Rogue Community College/Southern Oregon University
Higher Education Center
Operating Agreement

Integrated Pest Management

A. Purpose

The purpose of this policy is to reduce exposure of building occupants to potentially hazardous chemical contaminants that adversely affect air quality, occupant well-being, and the environment.

B. Policy

RCC and SOU operating staff and outside contractors providing services in the Higher Education Center shall follow pest management practices that complement the Indoor Environmental Quality requirements of the LEED (Leadership in Energy and Environmental Design) national rating system for high-performance, sustainable buildings developed by the U.S. Green Building Council. Products used for pest management in the Higher Education Center shall be non-hazardous, have a low environmental impact, and meet the criteria set forth in established standards.

C. Integrated Pest Management

Integrated pest management (IPM) is an approach to pest control that utilizes regular (monthly) monitoring and record keeping to determine if and when treatments are needed, and employs a combination of strategies and tactics to keep pest numbers low enough to prevent unacceptable damage or annoyance. Biological, cultural, physical, mechanical, educational, and chemical methods are used in site-specific combinations to solve the pest problem. Chemical controls are used only when needed, and in the least-toxic formulation that is effective against the pest. Educational strategies are used to enhance pest prevention, and to build support for the IPM program. IPM Contract Performance Specifications are included in Appendix AC-1.

Although pesticides often have a role to play in IPM programs, their use should be approached with caution. By using the least-toxic product effective against the pest and applying it in a spot treatment in combination with non-chemical methods (such as pest-proofing and improved sanitation), risks from pesticide exposure can be minimized.

The term "least-toxic" refers to pesticides that have low or no acute or chronic toxicity to humans, affect a narrow range of species, and are formulated to be applied in a manner that limits or eliminates exposure of

humans and other non-target organisms. Fortunately, there are an increasing number of pesticides that fit within this "least-toxic" definition. Examples include products formulated as baits, pastes, or gels which do not volatilize in the air and which utilize very small amounts of the active ingredient pesticide, and microbial pesticides formulated from fungi, bacteria, or viruses that are only toxic to specific pest species but harmless to humans.

D. IPM Program Goal

The goals of an IPM Program are to protect human health by suppressing pests that vector diseases, reduce losses from pest damage, reduce environmental pollution, reduce human exposure to pesticides, and reduce costs of pest control. In IPM programs, treatments are not made according to a fixed schedule; they are made only when and where monitoring has indicated that the pest will cause unacceptable economic, aesthetic, or medical injury damage. If treatments are needed, they can be selected and timed to be most effective on the pest, least disruptive to its natural controls, and least hazardous to humans and the environment.

E. Components of the IPM Program

One of the characteristics of an IPM approach that makes it so effective is that the basic decision-making process is the same for any pest problem in any location. The strategy and tactics may change, but the steps taken to decide if and when treatment is needed and which methods to use, are the same each time. Thus, the pest manager does not need to try to remember extensive pest control recipes for specific pests. Instead, it is an understanding of the components of an IPM program that must be mastered.

An IPM program is built around the following components:

- Monitoring the pest population and other relevant factors
- Accurate identification of the pest
- Determining injury and action levels that trigger treatments
- Timing treatments to the best advantage
- Spot treating the pest (to minimize human and other non-target organism exposure to pesticides and to contain costs)
- Selecting the lest-disruptive tactics
- Evaluating the effectiveness of treatments to fine-tune future actions
- Educating all people involved with the pest problem

F. The Decision-Making Process

The basic IPM process helps answer the four key pest management questions, easy remembered by four words: IF, WHERE, WHEN, and WHICH.

IF treatment is necessary

Instead of taking action at the first sign of a potential pest, the IPM process begins with asking whether any actions at all are needed. Sometimes, even a fairly large population of pests can be tolerated without causing a problem. In other cases, the presence of a single pest organism is considered intolerable. In still other cases, what is considered a pest by one group in society may be considered innocuous by another group.

WHERE treatment activity should take place

If it is decided that some treatment action is necessary, the IPM process encourages pest managers to look at the whole system for the best place to solve the problem. Treatment should be applied where actions will have the greatest effect.

WHEN treatment activity should take place

The timing of treatments is important. Often there is an optimal time in the life cycle of the plant or the pest to apply control measures. Conversely, there may be times when treatments actually increase pest problems. The human social system will also affect the timing of treatments. The IPM process encourages managers to discover the best timing for treatment actions because the long-term success of any treatment depends on timing and locating it properly.

WHICH mix of strategies and tactics are best to use

There are three guiding principles to use when choosing treatments: conserve and enhance naturally occurring biological controls, use a multi-tactic approach, and view each pest problem in its larger context.

1. Conserve and enhance naturally occurring biological controls – In a landscape setting, when we kill natural enemies of pests, we inherit their work. In many cases, the combined action of all natural enemies present may result in substantial pest control. Even when they are not able to do the complete job, natural enemies are nonetheless providing some help in protecting landscape plants from pest insects.

The IPM program should be designed to avoid damaging natural enemies.

2. Use a multi-tactic approach – Every source of pest mortality, however small, is a valuable addition to the program. Biological systems are so complex that rarely will a single tactic (such as the application of a pesticide) solve the problem for long. As many non-toxic tactics as possible should be combined to manage the pest problem.

3. View each pest problem in its larger context – Each pest problem must be considered within the framework of the larger system in which it has arisen. Textbooks and manuals commonly treat pest problems one by one. However, in the "real world" setting of an educational building and the grounds around it, pest problems occur several at a time or in a sequence in which management of one influences the others. In addition, pest problems are influenced by other human activities such as waste disposal and food handling indoors, and mowing, fertilizing, and irrigating outdoors, as well as the attitudes of the many people who work and study in the building.

   Using IPM means taking a "whole system" or ecosystem management approach to solving a pest problem. A successful IPM program considers all of the components of an ecosystem. As biologists and ecologists use the term, an ecosystem is usually thought of as containing non-living (abiotic) and living (biotic) components. For instance, if you consider an educational building as an ecosystem, the abiotic components of the building would be the building itself and the equipment and furnishings within it. The biotic components would be the people, insects, spiders, etc. that live and work in the building.

G. Criteria for Selecting Treatment Strategies

Once the decision-making process is in place and monitoring indicates a pest treatment is needed, the choice of specific strategies can be made. Treatments should be chosen that are:

- Least hazardous to human health
- Least disruptive of natural controls in landscape situations
- Least toxic to non-target organisms other than natural controls
- Most likely to be permanent and prevent recurrence of the pest problem
- Easiest to carry out safely and effectively

- Most cost-effective in the short- and long-term
- Appropriate to the site and maintenance system

H. Timing Treatments

Treatments must be timed to coincide with a susceptible stage of the pest and, if at all possible, a resistant stage of any natural enemies that are present. Only monitoring can provide the critical information needed for timing treatments and thereby make them more effective.

Spot treatments, whether pesticides or non-toxic materials, should only be applied when and where needed. It is rarely necessary to treat an entire building or landscape area to solve a pest problem. By using monitoring to pinpoint where pest numbers are beginning to reach the action level and confining treatments to those areas, costs and exposure to toxic materials can be kept to a minimum.

I. Summary of Available Treatment Options

The following is a list of general categories of treatment strategies. Examples have been included to help illustrate each strategy. The list is not intended to be exhaustive since products change, new ones are discovered or invented, and pest managers develop new solutions to old problems.

Education

Education is a cost-effective pest management strategy. Information that will help change people's behaviors—particularly how they dispose of wastes and store food—plays an important part in managing pests like cockroaches, ants, flies, yellow jackets, and rodents. Education can also increase people's willingness to share their environment with other organisms so that people are less likely to insist on toxic treatments for innocuous organisms.

Habitat Modification

Pests need food, water, and shelter to survive. If the pest manager can eliminate or reduce even one of these requirements, the environment will support fewer pests.

Design or Redesign of the Structure

Design changes can incorporate pest-resistant structural materials, fixtures, furnishings, etc. Sometimes these changes can entirely eliminate pest habitat. For example, stainless steel industrial wire shelving mounted on rolling casters helps reduce roach habitat and facilitates clean-up of spilled food.

Sanitation

Sanitation can reduce or eliminate food for pests such as rodents, ants, cockroaches, flies, and yellow jackets.

Eliminating Sources of Water for Pests

This involves fixing leaks, keeping surfaces dry overnight, and eliminating standing water.

Eliminating Pest Habitat

How this can be done will vary depending on the pest, but some examples are caulking cracks and crevices to eliminate cockroach and flea harborage, removing clutter that provides roach habitat, and removing dense vegetation near buildings to eliminate rodent harborage.

Modification of Horticultural Activities

Planting techniques, irrigation, fertilization, pruning, and mowing can all affect how well plants grow. Many of the problems encountered are attributable to using the wrong plants or failing to give the plants proper care. Healthy plants are often likely to have fewer insect, mite, and disease problems. It is very important to have a good foundation of knowledge about the care required by the particular plants or be willing to learn.

Design or Redesign of Landscape Plantings

- Choose the right plant for the right spot and choose plants that are resistant to or suffer little damage from local pests. Ask advice of landscape maintenance personnel, local nurseries, local pest management professionals, and County Extension Agents or the master gardeners on their staffs.
- Include in the landscape flowering plants that attract and feed beneficial insects with their nectar and pollen.

- Diversifying landscape plantings. When large areas are planted with a single species of plant, a pest can devastate the entire area.

J. Physical Controls

Vacuuming

A heavy-duty vacuum with a special filter fine enough to screen out insect effluvia (one that filters out particles down to 0.3 microns) is a worthwhile investment. Some vacuums have special attachments for pest control. The vacuum can be used not only for cleaning, but also for directly controlling pests. A vacuum can pull cockroaches out of their hiding places; it can capture adult fleas, their eggs, and pupae; and a vacuum can be used to collect spiders, box elder bugs, and cluster flies.

Trapping

Traps can play an important role in non-toxic pest control, however, traps should be placed out of the reach of children. A wide variety of traps is available to the pest manager. Some traps are used mainly for monitoring pest presence. These include cockroach traps and various pheromone (insect hormone) traps, although if the infestation is small, these traps can sometimes be used to control the pest. Other traps include the familiar snap traps for mice and rats, electric light traps for flies, and flypaper. There are also sticky traps for whiteflies and thrips, cone traps for yellow jackets, and box traps for skunks, raccoons, and opossums.

Barriers

Barriers can be used to exclude pests from buildings or other areas. Barriers can be as simple as a window screen to keep out flying and crawling insects or sticky barriers to exclude ants from trees. More complicated barriers include electric fences to keep out deer and other vertebrate wildlife and L-shaped footings in foundations to exclude rodents.

Heat, Cold, Electric Current

Commercial heat treatments can be used to kill wood-destroying pests such as termites. A propane weed torch can be used to kill weeds coming up through cracks in pavement. Freezing can kill trapped insects such as yellow jackets before emptying traps, kill clothes moths, and kill the eggs and larvae of beetles and moths that destroy grain.

Removing Pests by Hand

In some situations, removing pests by hand may be the safest and most economical strategy. For example, tent caterpillars can be clipped out of trees, and scorpions can be picked up with kitchen tongs and killed in soapy water or in alcohol.

K. Biological Controls

Biological control uses a pest's natural enemies to attack and control the pest. The word "control" is used rather than "eliminate" because biological control usually implies that a few pests will remain to feed the natural enemies. The exception to this is a separate category of biological control called microbial control, which includes the use of plant and insect pathogens. Microbial controls are generally used like pesticides to kill as many pests as possible. Biological control strategies include conservation, augmentation, and importation.

Conservation

Conserving biological controls means protecting those already present in the landscape. To conserve natural enemies, the following procedures should be followed:

- Treat only if injury levels will be exceeded.
- Spot treat to reduce impact on non-target organisms.
- Time treatments to be least disruptive in the life cycles of the natural enemies.
- Select the most species-specific, least damaging pesticide materials, such as Bacillus thuringiensis, insect growth regulators that are specific to the pest insect, and baits formulated to be attractive primarily to the target pest.

Augmentation

This strategy artificially increases the numbers of biological controls in an area. This can be accomplished by planting flowering plants to provide pollen and nectar for the many beneficial insects that feed on pest insects or purchasing beneficials from a commercial insectary. Examples of the best known commercially available natural enemies include lady beetles, lacewings, predatory mites, and insect-attacking nematodes. These are but a very small part of the large and growing number of species now commercially available for release against pests. Learning when to

purchase and release the natural enemies and how to maintain them in the field should be emphasized in any landscape pest management program.

Importation

People often ask if parasites or predators can be imported from another country to take care of a particular disruptive pest in their area. It is true that the majority of pests we have in North America have come from other parts of the world, leaving behind the natural enemies that would normally keep them in check. "Classical" biological control involves searching for these natural enemies in the pest's native area and importing these natural enemies into the problem area. This is not a casual adventure; it must be done by highly trained specialists in conjunction with certain quarantine laboratories approved by the U. S. Department of Agriculture. Permits must be obtained and strict protocols observed in these laboratories.

Microbial Controls

Microbial controls are naturally-occurring bacteria, fungi, and viruses that attack insects and weeds. A growing number of these organisms are being sold commercially as microbial pesticides. Because each of these microbial pesticides attacks a narrow range of pests, non-target organisms are much less likely to be affected.

The most well-known microbial insecticide is *Bacillus thuringiensis*, or "BT". The most widely sold strain of BT kills caterpillars. Another strain kills only the larvae of black flies and mosquitoes, and a third strain kills only certain pest beetles.

L. Least-Toxic Chemical Controls

The health of building occupants and long-term suppression of pests must be the primary objectives that guide pest control in educational settings. To accomplish these objectives, an IPM program must always look for alternatives first and use pesticides only as a last resort.

Many people are familiar with insecticides such as malathion, fungicides such as benomyl (Benlate®), and herbicides such as 2,4-D. These and similar materials have engendered controversy over possible hazards they pose to human health and the environment. There are many other chemical products to choose from that are relatively benign to the larger environment and, at the same time, effective against target pests.

"Least-toxic" pesticides are those with all or most of the following characteristics: they are effective against the target pest, have a low acute and chronic toxicity to mammals, biodegrade rapidly, kill a narrow range of target pests, and have little or no impact on non-target organisms. More and more such products are reaching the market. These include materials such as the following:

- Pheromones and other attractants
- Insect growth regulators (IGRs)
- Repellents
- Desiccating dusts
- Pesticidal soaps and oils
- Some botanical pesticides

Pheromones

Animals emit substances called pheromones that act as chemical signals. The sex pheromones released by some female insects advertise their readiness to mate and can attract males from a great distance. Other pheromones act as alarm signals.

A number of pheromone traps and pheromone mating confusants are now commercially available for insect pests. Most of the traps work by using a pheromone to attract the insect into a simple sticky trap. The mating confusants flood the area with a sex pheromone, overwhelming the males with stimuli and making it very difficult for them to pinpoint exactly where the females are.

Insect Growth Regulators (IGRs)

Immature insects produce juvenile hormones that prevent them from metamorphosing into adults. When they have grown and matured sufficiently, their bodies stop making the juvenile hormones so they can turn into adults. Researchers have isolated and synthesized some of these chemicals; when they are sprayed on or around certain insects, these insect growth regulators prevent the pests from maturing into adults. Immature insects cannot mate and reproduce so eventually the pest population is eliminated. The IGRs methoprene and fenoxycarb are used to suppress fleas, and hydroprene is used against cockroaches.

Since humans and other mammals don't metamorphose as insects do, our bodies do not recognize juvenile hormones.

Repellents

Some chemicals repel insects or deter them from feeding on treated plants. For example, a botanical insecticide extracted from the neem tree (Azadirachta indica) can prevent beetles and caterpillars from feeding on treated rose leaves. Current research shows that neem has a very low toxicity to mammals. A number of neem products are currently available.

Desiccating Dusts

Insecticidal dusts such as diatomaceous earth and silica aerogel, made from natural materials, kill insects by absorbing the outer waxy coating that keeps water inside their bodies. With this coating gone, the insects die of dehydration. Silica aerogel dust can be blown into wall voids and attics to kill drywood termites, ants, roaches, silverfish, and other crawling insects.

Pesticidal Soaps and Oils

Pesticidal soaps are made from refined coconut oil and have a very low toxicity to mammals. Researchers have found that certain fatty acids in soaps are toxic to insects but decompose rapidly, leaving no toxic residue. Soap does little damage to lady beetles and other hard-bodied insects but could be harmful to some soft-bodied beneficials. A soap-based herbicide is available for controlling seedling stage weeds; the soap kills the weeds by penetrating and disrupting plant tissue. Soap combined with sulfur is used to control common leaf diseases such as powdery mildew.

Insecticidal oils (sometimes called dormant oils or horticultural oils) also kill insects and are gentle on the environment. Modern insecticidal oils are very highly refined. Unlike the harsh oils of years ago that burned leaves and could only be used on deciduous trees during the months they were leafless, the new oils are so "light" they can be used to control a wide variety of insects even on many bedding plants.

Note that it as always wise to test a material on a small portion of the plant first to check for damage before spraying the entire plant.

Botanical Pesticides

Botanical pesticides, although they are derived from plants, are not necessarily better than synthetic pesticides. Botanicals can be easily degraded by organisms in the environment; however, plant-derived pesticides tend to kill a broad spectrum of insects, including beneficials, so

they should be used with caution. The most common botanical is pyrethrum, made from crushed petals of the pyrethrum chrysanthemum flower. "Pyrethrins" are the active ingredient in pyrethrum, but "pyrethroids" such as resmethrin and permethrin have been synthesized in the laboratory and are much more powerful and long-lasting than the pyrethrins. Neem, another botanical pesticide, is discussed above under "Repellents." Some botanicals, such as nicotine or sabadilla, can be acutely toxic to humans if misused, and rotenone is very toxic to fish. The same care must be used with these materials as with conventional insecticides.

M. How to Select a Pesticide for an IPM Program

When contemplating the use of a pesticide, it is prudent to acquire a Material Safety Data Sheet (MSDS) for the compound. MSDS forms are available from pesticide suppliers and contain some information on potential hazards and safety precautions.

The following criteria should be used when selecting a pesticide: safety, species specificity, effectiveness, endurance, speed, repellency, and cost.

Safety

This means safety for humans (especially children), pets, livestock, and wildlife, as well as safety for the overall environment. Questions to ask follow:

- What is the acute (immediate) and chronic (long-term) toxicity of the pesticide? Acute toxicity is measured by the "LD50," which is the lethal dose of the pesticide required to kill 50% of the test animals (measured in milligrams of pesticide per kilogram of body weight of the test animal). The higher the LD50 value, the more poison it takes to kill the target animals and the less toxic the pesticide. In other words, high LD50 = low toxicity. Chronic toxicity refers to potential health effects from exposure to low doses of the pesticide for long periods of time. Chronic effects can be carcinogenic (cancer-causing), mutagenic (causing genetic changes), or teratogenic (causing birth defects).
- How mobile is the pesticide? Is the compound volatile, so that it moves into the air breathed by people in the building? Can it move through the soil into the groundwater? Does it run off in rainwater to contaminate creeks and rivers?
- What is the residual life of the pesticide? How long does the compound remain toxic in the environment?

- What are the environmental hazards listed on the label? What are the potential effects on wildlife, beneficial insects, fish, or other animals?

Species Specificity

The best pesticides are species-specific; that is, they affect just the group of animals or plants you are trying to suppress. Avoid broad spectrum materials that kill many different organisms because they can kill beneficial organisms that keep pests in check. When broad spectrum materials must be used, apply them in as selective a way as possible by spot-treating.

Effectiveness

This issue is not as straightforward as it might seem, since it depends on how effectiveness is being evaluated. For example, a pesticide can appear to be very effective in laboratory tests because it kills 99% of the test insects. But in field tests under more realistic conditions, it may also kill 100% of the pest's natural enemies. This will lead to serious pest outbreaks at a later date.

Endurance

A pesticide may have been effective against its target pest at the time it was registered, however, if the pest problem is now recurring frequently, it may be a sign that the pest has developed resistance to the pesticide; or, stated in another way, that the pesticide has lost its endurance.

Speed

A quick-acting, short-lived, more acutely-toxic material might be necessary in emergencies; a slow-acting, longer-lasting, less-toxic material might be preferable for a chronic pest problem. An example of the latter is using slower-acting boric acid for cockroach control rather than a quicker-acting but more toxic organophosphate.

Cost

This is usually measured as cost per volume of active ingredient used. Some of the newer, less-toxic microbial and botanical insecticides and insect growth regulators may appear to be more expensive than some older, more toxic pesticides. But the newer materials tend to be effective in far smaller doses than the older materials—one container goes a long way.

This factor, together with their lower impact on the environment, often makes these newer materials more cost effective.

N. Pesticide Use Guidelines

In addition to becoming informed about the characteristics of the material itself, it is important to develop guidelines to be followed each time a pesticide is used. Prepare a checklist to be used each time an application is made. The following are important items to include on the checklist:

- Make sure the pesticide is registered for use in the state. (Pesticides can be registered in some states and not in others.) What are the laws regarding its use?
- READ THE PESTICIDE LABEL. Follow its restrictions and directions for use, labeling, and storage exactly.
- If required, secure a written recommendation from a licensed pest control adviser for using the pesticide.
- Make sure that all safety equipment and clothing (e.g., neoprene gloves, goggles, respirator, hat, and other protective coverings as necessary) is available and worn when the pesticide is used.
- Verify that the person doing the application is certified and/or qualified to handle the equipment and material chosen and has been adequately trained.
- Make sure application equipment is appropriate for the job and properly calibrated.
- Confine use of the material to the area requiring treatment (spot-treat).
- Keep records of all applications and copies of MSDS sheets for all pesticides used.
- Monitor the pest population after the application to see if the treatment was effective and record results.
- Be prepared for all emergencies and compile a list of whom to call for help and the kinds of first aid to be administered before help arrives. Place the list in an accessible area near a phone.
- Dispose of pesticides properly. DO NOT pour pesticides down the drain, into the toilet, into the gutter, or into storm drains! If you are unsure about how to dispose of the pesticide, call the manufacturer or your local utility company that handles sewage and storm drains.

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Notification and Posting

Educational institutions have the responsibility to inform building occupants when they may be exposed to pesticides. Unless it is an emergency situation, the applications should be performed when only maintenance staff members are present and the building is otherwise unoccupied. Notifications of all pending treatments using a pesticide should be made 72 hours in advance for normal conditions and 24 hours in advance for emergencies. Concerned individuals should be directed to the educational institution's pest manager for more specific information. Post all areas to be treated or that have been treated.

Approved by HEC Operations Team, Date: November 18, 2008

11/18/08
Craig Morris Date
VP Finance & Admin
Southern Oregon University

11/18/08
Lynda Warren Date
CFO/Dean of College Services
Rogue Community College

Rogue Community College/Southern Oregon University
Higher Education Center
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INTEGRATED PEST MANAGEMENT (IPM) CONTRACT PERFORMANCE SPECIFICATIONS

GENERAL PROGRAM DESCRIPTION

It is the intent of this contract to provide a comprehensive Integrated Pest Management (IPM) program for the RCC/SOU Higher Education Center. IPM is a relatively new concept in urban areas. Traditional structural pest control is largely reactive to pest infestations and bases much of its response on routinely scheduled application of pesticides. Routine applications are probably unnecessary and have limited effectiveness in providing adequate long-term control.

Conversely, IPM is a decision-making process for achieving long-term pest suppression. In the IPM process, monitoring and the interpretation of data gathered provide estimates of the pest population in a given area. This monitoring allows accurate decisions to be made about when intervention measures are needed, the type of control measure selected, and the method of application. Pest management practices in an IPM program extend beyond the application of pesticides to include structural, procedural, and landscape modifications. These practices establish physical barriers to pests; reduce the food, water, and harborage available to them; and establish landscape plants and designs which require less maintenance.

The Contractor shall furnish all labor, materials and equipment to implement the monitoring, trapping, and pesticide application aspects of the IPM program. The Contractor shall also make detailed, site-specific recommendations for structural and procedural modifications to achieve pest suppression. The Contractor shall provide evidence in his/her proposal of sufficient expertise in pest control, and IPM principles and practices to effectively carry out these responsibilities.

The RCC/SOU's Pest Manager will act as the manager of the IPM program, which will include overseeing and monitoring contract performance.

Pests Included and Excluded

The IPM program specified by this contract is intended to suppress the population of rats, mice, cockroaches, ants, silverfish, and any other pest included in the contract. Populations of these pests located outside the Higher Education Center but within the property boundaries of the building are included.

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GENERAL PROGRAM REQUIREMENTS

General requirements of the IPM program shall include the following for the Higher Education Center:

Initial Inspection

A thorough, initial inspection shall be conducted during the first month of this contract by the Contractor's representative, Property Manager or representative, and Pest Manager. The purpose of this initial inspection is to allow the contractor to evaluate the pest management needs of the Higher Education Center and to discuss these needs with the Property Manager and Pest Manager. The following specific points should be addressed:

- Identification of problem areas in and around the building
- Identification of structural features or personnel practices that are contributing to pest infestations
- Discussion of the effectiveness of previous control efforts
- Facilitation of Contractor access to all necessary areas
- Informing the Contractor of any restrictions or special safety precautions, or other constraints

Submission of Plan

Following the initial inspection, the Contractor will develop a detailed Pest Management Plan and Service Schedule for the Higher Education Center. This written plan and schedule must be submitted to the Pest Manager for approval prior to initiation. The plan and schedule must address the following:

- The structural and operational actions to inhibit pests
- The Contractor's means for monitoring pest populations in and around the building
- The proposed primary pesticides (accepted common name and generic name) and alternatives approved by the Environmental Protection Agency (EPA)
- The conditions requiring application
- The method(s) of application proposed
- The rationale for each type of use
- The proposed trapping devices for rodents, if any

Frequency of inspections, monitoring, and treatment by the Contractor shall depend on the specific pest management, needs of the premises. At the minimum, inspections and monitoring shall be done monthly.

The Plan and Schedule shall be submitted not more than 10 working days following the initial inspection of the premises. The Pest Manager will render a decision regarding the acceptability of the Plan and Schedule within 10 working days following receipt. The Contractor shall be on site to implement the Plan and Schedule within 5 working days following notice of approval of the plan. If the Plan is disapproved, the Contractor shall have 3 working days to submit a revised Plan and Schedule.

Any subsequent changes in the Plan and Schedule must receive the concurrence of the Pest Manager.

The Contractor shall describe, in the proposal, the capability of meeting emergency and special service requests (e.g., radio-dispatched service, names of office personnel handling the account, availability of trucks and personnel, etc.).

Monitoring and Inspection

A critical aspect of the Pest Management Plan shall be the establishment of a monitoring and inspection program to identify infested zones and allow an objective assessment of pest population levels. Monitoring and inspection shall be continued throughout the duration of this contract. The Contractor shall describe in the proposal the approach to meet this requirement. Where appropriate, glue traps shall be employed to monitor cockroach populations in selected areas.

Pesticide Treatment

The Contractor shall not apply any pesticide which has not been specifically approved by the Pest Manager. In cooperation with the Pest Manager, the Contractor shall develop action thresholds specific to each pest and to site zones.

As a general rule, application of pesticides in any area inside or outside the premises—i.e., in any room, closet, hallway, stairwell, court, driveway, planting bed, and similar locations—shall not occur unless inspections or monitoring indicate the presence of pests that exceed action thresholds in that specific area. Signs of pest activity must be seen and identified. For instance, a relatively fresh rodent dropping or an active burrow or runway is sufficient to indicate the presence of rodents in an area. Use and effectiveness of alternative non-pesticidal pest management methods must be documented in monitoring records prior to requesting the use of pesticides.

Preventive pesticide treatments of inside and outside areas where inspections indicate a potential insect or rodent infestation are generally unacceptable. In exceptional circumstances, however, preventive pesticide treatment may be allowed on a case-by-case basis. The Contractor must substantiate the need, indicating areas for preventive

treatment in the Pest Management Plan for the building, and listing the preventive treatment methods of application. Each preventive treatment is subject to approval by the Pest Manager and can be eliminated by him/her at any time.

Structural Modifications

Structural modifications for pest suppression shall not be the responsibility of the Contractor. However, the Contractor is responsible for notifying the Pest Manager about structural modifications necessary to prevent access by pest populations, or for safety reasons.

Record Keeping

The Contractor shall be responsible for maintaining a complete and accurate Pest Management Log Book. The Higher Education Center shall have its own Log Book which will be kept in the Property Manager's office and maintained on each visit by the Contractor.

The Log Book shall contain the following items:

- A copy of the Pest Management Plan and Service Schedule for the Higher Education Center.
- A copy of the current label and EPA registration number for each pesticide used in the building, including the Material Safety Data Sheet.
- Pest monitoring data sheets which record, in a systematic fashion, the number of pests or other indicators of pest population levels revealed by the Contractor's monitoring program for the building, e.g., number and location of cockroaches trapped, number and location of rodents trapped or carcasses removed, number and location of new rat burrows observed, etc. The Contractor shall provide, in the proposal, a sample of the format for the data sheets and an explanation of all information to be recorded on them.
- The location of all traps, trapping devices, and bait stations in or around the Higher Education Center. This information can be in either tabular or in list format, and should be accompanied by a map for each pest.
- The Property Manager's copies of a Pest Control Work and Inspection Report Form. These forms will be supplied to the Contractor to advise the Contractor of routine service requests and to document the performance of all work, including emergency work. Upon completion of a service visit to the building, the Contractor's representative performing the service shall complete, sign, and date the Form and return it to the Property Manager's office on the same or succeeding day of the performance of the service.
- The Contractor's Service Report forms, documenting arrival and departure time of the Contractor's representative performing the service, and all record keeping

information on pesticide application required by the FIFRA statute. These report forms may incorporate some or all of the pest monitoring data required above.

Special Requests and Emergency Service

The regular service shall consist of performing all components of an IPM program other than structural modifications, as described in the Contractor's detailed Plan and Schedule for the Higher Education Center, during the period of the contract. Occasional requests for corrective action, special services beyond the routine requests for emergency service shall be placed with the Contractor. The Contractor shall respond to requests for emergency service on the day of the request. The Contractor shall respond to special service requests within one (1) working day after receipt of request. In the event that such services cannot be completed within their time frames, the Contractor shall immediately notify the Pest Manager and indicate an anticipated completion date.

SPECIFIC PROGRAM REQUIREMENTS AND RESTRICTIONS

Personnel

The Contractor shall provide only qualified pest management personnel with adequate experience in the conduct of IPM programs. All personnel must understand current practices in this field and be able to make judgments regarding IPM techniques. Training and experience in IPM must be demonstrated.

Any proposed deletions, additions, or replacement of personnel from those cited in the Contractor's original proposal must be submitted, in writing, to the Pest Manager and approved prior to their becoming a part of this contract.

The contractor must meet the following specific staff requirements:

Entomologist

The Contractor shall have a staff Entomologist, or access to one, available for routine and emergency consultation. Evidence of the following documentation regarding this individual's experience and training shall be provided in the proposal:

- Bachelor's degree in entomology from an accredited University; or a Bachelor's degree in biology, chemistry, or other life science and proof of membership in the American Registry of Professional Entomologists (ARPE).
- Current certification in the appropriate jurisdictions as a Commercial Pesticide Applicator in the category of Industrial, Institutional, Structural, and Health Related Pest Control with a minimum of subcategories to include General Pest Control, Rodent Control, and Turf and Ornamental.

Supervisor

A Supervisor and an alternate must be identified in the proposal. The on-site Supervisor shall have the Contractor's authority to act on matters pertaining to the performance of services required under this contract. This individual shall assure safety and carry out coordination and continuity of the program routine. The Supervisor and alternate shall both have a working knowledge of this contract and the detailed Pest Management Plan and Schedule for each building. The Supervisor and alternate must both meet the qualifications identified below under Pest Management Technicians.

Pest Management Technicians

The Contractor shall provide, in the proposal, the names of all pest management personnel assigned to this contract, and pertinent information regarding their qualifications, experience, and training. Throughout the life of this contract, all personnel providing on-site pest management services must be certified in the appropriate jurisdictions as Commercial Pesticide Applicators in the category of Industrial, Institutional, Structural, and Health Related Pest Control. No uncertified personnel will be permitted to work on-site under this contract unless under the supervision of a certified applicator.

Manner and Time to Conduct Services

It shall be the Contractor's responsibility to carry out work according to the detailed Pest Management Plan and Schedule developed for the Higher Education Center. The Contractor's on-site Supervisor shall be responsible for coordination with the Property Manager or representative at the beginning of each visit. The purpose of this coordination is to review the plan and schedule, and to receive information on problem areas needing corrective action.

Services which are not likely to adversely effect tenant health or productivity may be performed during the regular hours of operation of the Higher Education Center. Pesticide applications (except bait placement), however, shall not be made during building hours, or during normal work hours of college/university staff. When it is necessary to perform work on weekends or outside the regularly scheduled hours set in the Contractor's Plan and Schedule, the Contractor shall notify the Pest Manager and the Property Manager at least 2 days in advance and all arrangements will be coordinated between the Pest Manager, the Property Manager, and the Supervisor.

Where service to vacated areas is required, it shall be the Contractor's responsibility to notify the Pest Manager and the Property Manager at least 2 days in advance of the treatment, provide and post all necessary signs (such as when an area may be re-

entered—in case of pesticide use, according to the product's label directions) and remove signs when the area is safe for entry. The Contractor shall observe all safety precautions throughout the performance of this contract. Certain areas within the Higher Education Center may require special instructions for persons entering the building. Any restrictions associated with these special areas will be explained, in writing, to the Contractor and Pest Manager by the Property Manager or representative. These restrictions shall be adhered to and incorporated into the Contractor's detailed plan and schedule for the building. All Contractor personnel working in the Higher Education Center shall wear distinctive uniform clothing. The uniform shall have the Contractor's name easily identifiable, affixed thereon in a permanent or semi-permanent manner. Additional personal protective equipment required for the safe performance of work must be determined and provided by the Contractor. Protective clothing, equipment, and devices shall, as a minimum, conform to Occupational Safety and Health Administration (OSHA) standards for the products being used. Vehicles used by the Contractor must be identified in accordance with State and local regulations.

Pesticide Products and Use

The Contractor shall be responsible for the proper use of pesticides. All pesticides used by the Contractor must be registered with the EPA and State and/or local jurisdiction. 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 will follow all notification and warning procedures required by the Pest Manager prior to the application of a pesticide. The environment and the public shall be protected at all times.

The Contractor shall minimize the use of synthetic organic pesticides wherever possible. Alternatives are:

- The use of crack and crevice application of pesticide to pest harborage areas rather than fan spraying exposed surfaces in the general vicinity of harborage areas.
- The use of containerized bait such as boric acid, for cockroaches, rather than sprays, wherever appropriate.

Pesticide fogs and sprays (including mists and ultralow volume applications) will be restricted to unique situations where no alternative measures are available or practical.

In the unusual event that a space spray application is required, and prior to performing a space spray treatment, the Contractor shall submit a written request for approval to the Pest Manager at least 2 days prior to the proposed treatment time. The request must identify the target pest, document the need for such treatment, the time (when site is not occupied) and specific place(s) of treatment, the pesticide(s) to be used, the method of

application, what precautions should be taken to ensure tenant and employee safety, and the steps to be taken to ensure the containment of the spray to the site of application. No space application of pesticides shall be made without the written approval of the Pest Manager. No space application of pesticide shall be made while tenant personnel are present. Products identifiable as fumigants shall be considered inappropriate for use and shall not be used in any space for any purpose, unless it determined that an emergency exists by the Pest Manager.

Rodent Control

Snap traps and trapping devices (including glueboards) used in rodent control must be checked daily. The Contractor shall dispose of rodents killed or trapped within 24 hours. Trapping shall not be performed during periods when maintenance will be delayed by holidays, weekends, etc. Traps shall be placed out of the general view and located so as not to be affected by routine cleaning procedures.

All rodenticides, regardless of packaging, shall be placed either in locations not accessible to children, pets, wildlife, and domestic animals, or in EPA-approved tamper-resistant (often termed "tamper-proof") bait boxes. Frequency of bait box servicing shall depend upon the level of rodent infestation. All bait boxes shall be labeled, and dated at the time of installation and each servicing. All bait boxes shall be maintained in accordance with EPA regulations, with an emphasis on the safety of non-target organisms. The following points shall be strictly adhered to:

- The lids of all bait boxes must be securely locked or fastened shut.
- Bait must always be placed in the baffle-protected feeding chamber of the box and never in the runway of the box. Bait may be placed inside an active rodent burrow if the burrow entrance (and the bait) is then buried or caved-in to avoid non-target access to the bait.
- All bait boxes must be securely attached or anchored to the floor, ground, wall, etc., so that the box cannot be picked up or moved.
- Baits, bait boxes, and stations should only be considered as a last option for use inside buildings.

All traps, trapping devices, and bait boxes shall be accounted for, and their location recorded in the Higher Education Center Log Book; all shall be removed from the premises covered by this contract at its conclusion.

Inspection

Throughout the duration of this contract, the Higher Education Center will be inspected periodically by the Pest Manager to determine the effectiveness of the program and Contractor compliance with the contract. Inspection results will be documented in

writing. The Contractor shall promptly initiate actions within 5 working days to correct all contract performance deficiencies found by the Pest Manager.

It shall be the Contractor's responsibility to furnish an adequate supply of materials necessary to inspect the interior of all rodent bait stations. These materials may include wrenches to loosen and tighten fasteners, keys to open locks, or replacement self-locking plastic ties. Implements to cut plastic ties or seals are not included under this provision.

Related Services

RCC/SOU reserves the right to negotiate with the Contractor for the purpose of related pest control services not specifically covered herein, such as subterranean and structural management of termites and other wood-boring insects, or bird control, and to add (or delete) parts of the Higher Education Center.

BID SUBMITTAL

Pre-Bid Building Inspection

All prospective bidders shall conduct a thorough and complete investigation of the Higher Education Center prior to submitting their proposal.

Selection for Award

Bidders should be aware that RCC/SOU will perform a "best-buy analysis" and the selection for award shall be made to the bidder whose proposal is most advantageous to the college/university, taking into consideration the technical factors listed below and the total proposed cost across all contract periods.

Technical Evaluation Criteria

The technical portion of the proposal will be the most important consideration in making the award; therefore, the proposal should be as complete and as specific as possible.

The merits of each proposal will be carefully evaluated in terms of the requirements and in relation to the criteria established below. The evaluation will take into consideration the technical and administrative capabilities of the bidders in relation to the needs of the program and reasonableness of costs shown in relation to the work to be done.