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Integrated Pest Management for North Carolina Schools and Child Care Facilities

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REVISED EDITION 2012

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CONTENTS

ACKNOWLEDGMENTS

Funding for the original version of this manual was provided, in part, by the North Carolina Department of Agriculture & Consumer Services and by various IPM grants.

We would like to thank the pest management professionals and faculty at NC State University who reviewed this manual.

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CHAPTER 1

North Carolina Schools and Child Care Facilities Integrated Pest Management Program

INTRODUCTION

In general, most people have little tolerance for pests in and around buildings. Pests are a nuisance: they damage property, contaminate and destroy food, and sometimes transmit diseases. Research has indicated that children are especially at risk from pests. For example, cockroaches and their remains are recognized as sources of allergens that can trigger asthma attacks in children. Cockroaches, mosquitoes, flies, ticks, fleas, rodents, and birds can be involved in spreading disease-causing viruses, bacteria, and fungi.

Pest control is necessary to safeguard the health of children and other occupants of schools and child care facilities and to prevent pests from damaging property. Pest control programs that rely primarily on routine application of pesticides, however, can expose children to pesticide residues unnecessarily. Compared to adults, children are more at risk from pesticide exposure because of their rapid growth, small body size, and habits. Younger children may spend considerable time on floors (Figure 1). They touch various surfaces and objects, and they often put their hands into their mouths without washing them. These behaviors increase the potential for inadvertent exposure to pesticides.

As parents have become aware of the potential hazards to children from pesticide exposure, they have encouraged schools and child care centers to use alternative approaches that are effective and safer for use around children. In an effort to reduce the impact of pests and pesticides on the health and well-being of children and other occupants of schools, the North Carolina General Assembly passed the 2006 School Children's Health Act (SCHA). The SCHA required all school districts to adopt integrated pest management (IPM) programs by October 2011 and to initiate a plan to notify parents, guardians, and staff 72 hours in advance of any nonexempt pesticide application in school buildings and grounds. Although there is currently no law requiring child care facilities to adopt IPM programs or to provide advance notification of pesticide applications, we encourage them to shift to an IPM approach to pest control.

Note: Although school IPM programs have focused primarily on structurally related pests (ants, cockroaches, rodents), the SCHA also covers outdoor pests, including arthropods (insects, mites, spiders), vertebrates (birds, moles, voles), and weeds, as well as the control of these pests with insecticides, herbicides, and other pesticides.

Figure 1. The potential for inadvertent exposure to pesticides may be greater for children because they often spend considerable time on floors.

OVERVIEW OF INTEGRATED PEST MANAGEMENT

Definition

IPM is a comprehensive approach to pest control that combines effective, economical, environmentally sound, and socially acceptable methods to prevent and solve pest problems. IPM emphasizes pest prevention and provides a decision-making process for determining if, when, and where pest suppression is needed and what control tactics are appropriate.

Goal

The overall goal of IPM in schools and child care facilities is to maintain a safe environment for building occupants by preventing, reducing, or eliminating pest problems using safe and effective methods. The keys to IPM are:

- Identifying any current pest problems and knowing the most common potential pests that affect schools and child care facilities, both indoors and outdoors
- Knowing the specific resources (such as food, water, and shelter) needed by each pest
- Identifying the availability of those resources in and around the facility
- Eliminating or reducing access to those resources using a variety of methods (sanitation, exclusion, habitat modification)
- Inspecting and monitoring, and applying pesticides only when needed

IPM programs never use pesticides on a routine schedule or apply them to all surfaces. Pesticides are used only when and where inspection and monitoring indicate that the pest population has reached an unacceptable level. If a pesticide treatment is needed, the chemical, the application method, and the timing of the treatment are chosen to be effective against pests and least hazardous for humans. Chemicals are used in their least toxic form, and placement or application techniques (such as baits or crack-and-crevice treatments) are selected to minimize human exposure.

Figure 2. Careful inspection for the presence of pests or evidence of pests is a critical component of a successful IPM program.

Components of IPM Programs

There are seven essential components of IPM:

1. Inspection and monitoring

Inspection helps find evidence of pests as well as conditions that are conducive to their presence (Figure 2). Monitoring helps detect pest problems early, before they have an opportunity to get out of hand. Keep a simple log of pest sightings. Be sure to include *when* and *where* pests were seen.

2. Identification

Correct pest identification is crucial to IPM. For pest management to be effective, corrective actions often must be tailored to the pests that are actually present.

3. Sanitation

The goal of sanitation is to remove sources of food and water, which pests need to survive and thrive.

4. Pest exclusion

Pest exclusion begins with a thorough inspection to locate possible points of entry, both indoors and on the exterior of the building. Once entry points are identified, steps are taken to make it more difficult for pests to enter.

5. Habitat modification

Habitat modification includes altering the environment to make it unfavorable for pest habitation.

6. Treatment of existing pest problems

In IPM programs, pesticides should be used selectively and only when and where needed. Many pests, such as most ants, crickets, millipedes, and other occasional invaders, pose no threat to people and can be removed by sweeping or vacuuming. Pesticides are sometimes necessary to eliminate heavy infestations of pests or those that pose a health hazard, such as fire ants or wasps. However, pesticides should never be applied on a routine basis or on a broad scale. Nonchemical control tactics, such as sticky traps and vacuuming, should be the first methods tried. For persistent or dangerous pest problems, use the least toxic chemical formulations, and apply these products in accordance with their label specifications.

7. Accurate record keeping

Keeping accurate records of past and current pest management activities is just as important as the other IPM components. Complete and accurate records aid in planning for certain types of seasonally recurring pest problems (primarily outdoors). They show what pest management tactics are being used or have been used previously and provide insight into what is working or what has worked in the past, as well as what is not effective for a particular pest problem.

Examples of records that should be kept include the following:

- Inspection reports
- Pest-sighting logs
- IPM work orders
- Notification registry
- Notification letters sent
- Pesticide labels and Material Safety Data Sheet (MSDS) documents for all pesticides and other pest control products used on facility grounds

NORTH CAROLINA SCHOOL IPM LAWS AND REGULATIONS

To reduce the impact of pests and pesticides on the health and well-being of children and other occupants of schools, the North Carolina General Assembly passed the SCHA in 2006. The SCHA requires that all North Carolina public schools:

1. Annually notify the students' parents and guardians, as well as school staff, of the schedule of pesticide use on school property. Under the SCHA, "pesticide use" includes both insecticides and herbicides.
2. Provide notification regarding an unscheduled or nonexempt pesticide application* on school grounds at least 72 hours (whenever possible) in advance of the treatment.
3. Implement an IPM program by October 1, 2011

Note: While the SCHA applies only to North Carolina public schools and not to private schools and child care facilities, all principals and facility directors and managers should adopt IPM programs.

* "Exempt pesticide applications" are those using EPA toxicity category IV products ("CAUTION" signal word not required) or products applied as crack-and-crevice treatments or as self-contained baits.

CHAPTER 2

Implementing an IPM Program for Schools and Child Care Facilities

COMPONENTS OF AN IPM PROGRAM

Communication

The idea behind IPM is not simply to teach people about pests but also to involve them in the pest management program. All involved should understand that they play an important part in IPM and that the success of the IPM program is in their best interest.

Communication about IPM can take many forms, such as informational brochures and handouts, service and sanitation reports, an IPM logbook, conversations between technicians and staff, features in school or child care facility newsletters, notes sent home to parents, presentations to school assemblies, PTA meetings, and staff meetings.

Education

Education is a critical and cost-effective pest management strategy. People need to recognize that the ways they store food and dispose of waste have a significant impact on pest management. Education helps occupants distinguish between incidental pest occurrences and actual pest infestations. This knowledge reduces the anxiety that often produces a demand for immediate and often unnecessary chemical remedial action when a few pests are sighted, and it allows for monitoring to assess the need for any remedial action. Education can also increase people's tolerance of harmless organisms in their environment so they don't insist that pesticides be applied for such nonpest situations. In addition, education increases understanding of the benefits of a holistic approach to problem solving. Science class projects that include hands-on experience can teach children about IPM, which has a long-term effect on the direction of pest management in the United States as these students grow up to become consumers, educators, policymakers, and researchers (Figure 3).

Inspection and Monitoring

An IPM program should begin with a walk-through or initial inspection of the facility to evaluate pest management needs. This process includes identifying problem areas and determining whether structural features or management practices contribute to pest infestations. Interviews with key building occupants (administrative office staff, custodians, cafeteria managers, teachers, and other staff) can also yield critical information for planning the IPM program. See chapter 4 of this manual for samples of IPM inspection report forms.

Figure 3. Educating students, teachers, staff, and parents about their role in the IPM program will help ensure that the program is a success.

Monitoring includes routine and ongoing inspections to look for evidence of pests and conditions that may encourage infestation. Information from these inspections is always carefully recorded on appropriate data sheets, maps of the school or child care facility grounds, and floor plans of buildings.

Monitoring relies on a combination of communication with building occupants, visual inspection, and trapping to detect pest activity. Monitoring helps identify entry points into buildings and places where pests are finding food, water, and harborage. Use sticky traps and glue boards to detect pests and determine the effectiveness of your control efforts. Place the traps under sinks, under shelves, and along walls in storage rooms, kitchens, bathrooms, and other critical areas where pests are likely to be found (Figure 4). Check traps for pests or pest droppings, and always make sure traps are placed out of the reach of children and where they won't be disturbed or damaged by routine maintenance and cleaning activities.

Monitoring school or child care buildings involves the routine observation and recording of:

- The condition of the building inside and out (structural deficiencies, openings that allow pests to enter, conditions that provide pest harborage)

Figure 4. Monitoring traps should be placed in areas where pests are likely to be found.

- The level of sanitation inside and out (waste-disposal procedures, level of cleanliness, conditions that supply food to pests)
- Pest damage and the number and location of pests or evidence of pest activity (rodent droppings, ants foraging, cockroaches caught in traps)
- Management activities and their effects on the pest population (pest exclusion, cleaning, setting out traps, applying pesticides)

Monitoring helps you decide whether action is necessary. Monitoring can:

- Show whether the pest population is increasing or decreasing. Inspection of problem sites on different occasions will help determine whether a pest situation warrants action.
- Detect pests early, before they become a problem.
- Provide information for discussions about progress in meeting pest management objectives. Without monitoring records, complaints or pest observations by occupants are the only source of information to direct pest control activities.

Monitoring helps to determine what kinds of actions are needed, where action is needed, and when it is needed. Monitoring will:

- Show where pest-proofing, sanitation, and other preventive measures are most needed.
- Pinpoint pest infestations and hot spots, and help target pesticide treatments.
- Help to time and target treatments to the most vulnerable stage in the pest life cycle.
- Help plan treatments to avoid interfering with school or child care activities and provide sufficient time for parent and staff notification, if necessary.

Monitoring also measures the effectiveness of pest control actions and provides baseline data for evaluation and fine-tuning. You should use monitoring data to answer the following questions:

- Did the corrective action reduce the number of pests to acceptable levels? If not, can you determine why? If yes, for how long were corrective measures effective?
- Is additional action needed?
- Were there any undesirable side effects?
- Does the action plan need to be adjusted?

Pest Identification

Assistance with correct pest identification is available from several sources (see chapter 5 of this manual for a list of resources). Once a pest has been correctly identified, you should review information about its biology and behavior. This information provides clues about what to look for during monitoring and what weaknesses in the pest's life cycle can be exploited for more effective management. If damage is the only evidence of pest activity, consider a different monitoring strategy, such as changing your inspection schedule (and method) to match peak time for pest activity.

Sanitation

Sanitation is the most important nonchemical pest control measure. Sanitation reduces or eliminates food and water available to pests and improves the efficacy of other pest control measures, such as baiting. For effective pest management, good sanitation is needed in all areas of the buildings (food-service areas, classrooms, science labs, restrooms, locker rooms, janitorial closets, floor and shower drains). Outside areas are just as critical. Check around the foundation and areas adjacent to the buildings (flower beds, shrubbery, playgrounds, dumpsters). Sanitation practices that discourage pests include the following:

- Clean up spills as soon as possible.
- Do not leave full trash cans or dirty dishes overnight.

- Clean garbage disposal and floor drains routinely to eliminate food debris.
- Store open food in plastic or glass containers with lids that fit tightly.
- Place garbage in trash cans with tight-fitting lids. Use plastic liners in trash cans and recycling bins.
- Clean food preparation equipment and areas after use, and remove grease from vents, ovens, and stoves.
- Periodically move equipment or shelves to clean hard-to-reach areas.
- Repair leaking pipes, dripping faucets, and drainage problems.
- Keep surfaces dry overnight, and eliminate standing water.
- Clean and dry mop buckets after use, and hang the mop vertically to dry.
- Keep all areas free of debris and clutter.
- Vacuum carpeted areas thoroughly and frequently.

Exclusion

Pest exclusion begins with a thorough inspection to locate possible points of entry, both indoors and on the exterior of the building. Once entry points are identified, take steps to make it more difficult for pests to enter.

- Seal holes and cracks on the outsides of buildings. Focus on gaps around pipes, ducts, and window and door frames.
- Install door sweeps on exterior doors, and don't keep doors propped open.
- Make sure window screens fit properly and are not damaged (Figure 5).

Figure 5. Pest exclusion is an important component of IPM. Make sure all window and door screens fit properly and are not damaged.

Figure 6. Storage areas should be organized and free of clutter to facilitate inspection and monitoring and to limit pest harborage areas.

Habitat Modification

Habitat modification involves altering the environment to make it unfavorable for pest habitation.

- Remove piles of paper, cardboard boxes, and other clutter that gives pests a place to hide and reproduce.
- Organize storage rooms so that they are easily inspected, and clean them periodically (Figure 6).
- Use movable, industrial-grade stainless-steel wire shelving to help reduce cockroach and rodent habitat and to facilitate cleanup of spills and monitoring for problems.
- Keep relative humidity below 50 percent in food storage areas.
- Inspect deliveries for damaged product and hitchhiking pests. Remove items from cardboard boxes, and dispose of the boxes as soon as possible.

Figure 7. Branches and limbs that touch buildings should be trimmed back so that ants and other insects cannot use them to access buildings.

- Avoid storing items in cardboard boxes; they make great harborage areas for roaches and mice.
- If possible, use pest-resistant structural materials, fixtures, and furnishings (for example, purchase cafeteria tables with sealed leg ends to eliminate harborage for cockroaches).
- Eliminate drop ceilings to take away an entire pest habitat within the school, if possible.
- In high-traffic areas, use floor coverings that are easier to clean, such as vinyl tiles, instead of carpeting.
- Pay attention to landscaping practices that contribute to pest problems. For example, plants growing too close to walls may encourage ant, rodent, and other pest problems. Ants can use limbs and branches that touch structures to avoid chemical barrier treatments and to access buildings (Figure 7). Removing dense vegetation near buildings will eliminate places where pests can hide and reproduce. If possible, replace organic mulch with inorganic mulch, such as decorative gravel, around building foundations (Figure 8).
- Maintain healthy stands of turf, and use mulches judiciously to reduce weeds.

Figure 8. Use inorganic mulch, such as decorative gravel, around buildings whenever possible to eliminate potential harborage areas for pests.

Physical and Mechanical Control

Capture and removal

With individual pests (such as a lone wasp, spider, or ant), capture and removal is a quick, effective, and nonlethal method of control.

Vacuum cleaners

The vacuum cleaner is one of the most effective pest management tools. It can be used to remove live and dead pests, fecal droppings, and food particles on which pests may feed. Some vacuums have special attachments for pest control and can pull cockroaches out of hiding places or collect spiders. Specialty vacuums equipped with HEPA filters can remove allergens from buildings.

Trapping

Traps play an important role in pest control, and a wide variety of traps are available. Traps are mechanical devices that often use an attractant (food, food odors, pheromones) to draw the pest to the trap. Some traps, including cockroach traps and various pheromone traps, are used mainly for monitoring pest presence, although they may be able to control small pest infestations in some situations. Other traps include the familiar snap traps and glue boards for mouse and rat control, and black-light traps and flypaper for flies. Traps can also be an option for invasive wildlife, such as raccoons, opossums, and even some bird species.

Temperature, lights, and air curtains

Freezing can kill trapped insects such as clothes moths and the eggs and larvae of beetles and moths that destroy grain. Placing infested food packages in a freezer (not the self-defrosting kind) at 0°F (–18°C) for 4 days will kill pantry pests before the packages are discarded and will prevent reinfestation of other stored food. Placing items in a clothes dryer on the highest setting (120°F minimum) for 30 minutes will kill all stages of bed bugs. Make sure items can be heated to such temperatures without damaging them, or simply discard them appropriately. Boiling water is sometimes used as an option for weed and fire ant control, although its use comes with some handling hazards.

Nocturnal (night-active) insects are attracted to metal halide lights. Consider replacing them with less attractive high-pressure sodium vapor lamps, which will reduce invasion of buildings by the occasional pests that are attracted to exterior lights.

Installing air curtains ("fly fans") or vinyl strips on external doors that are open frequently can prevent flying insects from entering buildings (Figure 9). Air curtains should be installed to start automatically whenever the door is opened.

Figure 9. Air curtains installed above doors can help exclude flying pests.

Figure 10. Crack-and-crevice applications should be used whenever possible to minimize potential exposure of occupants to pesticides.

Weeding

Mechanical removal of weeds by hand or machine is an alternative to using herbicides.

Pesticides

Although pesticides have a role in IPM programs for schools and child care facilities, they should be used with caution and only in very specific situations. The risk of harm from exposure to pesticides is relatively higher for children than for adults exposed to the same level of chemicals. When chemical controls are needed, select reduced-risk formulations such as baits, and use placements that will minimize exposure to occupants (e.g., crack-and-crevice or void treatments).

The following guidelines are recommended for the judicious use of pesticides in and around school and child care buildings:

- Pesticides should be applied selectively and judiciously according to need, not on a routine or predetermined calendar schedule.

- Follow label directions for rates, concentrations, application methods, protective clothing, ventilation of treated areas, and any reentry intervals (particularly when using chemicals outdoors on playgrounds and athletic fields). The label is a legal document that must be read and followed carefully whenever using any pesticide.
- Use application methods and formulations that reduce the amount of pesticide used and minimize the risk of exposing occupants to pesticides.
- Avoid using volatile formulations that may linger in the air.
- Whenever possible, use crack-and-crevice applications. These applications target harborage sites and maximize exposure of the pest to the pesticide while minimizing pesticide exposure for the occupants (Figure 10).
- Spot treatments in combination with improved sanitation, pest-proofing, and other nonchemical methods can minimize risks from pesticide exposure. (Note: The EPA defines an individual spot-treatment area as 2 square feet or less).
- Use appropriate bait formulations to target harborages and hot spots. Baits should be placed in areas that are inaccessible to children.
- Remove or cover aquariums or cages containing animals before any treatments. Check product labels for specific instructions on treating rooms where aquariums are present.
- Rodenticides should not be used indoors. Aside from the potential for children to contact the bait, another concern is the likelihood that rodents will die indoors in open areas, under equipment, or in wall voids where they can create a significant odor problem and attract other pests, such as flies. Because rodents may die indoors, it might be preferable to use traps and glue boards indoors (in tamper-resistant bait boxes). However, traps and glue boards must be checked regularly and dead rodents removed immediately. Outdoors, baiting should be used very selectively and only in tamper-resistant bait boxes (Figure 11). Use only paraffinized bait blocks (never use pelletized bait formulations) to reduce the likelihood that a rodent can remove the bait. In most cases, snap traps in tamper-resistant bait boxes are preferable outdoors to baits around schools and child care facilities.
- If there is a school or child care facility policy concerning notification, be sure to follow guidelines carefully. At a minimum, record all control measures during each treatment. Current regulations of the North Carolina Department of Agriculture & Consumer Services, Structural Pest Control & Pesticide Division, require pest management professionals to maintain records of any pesticide applications so as to ensure written documentation and help prevent misunderstandings.
- Pay particular attention to individuals who may be sensitive to pesticides. The IPM coordinator is the primary contact for all matters related to pest control, and serves as the liaison between building occupants and the pest management professional. He and she should have information from staff, parents, and guardians about members of the school or child care community who may be sensitive to pesticides.
- Keep the pesticide label (the information printed on or attached to the pesticide container), the pesticide labeling (which comprises the label and all other product information received from the manufacturer when the product is purchased), MSDS documents, and consumer information sheets easily accessible and available to anyone who may request the information.

Figure 11. Rodent bait should always be placed in tamper-resistant bait boxes.

Selecting Pesticides

Reduced-risk pesticides have low or no acute or chronic toxicity to humans. They may affect a narrower range of pest species, which means you need to be more selective in using them. They may also be formulated and applied in a manner that limits or eliminates the exposure of humans and other nontarget organisms. Pesticides are classified according to their potential hazard to humans, animals, and the environment. "Restricted use" pesticides are the most hazardous. For that reason, they can only be purchased and used by certified applicators. "General use" pesticides are the type used by the public. They can still be extremely hazardous if not used properly.

Pesticides can also be identified by one of the following signal words on the label: "DANGER," "WARNING," or "CAUTION." Pesticide products with the signal word "DANGER" pose the greatest potential hazard to humans, while those with "CAUTION" have the least potential hazard. Some pesticides (EPA toxicity category IV) are not required to have "CAUTION" on their label, but the manufacturer may choose to put "CAUTION" on the label regardless. If pesticides are deemed necessary to control pests effectively in schools or child care facilities, appropriate products with the signal word "CAUTION" should be selected. These might include insect and rodent baits in tamper-resistant containers or stations, cockroach baits that can be placed in cracks and crevices,

insect growth regulators, or inorganic pesticides, such as boric acid, diatomaceous earth, and silica gel.

Whenever possible, use appropriate nonvolatile baits (paste, gel, or containerized forms) that contain very small amounts of active ingredient. Some pests, such as cockroaches, can develop resistance to certain pesticides when they are used intensively or exclusively. If pesticides are used for control, rotate among classes of pesticides (switch between pesticides with different modes of action).

Information on pesticide toxicity can be obtained from the pesticide label, the MSDS, the manufacturer, or several other sources, including the Cooperative Extension Service, the National Pesticide Information Network, and nonprofit organizations (see chapter 5, "Resources").

Currently, the SCHA restricts all types of pesticide applications except category IV products, as well as bait applications and crack-and-crevice treatments.

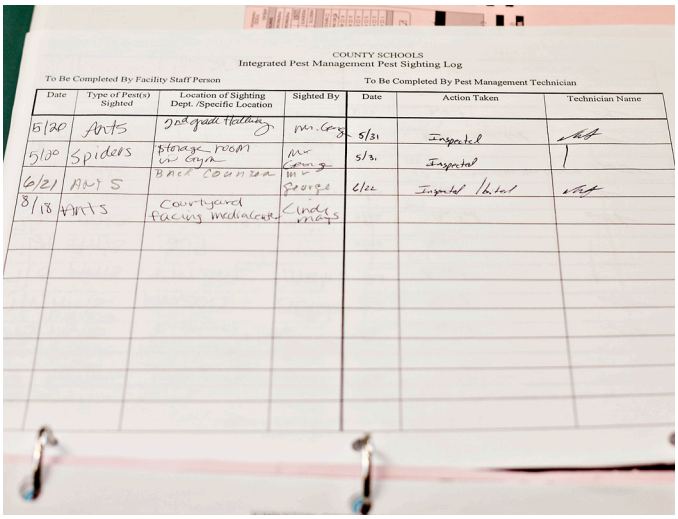
Record Keeping

The success of any IPM program depends heavily on an accurate record-keeping system. Keep a simple log of pest sightings (Figure 12). Be sure to include when and where pests occur. The size of the school or child care facility and number of buildings will help determine how many logbooks should be maintained. Logbooks can be established for each building or other facility as determined by the IPM coordinator. Place logbooks in a central location such as the main office, teachers' workroom, or cafeteria so employees can readily access them to note pest observations and pest management professionals can check them regularly. (See chapter 4 for a sample pest-sighting log.) Using a pest-sighting log and a good record-keeping system for pest management activities will:

- Allow schools and child care facilities to assess whether their IPM program objectives are being met.
- Lead to more efficient decision making and procuring of needed pest control supplies (if pest control is done in-house).
- Show changes in the site's resource environment (availability of resources for pests), physical environment (exclusion and repairs), pest population (size and location), and the amount of damage or loss caused by pests.
- Provide an ongoing record to help plan for control of seasonal pests or track possible sources of recurring pest problems.
- Preserve important information when employees leave or retire and make it easy to pass this information from one employee to another.
- Help address safety issues that might lead to litigation.

The following items should be kept in the logbook:

- A copy of the approved IPM policy and/or plan and pest control service schedule (regardless of whether the service is in-house or contracted). Remember, a pest control service should not use pesticides on a routine, prescheduled basis. Instead, regular inspection and monitoring, recommendations to correct sanitation issues and structural deficiencies, and other nonchemical control methods should be used first. Pesticides should be used only if deemed necessary based on careful inspection and monitoring. Chapter 4 contains a sample IPM policy.
- Contact information for the IPM coordinator, the contracted pest management professional (if applicable), the poison control center, and similar agencies.
- Maps of the grounds and floor plans of buildings showing sensitive areas (cafeteria, computer rooms, science laboratories, nurseries), the location of pest activity, location of detection and monitoring devices, and location of bait stations in and around the site.
- Pest surveillance record sheets that show the type and number of pests or other indicators of pest population levels found in the pest monitoring program on the site.
- Copies of the current label, labeling, and MSDS for each EPA-registered pesticide product used. This information should be updated as needed.
- Pest management service reports showing dates and areas where action was taken and recommendations for structural repairs and modification.
- Documentation of quality control assessments by the contractor or IPM coordinator.


COUNTY SCHOOLS
Integrated Pest Management Pest Sighting Log

To Be Completed By Facility Staff Person | To Be Completed By Pest Management Technician

Date	Type of Pest(s) Sighted	Location of Sighting Dept. /Specific Location	Sighted By	Date	Action Taken	Technician Name
5/20	Ants	2nd grade hallway	Mr. Gray	5/21	Inspected	
5/30	Spiders	storage room in Gym	Mr. Gray	5/31	Inspected	
6/21	Ants	Back courtyard	Mr. George	6/22	Inspected / treated	
8/18	Ants	Courtyard facing Medialcrest	Cindy Mays			

Figure 12. A simple log of any pest sightings that includes when and where pests are sighted should be maintained.

The IPM records should be reviewed regularly by the pest management professional and IPM coordinator to identify pest trends and problem areas. It is a good idea to create graphs, bar charts, or other visual representations of the information collected. This makes pest patterns emerge quickly, facilitating decision making and updating the facility on progress in implementing the IPM plan.

IDENTIFYING ROLES AND RESPONSIBILITIES

The success of any IPM program depends on the cooperation of all the people involved.

Committee

An IPM committee should be created to work with the IPM coordinator in overseeing the program. The committee is responsible for evaluating the IPM program and conferring with the IPM coordinator on any necessary changes. The committee should consist of teachers, administrators, and parents, as well as other facilities staff, as applicable (maintenance, food service, and grounds staff).

School or Child Care Personnel

IPM coordinator

The IPM coordinator is at the center of the implementation process and is critical to its success. He or she will facilitate communication among all parties involved in the IPM program and ensure that the facility's pest management decisions and actions adhere to the IPM program. The facility manager or director of maintenance of a school is frequently appointed IPM coordinator. In a child care facility this may be the director, although any other person who is interested in ensuring a healthy environment for students and staff is also a candidate. The IPM coordinator should be capable of influencing policy and practices at the facility.

The role of the IPM coordinator is to:

- Serve as the primary contact for the pest control company and pest management professional (if pest control services are contracted).
- Oversee the daily operation of the IPM program and evaluate its progress in achieving pest management objectives.
- Serve as the primary contact for inquiries about pest management and provide information requested by facility personnel, parents, and the general public about the pest management plan.
- Provide local training to school staff and students as needed or requested.
- Update facility occupants and decision makers about progress in implementing the IPM program. Keep accurate records about the IPM program, including pest sightings; the type, amount, and location of all pesticide treatments; dates of each treatment and other IPM activities; any pesticide-related complaints; and needed sanitation, structural, and landscape improvements. The IPM coordinator also evaluates the effectiveness of any treatments and addresses any shortcomings with the pest control service when a treatment doesn't work as expected.
- Implement IPM recommendations from the pest control technician (such as cleaning and repairs) by creating work orders or communicating necessary behavioral changes to principals, teachers, or staff.
- Maintain and make available pesticide labels, labeling, and MSDS documents.

Administrators and decision makers

Administrators and decision makers should understand the legal consequences of improper pesticide use, pesticide safety issues, and decision making about pesticides and their appropriate use in schools and child care facilities. This group may include superintendents and board members, school business officials, child care facility directors, maintenance facilities directors, child nutrition directors, and purchasing agents or contracting officers.

The role of administrators is to:

- Establish and implement a clear IPM policy for their school district or child care facility.
- Select a qualified IPM coordinator.
- Authorize the IPM program, commit the resources needed for pest management, and select a pest management professional (if applicable) who can meet the criteria of the IPM program as defined in the contract.
- Evaluate whether IPM objectives are being met.

Teachers, staff, and students

The cooperation of students and teachers is essential to the success of any IPM program. Classrooms, lockers, desks, and cubbyholes are key sites for pest problems in school and child care facility buildings.

Students and teachers should:

- Clean up food leftovers and store classroom foods properly in pest-proof containers (for example, plastic containers with tight-fitting lids), including snacks, pet food, and food items used in arts and crafts activities. Keep classrooms, cubbyholes, lockers, desks, and other storage areas clean and uncluttered.
- Follow IPM guidelines for reporting pest problems. For example, promptly record pest problems on the pest-sighting log sheets.
- Report conditions that are conducive to pests in and around the building, such as leaky faucets, damaged trash can lids, or loose baseboards.
- NEVER apply pesticides on school property. (Note: This excludes curriculum-related activities such as agricultural and horticultural classes.)

Figure 13. Proper sanitation is critical to a successful IPM program. Floor drains should be cleaned periodically to reduce the availability of food and water to pests.

Kitchen and cafeteria staff

Food handling and preparation areas are the most crucial areas for pest management because they provide all the resources (food, water, and shelter) that pests need. It is critical that cafeteria staff understand the importance of good sanitation, kitchen management, and proper food storage. Kitchen and cafeteria staff should also participate in periodic IPM training.

The roles of kitchen and cafeteria staff include:

- Reduce the availability of resources by practicing proper sanitation, such as cleaning floor drains, cleaning inside and under equipment and racks, and cleaning up spills quickly (Figure 13).
- Recognize, locate, and eliminate pest harborage areas.
- Report pest problems and pest-conducive conditions as dictated in the facility IPM plan.
- Store food off the floor in pest-proof containers.
- Keep storage areas clean and uncluttered.
- Check incoming deliveries for signs of damage or infestation. Practice FIFO (first in, first out): use older stock first.
- Leave pesticide applications to trained and certified pest management professionals only. Kitchen and cafeteria staff should not apply pesticides.

Custodial staff

Custodial staff play a significant role in any IPM program because they are familiar with the buildings they maintain. They are most likely to see pests, evidence of pests, or conditions conducive to pests in and around the buildings. With training, custodians can become instrumental in the success of the IPM program, because many pest problems are prevented or reduced through good cultural practices inside and outside the building.

Custodial staff members are responsible for:

- Reporting incidents and locations of pest problems
- Recognizing and reporting pest-conducive conditions, such as water leaks, and potential pest entry points into buildings (Figure 14)
- Correcting many of the conditions that may lead to pest problems

Maintenance staff

Staff (or contractors) in charge of facility maintenance and repair, landscaping design and maintenance, HVAC services, electrical services, plumbing, and roofing play significant parts in an IPM program. Through their services, maintenance staff can minimize or eliminate the availability of resources that favor pest infestations.

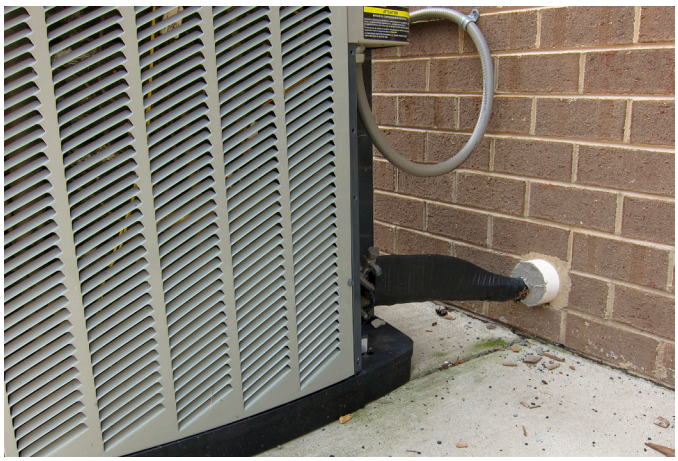


Figure 14. Any gaps around pipes that enter buildings should be sealed to help keep pests excluded.

Parents and community members

Parents need to be aware of the current pest management practices in their children's school or child care facility. Active interest and concern from parents can motivate facility staff to provide effective and safe pest control. Parents and the community can and should express their views to the IPM coordinator, school administrators, the PTA, and school boards. Parents should have representation on IPM advisory committees.

Pest Management Professionals and In-House Pest Management Technicians

Whether your pest control services are performed by in-house staff or by a contracted pest management professional, the services must be performed by individuals who have technical training, knowledge, and experience in integrated pest management. The pesticide applicator is an inspector, pest identifier, communicator, record keeper, and chief decision maker

for pest management tactics. He or she must be sensitive to the health and well-being of students and staff. The pesticide applicator should have a thorough understanding of the goals and objectives of the IPM program, the pest management contract (if services are contracted), and the facility IPM policy and its implications.

A pesticide applicator who practices IPM plays a much more active and interactive role than a conventional pesticide applicator. He or she spends more time inspecting the school and communicating with school workers than applying pesticides (Figure 15). In addition, he or she recommends and applies the appropriate pest management methods based on knowledge of the site and information about specific pests and their biology.

In an IPM program, the pesticide applicator should:

- Be certified or licensed to conduct pest control. Commercial pest management professionals must be licensed or must work under a licensed supervisor.
- Regularly inspect the school to identify conditions, procedures, and practices that encourage pests. This information is then reported to the IPM coordinator with recommendations for changes that can support the pest management effort.
- Monitor the site to identify pests and determine the level of pest presence.
- Provide written pest management recommendations to the facility IPM coordinator and take pest control actions to achieve pest management objectives. If a pesticide application is deemed necessary, the product and application method selected should minimize risk to occupants.
- Keep accurate records of any control actions taken. Monitor the site subsequently to determine if the actions taken are successful.

Figure 15. In an IPM program more time is spent inspecting and monitoring than applying pesticides.

- Routinely check the facility's IPM log(s) for records of new pest sightings and requests for pest control and to determine if the school or child care facility administration has implemented the recommendations for structural modifications or behavioral changes that are needed to discourage pests from entering or establishing.
- Notify the IPM coordinator if there is a need to use nonexempt pesticides (applies to schools following the SCHA).
- Provide periodic written or oral reports showing progress in achieving IPM program objectives.

SETTING UP YOUR IPM PROGRAM

(Note: Adapted with permission from the IPM Technical Resource Center, Department of Entomology, Purdue University.)

IPM is a common-sense approach to dealing with pests that emphasizes pest prevention and provides a decision-making process for determining if, when, and where pest suppression is needed and what control tactics are appropriate. Take the following steps to help transition your school or child care facility to IPM.

1. **Adopt an IPM policy.** A clear IPM policy is necessary for successful transition from a conventional pesticide-based program to an IPM program. The policy statement explains the intention of a school or child care facility to implement an IPM program. It provides specific goals, objectives, and expectations for the program and the education and involvement of staff and contractors. The IPM policy allows the entire community to participate in developing the IPM program and provides the school or child care facility with an effective way to respond to questions from the public. A sample IPM policy can be found in chapter 4 of this manual.
2. **Designate an IPM coordinator.**
3. **Educate staff, faculty, and parents about the IPM program.** Your IPM coordinator can help with this education effort. In addition, see chapter 5 for educational resources.
4. **Implement pest prevention.** These steps for preventing and managing pests are ongoing tasks requiring teamwork and participation from all parties:
   a. **Sanitation**
   b. **Pest exclusion**
   c. **Habitat modification**
   d. **Pesticides, as deemed necessary based on inspection and monitoring.**
5. **Contract with the right pest control company** (not applicable if pest control is done in-house). It is important to contract with a pest management professional who is qualified to deliver IPM services. See chapter 3 of this manual for information on contracting with pest control companies.

6. **Create pest-specific IPM action plans.** Establish tolerance levels and an action plan for each pest. Determine where and under what conditions pest control activities will take place. Doing so will prevent the unnecessary use of pesticides. For example, little action may be required if a couple of flies are found inside a classroom; the action may be as simple as making sure doors and windows stay closed. On the other hand, there is little tolerance for cockroaches, ants, mice, flies, and other pests found in areas where food is stored, prepared, or served. Just a few pests in this type of area may require a more extensive action plan. See chapter 4, "Sample Forms," for examples of pest-specific IPM action plans.
7. **Treat existing pest problems.**
8. **Set up procedures for notifying parents and staff.** Set up reliable notification procedures when nonexempt pesticides are applied.

EVALUATING YOUR IPM PROGRAM

One of the most important components of IPM is evaluating how well the program is working, along with fine-tuning it when necessary. Every component of the IPM program will need objectives and criteria for measuring success. In the evaluation step, the IPM coordinator determines whether all the necessary components were actually developed and whether the components are successful.

After two or three periods of fine-tuning the habitat, redesigning or repairing parts of the school, or changing behavioral practices to discourage pests, many pest problems should diminish or even disappear. Once this point is reached, periodic monitoring rather than remedial pest control measures may be all that is needed. However, monitoring must continue at regularly prescribed intervals so that pest problems do not recur or so they can be addressed quickly.

After evaluation, the facility should receive a summary report that notes the current conditions, progress made against particular pests or conditions, remaining problems, and recommendations for additional changes.

Use the IPM program assessment tool found in chapter 4 of this manual to help you evaluate your IPM program.

CHAPTER 3

Selecting IPM Services in Schools and Child Care Facilities

The first decision for a school or child care facility is whether to use in-house staff or a contracted service for the IPM program. Both approaches have advantages and disadvantages that should be considered thoroughly before deciding how to proceed. In most North Carolina public schools, landscape pest management (primarily turf) is more often handled in-house by facilities staff, maintenance staff, or athletic staff at the school. As stated previously, the same notification requirements for pesticide use inside buildings also apply to landscape pest management.

PEST CONTROL BY IN-HOUSE PERSONNEL

Advantages

- Compared to contracted pest control services, school pest management personnel may find it easier to communicate with students, teachers, and other employees and to develop a rapport with them. For the program to succeed, all individuals in the facility need to cooperate.
- When a school or child care facility employee performs pest control services, the organization may find it efficient to incorporate some pest control activities with other maintenance activities performed by in-house employees.
- Because in-house personnel are around the facility more frequently, they are more likely to identify pest problems before they become serious.
- When in-house personnel perform pest control, there is no need to develop a bid invitation. This eliminates the potential difficulty of choosing a pest control firm based on capability rather than simply selecting the company with the lowest bid.
- Maintenance supervisors or buildings and grounds supervisors have greater control over personnel selection and performance and thus greater influence over the quality of pest control services performed by these employees.

Disadvantages

- Adequate and safe facilities and service vehicles for storing and transporting pesticides and pest control equipment must be found and maintained.
- The potential liability of the school with regard to pesticide use is probably higher with an in-house program.
- Because some pesticides must be applied when the facility is closed (after school hours, weekends, or holidays), employee work schedules may be complicated, particularly if the employee performs other jobs besides pest control.
- Certifying an employee to apply pesticides on school or child care facility property will require time and expense for the certification exams and cards. In addition, all pesticide applicators must attend recertification training in order to maintain their status as certified applicators.

CONTRACTED PEST CONTROL SERVICES

Advantages

- Professional pest control personnel usually have a broader range of experience, ongoing training, and greater familiarity with the full range of treatment techniques and potentially expensive equipment available to control pests safely and effectively. By contracting with an outside pest control company, the school district or child care facility eliminates or reduces the need to train and maintain pesticide applicator certification for employees, although facilities are encouraged to have state-certified applicators who can better evaluate the quality of the work performed by the contractor.

- Using contracted services can reduce potential liability of the school system or child care facility with regard to the use and storage of pesticides. The need for locating a special storage site for pesticides and equipment is eliminated.
- There are times when pest control activities must be performed after hours or on weekends to meet reentry interval requirements set by the state or county. By hiring a contractor, the facility avoids the need for overtime expenses.
- Contracted pest control services can provide school administrators the flexibility of using specialized and professional labor as needed, as opposed to investing in the development of in-house capabilities that may not be used on a regular or continuous basis.

Disadvantages

- Communication between contracted individuals and employees may not be as easily developed as with an in-house program.
- School districts and child care facilities must develop a bid invitation for contracted services and then have employees who can evaluate the bids and choose a pest control firm based on capability rather than simply on the lowest bid.

HOW TO HIRE AN IPM CONTRACTOR

A good pest management professional (experienced with IPM) will become your partner in pest control. He or she will provide effective pest management and will recommend sanitation, exclusion, and habitat modifications that help prevent pest problems.

Before hiring a contractor, take these steps:

1. Call several companies. Introduce yourself and explain your interest in safer, more effective pest control through integrated pest management. Ask if they offer IPM services. If they do not offer IPM, call other companies.
2. Ask about the components of their IPM services. Services should include inspection, monitoring, recommendations for preventing pest problems, treating problems with traps and the least toxic pesticides, and providing service reports. Their technicians must understand that application of pesticides other than baits and other exempt pesticides requires your explicit permission (and advance notice to parents and school personnel).
3. Ask how the technician begins a routine service. Initial inspection is an important part of IPM. Be careful of a technician without a flashlight or those who say they provide IPM but don't thoroughly inspect the facility. They need to be aware of how the environment—inside and out—contributes to pest problems.
4. Ask the company to describe how it would handle a situation such as a cockroach problem in food service versus in a classroom. There are many potential responses to this question. Ideal candidates will express their plans to identify the cockroach species and look into sanitation and water issues. They would also determine where roaches are living and how they may have gotten there. The technician should make recommendations for removing food, water, and shelter. Finally, they would preferably use a bait (gel or bait stations) to solve the problem.
5. Ask if you will receive service reports and written recommendations that you can implement to prevent pest problems. Service reports and IPM recommendations will help you prevent pest problems by removing pests' access to food, water, and shelter.
6. Ask the company for references from other IPM customers, and contact those accounts.
7. Use an IPM contract that meets the needs of *all* of your facilities.

THE IMPORTANCE OF PEST MANAGEMENT BID SPECIFICATIONS

Thorough, well-written bid specifications will help reduce confusion and the problem of unrealistically low bids by firms that are unable or unwilling to provide the quality of work your school district or child care facility needs and should expect. Administrators can inquire with the local Better Business Bureau and the North Carolina Department of Agriculture and Consumer Services (NCDA&CS), Structural Pest Control & Pesticide Division, concerning any complaints or violations concerning a prospective bidder. **The selection of a pest control company should not be based solely or primarily on the lowest bid. The quality of the expected service is extremely important.** Whenever possible, multiyear contracts should be awarded to allow the company to determine effective control methods for your site and develop a rapport with school staff. Renewable contracts established for several years may encourage contractors' productivity because they will know that they are not going to lose the job next year simply to a lower bidder.

Some suggestions for IPM bid specifications:

- Include a list of all facilities and properties covered by the contract as well as a map showing their locations across the school district. This is important for the bidder to estimate travel and response times for routine and emergency services.
- Require all bidders to include photocopies of:
  - a valid NCDA&CS-issued structural pest control license under which the company operates (if you require the contractor to be able to treat athletic fields, they will need a category L [Ornamental & Turf Pest Control] license);

  - a current insurance policy covering pest control activities;
  - the certification card of any pest control supervisors (if different from the license holder).
- On-site inspections: Before submitting their bids, prospective bidders should conduct a walk-through of every site to be included in the contract. Potential bidders should view the facilities and pest problems firsthand so they can make a realistic estimate of the services needed and the time required to provide them.
- Minimum service times: The minimum amount of time that a pest control technician should take per scheduled visit can be defined by the school district or child care facility in the bid. Bidders should understand that minimum service times are an expectation of the contract, and failure to meet this requirement should be grounds for cancellation of the contract by the school district or child care facility.
- The contractor should use appropriate inspection and monitoring tools and procedures regularly to find pest infestations and determine the need for corrective action.

The bidder should provide current copies of labels and MSDS documents for all products to be used on the property. The school reserves the right to approve or disapprove any pesticide or device and may request additional pesticides or devices. Products may be added as needed and agreed upon by both parties (for advice on products listed by the bidder or suggestions on other possible products, contact your county's Cooperative Extension Center.) The use of pesticides will follow these guidelines:

- Pesticide use should be targeted and on an as-needed basis only. The practice of random baseboard sprays or other generalized spraying is prohibited.
- Least toxic materials: The use of the least toxic materials necessary to provide satisfactory pest control, as identified by the school district or child care facility, should be understood and agreed to by the bidder.
- Reduced-risk formulations and methods: Baits, bait stations, and crack-and-crevice or void treatments are preferred over aerosol, broadcast, spot, and baseboard treatments. The school should not allow the use of aerosol or machine-generated fogs, mists, or space sprays except in extraordinary situations and only with written permission in advance from the IPM coordinator.

The above provisions and others are specified in the following set of model bid specifications. **These specifications are not requirements, but they are strongly recommended as a model for schools attempting to implement an IPM program.** You may want to incorporate elements of the model contract into your existing bid specifications, or you may want to adopt the requirements in total, with additions and modifications suggested by your IPM coordinator, purchasing officer, or other business personnel. **Many standard clauses are omitted from the following contract to save space.** If there is a conflict between the model bid specifications and the school or child care facility's usual bid process, the facility should defer to its usual bidding process.

INTEGRATED PEST MANAGEMENT PROGRAM CONTRACT SPECIFICATIONS GUIDE

(Note: This information is excerpted and modified from Texas Agricultural Extension Service publication B-6015.)

1. GENERAL

Description of program: This specification is part of a comprehensive Integrated Pest Management (IPM) program for the premises listed herein. **IPM is a process for achieving long-term, environmentally sound pest suppression and prevention through the use of a wide variety of technological and management practices.** Control strategies in an IPM program include:

- Facility inspections to identify pest harborages and presence of conditions favorable to pests
- Proper identification of pests and an understanding of pest biology and behavior
- Structural and procedural changes to reduce the availability of food, water, and shelter to pests
- A preference for nonpesticide technologies, such as trapping and monitoring devices
- Use of reduced-risk pesticide compounds and formulations (those with "CAUTION" or no signal word required) and selection of application methods that present a reduced potential hazard to humans and the environment
- Coordination among all facilities management programs that have a bearing on the pest control effort

Contractor service requirements: The Contractor shall furnish all supervision, labor, materials, and equipment (excluding insect light traps, air curtains, and other major expense items unless requested by the contract administrator) necessary to accomplish the inspection, monitoring, trapping, pest management (including pesticide application if needed, excluding sanitation and building maintenance), and pest removal components of the IPM program. The Contractor shall also provide detailed, site-specific recommendations for structural and procedural modifications to aid in pest prevention/exclusion.

2. PESTS INCLUDED AND EXCLUDED

PESTS INCLUDED

The Contractor shall adequately suppress the following pests:

A. Indoor populations of commensal rodents, insects, arachnids, and other arthropods. For the purposes of this contract, commensal rodents include Norway rat, roof rat, and house mouse. There may be an additional charge for the control of certain species because of increased material and/or labor expenses, such as Argentine, fire, odorous house, and pharaoh ants, millipedes, yellowjackets, fleas, flies, boxelder bugs, ticks, mites, and other pests not specified in the contract.

B. Outdoor populations of potentially indoor-infesting species that are within the property boundaries within _____ yards of the specified buildings.

C. Nests of stinging insects within the property boundaries of the specified buildings.

D. Individuals of all excluded pest populations that are incidental invaders inside the specified buildings.

E. Populations (or individual animals) of vertebrates (other than commensal rodents), including birds and bats. For vertebrate pests, Contractor should have a qualified person on staff to control them or recommend a qualified wildlife damage control agent.

PESTS EXCLUDED

The following pests are excluded from this contract:

A. Termites and other wood-destroying organisms.

B. Mosquitoes.

C. Pests that feed on outdoor vegetation. *[Note: If you require this service, it should be handled as a separate contract so that lawn care companies are eligible to bid.]*

3. INITIAL BUILDING INSPECTIONS

The Contractor shall complete a thorough initial inspection of each building or site at least ____ working days prior to the starting date of the contract. The purpose of the initial inspections is for the Contractor to evaluate the pest control needs of all locations and to identify problem areas and any equipment, structural features, and other conditions or management practices that are conducive or contributing to pest infestations. Access to building space shall be coordinated with _____ _____.

* *Contact information for each facility (with address and phone number) is attached.*

4. THE INTEGRATED PEST MANAGEMENT PLAN

The Contractor shall submit to _____ an Integrated Pest Management (IPM) Plan at least _____ working days prior to the starting date of the contract. Upon receipt of the IPM Plan, _____ will render a decision regarding its acceptability within _____ working days. If aspects of the IPM Plan are incomplete or disapproved, the Contractor shall have _____ working days to submit revisions. The Contractor shall be on site to perform the initial service visit for each building within the first _____ working days of the contract.

The IPM Plan shall consist of five (5) parts as follows:

(1) *Proposed methods for pest identification, monitoring, and detection:* The Contractor shall describe methods and procedures to be used to identify pests, determine pest population levels and sites of pest harborage and access, and determine the need to implement specific control measures throughout the term of the contract.

(2) *Inspection schedule for each building or site:* The Contractor shall provide complete inspection schedules for scheduled Contractor visits.

(3) *Description of site-specific pest management methods:* The Contractor shall describe physical, structural, operational, and least-hazardous methods that will be used to respond to pest populations. The Contractor shall use nonchemical methods wherever possible. The Contractor shall provide the IPM Coordinator with written recommendations for any maintenance or sanitation measures to prevent future pest infestations.

(4) *Proposed materials and equipment for service:* The Contractor shall provide the following information:

(a) A list of all pesticide products to be used. This list shall include each product's brand name(s), common name of the active ingredient, and the signal word ("CAUTION," "WARNING," or "DANGER"), as appropriate and as defined under *40CFR 156.10(i)*.

(b) A list of the brand names of pesticide application equipment, rodent bait boxes, insect and rodent trapping devices, pest monitoring devices, pest detection equipment, and any other pest control devices or equipment that may be used to provide service.

(c) The current label (the information printed on or attached to the pesticide container), labeling (which includes the label and all other product information received from the manufacturer when the product is purchased), and MSDS for each pesticide product referenced in item 1 above.

(5) *Commercial pesticide applicator documentation:* The Contractor shall provide the following documents:

(a) The phone number for the currently designated state poison control center.

(b) The names and phone numbers of at least two individuals who are designated as the primary and secondary 24-hour contacts for information concerning any aspects of the pest control service being provided.

(c) A photocopy of the valid North Carolina Commercial Pesticide Applicator License(s) under which all pest control is to be performed.

(d) A photocopy of the Contractor's valid Certificate of Insurance.

(e) A list of all Contractor employees who will be performing on-site service under this contract. This list shall include the employee's name and a statement of whether the employee is a licensee, certified applicator, or registered technician, as described in the regulations of the North Carolina Department of Agriculture and Consumer Services (NCDA&CS).

The Contractor shall be responsible for carrying out work according to the approved Pest Control Plan. The Contractor shall receive the concurrence of the _____ prior to implementing any subsequent changes to the approved Pest Control Plan, including changes in on-site service personnel and any additional or replacement pesticides.

5. RECORD KEEPING

The Contractor shall be responsible for providing and maintaining a pest management logbook for each building or site specified in this contract. These logbooks shall be kept on site and accessible to all site staff and the IPM Coordinator. The Contractor shall maintain or update the contents of these logbooks on each visit. Each logbook shall contain at least the following items:

A. *Integrated Pest Management Plan:* A complete copy of the Contractor's approved IPM Plan.

B. *Pest-sighting log:* A form that permits school personnel to record the location of any pest sightings. The IPM Coordinator will review and approve the design of this form prior to its distribution and use at the facilities. The IPM Coordinator will be responsible for informing and educating all site staff about methods for reporting pest observations in the log.

C. *Contractor's service report:* The Contractor shall document site-specific pest findings and subsequent control measures performed during the service visit. A separate form is not required if the Pest-Sighting Form is designed to incorporate this information.

6. THE MANNER AND TIME TO CONDUCT PEST MANAGEMENT ACTIVITIES

A. *Time frame of service visits:* The Contractor shall conduct routine pest management activities after school/child care facility hours (except for nonserving areas of the cafeteria) to avoid class disruption. All contractor employees shall adhere to all policies for notifying local personnel that the employee is on site and working in the building. When it is necessary to perform work outside of the regularly scheduled service time set forth in the IPM Plan, the Contractor shall notify the _____ at least _____ days in advance, except when the _____ requests emergency service as described in Section 7 of this contract. The _____ shall approve such changes before any work is done.

B. *Safety and health:* The Contractor shall observe all applicable safety precautions throughout the performance of this contract. All work shall be in strict accordance with all applicable federal, state, and local safety and health requirements, as well as specific pest control product label instructions. Where there is a conflict between applicable regulations, the most restrictive shall apply.

C. *Compliance:* The Contractor shall assume full responsibility and liability for compliance with all applicable regulations pertaining to the health and safety of personnel during the execution of work. The contractor's liability insurance must be in force throughout the term of this contract.

D. *Special entrance:* Certain areas within some buildings may require special instructions for persons entering them. Any restrictions associated with these special areas will be explained by the _____. The Contractor shall adhere to these restrictions and incorporate them into the IPM Plan.

E. *Uniforms and protective clothing:* All Contractor personnel working in or around buildings specified in this contract shall wear distinctive uniform clothing and a photo ID badge. The Contractor shall determine the need for, and shall provide, any personal protective items required for the safe performance of work. Protective clothing, equipment, and devices shall, at a minimum, conform to U.S. Occupational Safety and Health Administration (OSHA) standards and to any specific label requirements for the products being used.

F. *Vehicles:* Vehicles used by the Contractor shall be identified in accordance with state (NCDA&CS and North Carolina Department of Transportation) and local regulations. While on site, all service vehicles shall be

secured to prevent unauthorized access to chemicals and equipment. Service vehicles shall be equipped with appropriate pesticide spill control equipment in accordance with NCDA&CS regulations. All pesticides in Contractor vehicles shall remain locked or remain inaccessible while vehicles are unattended.

7. SPECIAL REQUESTS AND EMERGENCY SERVICE

On occasion, the _____ may request that the Contractor perform corrective, special, or emergency services that are beyond routine service requests. The Contractor shall, if possible, respond to these exceptional circumstances and complete the necessary work within a time frame approved by the _____, to minimize disruption of the daily activities of the building.

8. CONTRACTOR PERSONNEL

Throughout the term of this contract, all Contractor personnel providing on-site pest control service must be currently registered technicians or certified applicators as described in the regulations of the NCDA&CS Structural Pest Control & Pesticide Division. They must also have specific IPM training. In addition, the contractor shall run criminal background checks and not allow any individual with a felony conviction within the last 5 years to service the property.

9. INSECT CONTROL

The priority for insect control will be the use of nonpesticide methods. The Contractor shall use nonpesticide methods of control wherever possible. For example:

- Portable vacuum cleaners rather than pesticide sprays shall be the standard method for initial cleanouts of cockroach infestations and the control of spiders and other miscellaneous pests.
- Trapping devices, such as light traps, shall be the standard method for indoor fly control. The Contractor will make recommendations to the _____ regarding the purchase and installation of such traps.

Where pesticides are used, the Contractor shall use reduced-risk materials and methods of application.

A. *Monitoring:* Monitoring devices (sticky traps, light traps, etc.) shall be used to guide decisions on appropriate pest control measures and subsequently to evaluate the effectiveness of these measures.

B. *Insecticide bait formulations:* Nonvolatile bait formulations, such as gel baits and containerized bait stations, shall be the first choice for cockroach and ant control. If possible, baits shall be applied or placed in areas that cannot be accessed by children or building occupants.

C. *Application of insecticides to cracks and crevices:* As a general rule, the Contractor shall apply liquid/dry insecticide formulations as "crack and crevice" treatments only, defined in this contract as treatments in which the formulated insecticide is applied to hidden or protected areas that are used as harborage sites by pests.

D. *Application of insecticides to exposed surfaces:* Application of insecticides to exposed surfaces shall be restricted to exceptional circumstances where no alternative effective measures are practical. The Contractor shall obtain approval of _____ prior to any application of insecticide to an exposed surface or use of any space spray treatment. The IPM Coordinator is responsible for complying with any parent/staff notification requirements and shall inform the contractor of compliance prior to the application. No surface application or space spray shall be made while the treatment site is occupied. The Contractor shall take all necessary precautions to ensure occupant and employee safety and all necessary steps to ensure the containment of the pesticide to the site of application. The contract and IPM Coordinator will determine who is responsible for any posttreatment cleanup (such as cleaning of surfaces, equipment, and other items).

E. *Space sprays:* Application of pesticides as space sprays ("fogging") must follow the same restrictions outlined for surface sprays. Space sprays must be timed to allow the specific treatment site to remain unoccupied for a minimum of 24 hours. The Contractor shall be responsible for ventilating the treatment site in accordance with instructions on the product label before school/child care facility personnel reenter the site. The _____ will help the Contractor secure the treatment site to prevent any unauthorized reentry to the area prior to ventilation or before any reentry period specified on the product label and will arrange for appropriate cleaning of exposed surfaces by _____ employees before the site is free for general use.

10. RODENT CONTROL

A. *Indoor trapping:* As a general rule, rodent control inside buildings shall be accomplished using live or lethal trapping devices only. All such devices shall be placed so as to conceal them from general view, make them inaccessible to building occupants, and protect them from any adverse effects of routine cleaning and other operations.

B. *Trapping devices shall be checked on a schedule approved by the* _____. Except under special circumstances, the Contractor shall be responsible for disposing of all trapped rodents or their carcasses in an appropriate manner.

C. *Use of rodenticides:* In exceptional circumstances, when rodenticides are deemed essential for adequate rodent control inside buildings, the Contractor shall

obtain approval of the _____ prior to making any interior rodenticide treatment. ONLY block (paraffin-based or other types) rodenticides shall be used. Pellet/pack bait formulations and packaging shall not be used in/around school/child care facility buildings. All bait must be placed in tamper-resistant bait boxes that are approved by the U.S. Environmental Protection Agency (EPA) and that can be secured to a surface.

D. *Use of bait stations:* All bait stations shall be maintained in accordance with EPA and NCDA&CS regulations, with an emphasis on the safety of nontarget organisms. The Contractor shall adhere to the following five (5) procedural points:

1. All bait stations shall be placed out of general view, in locations where they will not be disturbed by routine operations.
2. The lids of all bait stations shall be securely locked or fastened shut.
3. All bait boxes shall be securely attached or anchored to the floor, ground, wall, or other immovable surface, so that the station cannot be picked up or moved by unauthorized personnel.
4. Bait shall always be secured within the feeding chamber of the station and shall never be placed in the runway or entryway of the station where it could be removed or dislodged.
5. All bait stations shall be labeled with the Contractor's business name, address, and phone number, and the active ingredient of the bait. All bait stations shall be dated by the Contractor's technician at the time of installation and each servicing.

E. *The locations of all trapping devices and baiting stations will be recorded in the site's logbook.* The Contractor shall record all changes/additions to this information before leaving the site during that service visit. The Contractor will provide the _____ with a key and instructions for opening bait stations in the event of an emergency.

11. USE OF PESTICIDES

Any required notification of parents and facility staff concerning application of pesticides is the responsibility of _____. The Contractor shall be responsible for application of pesticides according to the label and all additional labeling. All pesticides used by the Contractor must be registered with the EPA or be EPA-exempt and be registered with the NCDA&CS. Transport, handling, and use of all pesticides shall be in strict accordance with the manufacturer's label instructions and all applicable federal, state, and local laws and regulations. The Contractor shall adhere to the following rules for pesticide use:

A. *Minimization of risk:* Where pesticide use is necessary, the Contractor shall adhere to a policy of "reduced risk," i.e., the Contractor shall employ materials, quantities, and application methods that minimize the risk or hazard of exposure to the applicator, building occupants, and environment in general. The Contractor shall not give any pesticides to any site personnel for application to the site without written approval from _____.

B. *Selection of pesticide products (active ingredient and formulation):* Pesticide products will be selected based on the following priority:

1. Exempt from notification (baits, crack-and-crevice treatments)
2. Signal word "CAUTION" (or no signal word needed)
3. Signal word "WARNING"
4. Signal word "DANGER"

Products with either "WARNING" or "DANGER" signal words shall be used only when there are no effective alternatives.

12. QUALITY CONTROL PROGRAM

The Contractor shall establish a complete quality control program to ensure that the requirements of the contract are provided as specified. Within _____ working days prior to the starting date of the contract, the Contractor shall submit a copy of the program to the Contracting Officer.

The Quality Control Program shall include at least the following items:

A. *Inspection system:* The Contractor's quality control inspection system shall cover all the services stated in this contract. The purpose of the system is to detect and correct deficiencies in the quality of services before the level of performance becomes unacceptable and/or the _____ identifies the deficiencies. For the duration of this contract, the contractor shall carry out such inspections on a quarterly basis.

B. *Checklist:* A quality control checklist shall be used in evaluating contract performance during regularly scheduled and unscheduled inspections. Every task shall be included on the checklist for every building or site serviced by the Contractor.

C. *File:* A quality control file shall contain a record of all inspections conducted by the Contractor and any corrective actions taken. The file shall be maintained throughout the term of the contract, and a copy shall be provided to the _____.

D. *Inspector(s):* The Contractor shall state the name(s) of the individual(s) responsible for performing the quality control inspections.

E. *(OPTIONAL)*. The contractor may use an electronic system of bar codes and scanning systems to record such information. Such systems can facilitate the tracking of time "in and out" of technicians and the sanitation condition of the facility. These records can allow the contractor to track the process and ensure performance at the facility.

F. *(OPTIONAL)*. The Contractor will meet with _____ at an agreed-upon interval to review the current program and address any problems.

13. _____ COUNTY SCHOOLS/ CHILD CARE FACILITY MAINTENANCE CONTACTS AND ADDRESSES

For questions concerning specifications or to preview facilities, contact _____ at the above numbers. The _____ County Board of Education reserves the right to reject any or all bids for any or no reason and to waive informalities.

CHAPTER 4

Sample Forms

This section contains sample documents that are important to implementing an IPM program. They are general in nature and are intended as templates for you to modify to fit situations you encounter (or don't encounter). Periodically, we will update forms and place them on the North Carolina School IPM website (http://schoolipm.ncsu.edu).

INTEGRATED PEST MANAGEMENT POLICY STATEMENT

Pests are significant problems for people and property. Many pesticides pose potential risks to human health and the environment. This school district/child care facility is committed to maintaining a safe environment while also protecting the physical conditions of school/child care facilities. To this end, this facility will utilize integrated pest management (IPM) programs or incorporate IPM procedures into the maintenance program conducted by the facility. The school superintendent or child care director will appoint an IPM coordinator to implement IPM techniques.

A. Overview of IPM

IPM is a comprehensive approach that combines effective, economical, environmentally sound, and socially acceptable methods to prevent and solve pest problems. IPM emphasizes pest prevention and provides a decision-making process for determining if, when, and where pest suppression is needed and what control tactics are appropriate.

B. IPM Policy

The school district's/child care facility's IPM program will strive to do the following:

- Manage pests in the facility and minimize exposure of students, faculty, and staff to pesticides.
- Use pesticides only as needed to achieve pest management goals.
- Avoid applying pesticides other than baits in the presence of children. Toys and other items mouthed by children must be removed prior to pesticide application.

C. Use of IPM

The IPM program at this facility will include the following:

- Regular inspections and monitoring to detect and identify pest problems.
- Preventive actions, such as sanitation, pest exclusion, and habitat modification, to reduce future pest problems.
- If pesticides are used, they may not be applied in the presence of children. Toys, other items, and surfaces that may be touched or mouthed by children must be removed from the treatment area prior to pesticide application or cleaned thoroughly after the application. Pesticides will not be used based solely on a schedule but only as needed to achieve pest management.

D. Notification

Staff, students, and parents will be informed about potential pest problems, IPM policies and procedures, and their respective roles in achieving the desired pest management objectives. If an unscheduled pesticide application is deemed to be necessary by the IPM coordinator, parents and staff will be notified 72 hours prior to the pesticide application; this applies to both indoor and outdoor application of pesticides on the facility grounds. This notification does not apply to exempt pesticides, such as gel baits, containerized baits, and crack-and-crevice treatments. [See "Special Note about Outdoor Applications," below.]

E. Record Keeping

Records of all pest management activities shall be maintained, including inspection records, monitoring records, and pest-sighting logs, as well as a record of structural repairs and modifications.

F. Contractors

Any contractor hired by the facility to provide pest control or other services must comply with the facility's IPM and notification policy. S/he must be knowledgeable about the use of IPM in schools or child care facilities. Contractors must refrain from applying pesticides routinely and without cause. They must provide detailed service reports with each visit and provide recommendations for nonchemical pest prevention measures.

Special Note about Outdoor Applications (herbicides and insecticides):

There are few nonexempt outdoor applications for insects and weeds. Because outdoor treatments are subject to weather, accessibility (treating when the area is not in use), and even equipment availability, the advanced scheduling of planned treatments (such as preemergent herbicides applied to athletic fields) can be difficult. Herbicide treatments do not meet the criteria for "emergencies." However, the SCHA requires schools to give 72-hour advance notice of nonscheduled treatments "to the extent possible." Whenever possible and within whatever advanced time frame possible, you should provide notice of such treatments to parents and staff. We strongly recommend that IPM programs includes a series of alternate dates ("rain dates") for such applications. Other herbicide treatments in landscaped areas are typically made in response to finding weeds and therefore should be able to adhere to the 72-hour advance notification policy.

PEST-SIGHTING LOG

School/child care facility/site name: _____ ***Date:*** _____

To be filled in by school/child care facility personnel				*To be filled in by pest management professional*		
Date	*Type of pest seen*	*Name of person reporting sighting*	*Specific location where pest was seen*	*Date*	*Action taken and/or recommendations*	*Technician's name*

FACILITY INSPECTION CHECKLIST

Exterior Areas

Facility name: _____ **Date of inspection:** _____

Name of inspector: _____ ❑ Additional comments on back of page

Building Exterior	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Doors close tightly					
Windows seal tightly; screens (if used) fit and are in good condition					
Walls and foundation areas clear of vegetation					
Utility service entrances sealed or screened					
Exterior water spigots not dripping or leaking					
Walls/roof line free of holes and cracks					
Vents (supply and exhaust) screened and unobstructed					
Exterior free from mold/mildew					
Adequate water drainage near foundation (no standing water)					
Roof in good condition and draining properly					
Gutters cleared of debris					
Dumpster and Trash Collection Areas	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Dumpster doors close properly					
Dumpster drains plugged or screened					
Dumpsters placed on concrete slabs that are kept clean					
Dumpsters located adequate distance from doors					
Exterior trash cans have plastic liners and tight-fitting lids					
Surplus equipment or material not placed next to buildings					

FACILITY INSPECTION CHECKLIST

Exterior Areas

Facility name: _____ **Date of inspection:** _____

Name of inspector: _____ ❑ Additional comments on back of page

Exterior Landscaping	*OK*	*Needs Work*	*N/A*	*Location*	*Comments*
Adequate visibility between plants and buildings					
Building free from direct contact with trees, shrubs, or vines					
Building free from direct tree hazards					
Aesthetic appearance/safety features					
Fence line clear					

FACILITY INSPECTION CHECKLIST

Interior Areas

Facility name: _____ **Date of inspection:** _____

Name of inspector: _____ ❑ Additional comments on back of page

Classrooms	*OK*	*Needs Work*	*N/A*	*Location*	*Comments*
No pesticides stored in classroom					
Sticky traps and/or bait stations placed out of the reach of children					
No food stored improperly in desks					
Cubbies and other storage areas organized					
Pet cages clean					
No food debris on tables, floors, counters					
Pet food and other food items kept in sealed containers					
Floor cleaned (vacuumed or mopped) regularly					
Edges of bulletin boards and blackboards sealed properly					
Items on walls free of signs of cockroaches					
Trash and recycling emptied daily					
Sinks dry overnight; cabinets clean; no sign of leaks					
Ceiling tiles in good condition; no signs of roof or pipe leaks					

FACILITY INSPECTION CHECKLIST

Gymnasium, Locker Rooms, Other Nonclassroom Areas

Facility name: _____ **Date of inspection:** _____

Name of inspector: _____ ❑ Additional comments on back of page

Gymnasium/Locker Rooms	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Floor under bleachers or out in open cleaned regularly; no food/drink debris					
No leaks; drains free of debris					
Refreshment stands - no spilled food or beverages on floors, counters; trash removed after area is used					
Offices, Teacher Prep/Lounge	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Food stored in sealable containers; expired foods discarded					
Floor, tables, and counters cleaned regularly					
Microwave, toasters, coffeemakers and other appliances kept clean					
Indoor plants not watered excessively					
Custodial Closets	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Closet kept organized					
Floor drain free of debris					
Mops hung to dry overnight					
Buckets rinsed and emptied at end of day					

FACILITY INSPECTION CHECKLIST

Food-Service Areas

Facility name: _____ **Date of inspection:** _____

Name of inspector: _____ ❑ Additional comments on back of page

Food Preparation and Serving Areas	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Walls — free of holes, cracks, and crevices					
Floors — in good repair, cleaned regularly					
Wall-floor junctions clean					
Drains — clean and operational					
Freezer and icemaker condensate lines free of organic debris					
Vents — screened, unobstructed					
Pipe chases sealed under sinks					
Ceilings — are tiles missing, stained, wet?					
Doors — are air curtains installed on loading doors? Operating?					
Kitchen Equipment (around, underneath, clean, dry?)	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Stoves, hoods, fryers					
Mixers and meat slicers					
Dishwasher and tray drop-off area					
Microwaves, bread warmers, toasters					
Service lines (warmer legs and underneath)					
Refrigerator/freezer areas					
Countertops, sinks, drying board, surrounding areas					
Shelves, cabinets, drawers					
Icemaker, milk coolers, freezers					
Vending machines					

FACILITY INSPECTION CHECKLIST

Food-Service Areas

Facility name: _____ **Date of inspection:** _____

Name of inspector: _____ ❑ Additional comments on back of page

Cafeteria/ Lunch Room Area	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Tables and chairs — are legs sealed or plugged?					
Tables and chairs clean (top surfaces, legs, underside)					
Floor cleaned regularly					
Utility closet well-organized and clean					
Recycling and Trash Collection Areas	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Recycling bins emptied and cleaned routinely					
Trash cans have liners and lids that fit tightly; area around trash cans cleaned regularly					
Delivery and Storage Areas	***OK***	***Needs Work***	***N/A***	***Location***	***Comments***
Materials stored on racks 6”–12” above floor					
Areas behind storage rack are easily inspected					
Incoming supplies inspected as they arrive					
Incoming supplies dated after inspection and stock rotated					
Supplies stored on clean shelves and mobile storage carts					
Damaged, contaminated, or infested packages removed promptly					
Pallets and empty packaging taken to recycle area or trash disposal promptly					

IPM ACTION PLAN FOR: Nuisance ants (odorous house ants, Argentine ants, little black ants, etc.)

Actions to be taken to control the problem				
No. of Sightings*	***First Actions***	***Sanitation, Exclusion, Habitat Alteration***	***Treat the Problem***	***Follow-up***
Zero	Continue all preventive actions.	Maintain course. Install doorsweeps. Caulk and seal cracks/holes. Repair torn/ripped screens. Make sure there are no trees, shrubs, or vines touching the building. Conduct a thorough cleaning on a quarterly basis.	No treatment necessary.	1. Conduct quarterly inspection to identify conditions conducive to pests.
1–5 per month	1. Review actions for zero pests to determine if there was an oversight. 2. Check area around pest sighting ASAP for conditions conducive to pests. 3. Ask pest control prof. to ID ant.	Sweep and mop areas where ants were found. Clean baseboards, counters, and around and under any equipment in area. Make sure all food items, including class pet food, are stored in pest-proof containers. Check for any plumbing leaks or other sources of moisture. Seal any openings (cracks, holes, etc.) in area.	Wait for confirmation that pest sighting wasn't just a lone ant. Hold off on baits for now.	1.Use sticky traps to determine extent of problem. 2. Reassess after two weeks to see if bait is needed. 3. Other follow-ups: _____ _____ _____
5–20 per month	1. Review actions for zero and 1–5 pests. Complete overlooked tasks. 2. Call pest control prof. and be present when they inspect.	Intensively clean the area: move appliances, equipment, and other items. Check the area where ant was found for a water leak or other moisture problem. Check any indoor plants to make sure ants are not nesting in them. Take trash out every day. Make sure all outdoor trashcans have lids that fit properly. Make sure outdoor recycling bins are clean. Caulk and seal all openings (indoors and out).	Consider using a tamper-resistant bait station in areas of pest sightings. Keep baits out of the reach of children. Record locations of all bait stations.	1. Check and replace sticky traps weekly. 2. Replenish bait as needed. 3. Remove bait stations when ants no longer appear. 4. Other follow-ups: _____ _____ _____

*Number of sightings refers to the number of each specific pest seen in one site (e.g., a classroom), not the number of pests seen in the entire school or child care facility.

Actions to be taken to control the problem				
No. of Sightings*	***First Actions***	***Sanitation, Exclusion, Habitat Alteration***	***Treat the Problem***	***Follow-up***
20–50 per month	1. Review all actions in above rows. Complete all overlooked tasks. 2. Call pest control prof. Be present when they come to inspect, and follow recommendations. 3. If you still have not determined exactly where ants are coming from, look very closely and try to pinpoint location(s) of infestation (check odd places that may have been overlooked before).	Perform rigorous cleaning on a daily basis. Check for any overlooked holes inside and out that ants may be using to gain access to building.	Place several tamper-resistant bait stations where ants have been sighted. Work with pest control prof. Consider use of insect growth regulators (IGRs) and/or boric acid in openings ants may be using to get into building. IGRs and boric acid, though less toxic than sprays, still require notification to staff and parents two days before use (unless they are applied as crack-and-crevice or void treatments).	1. Check and replace sticky traps weekly. 2. Replenish bait as needed. 3.Remove bait stations when pests are gone.
50+ per month	1. Review actions in rows above. Complete ALL overlooked tasks. 2. Locate nest(s) or area(s) where ants are getting in building if they have not been located. Your pest control prof. can help you with this.	Continue all steps in rows above. Make sanitation part of everyone's job. Make sure trash is taken out of all rooms, including classrooms, on a daily basis. Make sure teachers and students are not storing food in desks, lockers, or cubbyholes.	Place several tamper-resistant bait stations in areas of infestation. Use IGRs and/or boric acid behind walls with no ventilation. If a crack/crevice spray must be used, request the least toxic one. Request an outdoor perimeter spray to help keep ants out of building.	1. Continue to check traps weekly or more frequently if necessary.

*Number of sightings refers to the number of each specific pest seen in one site (e.g., a classroom), not the number of pests seen in the entire school or child care facility.

IPM ACTION PLAN FOR: Cockroaches

Actions to be taken to control the problem				
No. of Sightings*	***First Actions***	***Sanitation, Exclusion, Habitat Alteration***	***Treat the Problem***	***Follow-up***
Zero	Continue all preventive actions.	Maintain course. Install door sweeps. Caulk and seal cracks/ holes. Repair damaged walls and loose baseboards. Repair torn/ ripped screens. Conduct a thorough cleaning on a quarterly basis. Clean up spills as soon as possible. Clean and dry countertops at the end of every day. Never leave water in mop buckets or sinks overnight. Hang mops to dry after use. Check incoming supplies before stocking. Keep relative humidity below 55% in dry storage areas.	No treatment necessary.	1. Maintain monitor traps in kitchen, storage closet, pantry, bathrooms, classrooms (in tamper-resistant boxes out of reach of children), and other relevant areas; check monthly. 2. Conduct quarterly inspections to identify conditions conducive to pests.
1–5 per month	1. Review actions for zero pests to determine if there was an oversight. 2. Check area around pest sighting ASAP for conditions conducive to pests. 3. Ask pest control service to ID roach.	Sweep and mop areas where roaches were found. Clean baseboards, counters, and around and under any equipment in area. Make sure all food items, including pet food, are stored in pest-proof containers. Check for any plumbing leaks or other sources of moisture. Check floor drains to see if they are clogged. Seal any openings (cracks, holes, etc.) in area. Repair any loose floor tiles, baseboards, etc. in area. Address clutter problems in the area.	Wait for confirmation that pest sighting wasn't just a lone roach. Continue using sticky traps. Hold off on baits for now.	1. Check traps in two to three days to determine extent of problem. 2. Reassess after two weeks to see if bait is needed. 3. Other follow-ups: _____ _____ _____

*Number of sightings refers to the number of each specific pest seen in one site (e.g., a classroom), not the number of pests seen in the entire school or child care facility.

Actions to be taken to control the problem				
No. of Sightings*	***First Actions***	***Sanitation, Exclusion, Habitat Alteration***	***Treat the Problem***	***Follow-up***
5–20 per month	1. Review actions for zero and 1–5 pests. Complete overlooked tasks. 2. Call pest control prof. and be present when they inspect.	Intensively clean the area: move appliances, equipment, and other items. Clean pantry shelves to corners. Restrict food to certain areas of the facility. Take trash out every day. Make sure all outdoor trashcans have lids that fit properly. Make sure outdoor recycle bins are clean. Caulk and seal all openings (indoors and out). Remove or organize clutter. Dispose of all cardboard.	Consider using a tamper-resistant bait station in areas of pest sightings. Keep baits out of the reach of children. Record locations of all bait stations.	1. Check and replace sticky traps weekly. 2. Remove bait stations when pests no longer show up. 3. Other follow-ups: _____ _____ _____
20–50 per month	1. Review all actions in above rows. Complete all overlooked tasks. 2. Call pest control service. Be present when they come to inspect, and follow recommendations. 3. If you still have not determined exactly where roaches are living, look very closely and try to pinpoint location(s) of infestation (check odd places that may have been overlooked before, such as hollow table legs.)	Perform rigorous cleaning on a daily basis. Check for areas where pests may be coming in that may have been overlooked before (lockers/cubbyholes, cardboard boxes, paper bags, etc.). Check for any overlooked holes inside and out that roaches may be using as harborage or to gain access to building. Child care facilities that share building with other tenants should meet to see if roaches are a common problem.	Place several tamper-resistant bait stations where roaches have been sighted. Work with pest control service. Consider use of insect growth regulators (IGRs) and/or boric acid behind walls with no ventilation (baits and void treatments are exempt from notification).	1. Check and replace sticky traps weekly. 2. Remove bait stations when pests are gone.
50+ per month	1. Review actions in rows above. Complete ALL overlooked tasks. 2. Locate area(s) of infestation if they have not been located. Your pest control prof. can help you with this. 3. Schedule a vacuum clean-out with pest control prof.	Continue all steps in rows above. Make sanitation part of everyone's job. Make sure trash is taken out of all rooms, including classrooms, on a daily basis. Don't leave food garbage in rooms overnight. Make sure teachers and students are not storing food in desks, lockers, or cubbyholes.	Treat behind bulletin boards in infested areas. Ban clutter and throw away useless material. Schedule a vacuum clean-out with pest control service. After clean-out, place several tamper-resistant bait stations in areas of infestation. Use IGRs and/or boric acid behind walls with no ventilation. If a crack/crevice spray must be used, request the least toxic one.	1. Continue to check traps weekly or more frequently if necessary.

*Number of sightings refers to the number of each specific pest seen in one site (e.g., a classroom), not the number of pests seen in the entire school or child care facility.

IPM ACTION PLAN FOR: Rodents (indoors)

Actions to be taken to control the problem				
No. of Sightings*	***First Actions***	***Sanitation, Exclusion, Habitat Alteration***	***Treat the Problem***	***Follow-up***
Zero	Continue all preventive actions.	Make sure all holes, cracks, or other openings on building are sealed. Use copper mesh, screen, sheet metal, or caulk to close openings. Install door sweeps. Store items in pantry on shelves 6"–12" off the floor to facilitate inspection, monitoring, and cleaning. Keep open packages in sealed pest-proof containers.	No treatment necessary.	Conduct quarterly inspection in kitchen, pantry, storage closet, classrooms, etc. for evidence of rodents (droppings, nesting material, gnawing damage, outdoor burrows, etc.) and conditions conducive to pests.
1–3 rodent sightings or evidence of rodents (droppings, gnawing damage, nesting material, etc.) per month	1. Review actions for zero pests to determine if there was an oversight. 2. Check area around pest sighting ASAP for conditions conducive to pests. 3. Determine what rodent (mice, rat) is present. Your pest control service can help with this.	Clean area of any droppings or nesting material. Make sure all food items (including pet food in classrooms) are stored in pest-proof containers. Check area of pest sighting for any spilled food or beverage.	Consider using snap traps or sticky traps (placed in secure, tamper-resistant bait boxes) in areas where rodents have been seen. Place boxes in areas out of the reach of children.	1. Check daily and replace traps as needed. 2. Remove bait boxes when pests no longer show up. 3. Other follow-ups: _____ _____ _____
Evidence of rodents where students or staff are likely to contact them OR More than 3 rodent sightings per month	Inspect area as soon as possible for areas of entry, harborage, and sources of food and water.	Review actions above to determine if there was on oversight.	Consider using snap traps or sticky traps (placed in secure, tamper-resistant bait boxes) in areas where rodents have been seen. Place boxes in areas out of the reach of children.	See follow-ups above. Other follow-ups: _____ _____ _____

*Number of sightings refers to the number of each specific pest seen in one site (e.g., a classroom), not the number of pests seen in the entire school or child care facility.

IPM ACTION PLAN FOR: Wasps, hornets, yellow jackets, bees, fire ants

Actions to be taken to control the problem				
No. of Sightings*	***First Actions***	***Sanitation, Exclusion, Habitat Alteration***	***Treat the Problem***	***Follow-up***
Nest located in high-risk area (occupants are likely to contact them)	Pest emergency: immediate action required. Keep occupants AWAY from the area where pests are located (evacuate room, suspend recess, seal off the infested area). Contact pest control prof. immediately.		Pest control prof. should treat or remove the nest. Notification must take place as soon as possible following application.	Ask prof. pest control service (contracted or in-house) to check area/nest to ensure that all insects have been killed.
1 or 2 pests found indoors (occasional invader)	Keep occupants away from the pest. Trap and remove or kill pest with flyswatter, etc.	Make sure all holes or other openings on building are sealed. Keep unscreened windows and doors closed when not in use. Make sure all screens fit properly and are not damaged.	Contact pest control prof. to inspect for evidence of a nest. Pest control prof. should treat any nest found.	Have area/nest checked to ensure that all insects have been killed.
Several pests found swarming around teachers, students, and others outdoors	Keep people away from flying insects.	Make sure all outdoor trashcans have lids that fit properly. Make sure outdoor recycling bins are emptied routinely. Move trashcans and recycling bins away from outdoor play areas.	Inspect area for evidence of a nearby nest. Contact pest control prof. to remove or treat any nest found. If no nest found, keep people away from area until wasps/bees have moved on.	
Honeybee swarm outdoors	Keep people away from the area.		Two options: 1. High-risk area: Contact a local beekeeper to remove the swarm. 2. Low-risk area: The swarm should move on in a few hours, after the bees have found a suitable location for a new nest. You may simply wait for the bees to leave the area.	

*Number of sightings refers to the number of each specific pest seen in one site (e.g., a classroom), not the number of pests seen in the entire school or child care facility.

INTEGRATED PEST MANAGEMENT PROGRAM ASSESSMENT TOOL

School district/child care facility: _____ **Date:** _____

Assessed by: _____

Check what has been accomplished and then prioritize what needs to be done to improve the IPM program.

IPM policies, procedures, and plans:
___ IPM policy adopted.
___ Copy of policy kept on file.
___ Copy of policy has been circulated to school/child care facility administrators (principals, cafeteria managers, etc.).

Roles and responsibilities:
___ IPM coordinator designated.
___ IPM coordinator and members of school/child care facility community know their roles in the IPM program.

IPM plan:
___ IPM plan detailing response to each major pest infestation exists.

If pest control is contracted:
___ Pest management professional has knowledge and experience in IPM.
___ The contract reflects IPM requirements (inspections, monitoring, pesticides not used on a schedule, etc.).
___ A clear channel of communication has been established for the contractor to follow if nonexempt pesticides or application methods appear to be necessary.

If pest control is conducted in-house:
___ Pest control staff has received training in pest control.
___ Pest control staff has received IPM training.

Notification policy/procedure:
___ Each school/child care facility has procedure for notifying parents, guardians, and staff.
___ Copies of notification letter in IPM records.
___ Registry of names to notify as well as annual letter to notify parents about registry.
___ Procedures for pest emergencies established.

Establish procedures for pest emergencies:
___ We have a separate procedure and notification letter for using pesticides in a pest emergency.
___ We have in place a process for reviewing the conditions that gave rise to the emergency.

Staff training:
___ Educate staff, students, faculty, and parents about IPM, because IPM is a team effort.
___ IPM coordinator received training.
___ IPM is included in core staff training (for new custodial or maintenance crew).
___ IPM is included in teacher and staff inservice training.
___ We have established a source for retraining and a schedule for retraining.
___ No pesticides of any kind can be used without the express permission of the IPM coordinator.

Record keeping (kept with IPM/pest control records in the main office):
___ IPM policy and plan.
___ IPM contract (if applicable).
___ Pest-sighting logs.
___ Inspection records and recommendations.
___ Pesticide application records.
___ Materials Safety Data Sheets and pesticide labels.
___ Copies of work orders to address pest problems.

(Note: Adapted with permission from the Safer Pest Control Project: http://www.spcpweb.org.)

CHAPTER 5

Resources

- **School IPM Program of North Carolina State University: http://schoolipm.ncsu.edu**

  Patricia Alder, coordinator
  Telephone: (919) 513-3805
  Fax: (919) 515-0811
  Email: patricia_alder@ncsu.edu

The NC State School IPM Program promotes the implementation of IPM programs in North Carolina schools and child care facilities. The IPM Program's website provides numerous IPM resources, including an IPM manual, sample IPM forms, IPM presentations, and fact sheets. The site also lists IPM training workshop locations and schedules.

- **North Carolina school IPM blog: http://schoolipm.ncsu.edu/blog**

  This blog discusses the use of IPM in North Carolina schools and child care facilities. The blog also provides important updates on pests, pesticides, and other related issues.

- **Integrated Pest Management for Schools: A How-to Manual: http://www.epa.gov/opp00001/ipm**

  This free manual, available online in PDF format, is published by the U.S. Environmental Protection Agency.

- **The IPM Institute of North America: http://www.ipminstitute.org**

  An independent nonprofit organization formed in 1998 to foster recognition and rewards in the marketplace for service and product providers who practice IPM.

- **Information on IPM in schools, from the Safer Pest Control Project: http://spcpweb.org/schools**

  Dedicated to reducing the health risks and environmental impacts of pesticides and promoting safer alternatives. The site provides numerous resources for school and child care IPM.

- **North Carolina State University Plant Disease and Insect Clinic: http://www.cals.ncsu.edu/plantpath/extension/clinic**

  Diagnoses plant problems and provides insect identification for homeowners, gardeners, landscapers, farmers, and pest management professionals. In consultation with expert faculty, the clinic recommends ways to treat or prevent the problems they diagnose.

- **North Carolina Cooperative Extension: http://www.ces.ncsu.edu**

  Gives North Carolina residents easy access to the resources and expertise of NC State University and NC A&T State University.

- **North Carolina Cooperative Extension county centers: http://www.ces.ncsu.edu/counties**

  Provides a list of all North Carolina Cooperative Extension county centers.

- **North Carolina health departments by county: http://www.ncalhd.org/county.htm**

  Provides contact information for health directors for each North Carolina county, from the North Carolina Association of Local Health Directors.

- **PestWeb: http://www.pestweb.com**

  Provides information on pest manufacturers and pest management companies.

- **North Carolina Department of Agriculture and Consumer Services, Structural Pest Control and Pesticide Division, Structural Pest Control Section: http://www.ncagr.gov/SPCAP/structural/index.htm**

  Provides certification and licensing information for individuals conducting structural pest management.

- **North Carolina Department of Agriculture and Consumer Services, Structural Pest Control and Pesticide Division, Pesticide Section: http://www.ncagr.gov/SPCAP/pesticides/index.htm**

  Provides certification and licensing information for individuals conducting turf and ornamental pest management.

- **North Carolina Pest Management Association: http://www.ncpestmanagement.org**

  A nonprofit association dedicated to educating pest management professionals and promoting the pest management industry. The association also gives the general public access to pest management resources, including contact information for more than 230 professional pest management companies throughout the state.

- **National Pest Management Association: http://www.pestworld.org**

  A nonprofit organization committed to the protection of public health, food, and property. The website serves as a comprehensive resource for consumers, media, educators, and pest control professionals.

  PestWorld for Kids, by the National Pest Management Association: http://pestworldforkids.org/index.html

  Provides pest guides, games, science fair kits, lessons plans, etc. for children and teachers.

- **North Carolina Mosquito and Vector Control Association: http://www.ncmvca.org**

  A nonprofit professional organization founded in 1965 to promote public health through mosquito and vector control in North Carolina.

- **Chapter V, "Insect Control," of the North Carolina Agricultural Chemicals Manual: http://ipm.ncsu.edu/Agchem/5-toc.pdf**

  This manual, published by NC Cooperative Extension and the College of Agriculture and Life Sciences at NC State, provides pesticide recommendations for pests found in North Carolina.

- **National Pesticide Information Center: http://npic.orst.edu**

  Provides objective, science-based information about pesticides and pesticide-related topics to enable people to make informed decisions about pesticides and their use.

- **Agro-chemical database, compiled and presented by CDMS Inc.: http://www.cdms.net/manuf/manuf.asp**

  Provides MSDS information and product labels for pesticides.

- **Toxic Free NC: http://toxicfreenc.org**

  Toxic Free NC fights pesticide pollution in North Carolina by advocating for common-sense alternatives that protect the health of individuals and the environment.

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Published by
North Carolina Cooperative Extension Service

This publication is available on the Internet at http://schoolipm.ncsu.edu/resources/

2/12 BW (Revised) AG-631-01
11-CALS-2285