Module 1: An Introduction

Directions: Complete the blanks as you view the videotape. Use the margin to jot down additional notes or questions you may have.

1. IPM stands for ________________ pest management.

2. IPM is an ________________ sensitive approach to managing pest problems that takes advantage of all suitable pest control options.

3. IPM tries to decrease the need for chemical ________________ by increasing use of other methods.

4. The first step in implementing an IPM program is conducting an ________________ ________________.

5. The second step in implementing an IPM program is ________________ the problem.

6. The third step in implementing an IPM program is taking ________________ ________________.

7. The fourth step in implementing an IPM program is ________________ progress through on-going monitoring and communication.

8. The control options defined by the IPM pyramid are:
   a. sanitation controls
   b. ________________/mechanical controls
   c. ________________ controls
   d. chemical controls

9. All pests need food, water and ________________.

10. A successful IPM program depends on ________________ from everyone involved.

11. The fourth step in implementing an IPM program is ________________ progress through on-going monitoring and communication.
12. Three reasons pest control is important to your school are:
   a. health and ________________ reasons
   b. reduction of structural ________________ costs
   c. aesthetics of buildings and grounds

13. Several ways you can assist in the implementation of an IPM program at your school are:
   a. cooperate with requests of IPM ________________
   b. keep personal areas clean and free of ________________ sources for pests (lockers, classroom, teachers' lounges, kitchens, cafeterias, storage rooms, etc.)
   c. file repair ________________ with the maintenance staff
   d. report sightings of ________________ problems
NOTES

Module 2: Structural Pest Control

Directions: Complete the blanks in the following video outline notes as you view the videotape. Use the margin to jot down additional notes or questions you may have.

Foundations

1. IPM stands for ____________________________ pest management.

2. IPM is an ____________________________ sensitive approach to managing pest problems that takes advantage of all suitable pest control options.

3. The four steps of implementing or putting IPM to work are:
   a. the ____________________________
   b. identification of the problem
   c. taking ____________________________
   d. evaluation

IPM Strategies

Step 1: The Inspection

4. Two things to look for during an inspection: a. unsanitary conditions
   a. unsanitary conditions
   b. ____________________________ of pests

5. All pests need food, ____________________________ and harborage to live. When found close together these things become _________________ problems.

6. Examples of ____________________________ conditions are leaky pipes, unsealed cracks, spilled food, and gaps under doors.

7. Five essential inspection tools include:
   a. flashlight
   b. ____________________________
   c. screwdriver
   d. ____________________________ agents
8. Flushing agents are special chemicals that are very ____________________________ to pests.

**Step 2: Identifying the Problem**

9. It is important to identify pests ____________________________ because some control methods affect only certain ____________________________

**Step 3: Taking Action**

10. Before taking action it is important to have a ____________________________

11. Your plan should list pest problems and outline ____________________________ methods to solve each problem.

**Step 4: Evaluation**

12. Evaluation asks what you can do to ____________________________ your IPM program.

**Applying IPM**

**Strategies 1. School Inspection Tour**

<table>
<thead>
<tr>
<th>Pest Prone Areas</th>
<th>Common Pests</th>
<th>Notes</th>
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<tr>
<td>Classrooms and offices:</td>
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<td>Lounges:</td>
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<td>Utility rooms:</td>
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<td>Outside perimeters:</td>
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<tr>
<td>German cockroach</td>
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<td>Ants</td>
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<td>House mouse</td>
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<td>Termites</td>
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<td>Outdoor cockroaches</td>
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<td>Roof rat</td>
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<tr>
<td>Norway rat</td>
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</table>
3. Taking Action

13. Pest controls have either short-term or ____________________________ term effects.

14. Short-term methods correct a problem ____________________________ but have only temporary control.

15. Long-term control methods may require more ____________________________ and effort but results are usually better.

16. Short-term controls include application of ____________________________ and non-chemical methods.

17. Short-term ____________________________ control methods include: bird repellent glues, light traps, sticky boards, vacuums, snap-traps, glue boards, repeating multiple catch traps and weed barrier fabrics.

18. Examples of ____________________________ control which provide an alternative to pesticides are mites, insect parasites and insect-eating nematodes.

19. ____________________________ controls include pesticides, baits and liquid sprays.

20. Baits are safer and result in ____________________________ pesticide being used because pests ____________________________ the bait.

21. Liquid pesticide sprays can be applied as spot treatments, broadcast treatments, or as ____________________________ placements.
22. Broadcast sprays should be used indoors because they are not effective or safe for schools.

23. Spot sprays are treatments limited to an area no larger than square feet.

24. Directed placement treatments are used to reach inaccessible and voids.

25. Long-term preventive controls are those that last

26. Pest proofing actions include: using metal cloth to seal roof vents, windows, doors and openings; making sure outside doors are -fitting and made of glass or metal; using foam and mortar to seal cracks and holes; moving dumpsters away from buildings; modifying to discourage pests.

4. Evaluation

27. During the evaluation step we review data and and ask what can be done

28. A pest is a simple and effective record-keeping system maintained at each school site.

29. Pest control files should include:
   a. service forms
   b. contract specifications
   c. property
   d. labels of all used at the school
   e. Material Safety Data Sheets
   f. pest control log
Notes

Module 3: Food Handling Areas

Directions: Complete the blanks in the following video outline notes as you view the videotape. Use the margin to jot down additional notes or questions you may have.

1. Three common types of kitchen pests are cockroaches, flies and ________.

2. IPM stands for integrated pest _________________________________.

3. IPM is an ________________________________ sensitive approach to managing pest problems that takes advantage of all ________________________________ pest control options.

4. The control options defined by the IPM pyramid are:
   d. chemical controls
   c. biological controls
   b. ________________________________ controls
   a. sanitation controls

5. The four steps of the IPM process are: inspect, ________________________________, take action and ________________________________.

6. Three ways for a pest control operator to maintain the cooperation of kitchen staff are:
   a. schedule a visit at the ________________________________ of the day

   b. check in/out with ________________________________ manager

7. The two parts of an IPM inspection include looking for:
   a. ________________________________ sanitation conditions
   b. evidence of active pest problems

8. The three correctable sanitation conditions looked for during an IPM inspection are food, water and ________________________________

9. Characteristics of a desirable German cockroach harborage include:
   • warm, ________________________________ areas near water
10. During the inspection look for and record things that can be corrected, such as spilled food, leaky ________________, and cardboard boxes in the storage area.

11. A ________________ is an important inspection tool for spotting cockroaches.

12. Two signs of an active cockroach infestation are:
   a. roaches found in a check of sticky traps
   b. presence of ________________ specks near cockroach harborages

13. When monitoring for cockroaches, sticky traps should be placed in ________________, and along walls or near potential roach harborage sites.

14. Important inspection tools include: flashlight and ________________; screwdriver; ________________; agent, and ________________ traps.

15. Chemicals that are highly irritating or repellent to insects are called ____________ ________________ agents.

16. Injecting a flushing agent into a cockroach harborage drives the roaches out so they can be ________________ and counted.

17. Paraffin-based ________________ blocks are non-toxic and great for monitoring rodent activity.

18. The purpose of caulking materials is to deny pests access to food and ____________ ________________.

19. Three examples of non-chemical control techniques useful in a kitchen IPM program are caulking, vacuuming and ________________.

20. An example of a low-impact pesticide appropriate for pest control in kitchens is ________________ acid.
21. Pesticide baits are effective alternatives to ____________________________ sprays.

22. Pesticide baits come in the form of ________________________, dusts and gels.

23. Pesticide applied to crevices and voids is called a ____________________________ placement treatment.

24. Spraying floors and baseboards is ____________________________ and needlessly increases peoples' chances of exposure to pesticides.

25. You are breaking the law if you fail to read and follow instructions on the pesticide ____________________________.

26. Regularly observing and keeping systematic records of pest activity over time is called ____________________________.

27. The most important component of the evaluation process is ____________________________ with the kitchen and maintenance staff.

28. The role of the IPM coordinator requires ____________________________ school staff and keeping lines of communication open.
Notes

Module 4: Bids and Contracts

Directions: Complete the blanks in the following video outline notes as you view the videotape. Use the margin to jot down additional notes or questions you may have.

1. Responsibilities of the school district's contract officer include:
   1. helping to determine whether to use outside contractors or in-house staff
   2. writing contract bid ________________
   3. helping to __________________________ contractors
   4. working with administrators and maintenance staff to oversee contractor

2. Integrated Pest Management or IPM is an __________________________ approach to managing pest problems that takes advantage of all suitable pest control options.

3. An IPM __________________________ helps to clearly communicate the school district's intentions to use IPM methods to faculty, staff, pest control operators, parents and students.

4. Many IPM policies require school districts to appoint an IPM ________________ to oversee the whole IPM program.

5. Three steps involved in developing a bidding process are:
   a. establish an IPM __________________________
   b. determine what mix of __________________________ and contractual agreements are appropriate
   c. develop clear contract bid specifications

6. Advantages of using in-house pest control services for IPM include:
   a. eliminate the search for reputable __________________________ contractor
   b. maintain __________________________ control
   c. rapport with other school personnel is already established
   d. more efficient and __________________________ to combine some pest control tasks with maintenance jobs

7. Advantages of using contracted pest control services for IPM include:
   a. more varied __________________________ and classroom and field training
b. greater familiarity with pest techniques

c. need for training of school personnel and maintenance of applicator licenses reduced

d. eliminate need for district to store or dispose of expenses

e. reduced cost of expenses

f. liability expenses and insurance associated with pest control are absorbed by the contractor

<table>
<thead>
<tr>
<th>8. Common Problems Associated with Pest Control Contracting</th>
<th>Solutions</th>
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</thead>
<tbody>
<tr>
<td>A. Contractors underbid to get the job. Service is inadequate because they don't spend enough time on service calls.</td>
<td>A. Request inspections prior to submitting bid. Request contractors to provide written estimates of service time requirements. Establish minimal service times.</td>
</tr>
<tr>
<td>B. Contractor's experience in servicing schools is inadequate. They can't do the job properly due to time constraints and lack of knowledge.</td>
<td>B. Request information on previous experience with and institutional pest control. Request.</td>
</tr>
<tr>
<td>C. Contractor service consists primarily of pesticide sprays. Poor pest control, negative health effects, and pesticide overuse result.</td>
<td>C. Provide contractor with a clearly stated policy. Provide contractor with clearly stated for acceptable pesticide use.</td>
</tr>
<tr>
<td>D. Communication problems exist between the contractor and school district. Poor cooperation and inadequate pest control result.</td>
<td>D. Clearly spell out contractor responsibilities. Specify: To the pest control officer will report; problems will be reported; in the district will be responsible for responding to problems identified by the pest control officer.</td>
</tr>
</tbody>
</table>

9. Six elements essential to a good IPM bid specification are:
   a. required inspections
b. required estimates of ________________ service times for separate facilities
   c. clearly stated guidelines for acceptable ________________ use
   d. clearly written scope of ________________
   e. required ________________ and contractor responsibilities
   f. required plan of work

10. In evaluating bids to choose the best contractor, “looking beyond the bottom line” includes rating by:
   1. experience with ________________
   2. technician ________________ program
   3. previous school experience
   4. realistic service ________________ estimates
   5. ability to respond to ________________ requests
   6. managerial capabilities

11. The weighted ________________ rating system is a relatively objective method for evaluating bidders on several criteria.
Module 5: The Administrative Challenge

Directions: Complete the blanks in the following video outline notes as you view the videotape. Use the margin to jot down additional notes or questions you may have.

1. Integrated Pest Management (IPM) is an _______________ sensitive approach to managing pest problems that takes advantage of all suitable pest control options.

2. The focus of IPM is long-term _______________ or suppression of pest populations.

3. _______________ or cultural methods form the basis for control tactics in IPM.

4. The focus of sanitation control methods is to _______________ sources of food, water and harborage that might occur close to one another.

5. Physical _______________ control methods include traps, temperature, pest barriers, and physical removal of pests.

6. _______________ control methods use naturally occurring organisms to help control pests.

7. Pesticides, herbicides, fungicides, insecticides, repellents and disinfectants are examples of _______________ controls.

8. Benefits realized by schools as a result of adopting an IPM program include:
   a. pest problems reduced with less use of _______________
   b. healthier, safer environment for students, staff
   c. money saved in long run
   d. fewer parent _______________

9. The key to a successful IPM program is _______________ among administration, faculty, staff, students and parents.
10. How to Put IPM to Work in a School System:

STEP 1. Implement an IPM policy should state:
   a. intent of school administration to use principles in its pest control activities.
   b. district's goals and expectations of staff and contractors as they pertain to pest control.

STEP 2. Designate for school staff and others.
   A. Custodial staff: recognize and correct conditions resulting in problems
   B. Kitchen staff: maintain, reduce sources of food, water, harborage
   C. Teachers: practice good sanitation and proper of pet food and snacks
   D. Students: practice good and proper storage of pet food and snacks
   E. Parents: be aware of pest management practices, report pest or environmental problems
   F. IPM for district:
      1. oversee pest management personnel
      2. prioritize and maintain list of needed facility
      3. ensure with laws
      4. educate staff about IPM and keeping pest control records
   G. Decide whether services will be provided in-house or by contractors.

STEP 3: Implement IPM plans.

A site plan outlines what will be done to implement IPM at an individual school or property over years.

A site plan includes schedules for building, equipment replacement, and site improvement.
Notes

Module 6: Landscape IPM

Directions: Complete the blanks in the following video outline notes as you view the videotape. Use the margin to jot down additional notes or questions you may have.

Foundations

1. Integrated Pest Management (IPM) is a ________________________________ sense, environmentally sound strategy for managing pests.

2. IPM can be thought of as working ____________________________, not hard.

3. IPM is based on knowledge. You must be able to
   a. __________________________ the pest,
   b. its habits,
   c. the ______________ it causes, and
   d. ______________ tactics.

Tactics

The IPM Pyramid

4. The foundation of the IPM pyramid is ________________________________ controls.

5. Examples of cultural controls:
   a. __________________________ resistant to pests
   b. Proper fertilization
   c. Proper pruning
   d. __________________________

6. The next section in the IPM pyramid is ________________________________ controls.

7. Mechanical controls use manpower or materials other than pesticides to suppress pests. One example is _________________________________.

8. __________________________ control is the use of beneficial organisms to control pests.

9. At the top of the IPM pyramid are __________________________ controls.

10. When using pesticides, select the least __________________________ product and use it only when needed.

**Designing Pests Out of the Landscape**

11. One effective planning technique is the __________________________ concept.

12. Using this technique, we divide the school landscape into areas of high, medium and low __________________________, where lower maintenance plants are planted in areas less likely to be viewed up close by the public.

13. Sources of information about plants:
   a. Extension agent
   b. __________________________
   c. __________________________
   d. __________________________

**Weeds**

14. A weed is a plant out of __________________________.

15. Weeds can be classified according to their life cycles:
   a. __________________________ begin each growing season as seeds and complete their life cycle in 1 year.
   b. __________________________ require 2 years to complete their life cycle.
   c. __________________________ are plants that live 2 or more years.

16. Plants also can be classified according to the width of their leaves. The two types are:
   a. __________________________ Examples: __________________________
   b. __________________________ Examples: __________________________
17. Mowing reduces crabgrass germination by up to 85 percent by building a denser turf to prevent ________________ from reaching the plant.

18. Too much or too little ________________ can encourage weeds.

19. Soil ________________ can help control weeds in turfgrass areas that have been compacted by foot or vehicle traffic. The best times for this activity are:
   a. ________________ for warm-season grasses.
   b. ________________ for cool-season grasses.

20. Edging should extend ________________ inches deep and ________________ inches above ground to exclude creeping grasses from plant beds.

21. Mulching benefits plant beds by:
   a. ________________
   b. ________________

22. Mulches should be ________________ inches deep for maximum weed control.

23. Weeds can be more frequently tolerated in ________________ maintenance zones.

24. ________________ are chemicals for controlling weeds.

25. Three safety precautions when using herbicides:
   a. ________________
   b. ________________
   c. ________________

Diseases

26. Plant pathogens include:

<table>
<thead>
<tr>
<th>Pathogen type</th>
<th>Examples / symptoms</th>
<th>How they spread</th>
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27. Plant disease occurs when three things come together (fill in the blanks):

Disease triangle

### Insects

28. Types of insect damage:

<table>
<thead>
<tr>
<th>Type of pest</th>
<th>Example</th>
<th>Damage</th>
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<tbody>
<tr>
<td>Leaf-chewers</td>
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<td>Sap feeders</td>
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<tr>
<td>Leaf-cell feeders</td>
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<td>Borers</td>
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<tr>
<td>Gall-makers</td>
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<tr>
<td>Root-feeders</td>
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29. When entire plants are affected uniformly, or different kinds of unrelated plants show the same damage, suspect ___________________________ problems.

30. ___________________________ plants are less susceptible to insect attack.

31. Cultural controls for pests include:
   a. Check ___________________________
   b. Practice ___________________________
   c. Remove ___________________________
   d. Choose ___________________________
   e. Plant ___________________________ plants.

32. ___________________________ is a drastic form of pruning that should be avoided.

33. Successful biological control programs require knowing the exact ___________________________.

34. ________________ can be applied much like regular pesticides, yet are a safe form of biological control.

35. Pesticides that pose little risk to humans or the environment are called __________. Examples include:
   a. ________________  
   b. ________________  
   c. ________________  
   d. ________________  
   e. ________________