

Using Pesticides
Private Applicator Certification Training
Note-Taking Worksheet

I. Integrated Pest Management in Agriculture (video)

A. Defining IPM

1. IPM is a pest _____ management system that anticipates and prevents pests from causing damage.
2. IPM is an _____ approach to pest control.

B. Components of IPM

1. Pest _____
2. _____
3. Use of natural enemies (_____ control)
4. Pest - _____ plants
5. _____ and structural changes
6. Judicious use of _____ - toxic pesticides

C. Intent of IPM

1. To use tactics that are pesticide _____ that reduce the total amount of pesticide chemicals used thereby lessening the opportunity for pests to develop resistance.

II. Laws and Regulations (Chapter 1, pp. 1-6 and **Laws and Regulations Supplement**). Some of these questions may be repeated in the section where they best apply.

1. How is a pesticide defined by law? (page 1, paragraph 3; §76.001 definitions)

2. Which state and federal agencies register pesticides? (page 2, paragraph 1; §76.001 definitions)
3. What is the federal law that regulates the sale and use of pesticides? (page 2, paragraph 2; §76.001 definitions)
4. What is a state-limited-use pesticide? (page 2, paragraph 3; §76.003)
5. As defined by law, what is a private pesticide applicator? (page 2, paragraph 4; A2, page 79; §76.112)
6. When supervising pesticide use, must the private applicator be physically present? Is the applicator responsible for actions of the supervised workers? (page 3, paragraph 2; §7.31)
7. Who is responsible for assuring that any person working under the licensee's direct supervision is knowledgeable of the label requirements and rules and regulations governing the use of the particular pesticide being used by the individual? (page 3, paragraph 2; §7.31)
8. What practical knowledge and skills should a private applicator have? (page 3, items listed 1-5)
9. What is the significance of pesticide label directions with regard to the law? (page 3, paragraph 5; §7.71)
10. What types of laws are violated when the applicator uses pesticides inconsistent with label directions? Examples: Is it ever legal to use more than the labeled rate? Is it ever legal to allow the pesticide to DRIFT off of the target site? (page 3, paragraph 5; §7.71)
11. What role do Texas counties have in regulating pesticides? (page 4, paragraph 1; §7.50)

12. What is a spray permit? (page 4, paragraph 1; §7.50)
13. When does a spray permit expire? (§7.50)
14. List some applications that would require a spray permit and some that would not require a spray permit and some that are prohibited from having a spray permit. (§7.50)
15. What Continuing Education Units (CEUs) are required to renew the private applicator's license? (page 5, paragraph 3; §7.24)
16. What late fees are added to the renewal fee if a private applicator does not renew the license by February 28th? (page 5, paragraph 5; §7.25)
17. If an applicator fails to inform TDA of a change in mailing address, what can happen to the license? (§7.20)
18. When can a person request prior notification? (§7.37)
19. Name an excepted method of giving prior notification of a scheduled application to a neighbor who has requested prior notification. (§7.37)
20. How long are licensed pesticide applicators required to keep records? What types of pesticides are required to be included in these records? (§7.33)
21. Explain what is needed when the regulations require that the **total volume** of spray mix, dust, granules, or other materials applied per unit be recorded. (§7.33) Give an example of what is meant here.
22. List locations that are covered by WPS and others that are exempt. (see *Laws and Regulations Supplement* WPS - 40 CFR, Subpart A, §170.1).

23. Compare the terms “Agricultural Employer” and “Handler Employer” as used in the WPS. (see *Laws and Regulations Supplement* WPS - 40 CFR, Subpart A, §170.3).

24. What is an agricultural employer? (see *Laws and Regulations Supplement* WPS - 40 CFR, Subpart A, §170.3).

25. How often is a supervisor required to monitor a handler who is using a highly toxic pesticide marked with a skull and cross bones and how can they be monitored? (see *Laws and Regulations Supplement* WPS - 40 CFR, Subpart C, §170.210).

26. What items are necessary at the decontamination site(s) and who is responsible for providing these items? (see *Laws and Regulations Supplement* WPS - 40 CFR, Subpart C, §170.250).

Some of the above questions may be repeated in a later section due to specific subject matter.

III. How to Read Pesticide Labels (video, *Labels and Labeling*, Chapter 2, pp. 7-12)

1. Look for the _____ name on the front of the label. (page 7, paragraph 2)

2. _____ ingredients are the ones that kill or control the pests. (page 7, paragraph 3)

3. _____ words tell you how poisonous the pesticide is. (page 8-9, paragraph 3 & 1-4)

CAUTION: least poisonous pesticides - low toxicity

WARNING : more poisonous or irritating - moderately toxic

_____ : very poisonous or irritating; **MAY** also have skull and crossbones - very toxic

4. When handling pesticides with the **DANGER** signal word, someone should check on you _____ every hours . (from video and see WPS - 40 CFR §170.210)
5. The _____ statements section tells you which parts of your body need special protection and what kind of personal protective equipment to wear. (page 9-10, paragraph 7 & 1-2)
6. The _____ hazards section tells you if you must take extra care to protect bees and wildlife or to keep the pesticide out of groundwater and surface water. (page 10, paragraph 3)
7. A _____ is classified as restricted use by EPA because it may, without additional regulatory restrictions, cause unreasonable adverse effects to the environment or to human health (including injury to the applicator). Labels say for sale to and for use by certified applicators or persons under their direct supervision and only for uses covered by the Licensed Applicator's license. (page 10, paragraph 4)
8. The _____ for use section lists information on mixing, loading and application. (page 10, paragraph 5)
9. All agricultural pesticides have a restricted _____ interval (REI). The REI is the time immediately after a pesticide application when entry into the treated area is limited. (page 11, paragraph 1-2; WPS - 40 CFR, Subpart A, §170.3)
10. The _____ interval is the number of days between when the pesticide is applied and when the crop is harvested. (page 11, paragraph 3)
11. Using a little MORE pesticide than the label recommends is _____ legal since it is a use inconsistent with label directions. (**§7.71 - Use Inconsistent with Label Directions**)
12. The label _____ allows drift off of the intended spray target. (**§7.71 - Use Inconsistent with Label Directions**)

IV. Groundwater (Chapter 3, pp. 13-16)

1. What are some consequences of groundwater contamination? (page 14, paragraphs 2 & 3)
2. List some routes by which pesticides may reach groundwater. (page 14, paragraphs 4-5)
3. What site features contribute to a greater potential for chemical movement through soil? (page 15, paragraph 3)
4. What chemical and physical properties contribute to a pesticide's potential for leaching? (page 15, paragraph 4)
5. What pesticide application practices help minimize the potential for groundwater contamination? (page 16, paragraph 1)
6. List some ways to minimize direct contamination of groundwater. (page 16, paragraph 2)
7. How can back-siphoning be prevented? (page 16, paragraph 3 and also page 26, paragraph 3)
8. What procedures should be used to clean out pesticide containers? (page 16, paragraph 6)

V. Endangered Species Protection (Chapter 4, pp. 17-19)

1. What are the benefits of biological diversity? (page 17, paragraphs 1-2; page 18, paragraphs 1-3)
2. What is an endangered species? (page 18, paragraph 5)
3. What responsibility does the Environmental Protection Agency have with regard to endangered species protection? (page 18, paragraph 7)
4. How can the label help protect endangered species? (page 18, paragraph 8)
5. Name two government agencies that can provide information on endangered species. (page 19, paragraphs 2)

VI. Pesticide Record-Keeping (video; also refer to **RULE §7.33 - - - Records of Application**)

- A. The 1990 Farm Bill and subsequent amendments require you to record basic information about a pesticide application. The required information includes:
1. applicator _____ and certification/license number
 2. the _____, day and year of application
 3. product or brand name and EPA _____ number
 4. total amount applied of _____ pesticide
 5. _____, commodity, stored product or site that received the application
 6. the _____ of the area treated, in acres, number of trees or other measurement
 7. the location of application (using maps, county field numbers or legal descriptions so that the exact area can be identified _____ years later if requested)
- B. If you make a _____ application to an area that is less than of an acre over a 24-hour period. then you only need to record:
1. date of application
 2. brand or product name
 3. EPA registration number
 4. total amount applied
 5. the location (designated as spot application, followed with short description)
- C. Greenhouse and _____ applications are not considered spot application and therefore do NOT qualify for the shorter list of required data.
- D. Records must be recorded within _____ days of the application and then kept for _____ years.
- E. The regs require that the **total volume** of spray mix, dust, granules, or other materials applied per unit be recorded - Give an example of what is meant here.

VII. Personal Protection and Proper Use (video, Chapter 5, *Pesticide Safety*, pp. 21-24)

A. Protecting Yourself from Pesticides

1. When handling pesticides, watch out for spills and splashes. Avoid sprays and dusts from pesticide applications. Also avoid _____, which are pesticides that remain on the plants, soil, water, equipment, clothing or in the air after an application.
2. Pesticides can poison or injure you if you: swallow or _____ them, get them into your eyes or on your _____.
3. The most common route for pesticides to enter the body during use is through the _____.
4. Applicators are more likely to receive high levels of skin exposure when they are _____ and _____.
5. Signs and symptoms of organophosphate poisoning include: _____, _____, _____, _____, _____, _____.

B. Personal Protective Equipment (PPE)

1. Chemical-resistant PPE can be made of a variety of chemical-resistant material, including PVC and _____.
2. Gloves that are made of _____ and leather should NOT be worn when handling pesticides.

C. Follow these easy rules for wearing PPE correctly:

1. Keep pant legs _____ the top of boots.
2. Wear chemical-resistant _____ that reach at least half-way to the elbow.
3. If applying pesticides toward the ground, wear sleeves over the _____ of gloves.
4. If working above your shoulders, wear sleeves _____ your gloves. Make sure you choose gloves with cuffs.

5. Wear _____ over your regular work clothes to give your body good protection against most pesticides.
6. Use a chemical-resistant _____ to keep splashes and spills from soaking your coveralls while you are mixing and loading pesticides or cleaning equipment.

D. Respirators (best protection against gases and vapors)

1. The National Institute for Occupational Safety and Health (_____) is the federal agency that evaluates and approves _____. In addition, since 1998, the Occupational Safety Health Administration (OSHA) requires that before employees can use respiratory protection equipment they must be trained and have a medical evaluation.
2. Styles of respirators include:
 - _____ - _____ filtering respirators
 - Chemical _____ respirators
 - _____ respirators
 - Air - _____ or self-contained breathing apparatus (when using highly toxic pesticides or during fumigation)
3. Every time you put your respirator on, make sure that you do a _____ check.
4. If there are no instructions, then replace filters, cartridges and canisters at the end of each work day, or after _____ hours whichever comes first.

E. Transporting and Storing Pesticides

F. Mixing and Loading Pesticides

G. Cleaning Up Pesticide Spills - - The three "C"s of spill management:

1. _____
2. _____
3. _____

H. Cleaning and Disposing of Pesticides and Pesticide Containers

I. Applying Pesticides

J. Cleaning Up. When washing contaminated work clothes, follow these washing procedures:

1. Keep work clothes _____ from other laundry .
2. Wash only a few items at a time.
3. Use the _____ water level.
4. Use heavy-duty detergent and _____ water .
5. Use _____ rinse cycles and use warm water if possible.
6. Use two complete washer cycles for items moderately to heavily contaminated.
7. Hang washed work clothes _____ .
8. Run washer without clothes for _____ additional cycle using hot water and detergent to clean machine.
9. Try NOT to use _____ ; or use highest setting.

When clothing is heavily contaminated it should be _____ .

Environmental Considerations (Chapter 6, pg. 25-26; *Laws and Regulations Supplement §7.34*; and pesticide label.)

1. Empty pesticide containers should be triple rinsed prior to disposal, what should the applicator do with the rinse water from the triple rinsing? (page 26, paragraph 6; §7.34; storage and disposal language from the pesticide label)
2. What can be done with empty, rinsed, pesticide containers? (page 26, paragraph 5; Rule §7.34; storage and disposal language from the pesticide label)

VIII. The Worker Protection Standard (video, 40 CFR §170)

1. To conduct training, you must use: _____ or audio-visual training materials (EPA-approved).
2. You can deliver the information yourself or rely on _____ - _____ programs (or enlist another approved trainer).
3. The training must be presented so that it can be _____ by the workers: use trainee's language, use nontechnical terms, respond to questions.
4. List locations that are covered by WPS and others that are exempt. (see *Laws and Regulations Supplement* WPS - 40 CFR, Subpart A, §170.1).

5. Compare the terms “Agricultural Employer” and “Handler Employer” as used in WPS. (see *Laws and Regulations Supplement* WPS - 40 CFR, Subpart A, §170.3).
6. The _____ is the person ultimately responsible for insuring worker compliance with WPS restricted entry intervals before entering treated fields. (see *Laws and Regulations Supplement* WPS - 40 CFR, Subpart A, §170.3).
7. How often is a supervisor required to monitor a handler who is using a highly toxic pesticide marked with a skull and cross bones and how can they be monitored? (see *Laws and Regulations Supplement* WPS - 40 CFR Subpart C §170.210).
8. What items are necessary at the decontamination site(s) and who is responsible for providing these items? (see *Laws and Regulations Supplement* WPS - 40 CFR Subpart C §170.250).

IX. Application, Equipment, and Calibration (manual and video)

1. Rank the roller, centrifugal and piston pumps in order from lowest to highest pressure. Which has the highest volume capacity? (page 28, paragraphs 4-6)
2. When considering pump size, what capacity should a pump have? (page 28, paragraph 7)
3. What guideline should you follow for selecting a pressure gauge? (page 28, paragraph 8)
4. What kind of nozzle tip should be avoided when spraying wettable powders? (page 29, paragraph 3)
5. With flat spray tips, what must be adjusted to change the amount of overlap in spray pattern? (page 29, paragraph 4) (Note: error correction)
6. Which spray tips can be used at an operating pressure of 20 to 40 pounds per square inch?

(page 29, paragraphs 4-5)

7. You can change the output of any nozzle by changing the operating **pressure** . Changing pressure is only good for small changes; for larger changes it is best to change the nozzle tips to deliver the correct volume.
8. To double nozzle flow rate (without changing the nozzle), you must increase pressure **four (4)** times. (This is NOT a practical thing to do. For example if you are using 30 psi you would have to increase pressure to 120 psi and nozzle tips generally are designed to work best at pressures between 20 and 40 psi.) (page 30,paragraph 1)
9. What kind of material should be used to clean nozzles? (page 30, paragraph 1)
10. What is a specific precaution you should take to prevent drift related to wind? (page 30, paragraph 3)
11. What hours of the day are usually best for spray applications? (page 30, paragraph 4)
12. How often should equipment be calibrated? (page 31, paragraph 3)
13. What material should be used in the tank to check nozzle discharge or calibrate a sprayer? (page 31, paragraph 4)
14. When should a nozzle tip be replaced? (page 31, paragraph 4)
15. What kind of application method has a rate per acre of land that is different from its rate per treated acre? (page 31, paragraph 6)
16. How is swath width in feet determined when broadcast spraying? when band spraying? (page

32, no. 7)

17. What does the formula for GPA enable you to determine? (page 32, no. 8)

Calibration Problems: Practice working calibration problems on separate work sheet.

X. Pests and Pest Damage (manual, Chapters 8-14, pp. 39-76)

Pest and Pest Damage - Introduction and Insect Pests

- 8-1. What is the first step in managing a pest problem? (page 39, paragraph 1)

- 8-2. What is the difference between an insect that undergoes NO metamorphosis (like silverfish) and an insect that undergoes COMPLETE metamorphosis (like butterflies)? (page 40, paragraphs 4 & 5)

- 8-3. What do all adult insects have in common? (pages 40, paragraph 6) - Name six examples of types of insects:

- 8-4. What differences exist between insects and the group that includes mites, ticks and spiders? (page 41, paragraph 2)

- 8-5. Into what categories are insects grouped, according to their impact on humans? What proportion of all insects does each category contain? (page 41, paragraphs 4, 5, & 6).

- 8-6. Natural processes control _____ of potential damage caused by insects (page 41, paragraphs 8).

- 8-7. Give examples of natural factors and artificial techniques that control insect pests. (page 41-42, paragraphs 8-9 & 1-5)

- 8-8. Among insects, what are key pests, occasional pests and secondary pests? (page 42, paragraphs 6-7)
- 8-9. Define 'economic threshold.' (page 42, paragraphs 8) (page 43, paragraph 1 - note this may apply to both plants and animals.)
- 8-10. The economic threshold for greenbug (a sorghum aphid) depends on what two factors? (page 43, paragraphs 4)
- 8-11. The private applicator must decide what is the pest, if or when to treat and finally, what? (page 44, paragraphs 2)

Plant Disease Control

- 9-1. Without the aid of a microscope, how can plant diseases be recognized? (page 46, paragraph 1) - Name three factors required for infection to occur.
- 9-2. What plant disease symptoms are indicative of blight? (page 46, paragraph 4)
- 9-3. Why are protectant fungicides used to prevent fruit rots? (page 46, paragraphs 5 to pg. 47, paragraph 1)
- 9-4. What is the difference between powdery mildew and downy mildew? (page 47, paragraph 1)
- 9-5. What are nematodes? What potential harm can they cause to plants? (page 47, paragraph 3)
- 9-6. Besides chemical control, what methods may be used to prevent plant disease from occurring? (page 47, paragraph 6)

Weed Control

- 10-1. Describe the life cycles of annual, biennial and perennial weeds - Give examples of each. (page 50, all)
- 10-2. List 4 weed control methods and give examples of each. (page 51, paragraphs 1-4)
- 10-3. How do seedling grass plants and seedling broadleaf weeds differ in the location of their growing point? (page 51, paragraphs 5-6)
- 10-4. What kind of underground structure is found on purple nutsedge and wild onion? (page 51, paragraph 7)
- 10-5. Many perennial weeds have buds on creeping roots, rhizomes or stolons. What is necessary for a herbicide to be effective on these weeds? (page 51, paragraph 5-6)
- 10-6. What variation occurs in the effectiveness of herbicide for control of annual weeds during the seedling, vegetative, flowering and mature stages of growth? (page 51, paragraph 8-11)
- 10-7. In general, during which stage of growth should herbicides be applied for the best control of perennial weeds? (page 52, paragraph 2)
- 10-8. What is the benefit of adding a surfactant to a foliar spray mix? (page 52, paragraph 3-4)
- 10-9. What type of pesticide is used to control vegetation (plants)? (page 52, paragraph 2,3 & 5)
- 10-10. What type of soil will herbicides move through most easily? (page 52, paragraph 6)

10-11. When using soil-applied herbicides, why is a higher rate needed on soil that is heavy in clay and organic matter? (page 52, paragraph 6-7)

10-12. What is the effect of temperature and humidity on herbicide effectiveness? (page 53, paragraph 2-3)

COMMENT: As humidity increases from 0 to 100 percent, more herbicide is **absorbed** by the leaf surface. This is talking about **UPTAKE** (absorption) not activation. (page 53, paragraph 3)

Brush Control

11-1. What characteristic of some brush species makes them particularly hard to control? (Page 58, paragraph 2 & 3)

11-2. With chemical brush control, what factor should be considered in choosing between broadcast application methods and individual plant treatment? (page 58, paragraph 4)

11-3. How can physical spray drift from the target area be reduced during herbicide application on grasslands or croplands? (page 59, paragraph 2)

Aquatic Vegetation Control

12-1. List and describe the four types of aquatic plants. (page 61, paragraph 2)

12-2. What is the most important factor in controlling or preventing aquatic weeds in ponds? (page 62, paragraph 1)

12-3. When would a granular herbicide formulation be used for aquatic weed control? (page 62, paragraph 5)

12-4. When calculating chemical treatment for aquatic weed control, what is the difference in treating submersed weeds rather than floating and shoreline vegetation? (page 62, paragraphs 6-7)

- 12-5. How can you, the applicator, prevent contamination of water intended for other uses after the water leaves the treated area, when an aquatic pesticide is used? (page 63, paragraphs 1 & 2)

Wildlife Damage Control

- 13-1. What is the objective of wildlife damage control? (page 65, paragraph 1)
- 13-2. Before beginning any wildlife damage control program, what should you do? (page 66, paragraph 2)
- 13-3. Give an example of a fish that may cause problems at certain times but is also a protected game fish. (page 66, paragraph 7)
- 13-4. Give examples of nonchemical methods that could be used to control fish. (page 66, paragraph 7)
- 13-5. What is a nutria? (page 66, paragraph 8)
- 13-6. What is the first step in solving a wildlife damage problem? (page 67, paragraph 2)
- 13-7. What physical evidence contributes to proper identification of wildlife species? (page 67, paragraph 5) What would you look for if you suspected roof rats? (page 67, paragraph 5)
- 13-8. What constitutes environmental control of wildlife? (page 68, paragraph 1)

13-9. If an animal population must be reduced, what factors should be considered in choosing the control method? (page 71, paragraph 1)

13-10. When should carcasses of target animals be collected and destroyed? (page 72, paragraph 2)

Photo ID: Note that there are photos of pest damage or pests on pages 55, 56, 64, 73, and 74. This represents an extremely small sample of all of the possible pests that you may encounter but certain photos will be selected from this group for you to identify on the Exam. For each question a photo will be shown with 4 possible answers so it should be fairly easy if reviewed carefully before going into the Exam. Not all photos will be used.

Remember the continuing education requirements for license renewal:

15 hours every **5** years,
with 2 in laws and regulations and **2** in IPM.

Complete paperwork (Extension form D-1411 or TDA form Q565C)
You will need this to take your Exam and apply for your license.