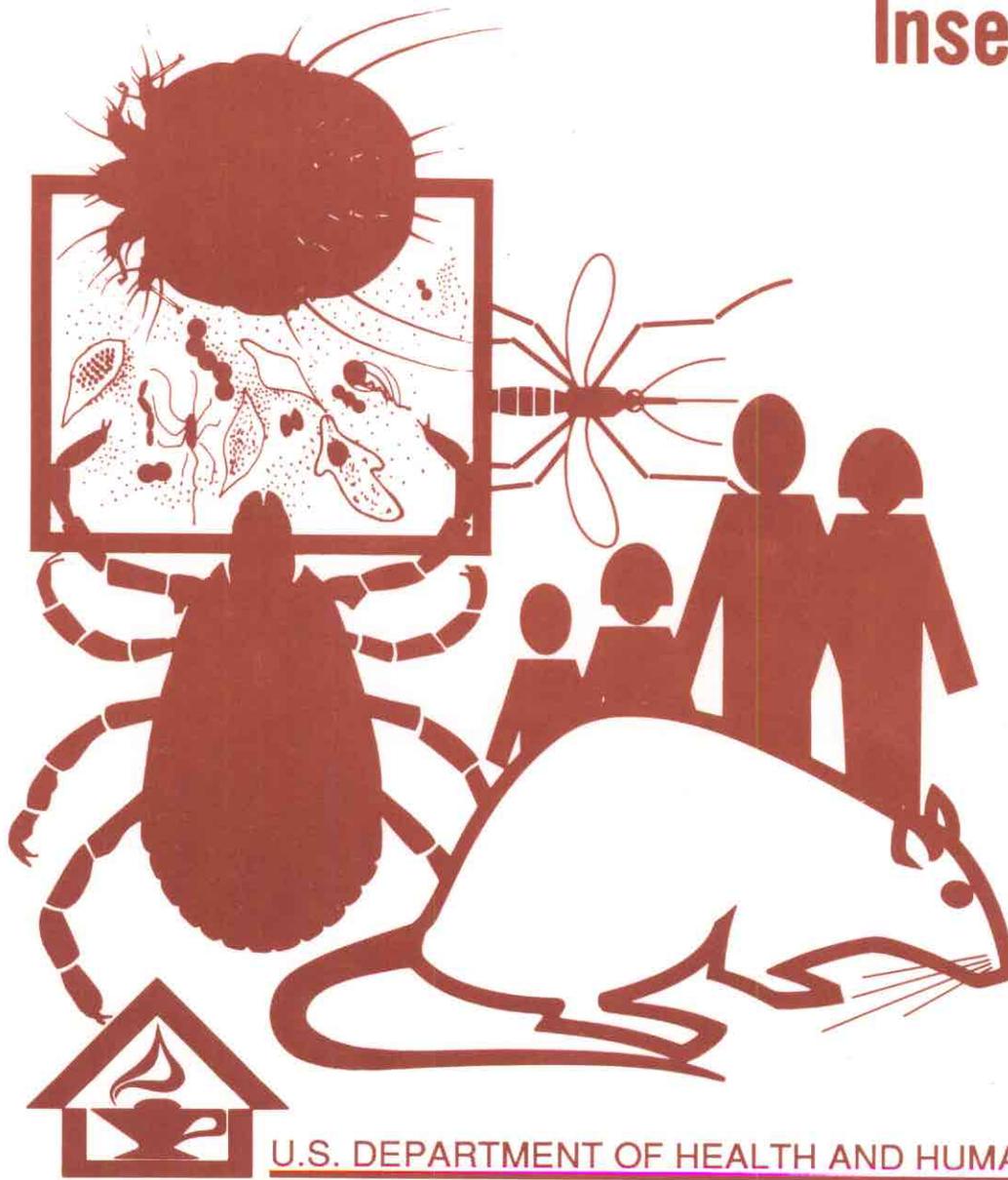


SELF-STUDY COURSE 3013-G

Vector-Borne Disease Control

Insecticides



4/91:5R

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

SELF-STUDY

PUBLIC HEALTH SERVICE
Centers for Disease Control
Public Health Practice Program Office
Atlanta, Georgia 30333

VECTOR-BORNE DISEASE CONTROL

Self-Study Course 3013-G

LESSON 2: INSECTICIDES

I: LESSON CONSISTS OF:

Part I: 25 multiple-choice questions
Part II: 25 true-false questions

II: REFERENCE:

Insecticides for the control of insects of public health importance. Please note that the following pesticides mentioned in the references are now banned:

- o Chlordane
- o DDT
- o Dieldrin
- o Heptachor
- o Kepone
- o Mirex

III: TOPICS AND READING ASSIGNMENTS:

	<u>Pages</u>
INTRODUCTION	5
INSECTICIDES WHICH CAN BE USED LEGALLY	5- 8
TYPES OF INSECTICIDES	8-11
A. Chlorinated Hydrocarbons	12-13
B. Organophosphates	13-16
C. Carbamates	16-17
D. Pyrethroids	17-18
E. Botanicals	18-20
F. Insect Growth Regulators (IGR's)	20-21
G. Fumigants	21-24
H. Miscellaneous	24
I. Inorganics	24
J. Dessiccants or Sorptive Dusts	25
K. Attractants	25-26
L. Repellents	26-28
M. Auxiliaries	28-30
TYPES OF INSECTICIDE FORMULATIONS	30-34
PREPARING INSECTICIDES FOR USE	34-40
SELECTION OF AN EFFECTIVE INSECTICIDE	41
TOXICITY OF INSECTICIDES AND THE LABEL	41-48
PRECAUTIONS IN THE USE OF INSECTICIDES	49-51
FIRST AID FOR INTERNAL POISONING	52-53
RESISTANCE TO INSECTICIDES	54-55
APPENDIX	56-57
SELECTED REFERENCES	58-62

VECTOR-BORNE DISEASE CONTROL

Lesson 2 - Objectives

Upon successful completion of Lesson 2, the student should be able to correctly:

- o Identify selected types of insecticides, insecticidal formulations, factors affecting their selection and preparation, and precautions for their use.
- o Identify the following:
 - aerosol
 - emulsifier
 - fumigant
 - general use pesticide
 - restricted use pesticide
 - solvent
 - synergist
 - wettable powder
- o Select and apply formulas to use in diluting insecticidal concentrates, when given ingredients and quantities desired.

VECTOR-BORNE DISEASE CONTROL

LESSON 2: INSECTICIDES

Part I: Multiple-Choice

1. A restricted use pesticide:
 - A. Can have an adverse effect on the environment.
 - B. Can injure the persons who apply it.
 - C. Can be very toxic.
 - D. All of the above.

2. An important insecticide, widely used, having quick knockdown capability and low toxicity to mammals, is derived from a plant. Which is it?
 - A. Pyrethrum
 - B. Propoxur
 - C. Dieldrin
 - D. Chlordane

3. One of the synergists generally used with pyrethrum is:
 - A. Piperonyl butoxide.
 - B. Carbaryl.
 - C. Rotenone.
 - D. Diazinon.

4. Which of the following is NOT a chlorinated hydrocarbon insecticide?
 - A. DDT
 - B. Chlordane
 - C. Rotenone
 - D. Dieldrin

5. There is a wide variation in the insecticidal effect of the various stereoisomers of a given compound. In the case of benzene hexachloride (BHC), which isomer has the most significant insecticidal activity?
 - A. Alpha
 - B. Beta
 - C. Gamma
 - D. Delta

Lesson 2/Part I

6. The organophosphate insecticides all act as:
- A. Fumigants.
 - B. Stomach poisons.
 - C. Inhibitors of the enzyme cholinesterase.
 - D. Desiccants.
7. Malathion is a popular insecticide because:
- A. It is available in both dust and spray form.
 - B. It is a general-purpose insecticide.
 - C. It is only slightly toxic to animals.
 - D. All of the above.
8. A carbamate insecticide which is used in controlling mosquitoes, fleas, and ticks is:
- A. DDVP.
 - B. Sevin.
 - C. Dibrom.
 - D. Endrin.
9. Propoxur (Baygon) is widely used in cockroach control because it:
- A. Possesses a strong irritating odor.
 - B. Is easy to apply.
 - C. Is a stomach poison with residual contact action.
 - D. Is toxic on contact with the skin.
10. Aerosols are different from fumigant gases in that:
- A. Aerosols are relatively non-toxic to humans.
 - B. Fumigants have a bad odor.
 - C. Aerosols have larger particle size and cannot penetrate materials.
 - D. Fumigants are less toxic to humans.
11. A fumigant generally available to householders in solid form for protecting woollens and furs from insect attack is:
- A. Chlordane.
 - B. Lindane.
 - C. DDVP.
 - D. Paradichlorobenzene.

Lesson 2/Part I

12. Phosphine gas is a well known fumigant. It is used as Gastoxin pellets to control:
- A. House flies.
 - B. Mosquito larvae.
 - C. Body lice.
 - D. Rodents in burrows.
13. The silica aerogels kill arthropods through their action as:
- A. Stomach poisons.
 - B. Contact poisons.
 - C. Fumigants.
 - D. Desiccants.
14. Which of the following repellents is the most recently developed and is one of the most promising all-purpose repellents?
- A. Oil of citronella
 - B. Diethyl Toluamide
 - C. Rutgers 612
 - D. Indalone
15. Auxiliaries include which of the following:
- A. Solvents.
 - B. Emulsifiers.
 - C. A & B above.
 - D. Diazinon.
16. One of the inert carriers most commonly used in diluting insecticides is:
- A. Talc.
 - B. Charcoal.
 - C. Road dust.
 - D. Borax.
17. Emulsifiers as used to aid in mixing:
- A. Liquids and dusts.
 - B. Liquid and solid insecticides.
 - C. Oil solutions and water.
 - D. Insecticides and inert carriers.

Lesson 2/Part I

18. Insecticidal dusts may be applied:
- A. By hand.
 - B. By dust guns.
 - C. By airplanes.
 - D. By all of these methods.
19. If a finely milled, technical grade insecticide is mixed with an inert carrier, a wetting agent, and water, the result is:
- A. An emulsion.
 - B. A suspension.
 - C. A solution.
 - D. An emulsifiable concentrate.
20. To prepare 100 pounds of 10 percent malathion dust from talc and 75 percent malathion, how much dust should be used?
- A. 10.3 lbs.
 - B. 13.3 lbs.
 - C. 30.5 lbs.
 - D. 50.0 lbs.
21. To prepare 100 gallons of 0.5 percent diazinon emulsion from 20 percent diazinon emulsifiable concentrate and water, how many gallons of 20 percent diazinon concentrate should be used?
- A. 2.5 gals.
 - B. 10.5 gals.
 - C. 25.0 gals.
 - D. 40.5 gals.
22. If an insecticide applied to the skin on a laboratory rat has an LD₅₀ acute oral toxicity value of 125 mg/kg, it is considered:
- A. A highly toxic insecticide.
 - B. A moderately toxic insecticide.
 - C. A slightly toxic insecticide.
 - D. Not toxic enough to kill insects of public health importance.
23. A broad spectrum organophosphate insecticide that is only slightly toxic to mammals is:
- A. Parathion.
 - B. Endrin.
 - C. Phosdrin.
 - D. Malathion.

Lesson 2/Part I

24. Which drug listed below has given great promise in treatment of severe cases of organophosphate poisoning?
- A. Antihistamine
 - B. 2-PAM Chloride
 - C. ACTH
 - D. Cortisone
25. Accidental insecticide poisoning can occur:
- A. By mouth.
 - B. Through the skin.
 - C. By breathing.
 - D. All of the above.

Part II: True-False - Mark "A" for True, "D" for False.

1. The most effective vector control projects have resulted from the use of insecticides alone.
2. The insecticide dichlorvos is a fumigant.
3. Pyrethrum is widely used in bug bombs because it is an inexpensive insecticide.
4. Rotenone, a fish poison, is recommended as an insecticide for controlling ectoparasites on pets.
5. Allethrin is a carbamate insecticide.
6. Methoxychlor is an organophosphate.
7. The gamma isomer of BHC has high insecticidal value.
8. Lindane is a contact insecticide.
9. When lice became resistant to DDT in Korea, parathion was substituted as an effective, safe, contact insecticide.
10. The organophosphates kill by lowering the level of the enzyme cholinesterase.
11. Organophosphorus compounds usually have a longer residual effectiveness than chlorinated hydrocarbons.
12. DDVP resin strips are used as residual fumigants.
13. Parathion is a relatively non-toxic organophosphorus insecticide.
14. Carbaryl (Sevin) is a carbamate insecticide.
15. Phosphine and methyl bromide are fumigant insecticides.
16. Synergists include perfumes and masking agents.
17. In general, granular or pelletized insecticides have smaller particle size than insecticidal dusts.
18. A wettable powder is made up of technical grade insecticide, inert carrier, and a wetting agent.
19. An insecticidal solution is made up of technical grade insecticide, solvent, and water.

Lesson 2/Part II

20. Emulsifiable concentrates have a higher percentage of the insecticide than do emulsions of the same insecticide.
21. The terms "hazard" and "toxicity" are synonymous in the field of insecticides.
22. The oral toxicity of insecticide with the signal word WARNING is greater than that of one with the signal word CAUTION, but less than that of one with the signal word DANGER.
23. The oral toxicity to humans of diazinon is generally considered to be greater than that of malathion but less than that of either parathion or methyl parathion.
24. Insecticides should be stored in the pantry or kitchen, for easy access.
25. Emulsifiable concentrates can be harmful if they are spilled on bare skin.

DHHS:PHS:CDC:PHPPO
Division of Media and Training Services

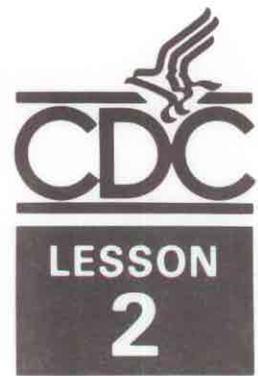
(FOR TRAINING PURPOSES ONLY)

4/91:5R

NAME _____

MAILING ADDRESS:

_____ ZIP _____



SELF-STUDY COURSE 3013-G

Vector-Borne Disease Control

ANSWER SHEET

PART I					PART II		
NO.	A	B	C	D	NO.	A	D
1	0	0	0	0	1	0	0
2	0	0	0	0	2	0	0
3	0	0	0	0	3	0	0
4	0	0	0	0	4	0	0
5	0	0	0	0	5	0	0
6	0	0	0	0	6	0	0
7	0	0	0	0	7	0	0
8	0	0	0	0	8	0	0
9	0	0	0	0	9	0	0
10	0	0	0	0	10	0	0
11	0	0	0	0	11	0	0
12	0	0	0	0	12	0	0
13	0	0	0	0	13	0	0
14	0	0	0	0	14	0	0
15	0	0	0	0	15	0	0
16	0	0	0	0	16	0	0
17	0	0	0	0	17	0	0
18	0	0	0	0	18	0	0
19	0	0	0	0	19	0	0
20	0	0	0	0	20	0	0
21	0	0	0	0	21	0	0
22	0	0	0	0	22	0	0
23	0	0	0	0	23	0	0
24	0	0	0	0	24	0	0
25	0	0	0	0	25	0	0

