions increasing somewhere along the flight line as the line is lengthened. This can cause a reduced work day or _____ over part of the block.

- A. Danger of collision
- B. Adverse weather conditions
- C. Poor application
- D. Assigned blocks may be necessary
- E. Critical indicators
- F. None of the Above

16. For boundaries in rural areas, the use of fence flagging is effective and should be posted as needed to ensure accurate application. The use of landmarks such as buildings, country roads, fence lines, highways, railroads, rivers, telephone and power lines, trees and brush patches, windmills, etc., also effectively help pilots _____.

- A. With spraying treatments
- B. Operate in a pattern
- C. Locate spray block boundaries
- D. Malfunction
- E. Ensure accurate application
- F. None of the Above

17. When the use of more than one aircraft is planned for treating separate blocks as part of a larger program, then the blocks **must** be arranged so that pilots can treat their assigned blocks without _____.

- A. Danger of collision
- B. Adverse weather conditions
- C. Helpers
- D. Assigned blocks
- E. Critical indicators
- F. None of the Above

18. Blocks which either contain or are adjacent to sensitive areas (beehives, mink farms, poultry farms, water reservoirs, etc.) **must** be arranged so that flights and turns over _____ will be avoided or held to a minimum.

- A. Spraying
- B. The pattern
- C. Adjacent areas
- D. Sensitive areas
- E. Accurate applications
- F. None of the Above

Spray Block, Sensitive Area, and Buffer Zone Verification

19. After taking a pretreatment reconnaissance flight with each pilot and confirming that everything (buffer zones, spray blocks, and sensitive areas) is recorded on a master program map, then jointly sign and date the map. When observation aircraft are **not** available, then using ground vehicles to show pilots and/or flaggers their _____.

- A. Hand signs
- B. Weather conditions
- C. Flags
- D. Assigned blocks may be necessary
- E. Critical indicators
- F. None of the Above

Congested Areas

20. Although the term congested area has **not** been defined specifically by the Federal Aviation Administration (FAA), a congested area applies in general to any city, town, community, or group of buildings in which people would _____ as a result of the malfunction of low-flying aircraft.

- A. Spraying treatment
- B. Be subject to injury
- C. Are adjacent
- D. Result of the malfunction
- E. Ensure accurate application
- F. None of the Above

21. If the congested area is **not** part of the treatment area, then _____ to congested areas so the aircraft will **not** fly or make turns over congested areas.

- A. Danger of collision
- B. Adverse weather conditions
- C. Arrange blocks adjacent
- D. Assigned blocks may be necessary
- E. Spray lightly
- F. None of the Above

22. To minimize the hazard in such areas, the FAA places restrictions on aircraft used for treating congested areas. If a single engine aircraft can operate _____ at such an altitude that the aircraft can land in an emergency **without** endangering persons or property on the surface, then the aircraft can treat where there are groups of buildings and very small towns. **Only** multi-engine aircraft and helicopters with limited loads can be approved for larger towns and cities.

- A. A spray treatment
- B. Can operate in a pattern
- C. In a pattern
- D. Result of malfunction
- E. Ensure accurate application
- F. None of the Above

Ultra Low Volume (ULV) Formulations

23. When using liquid ultra- low volume (ULV) formulations, special consideration **must** be given to monitoring the air and ground temperature difference. This is one of the _____ of the time to quit treating for the day.

- A. Dangers
- B. Problems
- C. Signs
- D. Assigned blocks
- E. Critical indicators
- F. None of the Above

24. The best weather for _____ is usually from dawn until mid-morning. As the morning progresses, inversions occur when the soil warms the air above; as the soil surface warms, the air above begins to rise.

- A. Spraying treatment
- B. Operating in a pattern
- C. Pilots
- D. Maintenance
- E. Accurate application
- F. None of the Above

25. When the soil temperature and air temperature equalize, the upward air currents (thermals) increase and cause the fine pesticide formulation droplets to float or even begin to rise as they near the ground. If the droplets float or rise, then offsite pesticide drift _____ due to the pesticide **not** reaching the target is more likely.

- A. May require monitoring
- B. An effective alternative
- C. Terminating application
- D. May require taking a reading
- E. And reduced efficacy
- F. None of the Above

26. Consistent monitoring of the deposition pattern on dye cards, the air and ground temperature are the best methods of determining the effects of weather factors on application. When weather inversions occur, consider _____ for the day.

- A. Monitoring
- B. An effective alternative
- C. Terminating application
- D. Taking a reading
- E. Reducing efficacy
- F. None of the Above

27. The _____ should be taken by placing the thermometer probe on an unshaded site; then shade the thermometer for 3 minutes before reading.
- A. Weather
 - B. Effective alternative
 - C. Terminating application
 - D. Soil temperature
 - E. Reduced efficacy
 - F. None of the Above

28. For rangeland programs, the air temperature should be taken 5 feet above the surface in the open, but with the thermometer shaded. Other programs may require taking a reading much higher above the canopy of vegetative cover. Some programs _____.
- A. May require monitoring
 - B. Require an effective alternative
 - C. Will terminate application
 - D. May require taking a reading
 - E. Will not work
 - F. None of the Above

Bait Formulations

29. A bait formulation is an active pesticide ingredient mixed with food or another substance to attract a specific type of pest. The pest eats the bait and expires. The _____ in most bait formulations is generally relatively low (usually less than five percent).

- A. Insecticide
- B. Poison
- C. Toxin
- D. Active pesticide ingredient
- E. Efficacy
- F. None of the Above

30. In some situations (pest habits, environmental sensitivity), etc.), _____ is an effective alternative to liquid pesticides. Baits are commonly used in the Grasshopper and Mormon Cricket Control Programs.

- A. Insecticide
- B. Poison
- C. Toxin
- D. Active pesticide ingredient
- E. Wheat bran bait
- F. None of the Above

31. Bait formulations (such as wheat bran) and other solid materials (such as pheromone flakes) are **not** as sensitive to air and ground temperatures. _____ can be applied throughout the day, and are **not** affected by temperature inversions. Rain and high winds still affect the application of bait treatments.

- A. Insecticide
- B. Poison
- C. Bait formulations
- D. Active pesticide ingredient
- E. Wheat bran bait
- F. None of the Above

National Environmental Policy Act NEPA Law Section Introduction

32. The National Environmental Policy Act (NEPA) is a United States environmental law that established a U.S. national policy _____ of the environment and also established the President's Council on Environmental Quality (CEQ).

- A. Procedural requirements
- B. Promoting the enhancement
- C. Expanded the requirement
- D. Ensure that environmental factors
- E. Promote the improvement
- F. None of the Above

33. NEPA's most significant effect was to _____ for all federal government agencies to prepare Environmental Assessments (EAs) and Environmental Impact Statements (EISs).

- A. Provide any portion
- B. Set up procedural requirements
- C. Assist
- D. Prevent or eliminate damage
- E. Consider environmental effects
- F. None of the Above

34. EAs and EISs contain statements of _____ of proposed federal agency actions. NEPA's procedural requirements apply to all federal agencies in the executive branch. NEPA does not apply to the President, to Congress, or to the federal courts.
- | | |
|------------------------------|--|
| A. Procedural requirements | D. Ensuring that environmental factors |
| B. Enhancements | E. The environmental effects |
| C. Expanding the requirement | F. None of the Above |

National Environmental Policy Act of 1969

35. The law has since been applied to any project, federal, state or local, that involves federal funding, work performed by the federal government, _____ by a federal agency.

- | | |
|-------------------------|--------------------------------------|
| A. Provides any portion | D. Or permits issued |
| B. Are not limited | E. Considering environmental effects |
| C. Its requirement | F. None of the Above |

36. Court decisions throughout the law's history have expanded the requirement for NEPA-related environmental studies to include _____ from a federal agency are required, regardless of whether or not federal funds are spent implementing the action. Although enacted on January 1, 1970, its "short title" is "National Environmental Policy Act of 1969."

- | | |
|------------------------------|--|
| A. Actions where permits | D. Ensuring that environmental factors |
| B. Promoting the enhancement | E. Promoting the improvement |
| C. Expanding the requirement | F. None of the Above |

The Preamble Reads:

37. "To declare national policy which will encourage productive and enjoyable harmony between man and his environment; to _____ which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation..."

- | | |
|------------------------|-----------------------------------|
| A. Provide any portion | D. Prevent or eliminate damage |
| B. Promote efforts | E. Consider environmental effects |
| C. Require | F. None of the Above |

NEPA contains three important sections:

38. The _____ of NEPA is to ensure that environmental factors are weighted equally when compared to other factors in the decision making process undertaken by federal agencies.

- | | |
|----------------------------|------------------------------|
| A. Procedural requirements | D. Environmental factors |
| B. Promote the enhancement | E. Promotion the improvement |
| C. Essential purpose | F. None of the Above |

39. The act establishes the national environmental policy, including a _____ to considering environmental effects in federal government agency decision making.

- | | |
|-------------------------------|---|
| A. Portion | D. Elimination of damage |
| B. Multidisciplinary approach | E. Consideration of environmental effects |
| C. Requirement | F. None of the Above |

40. The act also established the President's Council on Environmental Quality (CEQ). The CEQ was established to advise the President in the preparation of an annual environmental quality report addressing the state of federal agencies in implementing the act, on national policies nurture and _____ of the environments quality and on the state of the environment.

- | | |
|------------------------------|--------------------------------------|
| A. Procedural requirements | D. Ensure that environmental factors |
| B. Promoting the enhancement | E. Promote the improvement |
| C. Expanded the requirement | F. None of the Above |

Environmental Impact Statement (EIS)

41. The effectiveness of NEPA originates in its requirement of federal agencies to prepare an environmental statement to _____ for funding from Congress. This document is called an Environmental Impact Statement (EIS).

- A. Determine the significance
- B. Cause the proposed action
- C. Exempt
- D. Pertinent alternatives
- E. Accompany reports and recommendations
- F. None of the Above

42. NEPA is _____, meaning that the act itself does not carry any criminal or civil sanctions. All enforcement of NEPA was to be obtained through the process of the court system.

- A. A proposal
- B. Significant effect
- C. A proposed action
- D. An other environmental law
- E. No Significant Impact
- F. None of the Above

43. _____ has been expanded to include most things that a federal agency could prohibit or regulate. In practice, a project is required to meet NEPA guidelines when a federal agency provides any portion of the financing for the project.

- A. To determine the significance
- B. Cause the proposed action
- C. Functional equivalent exemption
- D. Pertinent alternative
- E. A major federal action
- F. None of the Above

44. NEPA covers a vast array of federal agency actions, but not all actions are necessarily covered under NEPA. The act does not apply to purely private or purely public state action. This means that there is a complete absence of government influence or funding concerning that specific action. _____ are also present within NEPA's guidelines.

- A. Develops a proposal
- B. Significant effect
- C. Proposed action
- D. Other environmental laws
- E. Exemptions and exclusions
- F. None of the Above

45. Exemptions from NEPA include specific federal projects detailed in legislation, EPA exemptions and _____. Functional Equivalent exemptions apply where compliance with other environmental laws requires environmental analysis similar to NEPA.

- A. To determine the significance
- B. The proposed action
- C. Functional equivalent exemptions
- D. Pertinent alternatives
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

46. The NEPA process consists of an evaluation of relevant environmental effects of a federal project or action undertaking, including a series of _____.

- A. Determining the significance
- B. Causing the proposed action
- C. Functional equivalent exemptions
- D. Pertinent alternatives
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

47. The NEPA process begins when an agency develops a proposal to address a need to take an action. Once a determination of whether or not the proposed action is covered under NEPA there are _____ that a federal agency may undertake to comply with the law.

- A. Three levels of analysis
- B. Significant effect
- C. Proposed action
- D. Other environmental laws
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

48. These three levels include: preparation of a Categorical Exclusion (CE), preparation of an Environmental Assessment (EA) and _____; or preparation and drafting of an Environmental Impact Statement (EIS).

- A. To determine the significance
- B. Cause the proposed action
- C. Functional equivalent exemptions
- D. Pertinent alternatives
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

Agricultural Pesticide Components

49. In evaluating pesticides for reregistration, EPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and _____ of each pesticide.

- A. Biomagnify
- B. Synthetic version
- C. Pesticides for reregistration
- D. Bigger drivers
- E. Environmental effects
- F. None of the Above

50. The Agency develops any mitigation measures or regulatory controls needed to effectively reduce each _____. EPA then reregisters pesticides that can be used without posing unreasonable risks to human health or the environment.

- A. Persistent toxins
- B. Persistence
- C. Pesticide's risks
- D. Toxin
- E. Adverse risks
- F. None of the Above

51. When a _____ is eligible for reregistration, EPA explains the basis for its decision in a Reregistration Eligibility Decision (RED) document.

- A. Pesticide
- B. Synthetic pesticide
- C. Pesticide for registration
- D. Product
- E. Chemical
- F. None of the Above

52. Organophosphate Pesticides - These pesticides affect the nervous system by disrupting the enzyme that regulates _____), a neurotransmitter.

- A. Cells
- B. Nerves
- C. Blood flow
- D. Acetylcholine
- E. Folic acid
- F. None of the Above

53. Carbamate Pesticides affect the nervous system by disrupting an enzyme that regulates _____, a neurotransmitter. The enzyme effects are usually reversible. There are several subgroups within the carbamates.

- A. Cells
- B. Nerves
- C. Blood flow
- D. Acetylcholine
- E. Folic acid
- F. None of the Above

54. Organochlorine Insecticides were commonly used in the past, but many have been removed from the market due to their health and environmental effects and their persistence (e.g. DDT and _____).

- A. Persistent toxins
- B. Their persistence
- C. Organochlorine pesticides
- D. Chlordane
- E. Adverse effects
- F. None of the Above

55. Pyrethroid Pesticides were developed as a synthetic version of the naturally occurring pesticide pyrethrin, which is found in chrysanthemums. They have been modified to increase their _____ in the environment. Some synthetic pyrethroids are toxic to the nervous system.

- A. Power
- B. Killing ability
- C. Genetics
- D. Toxins
- E. Stability
- F. None of the Above

Environmental Effects

Effects on Non-target Species

56. A number of the _____ have been banned from most uses worldwide, and globally they are controlled via the Stockholm Convention on persistent organic pollutants. These include: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex and toxaphene.

- A. Persistent toxins
- B. Controlled pesticides
- C. Organochlorine pesticides
- D. Toxic pesticides
- E. Adverse effects
- F. None of the Above

DDT

57. One of the bigger drivers in the development of new insecticides has been the desire to replace toxic and _____.

- A. Odorous pesticides
- B. Synthetic versions
- C. Pesticide reregistration
- D. Irksome insecticides
- E. Powerful pesticides
- F. None of the Above

58. DDT was introduced as a _____ to the lead and arsenic compounds. Some insecticides have been banned due to the fact that they are persistent toxins which have adverse effects on animals and/or humans.

- A. Toxic alternative
- B. Safer alternative
- C. Organochlorine pesticides
- D. Replacement
- E. Cheaper product
- F. None of the Above

59. Also, DDT may _____, which causes progressively higher concentrations in the body fat of animals farther up the food chain. The near-worldwide ban on agricultural use of DDT and related chemicals has allowed some of these birds, such as the peregrine falcon, to recover in recent years.

- A. Biomagnify
- B. Increase
- C. Fade
- D. Not control pests
- E. Kill everything
- F. None of the Above

Pollinator Decline

60. Insecticides can kill bees and may be a cause of _____, the loss of bees that pollinate plants, and colony collapse disorder (CCD), in which worker bees from a beehive or Western honey bee colony abruptly disappear. Loss of pollinators will mean a reduction in crop yields.

- A. Pollinator decline
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

61. Sublethal doses of insecticides (i.e. imidacloprid and other neonicotinoids) affect _____ of bees.

- A. Frequently unachievable
- B. Foraging behavior
- C. Pesticide application
- D. Reproduction
- E. Honey production
- F. None of the Above

IPM Methods (Types of Pest Control)

62. Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a _____.

- A. Crop sanitation
- B. Pest control action
- C. Erecting insect barriers
- D. Action threshold
- E. Sublethal doses of insecticides
- F. None of the Above

63. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to _____ by the most economical means, and with the least possible hazard to people, property, and the environment.

- A. Please homeowners
- B. Control pests
- C. Apply insecticides
- D. Apply sublethal doses of insecticides
- E. Manage pest damage
- F. None of the Above

The four steps include:

Set Action Thresholds

64. Before taking any pest control action, IPM first sets a(n) _____, a point at which pest populations or environmental conditions indicate that pest control action must be taken.

- A. Set Point
- B. Pest control action
- C. Insect barriers
- D. Action threshold
- E. Sublethal dose of insecticide
- F. None of the Above

Monitor and Identify Pests

65. Not all insects, weeds, and other living organisms require control. Many organisms are _____, and some are even beneficial.

- A. Easy to control
- B. Innocuous
- C. Pests
- D. Reproducing
- E. Friendly
- F. None of the Above

Control

66. Once monitoring, identification, and action thresholds indicate that pest control is required, and preventive methods are no longer effective or available, IPM programs then evaluate the proper _____ both for effectiveness and risk.

- A. Control method
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

Six Basic Components

An IPM system is designed around six basic components: The US Environmental Protection Agency has a useful set of IPM principles.

67. Acceptable pest levels: The emphasis is on control, _____. IPM holds that wiping out an entire pest population is often impossible, and the attempt can be economically expensive, environmentally unsafe, and frequently unachievable.

- A. Frequently unachievable
- B. Frequently achievable
- C. Pesticide application
- D. Not eradication
- E. Most economical means
- F. None of the Above

68. Preventive cultural practices: Selecting varieties best for local growing conditions, and maintaining healthy crops, is the first line of defense, together with plant quarantine and _____ ' such as crop sanitation (e.g. removal of diseased plants to prevent spread of infection).

- A. Cultural techniques
- B. Pest control actions
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

69. Monitoring: _____ is essential, as is a thorough knowledge of the behavior and reproductive cycles of target pests.

- A. Spraying
- B. Control
- C. Pesticide application
- D. Sublethal doses of insecticides
- E. Most economical means
- F. None of the Above

70. Mechanical controls: Should a pest reach an unacceptable level, mechanical methods are the first options to consider. They include simple hand-picking, _____, using traps, vacuuming, and tillage to disrupt breeding.

- A. Crop sanitation
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Spraying
- F. None of the Above

71. Biological controls: Biological insecticides, derived from naturally occurring microorganisms (e.g.: Bt, entomopathogenic fungi and _____), also fit in this category.

- A. PCP
- B. Biocide
- C. Entomopathogenic fungi
- D. Synthetic chemicals
- E. Entomopathogenic nematodes
- F. None of the Above

72. Responsible Pesticide Use: Synthetic pesticides are generally only used as required and often only at specific times in a pests life cycle.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

Classes of Agricultural Insecticides

73. The classification of insecticides is done in several different ways:

Contact insecticides are toxic to insects brought into direct contact. Efficacy is often related to the quality of pesticide application, with _____ (such as aerosols) often improving performance.

- A. PCP
- B. Biocide
- C. Small droplets
- D. Synthetic chemicals
- E. An insecticide will be toxic
- F. None of the Above

74. Inorganic insecticides are manufactured with metals and include _____, copper compounds and fluorine compounds, which are now seldom used, and sulfur, which is commonly used.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Arsenates
- E. Systemic insecticide(s)
- F. None of the Above

75. Mode of action—how the pesticide kills or inactivates a pest—is another way of classifying insecticides. _____ is important in predicting whether an insecticide will be toxic to unrelated species, such as fish, birds and mammals.

- A. PCP
- B. Biocide
- C. Mode of action
- D. Synthetic chemicals
- E. An insecticide will be toxic
- F. None of the Above

76. _____, such as nicotine, pyrethrum and neem extracts are made by plants as defenses against insects. Nicotine based insecticides have been barred in the U.S. since 2001 to prevent residues from contaminating foods.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Natural insecticides
- E. Systemic insecticide(s)
- F. None of the Above

77. _____ are synthetic chemicals which comprise the largest numbers of pesticides available for use today.

- A. PCP
- B. Biocide
- C. Organic insecticides
- D. Synthetic chemicals
- E. An insecticide will be toxic
- F. None of the Above

78. Plant-Incorporated Protectants (PIP) are insecticidal substances produced by plants after genetic modification. For instance, a gene that codes for a specific _____ is introduced into a crop plant's genetic material. Then, the plant manufactures the protein.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

79. Since the _____ is incorporated into the plant, additional applications at least of the same compound are not required.

- A. PCP
- B. Biocide
- C. Entomopathogenic fungi
- D. Synthetic chemicals
- E. Insecticide will be toxic
- F. None of the Above

80. _____ are incorporated by treated plants. Insects ingest the insecticide while feeding on the plants.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

81. _____, e.g. arsenic have been used as insecticides; they are poisonous and very rarely used now by farmers.

- A. PCPs
- B. Biocides
- C. Heavy metals
- D. Synthetic chemicals
- E. Borates
- F. None of the Above

Penta or Pentachlorophenol

82. 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. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

83. _____ 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. PCP
- B. Biocide
- C. Borates
- D. Synthetic chemicals
- E. Heavy metals
- F. None of the Above

84. As _____ is generally used for its properties as a biocidal agent, there is considerable concern about adverse ecosystem effects in areas of PCP contamination.

- A. Sulfur
- B. Nicotine
- C. PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

Pyrroles

85. Chlorfenapyr is the only termiticide from the _____ and is active primarily as a stomach poison with some contact activity. It is also non-repellent to termites.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

86. _____ acts on the mitochondria of cells and uncouples or inhibits oxidative phosphorylation, preventing the formation of the crucial energy molecule adenosine triphosphate (ATP).

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

Pyrethroids

87. To mimic the insecticidal activity of the natural compound pyrethrum another class of pesticides, pyrethroid pesticides, has been developed. These are non-persistent, which is a sodium channel modulators, and are much less acutely toxic than_____.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Organophosphates and carbamates
- F. None of the Above

Neonicotinoids

88. Neonicotinoids are synthetic analogues of the natural insecticide nicotine (with a much lower acute mammalian toxicity and greater field persistence). These chemicals are _____.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

89. Broad-spectrum—systemic insecticides, they have a rapid action (minutes-hours). They are applied as sprays, drenches, seed and soil treatments—often as substitutes for_____. Treated insects exhibit leg tremors, rapid wing motion, stylet withdrawal (aphids), disoriented movement, paralysis and death.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Organophosphates and carbamates
- F. None of the Above

Diflubenzuron

90. Diflubenzuron is an insecticide of the benzamide class. It is used in forest management and on field crops to selectively control insect pests. The mechanism of action of _____ involves inhibiting the production of chitin which is used by an insect to build its exoskeleton.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

91. Diflubenzuron is an acaricide/insecticide (_____) used to control many leaf eating larvae of insects feeding on agricultural, forest and ornamental plants (e.g. gypsy moths, mosquito larvae, rust mites).

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Insect growth regulator
- F. None of the Above

92. _____ is used primarily on cattle, citrus, cotton, mushrooms, ornamentals, standing water, forestry trees and in programs to control mosquito larvae and gypsy moth populations.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

93. Formulations include a soluble concentrate, flowable concentrate, wettable powder and a pelleted/tableted. _____ is applied by airblast, aircraft and hydraulic sprayers.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

Agricultural Application Section

94. Aerial application, commonly called **crop dusting**, involves spraying crops with fertilizers, pesticides, and fungicides from an agricultural aircraft. The specific spreading of fertilizer is also known as _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Aerial topdressing
- F. None of the Above

Understanding the Dangers of Drift

95. Droplet size depends primarily upon the _____, nozzle design and orientation, and the surface tension of the spray solution.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Spray pressure
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

96. The size of granular materials depends upon the _____ and can be controlled to some extent by screening.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Particular formulation
- F. None of the Above

97. In the case of sprays, _____ is generally increased by reducing pressures or increasing nozzle size.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

98. The use of surfactants tends to lower the surface tension of a spray solution and usually results in a smaller droplet size than when the same formulation is used without a _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

99. High wind velocities obviously increase the drift hazard as they carry the small droplets and particles away from their intended target. In many cases the distance can run into several miles. _____ tend to be least turbulent just before sunrise or just after sunset.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Winds
- F. None of the Above

Vapor Drift (Volatilization)

100. Most cases of 2,4-D injury to cotton result from _____ of an ester-containing formulation of 2,4-D.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

You are finished with your exam.

Agricultural Pesticide Supplement 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.

Classes of Agricultural Insecticides

The classification of insecticides is done in several different ways:

1. Contact insecticides are toxic to insects brought into direct contact. Efficacy is often related to the quality of pesticide application, with _____(such as aerosols) often improving performance.
A. PCP
B. Biocide
C. Small droplets
D. Synthetic chemicals
E. An insecticide will be toxic
F. None of the Above
2. Inorganic insecticides are manufactured with metals and include _____, copper compounds and fluorine compounds, which are now seldom used, and sulfur, which is commonly used.
A. Sulfur
B. Nicotine
C. Sodium salt of PCP
D. Arsenates
E. Systemic insecticide(s)
F. None of the Above
3. Mode of action—how the pesticide kills or inactivates a pest—is another way of classifying insecticides. _____ is important in predicting whether an insecticide will be toxic to unrelated species, such as fish, birds and mammals.
A. PCP
B. Biocide
C. Mode of action
D. Synthetic chemicals
E. An insecticide will be toxic
F. None of the Above
4. _____, such as nicotine, pyrethrum and neem extracts are made by plants as defenses against insects. Nicotine based insecticides have been barred in the U.S. since 2001 to prevent residues from contaminating foods.
A. Sulfur
B. Nicotine
C. Sodium salt of PCP
D. Natural insecticides
E. Systemic insecticide(s)
F. None of the Above

5. _____ are synthetic chemicals which comprise the largest numbers of pesticides available for use today.
- A. PCP
B. Biocide
C. Organic insecticides
D. Synthetic chemicals
E. An insecticide will be toxic
F. None of the Above
6. Plant-Incorporated Protectants (PIP) are insecticidal substances produced by plants after genetic modification. For instance, a gene that codes for a specific _____ is introduced into a crop plant's genetic material. Then, the plant manufactures the protein.
- A. Sulfur
B. Nicotine
C. Sodium salt of PCP
D. Insecticidal substance(s)
E. Systemic insecticide(s)
F. None of the Above
7. Since the _____ is incorporated into the plant, additional applications at least of the same compound are not required.
- A. PCP
B. Biocide
C. Entomopathogenic fungi
D. Synthetic chemicals
E. Insecticide will be toxic
F. None of the Above
8. _____ are incorporated by treated plants. Insects ingest the insecticide while feeding on the plants.
- A. Sulfur
B. Nicotine
C. Sodium salt of PCP
D. Insecticidal substance(s)
E. Systemic insecticide(s)
F. None of the Above
9. _____, e.g. arsenic have been used as insecticides; they are poisonous and very rarely used now by farmers.
- A. PCPs
B. Biocides
C. Heavy metals
D. Synthetic chemicals
E. Borates
F. None of the Above

Penta or Pentachlorophenol

10. 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. Sulfur
B. Nicotine
C. Sodium salt of PCP
D. Insecticidal substance(s)
E. Systemic insecticide(s)
F. None of the Above
11. _____ 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. PCP
B. Biocide
C. Borates
D. Synthetic chemicals
E. Heavy metals
F. None of the Above
12. As _____ is generally used for its properties as a biocidal agent, there is considerable concern about adverse ecosystem effects in areas of PCP contamination.
- A. Sulfur
B. Nicotine
C. PCP
D. Insecticidal substance(s)
E. Systemic insecticide(s)
F. None of the Above

Pyrroles

13. Chlorfenapyr is the only termiticide from the _____ and is active primarily as a stomach poison with some contact activity. It is also non-repellent to termites.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

14. _____ acts on the mitochondria of cells and uncouples or inhibits oxidative phosphorylation, preventing the formation of the crucial energy molecule adenosine triphosphate (ATP).

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

Pyrethroids

15. To mimic the insecticidal activity of the natural compound pyrethrum another class of pesticides, pyrethroid pesticides, has been developed. These are non-persistent, which is a sodium channel modulators, and are much less acutely toxic than _____.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Organophosphates and carbamates
- F. None of the Above

Neonicotinoids

16. Neonicotinoids are synthetic analogues of the natural insecticide nicotine (with a much lower acute mammalian toxicity and greater field persistence). These chemicals are _____.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

17. Broad-spectrum—systemic insecticides, they have a rapid action (minutes-hours). They are applied as sprays, drenches, seed and soil treatments—often as substitutes for _____. Treated insects exhibit leg tremors, rapid wing motion, stylet withdrawal (aphids), disoriented movement, paralysis and death.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Organophosphates and carbamates
- F. None of the Above

Diflubenzuron

18. Diflubenzuron is an insecticide of the benzamide class. It is used in forest management and on field crops to selectively control insect pests. The mechanism of action of _____ involves inhibiting the production of chitin which is used by an insect to build its exoskeleton.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

19. Diflubenzuron is an acaricide/insecticide (_____) used to control many leaf eating larvae of insects feeding on agricultural, forest and ornamental plants (e.g. gypsy moths, mosquito larvae, rust mites).

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Insect growth regulator
- F. None of the Above

20. _____ is used primarily on cattle, citrus, cotton, mushrooms, ornamentals, standing water, forestry trees and in programs to control mosquito larvae and gypsy moth populations.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

21. Formulations include a soluble concentrate, flowable concentrate, wettable powder and a pelleted/tableted. _____ is applied by airblast, aircraft and hydraulic sprayers.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

Agricultural Pesticide Components

22. In evaluating pesticides for reregistration, EPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and _____ of each pesticide.

- A. Biomagnify
- B. Synthetic version
- C. Pesticides for reregistration
- D. Bigger drivers
- E. Environmental effects
- F. None of the Above

23. The Agency develops any mitigation measures or regulatory controls needed to effectively reduce each _____. EPA then reregisters pesticides that can be used without posing unreasonable risks to human health or the environment.

- A. Persistent toxins
- B. Persistence
- C. Pesticide's risks
- D. Toxin
- E. Adverse risks
- F. None of the Above

24. When a _____ is eligible for reregistration, EPA explains the basis for its decision in a Reregistration Eligibility Decision (RED) document.

- A. Pesticide
- B. Synthetic pesticide
- C. Pesticide for registration
- D. Product
- E. Chemical
- F. None of the Above

25. Organophosphate Pesticides - These pesticides affect the nervous system by disrupting the enzyme that regulates _____, a neurotransmitter.

- A. Cells
- B. Nerves
- C. Blood flow
- D. Acetylcholine
- E. Folic acid
- F. None of the Above

26. Carbamate Pesticides affect the nervous system by disrupting an enzyme that regulates _____, a neurotransmitter. The enzyme effects are usually reversible. There are several subgroups within the carbamates.

- A. Cells
- B. Nerves
- C. Blood flow
- D. Acetylcholine
- E. Folic acid
- F. None of the Above

27. Organochlorine Insecticides were commonly used in the past, but many have been removed from the market due to their health and environmental effects and their persistence (e.g. DDT and _____).

- A. Persistent toxins
- B. Their persistence
- C. Organochlorine pesticides
- D. Chlordane
- E. Adverse effects
- F. None of the Above

28. Pyrethroid Pesticides were developed as a synthetic version of the naturally occurring pesticide pyrethrin, which is found in chrysanthemums. They have been modified to increase their _____ in the environment. Some synthetic pyrethroids are toxic to the nervous system.

- A. Power
- B. Killing ability
- C. Genetics
- D. Toxins
- E. Stability
- F. None of the Above

Environmental Effects

Effects on Non-target Species

29. A number of the _____ have been banned from most uses worldwide, and globally they are controlled via the Stockholm Convention on persistent organic pollutants. These include: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex and toxaphene.

- A. Persistent toxins
- B. Controlled pesticides
- C. Organochlorine pesticides
- D. Toxic pesticides
- E. Adverse effects
- F. None of the Above

DDT

30. One of the bigger drivers in the development of new insecticides has been the desire to replace toxic and _____.

- A. Odorous pesticides
- B. Synthetic versions
- C. Pesticide reregistration
- D. Irksome insecticides
- E. Powerful pesticides
- F. None of the Above

31. DDT was introduced as a _____ to the lead and arsenic compounds. Some insecticides have been banned due to the fact that they are persistent toxins which have adverse effects on animals and/or humans.

- A. Toxic alternative
- B. Safer alternative
- C. Organochlorine pesticides
- D. Replacement
- E. Cheaper product
- F. None of the Above

32. Also, DDT may _____, which causes progressively higher concentrations in the body fat of animals farther up the food chain. The near-worldwide ban on agricultural use of DDT and related chemicals has allowed some of these birds, such as the peregrine falcon, to recover in recent years.

- A. Biomagnify
- B. Increase
- C. Fade
- D. Not control pests
- E. Kill everything
- F. None of the Above

Pollinator Decline

33. Insecticides can kill bees and may be a cause of _____, the loss of bees that pollinate plants, and colony collapse disorder (CCD), in which worker bees from a beehive or Western honey bee colony abruptly disappear. Loss of pollinators will mean a reduction in crop yields.

- A. Pollinator decline
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

34. Sublethal doses of insecticides (i.e. imidacloprid and other neonicotinoids) affect _____ of bees.

- A. Frequently unachievable
- B. Foraging behavior
- C. Pesticide application
- D. Reproduction
- E. Honey production
- F. None of the Above

IPM Methods (Types of Pest Control)

35. Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a _____.

- A. Crop sanitation
- B. Pest control action
- C. Erecting insect barriers
- D. Action threshold
- E. Sublethal doses of insecticides
- F. None of the Above

36. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to _____ by the most economical means, and with the least possible hazard to people, property, and the environment.

- A. Please homeowners
- B. Control pests
- C. Apply insecticides
- D. Apply sublethal doses of insecticides
- E. Manage pest damage
- F. None of the Above

The four steps include:

Set Action Thresholds

37. Before taking any pest control action, IPM first sets a(n) _____, a point at which pest populations or environmental conditions indicate that pest control action must be taken.

- A. Set Point
- B. Pest control action
- C. Insect barriers
- D. Action threshold
- E. Sublethal dose of insecticide
- F. None of the Above

Monitor and Identify Pests

38. Not all insects, weeds, and other living organisms require control. Many organisms are _____, and some are even beneficial.

- A. Easy to control
- B. Innocuous
- C. Pests
- D. Reproducing
- E. Friendly
- F. None of the Above

Control

39. Once monitoring, identification, and action thresholds indicate that pest control is required, and preventive methods are no longer effective or available, IPM programs then evaluate the proper _____ both for effectiveness and risk.

- A. Control method
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

Six Basic Components

40. An IPM system is designed around six basic components: The US Environmental Protection Agency has a useful set of IPM principles. Acceptable pest levels: The emphasis is on control, _____. IPM holds that wiping out an entire pest population is often impossible, and the attempt can be economically expensive, environmentally unsafe, and frequently unachievable.

- A. Frequently unachievable
- B. Frequently achievable
- C. Pesticide application
- D. Not eradication
- E. Most economical means
- F. None of the Above

41. Preventive cultural practices: Selecting varieties best for local growing conditions, and maintaining healthy crops, is the first line of defense, together with plant quarantine and _____ ' such as crop sanitation (e.g. removal of diseased plants to prevent spread of infection).

- A. Cultural techniques
- B. Pest control actions
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

42. Monitoring: _____ is essential, as is a thorough knowledge of the behavior and reproductive cycles of target pests.

- A. Spraying
- B. Control
- C. Pesticide application
- D. Sublethal doses of insecticides
- E. Most economical means
- F. None of the Above

43. Mechanical controls: Should a pest reach an unacceptable level, mechanical methods are the first options to consider. They include simple hand-picking, _____, using traps, vacuuming, and tillage to disrupt breeding.

- A. Crop sanitation
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Spraying
- F. None of the Above

44. Biological controls: Biological insecticides, derived from naturally occurring microorganisms (e.g.: Bt, entomopathogenic fungi and _____), also fit in this category.

- A. PCP
- B. Biocide
- C. Entomopathogenic fungi
- D. Synthetic chemicals
- E. Entomopathogenic nematodes
- F. None of the Above

45. Responsible Pesticide Use: Synthetic pesticides are generally only used as required and often only at specific times in a pests life cycle.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

Agricultural Application Section

46. Aerial application, commonly called **crop dusting**, involves spraying crops with fertilizers, pesticides, and fungicides from an agricultural aircraft. The specific spreading of fertilizer is also known as _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Aerial topdressing
- F. None of the Above

Understanding the Dangers of Drift

47. Droplet size depends primarily upon the _____, nozzle design and orientation, and the surface tension of the spray solution.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Spray pressure
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

48. The size of granular materials depends upon the _____ and can be controlled to some extent by screening.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Particular formulation
- F. None of the Above

49. In the case of sprays, _____ is generally increased by reducing pressures or increasing nozzle size.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

50. The use of surfactants tends to lower the surface tension of a spray solution and usually results in a smaller droplet size than when the same formulation is used without a _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

51. High wind velocities obviously increase the drift hazard as they carry the small droplets and particles away from their intended target. In many cases the distance can run into several miles. _____ tend to be least turbulent just before sunrise or just after sunset.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Winds
- F. None of the Above

Vapor Drift (Volatilization)

52. Most cases of 2,4-D injury to cotton result from _____ of an ester-containing formulation of 2,4-D.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

53. Vapor drift injury results when the herbicide volatilizes and the vapors move to a susceptible crop such as cotton. Injury from vapor drift can occur at rather long distances from the _____.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Sprayed area
- F. None of the Above

54. Hot temperatures, moist soils, and temperature inversions all increase the potential for vapor drift. Vapor drift is not movement of material caused by _____.

- A. Granular material(s)
- B. Wind
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

Spray Calibration and Vortex

55. Fixed-wing aircraft and helicopters exhibit similar _____ (wingtip vortex and main rotor vortex).

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

56. Since the airflow patterns around and in the wake of each aircraft are sufficiently different, each type and series of aircraft _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Needs testing
- F. None of the Above

57. If the horsepower of the engine is changed, the type of propeller or wingtip shape will change the _____.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

58. Generalizations can be used to guide the operator on nozzle placement or granular disseminator adjustment. However, _____ is needed to check the effect of each feature added to the aircraft.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Pattern testing
- F. None of the Above

59. Pattern tests should be made in calm air to avoid cross-wind distortion. If wind is unavoidable, the tests should be made in a direction _____.

- A. Cross-wind distortion
- B. Parallel to the wind
- C. Drift hazard
- D. Compared to vapor drift injury
- E. In relation to droplet size
- F. None of the Above

60. Testing should be carried out in winds less than 3 MPH at all times. The best time for this is in the early morning before the sun heats up the ground, creating _____.

- A. Drops
- B. Eddies and inversions
- C. Vapor drift
- D. Airflow patterns
- E. Drift
- F. None of the Above

Discharge Calibration

61. Having installed the desired type, size and number of nozzles, the output of the system should be checked to see that the correct discharge in gallons per minute is taking place. If the pump can be run at operating speed with the aircraft stationary, _____ can be checked with a measuring container and stop watch. Boom pressure must remain constant.

- A. Spray system run
- B. Stationary test
- C. Correct discharge
- D. First mark
- E. Nozzle discharge
- F. None of the Above

62. If this _____ cannot be done, the aircraft should be parked and the tank(s) filled with water to a suitable mark.

- A. Spray system run
- B. Stationary test
- C. Correct discharge
- D. First mark
- E. Nozzle discharge
- F. None of the Above

63. The aircraft can then be flown and the _____ for a timed period (30, 60, 90 or 120 seconds).

- A. Spray system run
- B. Stationary test
- C. Correct discharge
- D. First mark
- E. Nozzle discharge
- F. None of the Above

64. The aircraft should then be brought back to the same point used previously and the amount of water determined by reading the tank scale(s) or refilling to the _____ using measuring devices.

- A. Spray system run
- B. Stationary test
- C. Correct discharge
- D. First mark
- E. Nozzle discharge
- F. None of the Above

Prior Warnings

Notify Beekeepers

65. Notify beekeepers about the meetings. Program operational guidelines, environmental impact statements, environmental assessments (EA), State laws, and/or pesticide labels may also require that beekeepers in the area be notified of control programs. Members of the public, not directly involved with the spray operation, may also be affected by an aerial pesticide application so the contractor/farmer may have a mandatory obligation to issue " _____ " to any person or organization that might be affected or concerned.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Spray pressure
- E. Hyperbolic lines of constant phase
- F. None of the Above

66. Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites. Where particularly toxic materials are to be used, it may be necessary to warn the emergency services, and the local environment and water authorities. The product label should give _____ on prior warning and who to contact.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Precise advice
- E. Require no external reference
- F. None of the Above

Accurate Aerial Spraying

67. Accurate aerial spraying over undulating rangelands and forest tracts is more difficult to achieve than when treating smaller crop areas and in these circumstances _____ may be financially justified.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Spray pressure
- E. Hyperbolic lines of constant phase
- F. None of the Above

68. Both the self-contained Inertial Navigation System (INS) and the Doppler System require no _____ during flight, but the size and complexity of these units confines their use to large aircraft. These systems are not precise enough for smaller-scale agricultural spraying.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. External reference input
- E. Require no external reference
- F. None of the Above

69. Systems working with external references are also available. Positional information is received from a series of transmitting stations around the world, which produce hyperbolic lines of constant phase, which can be _____ into navigational guidance.

- A. Electronic track guidance
- B. Prior warning
- C. Given
- D. Converted onboard
- E. Provided
- F. None of the Above

70. Such systems eliminate the need for _____, and constantly monitor and evaluate the spray process.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Sued or held liable
- E. Require no external reference
- F. None of the Above

Sprayer Field Settings

71. During a flight, spray pressure, _____ above the crop can be adjusted if necessary however, as the pilot has to concentrate on flying the aircraft he may only occasionally check the spraying system.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Output and aircraft height
- E. Hyperbolic lines of constant phase
- F. None of the Above

72. The use of artificial targets within the treated crop is strongly recommended to check and evaluate _____ as well as confirm the lane separation distances.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Spray deposit efficiency
- E. Require no external reference
- F. None of the Above

73. This is where the ground staff can report back to the pilot, via the radio, any problems with the spraying system such as blocked nozzles or _____.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Spray pressure
- E. Incorrectly operating atomizers
- F. None of the Above

Pesticide Storage

74. Unused pesticide must be returned to store. Distressed or damaged containers _____ into clean replacement containers, which are fully labeled.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Must be emptied
- E. Require no external reference
- F. None of the Above

75. Store stock control must ensure that existing chemicals are used first before recently purchased similar new products. Good stock control and _____ will mean that waste concentrate and diluted spray are kept to a minimum.

- A. Electronic track guidance
- B. Proper labels
- C. Current labels
- D. Careful planning
- E. Accurate planning
- F. None of the Above

76. Where old or obsolete chemical products have to be disposed of, an approved contractor must be used. Chemicals for disposal _____ wherever possible and fully labeled.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Must be secure in their original containers
- E. Require no external reference
- F. None of the Above

77. Pesticides should be shielded from direct exposure to the environment, e.g., light, temperature extremes, and humidity. Such conditions may cause _____ and thus decrease the effectiveness of the pesticide. Improperly stored pesticides are more hazardous to handle and may violate federal regulations.

- A. Explosions
- B. Chemical decomposition
- C. Fire
- D. Spray pressure
- E. Hyperbolic lines of constant phase
- F. None of the Above

78. Another concern of the applicator is the possibility of being sued or held liable for pesticide contamination of surface or _____.

- A. Disposed of
- B. Returned to store
- C. Eliminated
- D. Groundwater due to improper storage
- E. Require no external reference
- F. None of the Above

Applicator, Worker or Handler Health Surveillance

79. Where label recommendations demand applicator, worker or handler health surveillance, a _____ for each individual applicator, worker or handler to cover name health details and previous health history.

- A. Set of PPE
- B. Doctor
- C. Special Nurse
- D. Record
- E. Separate record must be prepared
- F. None of the Above

80. Exposure periods must be listed to include the date of the _____ to a particular product, together with any recommendations coming from the clinical practitioner responsible for the monitoring program.

- A. Check according
- B. Maximum protection
- C. Is limited
- D. Initial exposure
- E. Examination
- F. None of the Above

81. Applicator, worker or handler contact with other chemical products during the monitoring period must also be recorded. All staff involved with the _____ should be submitted for health checks on a regular basis.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Label recommendations
- E. Precise spray cut-off
- F. None of the Above

Personal Protective Equipment

82. PPE is only as good as its use and maintenance and must be provided and used on a strictly individual basis. To make sure that safety equipment gives _____, applicator, worker or handler training is important.

- A. Checked according
- B. Maximum protection
- C. Is limited
- D. Sense of security
- E. Safety
- F. None of the Above

83. Wearing protective clothing does not guarantee applicator, worker or handler protection. When chemical loading or handling equipment becomes defective through wear or damage _____.

- A. From spray operation
- B. When handling equipment
- C. From capturing drift fallout
- D. Label recommendations
- E. Or stolen
- F. None of the Above

84. Specialist equipment such as respirators must be checked according to the manufacturer's recommendation. Checks must be more frequent when working conditions are severe. _____ and corrected before further use.

- A. Checked according
- B. Maximum protection
- C. Is limited
- D. Faults must be recorded
- E. Always check
- F. None of the Above

Buffer Zones

85. A buffer zone is an untreated area wide enough to _____ to the sprayed area.

- A. Spray
- B. Handle equipment
- C. Capture fallout
- D. Capture drift fallout adjacent
- E. Precise spray cut-off
- F. None of the Above

86. Nozzle type, droplet size, product dose, dilution and spray technique should be considered when this _____.

- A. Check
- B. Maximum protection
- C. System is limited
- D. Unsprayed barrier (buffer) width is determined
- E. Sedimenting spray droplets is determined
- F. None of the Above

87. For aircraft spraying the buffer zone needs to be wider than for ground spraying as it is more difficult to make a _____ with an aircraft operating at speed.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Landing
- E. Precise spray cut-off
- F. None of the Above

88. The width of a buffer zone is also influenced by the pesticide product type and by the presence of adjacent waterways. For example, a buffer zone of 5,000 meters is recommended for certain organochlorine insecticides. This distance is considered adequate to capture _____ following the completion of a spray run.

- A. Buffer droplets
- B. Drift
- C. Is limited
- D. Unsprayed barrier (buffer)
- E. Sedimenting spray droplets
- F. None of the Above

89. Some pesticides are highly toxic to aquatic life so that spray drift fallout over water should be carefully avoided with products with this classification. The product label should provide application details, which should include nozzle selection, volume applied, and _____. When ULV applications are to be made using rotary atomizers, liquid flow regulation and atomizer rotational speed should also be stated on the label.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Label recommendations
- E. Application timing
- F. None of the Above

Agricultural Aircraft Equipment Section

90. Equipment for aerial pesticide application _____ to either fixed or rotary wing aircraft. Regardless of the choice, there are at least a few general features which should be considered.

- A. Is checked according
- B. Is not limited
- C. Is limited
- D. For spraying is
- E. For flying or gliding
- F. None of the Above

These are as follows:

91. Pilot's fresh air supply--Filtered air for the pilot to breathe is necessary because it is nearly impossible for the pilot to avoid flying back through some of the swath of previous flight passes. If a filtered-air helmet is not available, the pilot should at least _____.

- A. Should be stacked
- B. Hold his breath
- C. Recognize the outline
- D. Be sure to indicate
- E. Wear an approved respirator
- F. None of the Above

92. Fuselage features--Enclosed fuselages should be fitted with cleanout panels for the regular removal of corrosive sprays and dusts. Spray pumps, filters, and control valves _____ for maintenance and repair.

- A. Always record the location
- B. Close proximity
- C. Be in a sensitive area
- D. Easily accessible
- E. Should be easily accessible
- F. None of the Above

93. Maintenance--The seasonal use of agricultural aircraft might suggest a _____ and repair during the idle, off-season periods. However, the critical demands of agricultural flying call for all the regular maintenance checks at all required intervals to ensure that the aircraft is in first class order at all times.

- A. Shutdown
- B. Pattern of inspection
- C. Recognize the outline
- D. Check
- E. Recording
- F. None of the Above

94. Two of the _____ of fixed wing aircraft are a high speed of application and a large payload capacity per dollar invested. Maneuverability is adequate, though not equal to the rotary wing aircraft. One of the limitations of fixed wing equipment is the necessity of a designated landing area, which may not always be in close proximity to the application area.

- A. Benefits
- B. Disadvantages
- C. Sensitive areas
- D. Easily accessible cockpit
- E. Wings
- F. None of the Above

Boundary Flagging

95. On the program map, be sure to indicate the location of all boundary flagging used in the block. Global information systems technology may be available for the project that _____ for boundary flagging.

- A. Should be stacked
- B. Obstruct
- C. Recognize the outline
- D. May replace the need
- E. Critical demands
- F. None of the Above

Boundary Flag Placement

96. Boundary flags should be placed as follows, _____ on the program maps: Place flags 25 to 30 feet down each side from the corner of the spray block

- A. Fly over the location
- B. Close proximity
- C. And record the location
- D. Easily accessible
- E. Draw a picture
- F. None of the Above

97. Place flags so they are easily visible from the air for at _____

- A. Least five miles
- B. Least half mile
- C. Recognize the outline
- D. Least ten miles
- E. Least one mile
- F. None of the Above

98. Place orange flags around sensitive area perimeters with (use as many flags as needed to be able to recognize the outline of the _____ from the air)

- A. State
- B. Sensitive area
- C. Recognized outline
- D. Farm
- E. Critical area
- F. None of the Above

Object Free Areas (OFAs) and Pesticide Storage

99. If the pesticide storage area is at an airport, then **do not** place the dike and tank too close to a runway, for safety reasons and to maintain _____.

- A. And record the location
- B. Close proximity to Spill kit
- C. The required the object free area
- D. Easily accessible PPE
- E. An accessible spill kit
- F. None of the Above

100. Consider where aircraft can be safely loaded that _____ other aircraft using the airport. Diking Tanks Containment dikes (berms) may be required by local or State pesticide regulators or program guidelines. Be aware that many times the diking **must** be made of a certain material or grade.

- A. Identify
- B. Obstruct
- C. Recognize the outline of
- D. Will not obstruct
- E. List critical demands
- F. None of the Above

2017 Changes to EPA's Farm Worker Protection Standard

In late 2015 the Environmental Protection Agency issued the long awaited revision to the Worker Protection Standard (WPS). Although it is now technically active it will not be enforced until 2017 but the original WPS will still be enforced until the end of 2016. Please keep in mind that the WPS covers both restricted use AND general use pesticides.

This course contains EPA's federal rule requirements. Please be aware that each state implements pesticide regulations that may be more stringent than EPA's regulations and these frequently are changed. Check with your state environmental/pesticide agency for more information.

Agricultural Pesticide Supplement 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.

Agricultural Pesticide Components

1. In evaluating pesticides for reregistration, EPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and _____ of each pesticide.
A. Biomagnify D. Bigger drivers
B. Synthetic version E. Environmental effects
C. Pesticides for reregistration F. None of the Above
2. The Agency develops any mitigation measures or regulatory controls needed to effectively reduce each _____. EPA then reregisters pesticides that can be used without posing unreasonable risks to human health or the environment.
A. Persistent toxins D. Toxin
B. Persistence E. Adverse risks
C. Pesticide's risks F. None of the Above
3. Organophosphate Pesticides - These pesticides affect the nervous system by disrupting the enzyme that regulates _____), a neurotransmitter.
A. Cells D. Acetylcholine
B. Nerves E. Folic acid
C. Blood flow F. None of the Above
4. Carbamate Pesticides affect the nervous system by disrupting an enzyme that regulates _____, a neurotransmitter. The enzyme effects are usually reversible. There are several subgroups within the carbamates.
A. Cells D. Acetylcholine
B. Nerves E. Folic acid
C. Blood flow F. None of the Above

5. Organochlorine Insecticides were commonly used in the past, but many have been removed from the market due to their health and environmental effects and their persistence (e.g. DDT and _____).

- A. Persistent toxins
- B. Their persistence
- C. Organochlorine pesticides
- D. Chlordane
- E. Adverse effects
- F. None of the Above

Pollinator Decline

6. Insecticides can kill bees and may be a cause of _____, the loss of bees that pollinate plants, and colony collapse disorder (CCD), in which worker bees from a beehive or Western honey bee colony abruptly disappear. Loss of pollinators will mean a reduction in crop yields.

- A. Pollinator decline
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

7. Sublethal doses of insecticides (i.e. imidacloprid and other neonicotinoids) affect _____ of bees.

- A. Frequently unachievable
- B. Foraging behavior
- C. Pesticide application
- D. Reproduction
- E. Honey production
- F. None of the Above

IPM Methods (Types of Pest Control)

8. Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a _____.

- A. Crop sanitation
- B. Pest control action
- C. Erecting insect barriers
- D. Action threshold
- E. Sublethal doses of insecticides
- F. None of the Above

The four steps include:

Set Action Thresholds

9. Before taking any pest control action, IPM first sets a(n) _____, a point at which pest populations or environmental conditions indicate that pest control action must be taken.

- A. Set Point
- B. Pest control action
- C. Insect barriers
- D. Action threshold
- E. Sublethal dose of insecticide
- F. None of the Above

Monitor and Identify Pests

10. Not all insects, weeds, and other living organisms require control. Many organisms are _____, and some are even beneficial.

- A. Easy to control
- B. Innocuous
- C. Pests
- D. Reproducing
- E. Friendly
- F. None of the Above

Control

11. Once monitoring, identification, and action thresholds indicate that pest control is required, and preventive methods are no longer effective or available, IPM programs then evaluate the proper _____ both for effectiveness and risk.

- A. Control method
- B. Pest control action
- C. Erecting insect barriers
- D. Action thresholds
- E. Sublethal doses of insecticides
- F. None of the Above

12. Biological controls: Biological insecticides, derived from naturally occurring microorganisms (e.g.: Bt, entomopathogenic fungi and _____), also fit in this category.

- A. PCP
- B. Biocide
- C. Entomopathogenic fungi
- D. Synthetic chemicals
- E. Entomopathogenic nematodes
- F. None of the Above

13. Responsible Pesticide Use: Synthetic pesticides are generally only used as required and often only at specific times in a pests life cycle.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

Classes of Agricultural Insecticides

14. The classification of insecticides is done in several different ways:

Contact insecticides are toxic to insects brought into direct contact. Efficacy is often related to the quality of pesticide application, with _____ (such as aerosols) often improving performance.

- A. PCP
- B. Biocide
- C. Small droplets
- D. Synthetic chemicals
- E. An insecticide will be toxic
- F. None of the Above

15. Inorganic insecticides are manufactured with metals and include _____, copper compounds and fluorine compounds, which are now seldom used, and sulfur, which is commonly used.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Arsenates
- E. Systemic insecticide(s)
- F. None of the Above

16. Plant-Incorporated Protectants (PIP) are insecticidal substances produced by plants after genetic modification. For instance, a gene that codes for a specific _____ is introduced into a crop plant's genetic material. Then, the plant manufactures the protein.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

17. Since the _____ is incorporated into the plant, additional applications at least of the same compound are not required.

- A. PCP
- B. Biocide
- C. Entomopathogenic fungi
- D. Synthetic chemicals
- E. Insecticide will be toxic
- F. None of the Above

18. _____ are incorporated by treated plants. Insects ingest the insecticide while feeding on the plants.

- A. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

19. _____, e.g. arsenic have been used as insecticides; they are poisonous and very rarely used now by farmers.

- A. PCPs
- B. Biocides
- C. Heavy metals
- D. Synthetic chemicals
- E. Borates
- F. None of the Above

Penta or Pentachlorophenol

20. 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. Sulfur
- B. Nicotine
- C. Sodium salt of PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

21. _____ 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. PCP
- B. Biocide
- C. Borates
- D. Synthetic chemicals
- E. Heavy metals
- F. None of the Above

22. As _____ is generally used for its properties as a biocidal agent, there is considerable concern about adverse ecosystem effects in areas of PCP contamination.

- A. Sulfur
- B. Nicotine
- C. PCP
- D. Insecticidal substance(s)
- E. Systemic insecticide(s)
- F. None of the Above

Pyrroles

23. Chlorfenapyr is the only termiticide from the _____ and is active primarily as a stomach poison with some contact activity. It is also non-repellent to termites.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

24. _____ acts on the mitochondria of cells and uncouples or inhibits oxidative phosphorylation, preventing the formation of the crucial energy molecule adenosine triphosphate (ATP).

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

Pyrethroids

25. To mimic the insecticidal activity of the natural compound pyrethrum another class of pesticides, pyrethroid pesticides, has been developed. These are non-persistent, which is a sodium channel modulators, and are much less acutely toxic than _____.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Organophosphates and carbamates
- F. None of the Above

Neonicotinoids

26. Neonicotinoids are synthetic analogues of the natural insecticide nicotine (with a much lower acute mammalian toxicity and greater field persistence). These chemicals are _____.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

27. Broad-spectrum—systemic insecticides, they have a rapid action (minutes-hours). They are applied as sprays, drenches, seed and soil treatments—often as substitutes for _____. Treated insects exhibit leg tremors, rapid wing motion, stylet withdrawal (aphids), disoriented movement, paralysis and death.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Organophosphates and carbamates
- F. None of the Above

Diflubenzuron

28. Diflubenzuron is an insecticide of the benzamide class. It is used in forest management and on field crops to selectively control insect pests. The mechanism of action of _____ involves inhibiting the production of chitin which is used by an insect to build its exoskeleton.

- A. Diflubenzuron
- B. Systemic insecticide(s)
- C. Acaricide/insecticide
- D. Pyrethroid pesticide(s)
- E. Chlorfenapyr
- F. None of the Above

Agricultural Application Section

29. Aerial application, commonly called **crop dusting**, involves spraying crops with fertilizers, pesticides, and fungicides from an agricultural aircraft. The specific spreading of fertilizer is also known as _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Aerial topdressing
- F. None of the Above

Understanding the Dangers of Drift

30. Droplet size depends primarily upon the _____, nozzle design and orientation, and the surface tension of the spray solution.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Spray pressure
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

31. The size of granular materials depends upon the _____ and can be controlled to some extent by screening.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. Particular formulation
- F. None of the Above

32. In the case of sprays, _____ is generally increased by reducing pressures or increasing nozzle size.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Droplet size
- F. None of the Above

33. The use of surfactants tends to lower the surface tension of a spray solution and usually results in a smaller droplet size than when the same formulation is used without a _____.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

34. High wind velocities obviously increase the drift hazard as they carry the small droplets and particles away from their intended target. In many cases the distance can run into several miles. _____ tend to be least turbulent just before sunrise or just after sunset.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Winds
- F. None of the Above

Vapor Drift (Volatilization)

35. Most cases of 2,4-D injury to cotton result from _____ of an ester-containing formulation of 2,4-D.

- A. Granular material(s)
- B. Surfactant(s)
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

36. Vapor drift injury results when the herbicide volatilizes and the vapors move to a susceptible crop such as cotton. Injury from vapor drift can occur at rather long distances from the _____.

- A. Cross-wind distortion
- B. Distribution pattern
- C. Drift hazard
- D. Vapor drift injury
- E. Sprayed area
- F. None of the Above

37. Hot temperatures, moist soils, and temperature inversions all increase the potential for vapor drift. Vapor drift is not movement of material caused by _____.

- A. Granular material(s)
- B. Wind
- C. Vapor drift
- D. Airflow patterns
- E. An ester-containing formulation
- F. None of the Above

Prior Warnings

Notify Beekeepers

38. Notify beekeepers about the meetings. Program operational guidelines, environmental impact statements, environmental assessments (EA), State laws, and/or pesticide labels may also require that beekeepers in the area be notified of control programs. Members of the public, not directly involved with the spray operation, may also be affected by an aerial pesticide application so the contractor/farmer may have a mandatory obligation to issue " _____ " to any person or organization that might be affected or concerned.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Spray pressure
- E. Hyperbolic lines of constant phase
- F. None of the Above

Accurate Aerial Spraying

39. Accurate aerial spraying over undulating rangelands and forest tracts is more difficult to achieve than when treating smaller crop areas and in these circumstances _____ may be financially justified.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Spray pressure
- E. Hyperbolic lines of constant phase
- F. None of the Above

40. Both the self-contained Inertial Navigation System (INS) and the Doppler System require no _____ during flight, but the size and complexity of these units confines their use to large aircraft. These systems are not precise enough for smaller-scale agricultural spraying.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. External reference input
- E. Require no external reference
- F. None of the Above

41. Systems working with external references are also available. Positional information is received from a series of transmitting stations around the world, which produce hyperbolic lines of constant phase, which can be _____ into navigational guidance.

- A. Electronic track guidance
- B. Prior warning
- C. Given
- D. Converted onboard
- E. Provided
- F. None of the Above

Sprayer Field Settings

42. During a flight, spray pressure, _____ above the crop can be adjusted if necessary however, as the pilot has to concentrate on flying the aircraft he may only occasionally check the spraying system.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Output and aircraft height
- E. Hyperbolic lines of constant phase
- F. None of the Above

43. The use of artificial targets within the treated crop is strongly recommended to check and evaluate _____ as well as confirm the lane separation distances.

- A. Disposed of
- B. Returned to store
- C. Eliminate the need
- D. Spray deposit efficiency
- E. Require no external reference
- F. None of the Above

44. This is where the ground staff can report back to the pilot, via the radio, any problems with the spraying system such as blocked nozzles or _____.

- A. Electronic track guidance
- B. Prior warnings
- C. Blocked nozzles
- D. Spray pressure
- E. Incorrectly operating atomizers
- F. None of the Above

Applicator, Worker or Handler Health Surveillance

45. Where label recommendations demand applicator, worker or handler health surveillance, a _____ for each individual applicator, worker or handler to cover name health details and previous health history.

- A. Set of PPE
- B. Doctor
- C. Special Nurse
- D. Record
- E. Separate record must be prepared
- F. None of the Above

46. Exposure periods must be listed to include the date of the _____ to a particular product, together with any recommendations coming from the clinical practitioner responsible for the monitoring program.

- A. Check according
- B. Maximum protection
- C. Is limited
- D. Initial exposure
- E. Examination
- F. None of the Above

47. Applicator, worker or handler contact with other chemical products during the monitoring period must also be recorded. All staff involved with the _____ should be submitted for health checks on a regular basis.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Label recommendations
- E. Precise spray cut-off
- F. None of the Above

Personal Protective Equipment

48. PPE is only as good as its use and maintenance and must be provided and used on a strictly individual basis. To make sure that safety equipment gives _____, applicator, worker or handler training is important.

- A. Checked according
- B. Maximum protection
- C. Is limited
- D. Sense of security
- E. Safety
- F. None of the Above

49. Wearing protective clothing does not guarantee applicator, worker or handler protection. When chemical loading or handling equipment becomes defective through wear or damage

- _____.
- A. From spray operation
 - B. When handling equipment
 - C. From capturing drift fallout
 - D. Label recommendations
 - E. Or stolen
 - F. None of the Above

50. Specialist equipment such as respirators must be checked according to the manufacturer's recommendation. Checks must be more frequent when working conditions are severe. _____ and corrected before further use.

- A. Checked according
- B. Maximum protection
- C. Is limited
- D. Faults must be recorded
- E. Always check
- F. None of the Above

Buffer Zones

51. A buffer zone is an untreated area wide enough to _____ to the sprayed area.

- A. Spray
- B. Handle equipment
- C. Capture fallout
- D. Capture drift fallout adjacent
- E. Precise spray cut-off
- F. None of the Above

52. Nozzle type, droplet size, product dose, dilution and spray technique should be considered when this _____.

- A. Check
- B. Maximum protection
- C. System is limited
- D. Unsprayed barrier (buffer) width is determined
- E. Sedimenting spray droplets is determined
- F. None of the Above

53. For aircraft spraying the buffer zone needs to be wider than for ground spraying as it is more difficult to make a _____ with an aircraft operating at speed.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Landing
- E. Precise spray cut-off
- F. None of the Above

54. The width of a buffer zone is also influenced by the pesticide product type and by the presence of adjacent waterways. For example, a buffer zone of 5,000 meters is recommended for certain organochlorine insecticides. This distance is considered adequate to capture _____ following the completion of a spray run.

- A. Buffer droplets
- B. Drift
- C. Is limited
- D. Unsprayed barrier (buffer)
- E. Sedimenting spray droplets
- F. None of the Above

55. Some pesticides are highly toxic to aquatic life so that spray drift fallout over water should be carefully avoided with products with this classification. The product label should provide application details, which should include nozzle selection, volume applied, and _____. When ULV applications are to be made using rotary atomizers, liquid flow regulation and atomizer rotational speed should also be stated on the label.

- A. Spray operation
- B. Handling equipment
- C. Capture drift fallout
- D. Label recommendations
- E. Application timing
- F. None of the Above

Agricultural Aircraft Equipment Section

56. Equipment for aerial pesticide application _____ to either fixed or rotary wing aircraft. Regardless of the choice, there are at least a few general features which should be considered.

- A. Is checked according
- B. Is not limited
- C. Is limited
- D. For spraying is
- E. For flying or gliding
- F. None of the Above

Boundary Flag Placement

57. Boundary flags should be placed as follows, _____ on the program maps:
Place flags 25 to 30 feet down each side from the corner of the spray block

- A. Fly over the location
- B. Close proximity
- C. And record the location
- D. Easily accessible
- E. Draw a picture
- F. None of the Above

58. Place flags so they are easily visible from the air for at _____

- A. Least five miles
- B. Least half mile
- C. Recognize the outline
- D. Least ten miles
- E. Least one mile
- F. None of the Above

59. Place orange flags around sensitive area perimeters with (use as many flags as needed to be able to recognize the outline of the _____ from the air)

- A. State
- B. Sensitive area
- C. Recognized outline
- D. Farm
- E. Critical area
- F. None of the Above

Object Free Areas (OFAs) and Pesticide Storage

60. If the pesticide storage area is at an airport, then **do not** place the dike and tank too close to a runway, for safety reasons and to maintain _____.

- A. And record the location
- B. Close proximity to Spill kit
- C. The required the object free area
- D. Easily accessible PPE
- E. An accessible spill kit
- F. None of the Above

61. Consider where aircraft can be safely loaded that _____ other aircraft using the airport. Diking Tanks Containment dikes (berms) may be required by local or State pesticide regulators or program guidelines. Be aware that many times the diking **must** be made of a certain material or grade.

- A. Identify
- B. Obstruct
- C. Recognize the outline of
- D. Will not obstruct
- E. List critical demands
- F. None of the Above

Dry Pesticide Formulations

62. Keep dry pesticide formulations dry; **do not** let them get damp or wet. A hangar, warehouse, or other suitable building at the airport, or enclosed van, truck, or trailer _____.

- A. And record the location
- B. In close proximity
- C. Park in a sensitive area
- D. That is easily accessible
- E. Contains an accessible spill kit
- F. None of the Above

63. If suitable enclosed storage facilities are **not** available at or near the loading site, then pesticide material stored outside of buildings _____ on pallets and protected with waterproof covers.

- A. Should be stacked
- B. Obstruct
- C. Cover with a tarp
- D. Be sure to indicate
- E. Place pesticides
- F. None of the Above

Pesticide Spill Kit

64. Every pesticide storage and loading area site should have _____ to contain and clean up accidental leaks or spills. To create a spill kit, collect and/or order and assemble the items listed. Use the 50-gallon garbage cans to hold the spill kit contents.

- A. Applicators assigned
- B. Ventilation
- C. PPE
- D. Easily accessible MSDS
- E. An accessible spill kit
- F. None of the Above

Kytoons®

65. The use of Kytoons®, light, mirrors, or electronic or DGPS guidance allows for considerable extension of the flight lines. However, there are limitations **other than** the guidance system, such as the chance of adverse weather conditions increasing somewhere along the flight line as the line is lengthened. This can cause a reduced work day or _____ over part of the block.

- A. Danger of collision
- B. Adverse weather conditions
- C. Poor application
- D. Assigned blocks may be necessary
- E. Critical indicators
- F. None of the Above

Congested Areas

66. Although the term congested area has **not** been defined specifically by the Federal Aviation Administration (FAA), a congested area applies in general to any city, town, community, or group of buildings in which people would _____ as a result of the malfunction of low-flying aircraft.

- A. Spraying treatment
- B. Be subject to injury
- C. Are adjacent
- D. Result of the malfunction
- E. Ensure accurate application
- F. None of the Above

67. If the congested area is **not** part of the treatment area, then _____ to congested areas so the aircraft will **not** fly or make turns over congested areas.

- A. Danger of collision
- B. Adverse weather conditions
- C. Arrange blocks adjacent
- D. Assigned blocks may be necessary
- E. Spray lightly
- F. None of the Above

68. To minimize the hazard in such areas, the FAA places restrictions on aircraft used for treating congested areas. If a single engine aircraft can operate _____ at such an altitude that the aircraft can land in an emergency **without** endangering persons or property on the surface, then the aircraft can treat where there are groups of buildings and very small towns. **Only** multi-engine aircraft and helicopters with limited loads can be approved for larger towns and cities.

- A. A spray treatment
- B. Can operate in a pattern
- C. In a pattern
- D. Result of malfunction
- E. Ensure accurate application
- F. None of the Above

National Environmental Policy Act NEPA Law Section Introduction

69. The National Environmental Policy Act (NEPA) is a United States environmental law that established a U.S. national policy _____ of the environment and also established the President's Council on Environmental Quality (CEQ).

- A. Procedural requirements
- B. Promoting the enhancement
- C. Expanded the requirement
- D. Ensure that environmental factors
- E. Promote the improvement
- F. None of the Above

70. NEPA's most significant effect was to _____ for all federal government agencies to prepare Environmental Assessments (EAs) and Environmental Impact Statements (EISs).

- A. Provide any portion
- B. Set up procedural requirements
- C. Assist
- D. Prevent or eliminate damage
- E. Consider environmental effects
- F. None of the Above

71. EAs and EISs contain statements of _____ of proposed federal agency actions. NEPA's procedural requirements apply to all federal agencies in the executive branch. NEPA does not apply to the President, to Congress, or to the federal courts.

- A. Procedural requirements
- B. Enhancements
- C. Expanding the requirement
- D. Ensuring that environmental factors
- E. The environmental effects
- F. None of the Above

National Environmental Policy Act of 1969

72. The law has since been applied to any project, federal, state or local, that involves federal funding, work performed by the federal government, _____ by a federal agency.

- A. Provides any portion
- B. Are not limited
- C. Its requirement
- D. Or permits issued
- E. Considering environmental effects
- F. None of the Above

73. Court decisions throughout the law's history have expanded the requirement for NEPA-related environmental studies to include _____ from a federal agency are required, regardless of whether or not federal funds are spent implementing the action. Although enacted on January 1, 1970, its "short title" is "National Environmental Policy Act of 1969."

- A. Actions where permits
- B. Promoting the enhancement
- C. Expanding the requirement
- D. Ensuring that environmental factors
- E. Promoting the improvement
- F. None of the Above

The Preamble Reads:

74. "To declare national policy which will encourage productive and enjoyable harmony between man and his environment; to _____ which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation..."

- A. Provide any portion
- B. Promote efforts
- C. Require
- D. Prevent or eliminate damage
- E. Consider environmental effects
- F. None of the Above

NEPA contains three important sections:

75. The _____ of NEPA is to ensure that environmental factors are weighted equally when compared to other factors in the decision making process undertaken by federal agencies.

- A. Procedural requirements
- B. Promote the enhancement
- C. Essential purpose
- D. Environmental factors
- E. Promotion the improvement
- F. None of the Above

76. The act establishes the national environmental policy, including a _____ to considering environmental effects in federal government agency decision making.

- A. Portion
- B. Multidisciplinary approach
- C. Requirement
- D. Elimination of damage
- E. Consideration of environmental effects
- F. None of the Above

77. The act also established the President's Council on Environmental Quality (CEQ). The CEQ was established to advise the President in the preparation of an annual environmental quality report addressing the state of federal agencies in implementing the act, on national policies nurture and _____ of the environments quality and on the state of the environment.
- A. Procedural requirements
 - B. Promoting the enhancement
 - C. Expanded the requirement
 - D. Ensure that environmental factors
 - E. Promote the improvement
 - F. None of the Above

Environmental Impact Statement (EIS)

78. The effectiveness of NEPA originates in its requirement of federal agencies to prepare an environmental statement to _____ for funding from Congress. This document is called an Environmental Impact Statement (EIS).
- A. Determine the significance
 - B. Cause the proposed action
 - C. Exempt
 - D. Pertinent alternatives
 - E. Accompany reports and recommendations
 - F. None of the Above

79. NEPA is _____, meaning that the act itself does not carry any criminal or civil sanctions. All enforcement of NEPA was to be obtained through the process of the court system.
- A. A proposal
 - B. Significant effect
 - C. A proposed action
 - D. An other environmental law
 - E. No Significant Impact
 - F. None of the Above

80. _____ has been expanded to include most things that a federal agency could prohibit or regulate. In practice, a project is required to meet NEPA guidelines when a federal agency provides any portion of the financing for the project.
- A. To determine the significance
 - B. Cause the proposed action
 - C. Functional equivalent exemption
 - D. Pertinent alternative
 - E. A major federal action
 - F. None of the Above

81. NEPA covers a vast array of federal agency actions, but not all actions are necessarily covered under NEPA. The act does not apply to purely private or purely public state action. This means that there is a complete absence of government influence or funding concerning that specific action. _____ are also present within NEPA's guidelines.
- A. Develops a proposal
 - B. Significant effect
 - C. Proposed action
 - D. Other environmental laws
 - E. Exemptions and exclusions
 - F. None of the Above

82. Exemptions from NEPA include specific federal projects detailed in legislation, EPA exemptions and _____. Functional Equivalent exemptions apply where compliance with other environmental laws requires environmental analysis similar to NEPA.
- A. To determine the significance
 - B. The proposed action
 - C. Functional equivalent exemptions
 - D. Pertinent alternatives
 - E. Finding of No Significant Impact (FONSI)
 - F. None of the Above

83. The NEPA process consists of an evaluation of relevant environmental effects of a federal project or action undertaking, including a series of _____.
- A. Determining the significance
 - B. Causing the proposed action
 - C. Functional equivalent exemptions
 - D. Pertinent alternatives
 - E. Finding of No Significant Impact (FONSI)
 - F. None of the Above

84. The NEPA process begins when an agency develops a proposal to address a need to take an action. Once a determination of whether or not the proposed action is covered under NEPA there are _____ that a federal agency may undertake to comply with the law.

- A. Three levels of analysis
- B. Significant effect
- C. Proposed action
- D. Other environmental laws
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

85. These three levels include: preparation of a Categorical Exclusion (CE), preparation of an Environmental Assessment (EA) and _____; or preparation and drafting of an Environmental Impact Statement (EIS).

- A. To determine the significance
- B. Cause the proposed action
- C. Functional equivalent exemptions
- D. Pertinent alternatives
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

Preparation of a Categorical Exclusion

86. A CE is a category of actions that the agency has determined does not individually or cumulatively have a _____ on the quality of the human environment (40 C.F.R. §1508.4).

- A. Proposal
- B. Significant effect
- C. Proposed action
- D. Law or rule
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

87. If a proposed action is included in the description provided for a listed CE established by the agency, the agency must check to make sure that no extraordinary circumstances exist that may cause the proposed action to have a _____ in a particular situation.

- A. To determine the significance
- B. Cause the proposed action
- C. Functional equivalent exemptions
- D. Pertinent alternative
- E. Significant effect
- F. None of the Above

88. Extraordinary circumstances typically include such matters as effects to endangered species, protected cultural sites, and wetlands. If the _____ is not included in the description provided in the CE established by the agency, or there are extraordinary circumstances, the agency must prepare an EA or an EIS, or develop a new proposal that may qualify for application of a CE.

- A. Proposal
- B. Significant effect
- C. Proposed action
- D. Other environmental laws
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

Preparation of an Environmental Assessment and Finding of No Significant Impact

89. The purpose of an EA is to determine the significance of the environmental effects and to look at alternative means to _____.

- A. Determine the significance
- B. Cause the proposed action
- C. Function as equivalent exemptions
- D. Pertinent other alternatives
- E. Achieve the agency's objectives
- F. None of the Above

90. If after investigation and drafting of the environmental assessment no substantial effects on the environment are found the agency may produce a _____.

- A. Proposal
- B. Significant effect
- C. Proposed action
- D. New law
- E. Finding of No Significant Impact (FONSI)
- F. None of the Above

Preparation of an Environmental Impact Statement

91. The EIS is a(n) _____ of the environmental impacts when compared to the content of the environmental assessment. The crafting of EIS has many components including public, outside party and other federal agency input concerning the preparation of the EIS. These groups subsequently comment on the draft EIS.

- A. More detailed evaluation
- B. Significant effect
- C. Public involvement
- D. Environmental consequence
- E. Particular kind of action
- F. None of the Above

92. In some circumstance an agency may wish to undertake the construction of an EIS without the initial drafting of the _____. This will take place under circumstances in which the agency believes that the action will undoubtedly have adverse effects on the environment or is considered an environmentally controversial issue.

- A. Adverse effects
- B. Lack of significant impacts
- C. Screening document
- D. Environmental assessment
- E. Proposed federal action
- F. None of the Above

CE (Categorical Exclusion)

93. A CE is based on an agency's experience with a _____ and its environmental effects.

- A. Implementing regulations
- B. Significant effect
- C. Public involvement prior
- D. Environmental consequences
- E. Particular kind of action
- F. None of the Above

94. The agency may have studied the action in previous EAs, found no significant impact on the environment based on the analyses, and validated the _____ after the implementation.

- A. Adverse effects
- B. Lack of significant impacts
- C. Screening document
- D. Substitute for an EIS
- E. Proposed federal action
- F. None of the Above

95. If this is the type of action that will be repeated over time, the agency may decide to amend their _____ to include the action as a CE.

- A. Implementing regulations
- B. Significant effect
- C. Public involvement prior
- D. Environmental consequences
- E. Particular kind of action
- F. None of the Above

EA (Environmental Assessment)

96. An EA is a _____ used to determine if an agency will need to prepare either an EIS or construct a FONSI.

- A. Listing
- B. Lack of significant impacts
- C. Screening document
- D. Substitute for an EIS
- E. Proposed federal action
- F. None of the Above

97. EAs are concise public documents that include: a brief discussion of the need for the proposal; of alternatives and a listing of agencies and person consulted. Most agency procedures do not require _____ prior to finalizing an EA document.

- A. Implementing regulations
- B. Significant effect
- C. Public involvement
- D. Environmental consequences
- E. Particular kind of action
- F. None of the Above

98. Agencies advise that facilitating public comment be considered at the draft EA stage. EAs need to be of _____ to ensure that the underlying decision about whether to prepare an EIS is legitimate, but should not attempt to be a substitute for an EIS.

- A. Adverse effects
- B. Significant impacts
- C. Screening document
- D. Substitution for an EIS
- E. Proposed federal action
- F. None of the Above

Council on Environmental Quality (CEQ)

99. The CEQ was modeled after the Council of Economic Advisers created by the employment act of 1946. Shortly after the act was signed into law, President Nixon expanded the CEQ's mandate by Executive Order directing it to issue guidelines to federal agencies for the proper preparation of Environmental Impact Statements and to _____ federal programs related to environmental quality.

- A. Properly prepare
- B. Present progress
- C. Formalize agency regulations
- D. Assemble and coordinate
- E. Prepare advisory documentation
- F. None of the Above

100. The CEQ has taken strides within the past several years to prepare advisory documentation to explain the _____ of the environmental document, the nature of cumulative impacts and other advisories.

- A. EOP components
- B. Advisory documentation
- C. General structure
- D. Various planning requirements
- E. Irreversible and irretrievable commitments
- F. None of the Above

2017 Changes to EPA's Farm Worker Protection Standard

In late 2015 the Environmental Protection Agency issued the long awaited revision to the Worker Protection Standard (WPS). Although it is now technically active it will not be enforced until 2017 but the original WPS will still be enforced until the end of 2016. Please keep in mind that the WPS covers both restricted use AND general use pesticides.

This course contains EPA's federal rule requirements. Please be aware that each state implements pesticide regulations that may be more stringent than EPA's regulations and these frequently are changed. Check with your state environmental/pesticide agency for more information.

You are finished with your exam.